スリランカ民主社会主義共和国
認証野菜種子生産システム強化プロジェクト
中間レビュー調査報告書

平成26年11月
（2014年）

独立行政法人国際協力機構
農村開発部

農 村
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14-098

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序　　文

日本国政府は、スリランカ民主社会主義共和国からの要請に基づき、「認証野菜種子生産システム強化プロジェクト」を実施することを決定し、2012 年 2 月 29 日に討議議事録（R/D）の署名を行い、5 年間のプロジェクトとして実施しています。

今般、中間レビュー調査団を派遣し、スリランカ民主社会主義共和国政府及び関係機関との間で、プロジェクトの進捗の確認と今後の方向性に係る協議を行いました。本報告書は、同調査団による協議結果、評価結果を取りまとめたもので、当プロジェクト及び類似プロジェクトの実施にあたり広く活用されることを願います。

終わりに、本調査に対しご協力とご支援をいただいた内外関係者の皆様に、心からの感謝の意を表します。

平成 26 年 11 月

独立行政法人国際協力機構
農村開発部長　北中　真人

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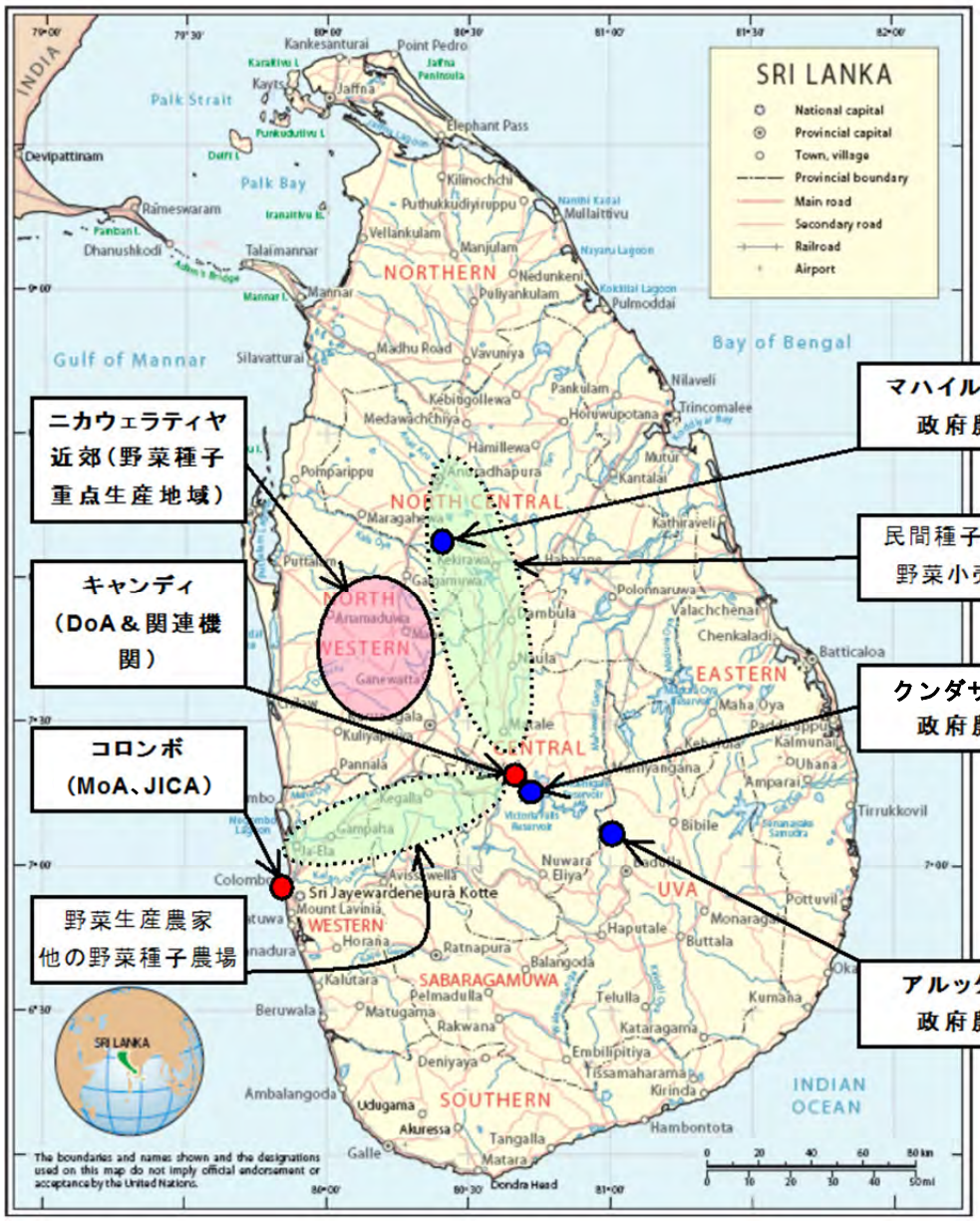
SRI LANKA
National capital
Provincial capital
Town, village
Provincial boundary
Main road
Secondary road
Railroad
Airport
INDIA
Palk Strait
Palk Bay
Gulf of Mannar
Bay of Bengal
INDIAN OCEAN
NORTHERN
NORTH CENTRAL
NORTH WESTERN
CENTRAL
EASTERN
UVA
WESTERN
SABARAGAMUWA
SOUTHERN
Kankesanturai
Point Pedro
Jaffna
Kayts
Elephant Pass
Devipattinam
Rameswaram
Dhanushkodi
Talaimannar
Mannar
Kilinochchi
Puthukkudiyiruppu
Mullaittivu
Vellankulam
Manjulam
Nedunkeni
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Madhu Road
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Mutur
Kantalai
Maragahawewa
Kathiraveli
Puttalam
Polonnaruwa
Valachchenai
Chenkaladi
Batticaloa
Kurunegala
Kegalle
Maha Oya
Kalmunai
Uhana
Amparai
Tirrukkovil
Bibile
Pannala
Ja-Ela
Colombo
Sri Jayewardenepura Kotte
Mount Lavinia
Nuwara Eliya
Haputale
Buttala
Monaragala
Pottuvil
Horana
Ratnapura
Balangoda
Kalutara
Pelmadulla
Telulla
Kumana
Beruwala
Matugama
Rakwana
Kataragama
Deniyaya
Embilipitiya
Tissamaharama
Kirinda
Ambalangoda
Udugama
Akuressa
Hambontota
Galle
Tangalla
Matara
Dondra Head
SRI LANKA
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
0 20 40 60 80 km
0 10 20 30 40 50 mi
ニカウェラティヤ近郊（野菜種子重点生産地域）
キャンディ（DoA＆関連機関）
コロンボ（MoA、JICA）
野菜生産農家他の野菜種子農場
マハイルパラマ政府農場
民間種子販売所野菜小売市場
クンダサーレ政府農場
アルッタラマ政府農場

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略　語　表

略　語	欧　文	和　文
AI	Agriculture Instructors	農業指導員
AO	Agricultural Officer	農業オフィサー
BFB	Bacterial Fruit Blotch	果実汚斑細菌病
DB	Database	データベース
DoA	Department of Agriculture	農業局
ETC	Extension and Training Centre	普及訓練センター
GDP	Gross Domestic Product	国内総生産
HORDI	Horticulture Research and Development Institute	園芸研究開発所
ISTA	International Seed Testing Association	国際種子検査協会
JCC	Joint Coordination Committee	合同調整委員会
JICA	Japan International Cooperation Agency	国際協力機構
M/M	Minutes of Meeting	ミニッツ（協議議事録）
OFC	Other Field Crops	野菜・果樹以外の旗作物
OIC	Officer in Charge	担当職員
OJT	On-the-Job Training	オンザジョブ・トレーニング
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
R/D	Record of Discussions	討議議事録
SCPPC	Seed Certification and Plant Protection Centre	種子認証植物防疫センター
SCS	Seed Certification Services	種子認証サービス
SEPC	Social and Economic Planning Centre	社会経済計画部
SPASL	Seed Producers Association of Sri Lanka	スリランカ種子生産者協会
SPMDC	Seed and Planting Materials Development Centre	種苗開発センター
STL	Seed Testing Laboratory	種子検査室
TA	Technical Assistant	技術アシスタント

評価調査結果要約表

１．案件の概要	
国　名：スリランカ民主社会主義共和国	
案件名：認証野菜種子生産システム強化プロジェクト （Project for Enhancement of Production System of Certified Vegetable Seed in Sri Lanka）	
分野：農業・農村開発	援助形態：技術協力プロジェクト
所管部署：農村開発部	協力金額（中間レビュー時）：1 億 400 万円 （2014 年 3 月までの実績）
協力期間：2012 年 5 月 14 日～2017 年 5 月 13 日（5 年間）	先方実施機関：農業省農業局（DoA）
	日本側実施機関：―

１－１　協力の背景と概要

スリランカ民主社会主義共和国（以下、「スリランカ」と記す）の中長期国家開発計画[1]では、野菜、コメ以外の穀類や豆類の自給率の改善の重要性が示されており、質の高い種苗が使われていないことが農業分野の重要な課題であると指摘されている。プロジェクト計画時、農業局（DoA）に品質を認証された認証種子の割合は野菜種子の全供給量のうち 4～35%であり、これは種子生産、種子加工、種子認証、販売に関する能力が十分でないためと考えられていた。なお当時、スリランカは毎年約 250 t の野菜種子を輸入しており、国内の種子生産量は 90 t であった。

このような背景の下、スリランカ政府は質の高い野菜種子の生産技術を開発・普及し、農業生産性と質を向上させることを目的とした技術協力プロジェクトの実施を日本政府に要請した。その後両者は、①種苗開発センター（SPMDC[2]）による生産計画、②原種種子と標準種子の生産、③種子認証サービス（SCS[3]）による認証、④種子販売の分野において、農家と私企業も視野に入れたプロジェクトを実施するべく合意した。

１－２　協力内容

本プロジェクトは、スリランカにおける認証種子の生産体制の改善を目的としたものである。

（１）上位目標

全国の野菜の認証種子の利用が増える。

（２）プロジェクト目標

対象地域における野菜の認証種子の生産体制が改善される。

（３）成　果

１）SPMDC の種子生産・配布計画策定能力が向上する。

２）官民の野菜種子生産技術が向上する。

３）官民の野菜種子の品質管理技術が改善する。

[1] “*Mahinda Chintana, The Vision for the Future”* (2010-2016)”, 2010.

[2] SPMDC：Seed and Planting Materials Development Centre. 農業局傘下の組織。

[3] SCS：Seed Certification Services. 農業局傘下の種子認証植物防疫センター（SCPPC）の下部組織。

（4）投　入

＜日本側[4]＞

項　目	計　画	実　績
専門家	合計 222 人月 ・長期　3 名 総括／認証種子生産体制、種子検査／訓練、業務調整／種子生産 ・短期 種子検査、種子病理、植物病理、農家経済経営、市場調査、収穫後処理	合計 104.2 人月 ・長期　4 名（95.8 人月） 総括／認証野菜種子生産システム、種子検査、種子生産、業務調整／研修 ・短期　延べ 7 名（8.4 人月） 種子生産計画、種子病理、植物病理、種子流通販売、優良種子評価
本邦／第三国研修	種子生産と認証 （参加者数の計画なし）	・本邦研修 18 名 種子行政、種子検査、野菜種子生産、植物病理 ・第三国研修 2 名 国際野菜訓練コース（タイ）
機材供与	車両、スプリンクラー灌漑施設、点滴灌漑施設、種子加工・検査機材	約 1,700 万ルピー〔点滴灌漑システム、苗床雨よけ（ポリハウス）、種子検査機材など〕
事業費	3 億 6,000 万円	1 億 400 万円　（2014 年 3 月までの実績）

＜スリランカ側[5]＞

以下の実績はほぼ計画どおり。

1）カウンターパート職員の配置：延べ 32 名

2）プロジェクト事務所

3）研修実施に必要な教室、資材、用具など

4）プロジェクトのローカルコスト：280 万ルピー（カウンターパート職員研修参加時の手当、プロジェクト事務所の電気・水道代、プロジェクトで供与した機材購入にかかる税金など）

２．評価調査団の概要

調査者	総　　括：JICA 農村開発部次長（第二グループ）	田和　正裕
	種子行政：農林水産省食料産業局新事業創出課種苗産業室課長補佐	齋藤　千栄美
	協力企画：JICA 農村開発部第二グループ第三チーム	横田　千映子
	評価分析：かいはつマネジメント・コンサルティング	田村　智子
	G. M. W. Chithral, Additional Director, SCPPC[6], DoA[7]	
	G. W. R. Weerakoon, Assistant Director, SPMDC, DoA	
	V. D. N. Ayoni, Agrculture Economist, Social Economic Planning Center, DoA	
調査期間	2014 年 9 月 1 日（月）～20 日（土）	評価種類：中間レビュー調査

[4] 専門家派遣実績とプロジェクト費用は 2014 年 8 月末現在、研修と機材供与の実績は 2014 年 6 月末現在。

[5] 2014 年 6 月末現在の実績

[6] SCPPC：Seed Certification and Plant Protection Center（種子認証植物防疫センター）

[7] DoA：Department of Agriculture（農業局）

３．評価結果の概要

３－１　実績の確認

３－１－１　成果１

本プロジェクトによる官民連携の促進の結果、情報交換や討議の機会がより多くもてるようになった。民間企業からも、原種種子在庫量などの SPMDC からの情報提供や、官民の意見交換の促進を評価する声が聞かれた。また、以前は民間企業から SPMDC に随時提出されていた原種種子の必要量に関するリストが、官民合同会議において一度に提出されるようになり、SPMDC の原種種子生産計画が作成しやすくなったことも評価できる。なお成果１を達成するためには、官民の連携がさらに強まること、データベースシステムが遅延なく導入されること、販売改善に関する活動が速やかに実施されることなどが重要である。

３－１－２　成果２

育苗から収穫後処理までを対象とした種子生産研修が実施されており、研修終了時のアンケートによると参加者の満足度は高い。研修参加者の契約農家（政府／民間）をいくつか訪問したところ、研修で導入した、育苗（トレイとポットの使用)、畝づくり、一本植えなどの技術を積極的に実践している例がみられた。しかし、政府種子農場における、研修で導入した技術の適用例は限定的である。カウンターパート職員からは、これら技術を農場に導入するには難しい点がいくつかあるとの指摘もあり、技術の効用について疑問の声もあった。長年実施してきた耕作方法を変えることへの躊躇もあるようである。

３－１－３　成果３

プロジェクト開始時の JICA 専門家の観察によると、SCPPC の下部組織である種子検査室（STL）では、国際的な種子検査ルール[8]に沿って種子検査が実施されていた。これを更に改善すべくプロジェクトで研修等を実施した結果、検査手順の合理化や発芽評価の標準化が更に進んだ。今後は、種子病理分野の技術向上、及び民間企業を対象とした種子検査訓練実施による、更なる効果発現が期待されている。なお、中間レビュー時の協議を通して、市場の種子の品質の現状が把握されていないことが判明したため、市場の種子の品質管理のためには今後、現状把握を目的とした調査を行い、その結果に基づいた対策を立案することが重要と思われる。

３－２　プロジェクト目標達成の見込み

官民の情報共有が促進され、種子検査に携わる職員の技術力が期待されたレベルに向上しつつあることは評価に値するが、種子生産研修で導入された技術が政府種子農場で積極的に取り入れられていないことは懸念事項である。プロジェクト目標達成のために、JICA 専門家チームと SPMDC は、政府種子農場で導入する技術の選定を行い、通達などで農場に導入の指示を出すこと、種子生産研修の内容や方法について精査し、対象者のニーズに応じた内容となるよう改善案を策定することが必要である。また、研修内容に知見のある SPMDC 職員を研修講師として選定・任命するとともに、研修の計画策定やフォローアップなどの実施主体を徐々に SPMDC に移行していくことも重要である。以上のとおり、プロジェクト目標達成のためには、今後いくつかの課題を解決していく必要がある。

[8] International Seed Testing Association（ISTA）ルール

３－３　貢献・阻害要因

３－３－１　効果発現に貢献した要因

（１）JICA 研修員の活躍

2003～2007 年に実施された JICA 国別研修に参加した SPMDC の職員が、研修で学んだ知見を生かし、本プロジェクトで種子生産研修の実技指導を担当し、同研修の効果的な実施に貢献している。また、JICA 研修員の同窓会組織（JICA Ex-participants' Association）は近年、契約種子農家や民間企業を対象に、種子生産研修を定期的に企画・実施している。これはプロジェクト目標や上位目標の達成に貢献するものとして評価できる。

（２）種子検査分野における技術移転の進捗

種子検査室の職員が、国際的な種子検査ルールにのっとって種子検査を実施するに必要な基本的な能力を有していたことが、種子検査分野の JICA 長期専門家による技術移転の早期完了に貢献した。

３－３－２　問題点及び問題を惹起した要因

（１）農業局（DoA）による作業の遅延

プロジェクトに関連する DoA の作業や調整が大幅に遅れることがある。例えば、2013 年 11 月のプロジェクト月例会議で、プロジェクトで実施した種子生産研修で導入された技術を政府種子農場で適用するよう、DoA が通達を出すことが決まったが、現在においても通達は発行されていない。2013 年 12 月、JICA 運営指導調査団と SPMDC は DoA の種子販売所の改善に取り組むことに同意し、SPMDC はこれに関する提案書を提出することになっていたが、これに関連する書類が提出されたのは、2014 年の 9 月のことであった。

（２）プロジェクト活動開始や機材調達の遅延

プロジェクトのキックオフ会議が開催され、プロジェクト事務所が設置されたのは、JICA 専門家がスリランカに到着してから約 3 カ月後のことであり、プロジェクト活動の本格的な開始が遅延した[9]。また、プロジェクトに供与される機材のスペックの選定、税金の準備、見積もりの取り付けなどに予想以上の時間がかかっており、機材調達にも遅れがみられる。このため、供与機材を使った活動やそれによる効果発現が遅延している[10]。

３－４　評価結果の要約

（１）妥当性＜高いと思われるが要検討＞

「１－１　協力の背景と概要」でも述べたとおり、スリランカの中長期国家開発計画[11]では、野菜、コメ以外の穀類や豆類の自給率の改善の重要性が示されており、質の高い種苗が使われていないことが農業分野の重要な課題である、と分析がなされている。このこと

[9] キックオフ会議の開催が遅延した主な理由は、DoA 設立 100 周年記念行事の準備でカウンターパート職員が多忙であったことである。

[10] 例えば、政府種子農場における生産環境を整備するため、育苗用雨よけや灌漑施設の調達と設置が計画されていたが遅延した。そのため、環境の整っていないなかで生産技術の実技研修やデモンストレーションを実施せざるを得ず、技術の効果を効果的に提示できないことがあった。また種子処理の機材の調達が遅れており、期待されていた、処理工程の効率化の実現が遅延している。

[11] *"Mahinda Chintana, The Vision for the Future"*（2010-2016）*"*, 2010.

から本プロジェクトの目的はスリランカの開発政策と整合性がある。また、同開発計画では、政府種子農場における生産性の向上のための施設・技術の改善や、認証種子の在庫の確保の必要性が述べられており、種子生産や計画の改善を図る本プロジェクトは、同開発計画に示されているこれらのニーズに応えるものである。また、日本の外務省の「対スリランカ国別援助計画 （2012 年 6 月）」では後発開発地域の開発支援が重点分野のひとつとなっており、農業分野を中心とした産業育成、農業関連インフラの整備を支援する方針である。

以上のとおり本プロジェクトは、現在のスリランカの開発計画に記載の政策や開発ニーズ、日本の援助方針と合致しており、妥当性は高いといえる。しかし中間レビューでは、計画時の認証種子の市場における位置づけに関する認識に一部齟齬があったこと、SPMDC は、認証種子の生産量を年々増加させる計画・方針にはないことなどがわかった。しかし中間レビューでは、これらがプロジェクトの妥当性に及ぼす影響について結論を導き出すことはできなかった[12]。

（2）有効性 ＜中程度＞

プロジェクト目標の達成に関し、種子生産計画における官民の情報交換の促進や、種子検査技術の向上などの進捗がみられることは評価に値する。一方、プロジェクトで実施した種子生産研修により導入された生産技術が、政府種子農場においてまだ積極的に取り入れられておらず、種子生産技術の向上における進捗は遅れている。このようなことから、現時点では本プロジェクトの有効性は中程度と判断する。

（3）効率性＜中程度＞

プロジェクト活動の開始は遅延したが、その後、ほとんどの活動が計画どおりに実施されている。また種子検査分野における技術移転は 5 年間の予定であったが、現時点でほぼ完了している。

一方、機材調達の遅れがプロジェクトの効果発現に影響を与えていると考えられる。また、SPMDC の本部は、その下部機関である SPMDC 地域事務所、政府種子農場、種子加工場、及び州政府農業局などと連絡をとり、プロジェクト活動が円滑に実施されることが期待されていたが、現在、種子生産研修の計画や実施にあたっては、JICA 専門家がこれらの機関とそれぞれ連絡を取っている状況にあり、効率的とはいえない。なお、プロジェクトは計画どおり 5 年間で完了する予定であり、事業費も計画内に収まる見込みである。これらより、効率性は中程度と判断する。

（4）インパクト＜情報不足のため判断できず＞

プロジェクトの上位目標は「全国の野菜の認証種子の利用が増える」であり、プロジェ

[12] 本プロジェクト計画時、(a) スリランカでは認証種子の生産量が少なく、(b) そのため良質の種子が不足しており、(c) よって同国は種子を輸入に頼らざるを得ない状況にある、と分析されていた。しかし現在、(a) SPMDC は標準種子の在庫を抱え、2014 年ヤラ期は生産を控えている状況にあり、標準種子の生産量や生産能力に不足はみられない。(b) 認証種子の生産量は、国内の種子生産量の約 10%と推測され、わずかであることに変わりはないが、「認証種子の量が少ない＝良質の種子がわずかである」という認識は正しくない。民営化に伴い DoA は、種子を生産している民間企業が企業内で品質検査・管理を行うことを奨励しており、このように企業が品質管理をした良質の種子も市場には相当量、流通しているからである。また、(c) 認証種子の生産量と種子の輸入に直接の関係はないと考えられる。その理由は、上述のとおり国産種子のうち認証種子の量はわずかであることに加え、種子の輸入の背景には、高原野菜など、気温や日照時間の関係で種子を国内生産できない野菜があり、このような品種の種子は輸入せざるを得ないこと、農民が高い収穫量の見込めるハイブリッドの輸入種子を指向する傾向があることなどがあるためである。

クトで取り扱う野菜の認証種子の利用が増えることが指標となっている。認証種子には、SPMDC 及びその契約農家が生産し SCS が認証したものと、民間企業が生産し SCS が認証したものの 2 種類がある。前者の利用率は平均約 7%であることが、プロジェクトで実施したベースライン調査で分かった（2014 年)。しかし、後者の利用率については情報がなく不明であり、現状を把握することはできなかった。

なお SPMDC は、認証種子の生産を在庫や需要予測を基に計画しており、毎年の生産量の増加をめざしているわけではない。そのため中間レビュー時、プロジェクトに期待するインパクトは何か、関係者間で協議を行った。その結果、DoA の認証種子（政府生産と民間生産）に限定せず、市場に出回る種子の品質改善をインパクトとしてめざすことで関係者は合意し、プロジェクトの上位目標についても同様の内容となるよう修正を行った。[13]

その他の正負のインパクトはみられない。

（5）持続性＜中程度＞

1）政策・制度

農業生産性の向上や、種子生産の改善を支持する政策は、今後も引き続き変化がないものと思われる。また、DoA は、2003 年の種子法の細則を整備すべく準備中であり、この施行が実現すれば本プロジェクトの効果の持続性を助長すると思われる。

2）組織・体制

SPMDC と SCPPC は、役割分担や指示命令系統が明確であり組織上の問題はない。以前は欠員が多かったが、最近では充足される傾向にあることも好ましい傾向である。しかし現在、種子生産研修の計画や実施において JICA 専門家が中心的な役割を果たしており、SPMDC の組織的関与が十分でないことは持続性の面における課題である。

3）技　術

プロジェクトで導入した種子生産技術は基本的なものである。SPMDC の現場職員は農業の専門教育を受けており、これらの技術を適用したり、指導したりすることに技術的な問題はないと思われる。しかし現時点で SPMDC が、これらの技術を農場や種子農家に導入することを決めておらず、現場職員へ明確な指示がでていないことが問題である。SCPPC 職員は、種子検査や認証に関する基本的な技能を有している。SCPPC には、在職者研修や新人研修を実施する仕組みがあり、近年、職員や民間企業を対象とした研修の数や内容が拡張されつつあることが確認できた。そのため、本プロジェクトで導入した種子検査に関する研修内容を、今後これらの研修に組み込んでいくことが可能と思われる。SPMDC が立案・実施した在職者研修や新人研修の実績は確認できなかった。そのため、本プロジェクトで導入した種子生産研修をプロジェクト完了後、何らかのかたちで継続的に実施するための技術的・制度的素地があるかについては不明である。

4）財　務

SPMDC への予算配分は、年によって変動はあるものの、内戦の頃に比べると金額が大幅に増加している。研修費用の予算確保については不明である。SCPPC にも、計画した業務を実施するに適当な予算が配分されており、在職者や新人のための研修費用もさまざまな形で確保しているとのことであった。

[13] プロジェクト期間内では認証種子の生産体制改善をめざすが、市場に出回る種子の品質改善につながる活動として、①種子の品質実態調査や②民間を対象とした生産・検査の研修実施等にプロジェクト後半で取り組むことで合意し、提言に盛り込んだ。

以上からプロジェクト効果の持続性は中程度と見込まれる。

３－５　結　論

計画面での効果発現のためには、官民の連携を更に促進するとともに、導入予定のデータベースシステムを計画立案や官民の情報共有のために活用することが期待される。種子生産技術の分野では、SPMDC と JICA 専門家が、研修の内容や方法について精査し改善するとともに、技術の導入に関する今後の方向性について同意する必要がある。種子検査の分野では、プロジェクトがこれまで取り組んだ検査手順の徹底や発芽評価の標準化を、今後実施予定の在職者研修や新人研修に生かしていくことが重要である。プロジェクトはおおむね、プロジェクト目標達成のために進捗してはいるが、有効性と持続性の確保のためには、下記の提言を確実に実行に移す必要がある。

３－６　提言（DoA に対する提言）

（１）これまで JICA 専門家が主に企画・運営を担っていた原種種子生産セミナー[14]を、次回からは DoA 主導で開催すること。中小規模の種子生産業者のセミナーへの参加を促すこと。

（２）プロジェクトで導入した種子生産技術に関し、JICA 専門家チームと SPMDC が重要度、適用可能性などについて協議を行う。その結果、速やかに適用が可能と判断された技術については、政府農場での適用指示の通達を 2014 年 10 月中旬までに出す。また、これまでの研修内容・方法を精査し、マニュアルの内容や活用方法を含めた研修実施改善策の立案を進める。

（３）種子生産研修で導入され、その後、DoA の園芸作物研究開発所による検証が進んでいる摘果・剪定に関し、技術リリース委員会の承認を 2015 年末までに取得し、実用に移す。

（４）種子生産研修の計画・立案・実施を SPMDC に徐々に移行する。過去の JICA 研修員等の活用も念頭に、JICA 専門家に代わって講義を担当する職員を任命する。

（５）研修で導入された生産技術の契約種子農家による採用を促すため、SPMDC 地域事務所によるフォローアップを行う。また、DoA の社会経済計画部（SEPC）は、本プロジェクトの評価活動を実施する予定であり、その際には、上述の契約種子農家の技術導入状況を含む、各成果の達成状況の調査・分析を行う。

（６）市場にある種子の現状調査について、SEPC が中心となって調査手法を立案し、SCS と協力して調査を実施する。

（７）プロジェクトは官民へのインパクトをめざしているが、プロジェクト前半は政府職員への投入が主であった。後半は、民間を対象とした種子生産研修や種子検査研修を拡大する必要がある。

[14] プロジェクトの働きかけにより、これまで 4 回実施された。年 2 回の耕作期の前に実施され、官民からの参加がある。民間からの原種種子の生産量の要望を SPMDC が受領したり、各種の情報交換・討議が行われる場となっている。

第１章　中間レビューの概要

１－１　調査団派遣の経緯と目的

スリランカ民主社会主義共和国（以下、「スリランカ」と記す）において、国内総生産（GDP）に占める農業セクターのシェアは 12%にとどまるが、依然として国内労働人口の 32%を抱えている。また、貧困層の 8 割は農村地域に居住しており、貧困層の所得向上のためには農業セクター振興が重要である。

スリランカ政府は、独立以来、主食であるコメの国内自給達成を目標に掲げ、優先的に取り組んだ結果、2008 年以後は国内自給を達成するようになっている。その一方で、コメ以外の作物では輸入依存度が高く、食料安全保障の確保及び外貨流出の低減、さらに輸出促進のための生産性の向上が必要とされている。

スリランカの中長期国家開発計画[1]では、野菜、コメ以外の穀類や豆類の自給率の改善の重要性が示されており、質の高い種苗が使われていないことが農業分野の重要な課題であると指摘されている。プロジェクト計画時、農業局（Department of Agriculture：DoA）に品質を認証された認証種子の割合は野菜種子の全供給量のうち 4～35%であり、これは種子生産、種子加工、種子認証、販売に関する能力が十分でないためと考えられていた。なお当時、スリランカは毎年約 250 t の野菜種子を輸入しており、国内の種子生産量は 90 t であった。

このような背景の下、スリランカ政府は質の高い野菜種子の生産技術を開発・普及し、農業生産性と質を向上させることを目的とした技術協力プロジェクトの実施を日本政府に要請した。その後両者は、①種苗開発センター（SPMDC[2]）による生産計画、②原種種子と標準種子の生産、③種子認証サービス（SCS[3]）による認証、④種子販売の分野において、農家と私企業も視野に入れたプロジェクトを実施するべく合意した。

本中間レビュー調査は、プロジェクト開始から 2 年 4 カ月を経て、スリランカ国政府と合同でプロジェクト活動の実績や成果の発現見込み、プロジェクト目標の達成見込みを確認するとともに、プロジェクトの残り期間の課題及び今後の方向性について確認し、合同中間レビュー報告書に取りまとめ、合意することを目的とした。

１－２　調査団構成と日程

【日本側メンバー】

総　　括	JICA 農村開発部次長（第二グループ）	田和　正裕
種子行政	農林水産省食料産業局新事業創出課種苗産業室課長補佐	齋藤　千栄美
評価分析	かいはつマネジメント・コンサルティング	田村　智子
協力企画	JICA 農村開発部第二グループ第三チーム	横田　千映子

【スリランカ側メンバー】

Dr. G.M.W. Chithral　　（種子認証・植物防疫センター副所長）
Additional Director, SCPPC（Seed Certification and Plant Protection Centre）

[1] “*Mahinda Chintana, The Vision for the Future”* (2010-2016)”, 2010.
[2] SPMDC: Seed and Planting Materials Development Centre. 農業局傘下の組織。
[3] SCS: Seed Certification Service. 農業局傘下の種子認証植物防疫センター（SCPPC）の下部組織。

Mr. G.W.R. Weerakoon　　（種苗開発センター副所長）
Assistant Director, SPMDC（Seed and Planting Material Development Centre）
Ms. V.D.N. Ayoni,　　（社会経済計画部農業エコノミスト）
Agri.Economist, SEPC（Socio Economic and Planning Centre）

【調査日程】
2014 年 9 月 1 日（月）～20 日（土）
＊評価分析団員は 1 週間先行して調査を開始、総括・評価企画団員は 9 月 8 日（月）から合流、種子行政団員は 9 月 14 日（日）から合流。

１－３　対象プロジェクトの概要（PDM 第４版）

（１）上位目標：全国の野菜の認証種子の利用が増える。

（２）プロジェクト目標：対象地域[4]における野菜の認証種子の生産体制が改善される。

（３）成果及び活動

成果１：SPMDC の種子生産・配布計画策定能力が向上する。

1-1	官民の定例会議や合同ワークショップを開催する。
1-2	対象地域における市場調査と生産・配布の実態調査を行う。
1-3	官民双方を対象とした、野菜種子の生産、輸入、配布、在庫に関するデータベースを構築する。
1-4	データベース及び昨期の生産計画のレビューに基づいて、種子の生産計画（マハ期、ヤラ期）を策定する。
1-5	種子販売サービスの現況評価を行い、改善計画を作成する。
1-6	DoA モデル販売所において、改善計画（1-5）に基づいたパイロット活動を実施する。

成果２：官民の野菜種子生産技術が向上する。

2-1	ハイブリッド種子、原種種子及び標準種子の生産に関する現状レビューを行う（ベースライン調査を含む）。
2-2	2-1 に基づいて、適切な種子生産機材及び施設の導入、並びに政府種子農場の種子調整場の機材更新を行う。
2-3	種子の生産に関して、政府及び民間の技術職員、普及員、契約農家向けに実技研修を行う。
2-4	種子の生産に関して、生産者向けの技術マニュアルを作成する。
2-5	研修を受けた政府の技術職員及び農家が、契約農家と潜在的契約農家に対して、標準種子の生産指導を圃場で行う。

[4] クンダサーレ、アルッタラマ、マハイルパラマ及びニカウェラティヤを指す。

成果３：官民の野菜種子の品質管理技術が改善する。

3-1	種子認証システムの現行手順及び施設の評価調査を実施し、改善計画を作成する。
3-2	種子検査に関する技術マニュアル及び研修教材を作成する。
3-3	政府及び民間の技術職員、普及員に対して、種子の品質管理（圃場検査と種子検査）に関する研修を行う。
3-4	種子生産者に対して、優良種子を準備するための研修を行う。
3-5	種子の品質管理についてモニタリングを促進する。

第２章　中間レビューの方法

２－１　評価の枠組みとデータ収集方法

活動実施状況、プロジェクト実施プロセスについて必要なデータを収集し、成果達成状況と５項目評価について中間レビュー時のプロジェクト・デザイン・マトリックス（Project Design Matrix：PDM）第４版の成果の指標を用いて検証した。

データ収集は以下の方法により実施した。

・プロジェクト報告書・関連資料のレビュー
・プロジェクト・チーム（JICA 専門家チーム及びスリランカ側カウンターパート)、農業省、農業局（DoA)、カウンターパート組織職員、民間種子生産業者、正負契約種子農家、民間契約種子農家とのインタビューやディスカッション
・サイト実査（対象地域政府種子農場、契約種子農家、民間種子生産業者など）

プロジェクトの実施プロセスについては下記のような項目に関する情報を収集した。

・これまでに行われた PDM 改訂の内容
・合同調整委員会（Joint Coordination Committee：JCC）の開催状況
・プロジェクト月例会議の開催状況
・効果発現に貢献した要因
・問題点及び問題を惹起した要因

２－２　データ分析方法

５項目評価に関しては主な設問項目を下表のとおり設定した。

表２－１　評価５項目の設問項目

評価５項目	設問項目
妥当性	スリランカの開発政策との整合性 スリランカの開発ニーズとの整合性 日本の援助方針との整合性
有効性	プロジェクト目標の達成見込み プロジェクト目標達成の貢献・阻害要因
効率性	投　入 活動実績 成果達成状況
インパクト	上位目標の達成見込み その他の正負のインパクト
持続性	政策・制度面 カウンターパートの組織 カウンターパートの技術 カウンターパートの財務

上述の方法により収集したデータを活動実績表（付属資料６）及び成果達成表（付属資料７）に記入し、記載事項についてレビュー団内で検証を行い、達成・進捗状況や計画と実績の差異やその原因や背景を分析した。分析結果を日本側中間レビュー調査団員が中間レビュー報告書案（英文）にまとめ、スリランカ側中間レビュー調査団員及びプロジェクトのカウンターパート組織の代表者と協議を行った。協議において指摘・合意された事項を同報告書案に反映させて最終報告書（英文）を作成し、2014 年 9 月 18 日に開催された JCC で承認を得た。

当和文報告書は、上述の英文報告書を基に、日本側中間レビュー調査団員内での協議、JICA 農村開発部、JICA スリランカ事務所との協議内容も反映させたものである。

２－３　調査の限界

PDM 第 4 版の成果の指標のなかには、意味があいまいなものがあった。中間レビュー調査団は、プロジェクトが各指標で何を達成しようとしたかについて再考し、これらの指標の意味を定義し、達成度について検証した。

中間レビュー調査団は、カウンターパート機関の職員に関しては、幹部職員から現場職員まで幅広く面談を行う機会を得た。また、スリランカ側中間レビュー調査団員との意見交換も頻繁に行った。このように、政府機関からは十分な情報収集ができた。一方、時間の制約から、同調査団が訪問した民間種子生産業者は 6 社、契約種子農家は 4 世帯のみであり、プロジェクトに関連する民間企業や種子農家の状況を一般化するには情報量が十分でなかった可能性がある。

第３章　プロジェクトの実績

３－１　投入実績

３－１－１　日本側

日本側の主な投入の計画と実績は下表の通りである。[5]

表３－１　日本側投入の計画と実績

項　目	計　画	実　績
専門家	合計 222 人月 ・長期　3 名 総括／認証種子生産体制、種子検査／訓練、業務調整／種子生産 ・短期 種子検査、種子病理、植物病理、農家経済経営、市場調査、収穫後処理	合計 104.2 人月 ・長期　4 名（95.8 人月） 総括／認証野菜種子生産システム、種子検査、種子生産、業務調整／研修 ・短期　延べ 7 名（8.4 人月） 種子生産計画、種子病理、植物病理、種子流通販売、優良種子評価
本邦／第三国研修	種子生産と認証 （参加者数の計画なし）	・本邦研修 18 名 種子行政、種子検査、野菜種子生産、植物病理 ・第三国研修 2 名 国際野菜訓練コース（タイ）
機材供与	車両、スプリンクラー灌漑施設、点滴灌漑施設、種子加工・検査機材	約 1,700 万ルピー〔点滴灌漑システム、苗床雨よけ（ポリハウス）、種子検査機材など〕
事業費	3 億 6,000 万円	1 億 400 万円（2014 年 3 月までの実績）

（１）JICA 専門家

計画時、長期専門家の派遣は 3 名の予定であったが、2012 年 12 月に開催された第 1 回の JCC で、これを 4 名とすることが決定された。その理由は、計画時、2 カ所の対象地域で活動を始め、中間レビュー時に 4 カ所に拡大することを検討する計画であったが、上述の会議でプロジェクト開始当初より 4 カ所にて活動を実施することになったため、業務調整／種子生産を担当する専門家の業務量が増加したことにあった。4 人目の長期専門家（業務調整／研修）は 2013 年 5 月に着任した。

種子検査を担当する長期専門家の任期が 2014 年 5 月に終了した。プロジェクト開始当初より、SCS は国際的な種子検査ルール[6]に沿った検査を実施しており、プロジェクトの活動により検査手順の合理化や発芽検査の標準化がさらに進んだことから、長期専門家による更なる協力は必要ないとの判断となり、後任は派遣されなかった。プロジェクト後半は、種子検査分野の協力を主に本邦研修・現地研修を通じて、種子病理分野での協力を短期専門家により実施する計画である。

[5] 専門家派遣実績とプロジェクト費用は 2014 年 8 月末現在、研修と機材供与の実績は 2014 年 6 月末現在。
[6] International Seed Testing Association（ISTA）ルール

専門家の業務を補佐するため、2013 年 7 月よりローカルコンサルタントを 1 名雇用している。

（2）本邦研修／第三国研修

下表のとおり、2014 年 6 月末現在において、本邦研修の参加者は 18 名、タイにおける第三国研修の参加者は 2 名である。

表３－２　本邦研修／第三国研修

研修コース名	参加者数	開催場所
種子行政	8	日本
野菜種子生産	5	日本
種子検査	3	日本
種子病理	1	日本
植物病理	1	日本
International vegetable training course	2	タイ

出典: JICA 専門家チーム

中間レビュー調査団は、研修参加者のうち数名とインタビューをする機会を得た。研修参加者は、知識や技能を向上させるために研修は有意義であったと述べており、日本人が効率よく熱心に働いているのを見て感銘を受けたとの声もあった。また、種子病理・植物病理分野の本邦研修の結果を受け、DoA が、種子病理検査の本格的な実施に向け、検査室を設置する建物の建設を決定したことは特筆に値する（現在建設中）。

一方、数カ月後に定年退職する予定でありながら、SCPPC のディレクターと、民間企業の社長が本邦研修に参加したのは適切とはいえない（研修参加時には退職の情報が日本側には知らされていなかった）。また、研修に参加した民間企業のアシスタントディレクターと、種子検査室（Seed Testing Laboratory：STL）の職員は現在休職中である。

（3）機材供与

2014 年 6 月現在でプロジェクトにより供与された機材は下表のとおりであり、合計 1,700 万ルピーである[7]。これらの機材は良く活用されており、維持管理状態にも問題はない。

表３－３　プロジェクトにより供与された機材

品　目	用　途
Nursery house, a drip irrigation system with water pump and pump house, planting trays, digital cameras, GPS	種子生産

[7] 日本で購入されたものについては、為替レート 1JPY=1.2464LKR（2014 年 8 月 1 日のスリランカ中央銀行）を用いてルピー額に換算した。

Microscope camera, electric balances, magnifier lamps, optics carrier, HP meters, germination papers and other tools and equipment for seed testing	種子検査
Microscope digital camera, compact rotary microtome, system microscope, moisture meter and others	研究
Computers, a photocopy machine, air conditioners, a projector, office furniture and stationeries	プロジェクト事務所

出典: JICA 専門家チーム

種子粉砕器を 2014 年末までに、種子検査用のインキュベーターを 2015 年に調達予定である。カラーソーター、種子抽出機、種子コーティング機、種子重力選別機については、2012 年に調達予定であったが、DoA の調達委員会による仕様の決定、関税その他租税の確保、JICA 専門家チームによる輸入業者からの見積もりの取得など、調達過程におけるさまざまな作業の遅延によって未調達である。現在、これらの機材を 2015 年 3 月末までに調達すべく作業がなされている。車両については、プロジェクトが必要とする車種に対する関税その他の税金が高額であり、DoA はこれを用意するのが困難であることから、調達しないことで DoA と JICA 専門家チームは合意した。

（4）プロジェクトコスト

プロジェクトコストは 3 億 6,000 万円を予定しており、2014 年 3 月末現在までの支出は約 1 億 400 万円である（ローカルコストの 2,100 万スリランカルピーを除く）。

3－1－2　スリランカ側

スリランカ側の投入の計画と実績は下表のとおりである[8]。

表３－４　スリランカ側投入の計画と実績

項　目	計　画	実績（2014 年 6 月末現在）
カウンターパート職員の配置	<Project Director and Managers> Project director: Director-General of DoA Project managers: Directors of SPMDC and SCPPC <SPMDC> Staff of VSC, government seed farms, regional centers and seed processing centers and deputy directors of the regional centers <SCPPC> Staff of SCS head office and SCS regional centers and STL	ほぼ計画どおり。 延べ 32 名

[8] 2014 年 6 月末現在の実績

	<Others> Staff of HORDI, SEPC, ETC, Agrarian Service Center under Ministry of Agrarian Services and Wildlife and others	
プロジェクト事務所	DoA の敷地内にプロジェクト事務所を設置。事務家具、電気とインターネットの接続	SCPPC の敷地内にプロジェクト事務所を設置。基本的な事務家具、電気とインターネットの接続
研修実施に必要な教室、資材、用具など	研修用会場、設備・機材、部品など、プロジェクト実施に必要な項目で日本側から供給される以外のもの	研修用会場、設備・機材、種子、ポット、肥料、参加者へのお茶や軽食など研修に必要なもの
プロジェクトのローカルコスト	カウンターパートの国内研修用日当・旅費、プロジェクト事務所の光熱費、プロジェクト実施のための必要経費	280 万ルピー（カウンターパート職員研修参加時の手当、プロジェクト事務所の電気・水道代、プロジェクトで供与した機材購入に係る税金など）

（1）カウンターパート職員の配置

カウンターパート職員がプロジェクト活動に参加したのは、キックオフ・ミーティングが開催された 2012 年 8 月 22 日からであり、これは JICA 専門家が 2012 年 5 月 14 日に着任してから約 3 カ月後のことであった。参加が遅れたのは、当時、DoA の 100 周年記念行事の準備及び、デヴィネグマ・プログラム用に種子を 1 億 5,000 万パック準備する必要があり、カウンターパートが多忙であったことが主な理由であった[9]。

（2）プロジェクト事務所

プロジェクト事務所の設置も遅延した。JICA 専門家が 2012 年 5 月 14 日に着任してすぐに SPMDC の敷地内にプロジェクト事務所が設置される計画であったが、そのような準備はされていなかった。その後、SPMDC の敷地内にはプロジェクト事務所設置の場所がないとして、SCPPC の事務所内にプロジェクト事務所が設置されることになった。2 部屋の事務所の改修がほぼ完了し、プロジェクト事務所が準備されたのは、2012 年 8 月 2 日のことであった。電話、インターネットの接続、プロジェクト事務所の入り口への防犯用格子の設置などが完了したのは、2013 年の 1 月のことであった。

（3）研修実施に必要な教室、資材、用具など

研修用会場、設備・機材、種子、ポット、肥料、参加者へのお茶や軽食など研修に必要なものを DoA が提供している。ニカウェラティヤ地域の北西部州政府の農場で実施する研修については、DoA による経費の準備ができなかったため、JICA 専門家チームが負担した。

[9] デヴィネグマ・プログラム（Devi Negma）とは、スリランカの経済開発相による生計向上プログラムである。家庭菜園用に種子や苗の配布を実施している。

（4）プロジェクトのローカルコスト

計画どおり、カウンターパート職員の国内研修参加時の手当、プロジェクト事務所の電気・水道代を DoA が負担している。プロジェクトで供与した機材購入に係る関税や付加価値税などの税金も DoA が負担した。プロジェクト開始当時、DoA 職員や JICA 長期専門家はこの税金の負担の必要性に関する認識が薄かったようであり、輸入機材の税金負担分を DoA が準備するのに約 1 年かかった。

３－２　活動実施状況

成果１と２に関する活動は多少の遅れはあるが実施されている。成果３に関する活動は計画どおり実施された。プロジェクト活動の開始と、資機材購入の遅れが、活動の進捗に影響を与えているものもある。

（1）成果１に関する活動

下表は、成果１「SPMDC の種子生産・配布計画策定能力が向上する」を達成するために計画された 6 つの活動の進捗を示す。

表３－５　成果１に関する活動の進捗状況

<table>
<tr><th>活　動</th><th>これまでの実績</th><th>進　捗</th></tr>
<tr><td>1-1　官民の定例会議や合同ワークショップを開催する。</td><td>プロジェクトの月例会議に民間企業の代表者が参加している。原種種子生産セミナーがこれまで4回、耕作期の約 1 カ月前に開催された。</td><td>計画どおり実施されており継続の予定</td></tr>
<tr><td></td><td colspan="2"><原種種子生産セミナー参加者数>
<table><tr><th rowspan="2">耕作期</th><th rowspan="2">開催日</th><th colspan="3">参加者数</th></tr><tr><th>政府職員</th><th>民間</th><th>合　計</th></tr><tr><td>2013 年ヤラ</td><td>2013 年 2 月 22 日</td><td>44</td><td>39</td><td>83</td></tr><tr><td>2013-14 年マハ</td><td>2013 年 8 月 23 日</td><td>29</td><td>33</td><td>62</td></tr><tr><td>2014 年ヤラ</td><td>2014 年 2 月 6 日</td><td>58</td><td>28</td><td>86</td></tr><tr><td>2014-15 年マハ</td><td>2014 年 8 月 13 日</td><td>60</td><td>20</td><td>80</td></tr></table></td></tr>
<tr><td>1-2　対象地域における市場調査と生産・配布の実態調査を行う。</td><td>JICA 専門家チームのローカルコンサルタントがベースライン調査の一環として種子の使用とマーケティングに関する調査を 2012 年 9 月に実施した。野菜種子生産計画を専門とする JICA 短期専門家が実施した市場調査が 2013 年 9 月に完了している。</td><td>完了</td></tr>
<tr><td>1-3　官民双方を対象とした、野菜種子の生産、輸入、配布、在庫に関するデータベースを構築する。</td><td>種子関連のデータベース作成のための打合せが数回開催され、データベースシステムの内容について協議がもたれた。打合せで決定した内容を基に、2014 年 7 月にシステムの開発を委託する IT 業者が選定された。現在、当該業者が開発作業を進めている。</td><td>計画どおり実施されており継続の予定</td></tr>
</table>

1-4 データベース及び昨期の生産計画のレビューに基づいて、種子の生産計画（マハ期、ヤラ期）を策定する。	種子生産計画は毎耕作期に策定されているが、データベースが未構築のため、データベースに基づいた計画とはなっていない。	未実施
1-5 種子販売サービスの現況評価を行い、改善計画を作成する。	JICA 短期専門家が種子販売に関する調査を実施した。同専門家の提言に従い、SPMDC は 2014 年 9 月に販売に関する改善策のレポートを JICA 専門家チームに提出した。	完了
1-6 DoA モデル販売所において、改善計画（1-5）に基づいたパイロット活動を実施する。	SPMDC と JICA 専門家チームは、対象地域にある 8 カ所の DoA 販売所のうち、バタラゴダとワーゴッラの販売所を改善することで合意し、同販売所を 2014 年 8 月に訪問した。*	計画どおり実施されており継続の予定

*注：SPMDC は、2012 年から 2014 年 8 月の間、種子販売に関し、全国で下記の活動を実施した。
a) 啓蒙プログラムを 2 回実施、b) 9 カ所の販売所を新設、c) 種子包装機を購入、d) 訪問販売キャンペーンを実施、e) 新しいパッケージを導入。これらはプロジェクトの活動としてではなく通常業務の一環として実施された。

（２）成果２に関する活動

下表は、成果２「官民の野菜種子の生産技術が向上する」を達成するために計画された活動の進捗を示す。

表３－６　成果２に関する活動の進捗

活　動	これまでの実績	進　捗
2-1 ハイブリッド種子、原種種子及び標準種子の生産に関する現状レビューを行う（ベースライン調査を含む）。	JICA 専門家チームとカウンターパート職員は政府種子農場、民間種子業者、契約種子農家を訪問し、現状と技術レベルを調査した。JICA 専門家チームのローカルコンサルタントは 2012 年 9 月に種子の使用とマーケティングに関する調査を実施した。	完了
2-2 2-1 に基づいて、適切な種子生産機材及び施設の導入、並びに政府種子農場の種子調整場の機材更新を行う。	政府種子農場に必要な資機材の見積もり作成のための調査が実施された。資機材の仕様を決めるための技術委員会が組織され、クンデサーレ農場に、雨よけ 2 基（ポリハウス）と種苗用トレイの購入、5 エーカー分の点滴灌漑システムとポンプ、ポンプハウスの設置が実施された。	約 1 年の遅延

<table>
<tr><td>2-3 種子の生産に関して、政府及び民間の技術職員、普及員、契約農家向けに実技研修を行う。</td><td>2013 年ヤラ期と 2014 年のヤラ期には、3 カ所の政府種子農場においてトレーニングが実施された。2013/2014 年マハ期には、4 カ所においてトレーニングが実施された。ハイブリッド種子と受粉に関するトレーニングも実施された。2014 年 7 月時点で、官民の参加者の延べ人数は 1,141 名であった。</td><td>計画どおり実施されており継続の予定</td></tr>
<tr><td></td><td colspan="2">
<種子生産研修の実績>
<table>
<tr><th>項目</th><th></th><th>ヤラ 2013</th><th>マハ 2013-14</th><th>ヤラ 2014*</th></tr>
<tr><td colspan="5">クンダサーレ</td></tr>
<tr><td>開催日数</td><td></td><td>6 日間</td><td>4 日間</td><td>5 日間</td></tr>
<tr><td>各開催日の参加者数</td><td>-政府職員
-政府契約農家</td><td>15, 14, 16, 15, 17
13, 7, 8, 0, 3, 8</td><td>13, 12, 11, 17
0, 11, 4, 17</td><td>24, 26, 24, 14, 23
20, 10, 4, 3, 4</td></tr>
<tr><td colspan="5">アルッタラマ</td></tr>
<tr><td>開催日数</td><td></td><td>5 日間</td><td>5 日間</td><td>3 日間</td></tr>
<tr><td>各開催日の参加者数</td><td>-政府職員
-政府契約農家</td><td>17, 16, 12, 14, 15
7, 5, 4, 7, 6</td><td>21, 15, 16, 14, 21
11, 3, 7, 7, 2</td><td>18, 20, 18
14, 11, 6</td></tr>
<tr><td colspan="5">マハイルパラマ</td></tr>
<tr><td>開催日数</td><td></td><td>5 日間</td><td>4 日間</td><td>4 日間</td></tr>
<tr><td>各開催日の参加者数</td><td>-政府職員
-政府契約農家
-民間</td><td>19, 19, 18, 19, 15
29, 24, 10, 13, 22</td><td>18, 18, 19, 14
17, 11, 11, 9</td><td>18, 22, 24, 20
2, 2, 8, 2
10, 9, 12, 7</td></tr>
<tr><td colspan="5">ニカウェラティヤ</td></tr>
<tr><td>開催日数</td><td></td><td></td><td>4 日間</td><td></td></tr>
<tr><td>各開催日の参加者数</td><td>-政府職員
-政府契約農家</td><td></td><td>15, 14, 6, 3
24, 15, 17, 5</td><td></td></tr>
<tr><td>ハイブリッド種子一日研修</td><td></td><td>21 (政府職員)</td><td></td><td>23 (民間)</td></tr>
</table>
*注：2014 年 8 月末現在
</td></tr>
<tr><td>2-4 種子の生産に関して、生産者向けの技術マニュアルを作成する。</td><td>JICA 専門家は SPMDC よりマニュアルの構成に関する意見を聴取し、下書きを進めている。マニュアルに挿入する写真やイラストも収集中である。</td><td>計画どおり実施されており継続の予定</td></tr>
<tr><td>2-5 研修を受けた政府の技術職員及び農家が、契約農家と潜在的契約農家に対して、標準種子の生産指導を圃場で行う。</td><td>中間レビュー調査チームは SPMDC の現場職員と幹部にインタビューをしたが、政府技術職員がトレーニングで学んだ技術に関して、契約農家に対し圃場でガイダンスを与えているというエビデンスは得られなかった。</td><td>約 1 年の遅延</td></tr>
</table>

（3）成果 3 に関する活動

下表は、成果 3「官民の野菜種子の品質管理技術が改善する」を達成するために計画された 5 つの活動の進捗を示す。

表３－７　成果３に関する活動の進捗

<table>
<tr><th>活　動</th><th>これまでの実績</th><th>進　捗</th></tr>
<tr><td>3-1　種子認証システムの現行手順及び施設の評価調査を実施し、改善計画を作成する。</td><td>JICA 専門家チームと SCPPC のカウンターパート職員は、官民の種子検査室を訪問した。また、JICA 専門家はペラデニヤにある種子検査室において数カ月、検査活動を観察した。2013 年 11 月には改善に関する提言が文書に取りまとめられた。</td><td>完了</td></tr>
<tr><td>3-2　種子検査に関する技術マニュアル及び研修教材を作成する。</td><td>下記の指導マニュアルと操作マニュアルが JICA 専門家により作成された。(a) operation manuals of electronic balance and measuring pH of germination papers, (b) seedling evaluation manual, and (c) teaching materials for seed testing procedures and seed evaluation. 種子認証サービス（SCS）の職員は、JICA 専門家の指導を受け、種子検査の行程に関するハンドブックを作成する予定。</td><td>計画どおり実施されており継続の予定</td></tr>
<tr><td rowspan="2">3-3　政府及び民間の技術職員、普及員に対して、種子の品質管理（圃場検査と種子検査）に関する研修を行う。</td><td>下表のとおりトレーニングが実施された。なお、フィールド視察のトレーニングは、種子生産研修の一環として実施された。</td><td>計画どおり実施されており継続の予定</td></tr>
<tr><td colspan="2"><種子検査のトレーニング>
<table><tr><th>トレーニング名</th><th>回数／日数</th><th>参加者数（人）</th></tr><tr><td>Seed testing procedures</td><td>4 プログラム</td><td>91</td></tr><tr><td>Seedling evaluation</td><td>3 プログラム</td><td>32</td></tr><tr><td>Seed health testing</td><td>10 days</td><td>129</td></tr></table></td></tr>
<tr><td>3-4　種子生産者に対して、優良種子を準備するための研修を行う。</td><td>質の良い種子ロットを生産するためのトレーニング（収穫後処理）が、2013 年 9 月及び 2013 年 3～5 月に、種子生産研修の一環として実施された。</td><td>計画どおり実施されており継続の予定</td></tr>
<tr><td>3-5　種子の品質管理についてモニタリングを促進する。</td><td>種子検査サービス（SCS）により下表のとおり、ランダムサンプルテストが実施されているが、野菜種子のテスト実施数は限定的である。2013 年 12 月に JICA は SCPPC に種子のモニタリング（ランダムサンプリング）のアクションプランの提出を依頼したが、未提出である。SCPPC の説明によれば、種子サンプルを市場で購入するための予算が与えられていないため、ランダムサンプリングテストの数を増加させるのは困難とのことである。
< SCS が実施したランダムサンプリングテストの数>
<table><tr><th></th><th>コメ</th><th>その他畑作物</th><th>野菜</th><th>合　計</th></tr><tr><td>2013 年</td><td>6</td><td>10</td><td>0</td><td>16</td></tr><tr><td>2014 年</td><td>2</td><td>0</td><td>5</td><td>7</td></tr></table>出典：SCS が 2014 年 9 月に提出した資料を基に中間レビュー団が作成。</td><td>未実施</td></tr>
</table>

（4）DoA その他により実施されたプロジェクトに関連する活動

DoA は 2014 年 1 月と 3 月に 85 名の新規採用者を対象とした合宿導入研修を実施した。本プロジェクトの JICA 長期専門家も、同トレーニングの一部を担当した。

JICA スリランカ事務所の財務支援により、2013 年 8 月と 12 月及び 2014 年 5 月に JICA 研修生の同窓会組織が契約種子農家へのトレーニングを企画実施した。トレーニングの主題は順に、野菜種子生産研修、野菜種子生産技術研修、ペラデニヤ種子検査室訪問であった。

３－３　成果の達成状況

３－３－１　成果１：SPMDC の種子生産・配布計画策定能力が向上する。

＜まとめ＞

本プロジェクトによる官民連携の促進の結果、官民の関係者が、種子生産に関する情報交換や討議の機会がより多くもてるようになった。民間企業からも、原種種子在庫量などの SPMDC からの情報提供や、官民の意見交換の促進を評価する声が聞かれた。また、以前は民間企業から SPMDC に随時提出されていた原種種子の必要量に関するリストが、官民合同会議において一度にまとめて提出されるようになり、SPMDC は原種種子生産計画が作成しやすくなった。なお成果 1 を達成するためには、官民の連携がさらに強まること、データベースシステムが遅延なく導入されること、販売改善に関する活動が速やかに実施されることなどが重要である。

下表は、成果 1 の指標とその進捗を示すものである。

指　標	進　捗
1-1　ワークショップで提起された課題に対する対応策が提言される。	順調に進捗
1-2　民間セクター育成を考慮した原種種子及び標準種子の生産計画が策定される。	進捗はあるが一部遅延
1-3　計画に基づいて改善される DoA 販売所の数が増加する。	進捗なし

指標 1-1 は、種子生産における官民の情報共有の促進をめざしている。また DoA が民間からの要望に責任をもって応えることも期待されている。プロジェクトが主催した原種種子生産セミナーには民間からの参加があり、情報共有が行われ、現状や課題に関する活発な討議がなされている。また両者の間での情報共有も進んだ。例えば DoA からは、原種種子の生産量や在庫量に関する情報が提供され、JICA 専門家や SCPPC 職員からは、民間からの参加者にとって重要と思われる、輸入種子の現状、種子法の施行状況、種子病理などの話題に関するプレゼンテーションが実施された。また以前は、民間企業から SPMDC に不定期に提出されていた、原種種子の必要量に関するリストが、当セミナー時に一度に提出されるようになり、SPMDC の原種種子生産計画策定の作業効率向上に貢献している。また DoA は、セミナーで民間企業から依頼のあった、ハイブリッド種子の開発、原原種種子の品質の問題などに順次対応している。

DoA 職員及び民間企業は当セミナーを評価しており、継続的な実施の見込みはある。一方で、民間からの参加者数が減少傾向にあることから、関心が低下している懸念があり、また、民間からの参加者は、特定の人しか発言しておらず、他の参加者は黙っていることが多い、といった問題もある。なお現在は、SPMDC ではなく JICA 専門家が中心となってセミナーを企画実施している。

指標 1-2 の意味は明確でないが、「原種種子の生産計画が民間のニーズを考慮して作成される」と理解した。また、プロジェクトでは、データベースシステムを導入予定であることから、この指標では、生産計画がデータベースを用いて、より正確に、効率的に作成されることを期待していると思われる。

プロジェクト開始以前より、SPMDC は原種種子の生産計画を、民間のニーズを考慮して作成していた。しかし前述のように、以前は不定期に提出されていた原種種子の必要量に関するリストを、年 2 回の耕作期の約 1 カ月前に開催される原種種子生産セミナー開催時に一度に入手できるようになり、DoA の計画策定の正確さや効率の向上に役立っている。

また、データベースシステムの導入が予定されており、これにより SPMDC の原種種子、標準種子の生産計画立案や日常の情報管理が効率化することが期待されている。しかし同システムが未導入のため、この効果はまだ発現していない[10]。

DoA は、国全体の生産計画を作成するには、民間の中期計画に関する情報提供が必要であるとの意見である。例えば、来る 3 耕作期の原種種子の必要量の提出などを民間企業に期待している。しかし、市場が流動的であるため、民間企業がこれに応えるのは困難な様子である。

DoA は、民間企業の種子生産量に関する情報の提供も期待している。スリランカ種子生産協会（Seed Producers Association of Sri Lanka : SPASL）のメンバーは生産量に関する一部の情報を DoA に提供しているが、協会に未加入の中小の種子生産企業からは生産量に関する情報が提出されていない。これは、これらの企業が、情報を公開することにより市場における競争力が低下することを懸念していることが理由の一因である。

指標 1-3 の表現が明確でないが、「プロジェクト活動により改善された DoA の種子販売所の実績を参考に、DoA が改善した販売所の数」と理解した。種子販売所の改善に関しては、対象とするモデル種子販売所の選定がなされているが、具体的な改善についてはまだ進捗がみられない。DoA はこれに関し、早急にアクションプラン案を作成し、JICA 専門家チームと協議する必要がある。

３－３－２　成果２：官民の野菜種子生産技術が向上する。

＜まとめ＞

育苗から収穫後処理までを対象とした種子生産研修が実施されており、研修終了時のアンケートによると参加者の満足度は高い。研修参加者の契約農家（政府／民間）をいくつか訪問したところ、研修で導入した、育苗（トレイとポットの使用）、畝づくり、一本植えなどの技術を積極的に実践している例がみられた。しかし、研修で導入した技術の、政府種子農場における適用例は限定的である。カウンターパート職員からは、これら技術を農場に導入するには難しい点がいくつかあるとの指摘もあり、技術の効用について疑問の声もあった。長年実施してきた耕作方法を変えることへの躊躇もあるようである。

[10] 中間レビュー団は調査中、生産実績について SPMDC 地方事務所の職員に質問したところ、回答の取りまとめに大変長い時間をかけていた職員もいた。データベースシステムの導入により、例えば、現在把握していない作物・品種ごとの調整・検査中の種子の量などもデータとして取り扱えるようになり、情報の種類が増えることも期待できる。また情報がリアルタイムで提供され、現在のようにファックスやメールの到着を待つ必要がなくなる。情報を要約したり分析したりするための時間も短縮できる。また将来、データベースを基に、民間セクターにとって重要と思われる情報が、SPMDC のウェブサイトに掲載されることも期待されている。

下表は、成果２の指標とその進捗を示すものである。

指　標	進　捗
2-1　野菜種子生産の研修参加者の 75%が研修後のテストに合格する。	一部進捗
2-2　野菜種子生産の研修参加者の 25%がプロジェクトで紹介した技術を採用する。	進捗はあるが遅延
2-3　対象の政府種子農場において主要作物の原種種子生産の計画達成率が増える。	進捗なし

指標 2-1 は、種子生産研修の参加者が研修の内容を理解することを期待している。研修終了時に実施されたテストの結果で理解度をはかる予定であった。プロジェクトでは、DoA の技術職員は、テストにおいて 7 問中、最低 6 問に正解することを期待しており、これを合格の基準として設定したところ、研修に参加した職員のうち 51%が合格したことになり、これは期待値を満たしていない。一方、中間レビュー調査団が研修に参加した何人かの職員にインタビューをしたところ、それら職員は研修内容をよく理解しており、興味をもっていることがわかった。このようなことから、参加者の研修への理解度に関し、評価をするのは困難であった。

なお、プロジェクトでは、契約農家はテストにおいて、7 問中、最低 4 問に正解することを期待しており、これを合格の基準として設定したところ、研修に参加した契約農家のうち 80%が合格している。

SPMDC 本部の職員や地方事務所の幹部のなかには、研修で教えているのは基本的なことであり、知っていることが多いため、あまり魅力的ではない、とコメントするものもあった。研修で、先進的な技術を教えてもらいたいという声もあったものの、先進的な技術について具体的なイメージはないようであった。

指標 2−2 では、種子生産研修で導入した下記のような技術が種子生産の場で活用されることを期待している。これらの技術は、JICA 専門家が、政府種子農場や契約農家における生産の実態を観察し分析した結果、種子の品質を向上させるために、最も重要で至急導入が必要と判断したものである。

①Sowing and raising nursery using seedling holders（trays and pots）　（育苗の際のトレイやポットの使用）
②Watering before sowing or transplanting　（播種や定植前の水撒き）
③Composition of nursery soil medium　（育苗の際の土壌管理）
④Nursery management　（育苗管理）
⑤Raised beds　（畝づくり）
⑥Soil sterilization　（土壌消毒）
⑦Crop rotation　（輪作）
⑧Planting density（single planting）　（定植密度、一本植え）
⑨Application of soil cover（mulching）　（土壌の覆い、マルチング）
⑩Application of additional fertilizer in line　（ラインに沿った追加施肥）
⑪Fruits and buds thinning and pruning　（剪定、摘果）

⑫Using of net （つる性植物誘引用ネットの使用）
⑬Artificial pollination （人工授粉）

中間レビュー調査団は、これらの技術の活用例をいくつか観察することができた。例えば、アルッタラマ政府種子農場では、「①育苗の際のトレイやポットの使用」が小規模ではあるが適用されていた。トレイやポットは SPMDC が配布する予定であるがまだなので、その代わりに、ビニールで袋をつくり使用していた。また今期初めて、上記のリストの「⑫ネットの使用」をハイブリッドのキュウリの種子生産に適用した。

マハイルパラマ政府種子農場では、前耕作期に、「⑫ネットの使用」をニガウリの種子生産に、「⑨土壌の覆い（マルチング）」をナスの種子栽培に適用したとのことであった。クンダサーレ政府種子農場では、以前、JICA の国別研修に参加した SPMDC の職員がプロジェクト開始以前より「①育苗の際のトレイやポットの使用」を適用していた。プロジェクトで育苗用の雨よけとトレイを供与した結果、同技術の適用が更に拡大している。また、プロジェクトにより供与された点滴灌漑システムの効果で、生産環境が改善し農場の生産キャパシティが拡大した。

SPMDC はニカウェラティヤには種子農場をもっていたいため、種子生産研修は近隣のワーリヤポラにある北西部州の農場を借りて実施された。JICA 専門家によれば、この農場では導入した技術の適用はなされていないとのことであった。

JICA 専門家によれば、契約種子農家のなかには、研修で導入した技術を取り入れているところがあるとのことであった。中間レビュー調査団は、マハイルパラマの契約種子農家が、①⑧⑫などの技術を取り入れていることを観察した。また、民間企業に種子を生産・供給している農家が①を取り入れているのも観察した。研修に参加した、ある民間企業の現場職員が、①などの技術を同社の契約種子農家に導入の指示をしていることも確認した。これらの技術を適用した農家による評価は総じて高かった。

このようなことから、契約農家や民間による技術の適用はある程度進んでいるが、政府農場における技術の適用は非常に限られた範囲であると考えられる。研修に参加した DoA の職員にインタビューしたところ、それら技術の重要性については評価が高かった。世界のほとんどの国で適用されている技術であると言及する者もいた。一方で、研修後、それらの技術を速やかに適用するのには困難もあるようであった。

SPMDC の幹部職員のなかには、政府種子農場では、作付け時期に労働力不足の傾向があること、土壌や気候が適さないことを技術の適用が困難な理由として挙げた者もあった。JICA 専門家の観察によれば、SPMDC 幹部や農場の職員には、何 10 年も続けてきた耕作方法を変えることへの漠然とした抵抗感もあるとのことである。また、農場で働く職員が技術を適用するためには、上司からの具体的な指示が必要な場合もある。また、SPMDC の幹部のなかには、これら技術、特に「⑧一本植え」や「⑨土壌の覆い」に関する適切性に疑問をもっている者があり、話し合いを重ねていく必要性が認められた。

「⑪摘果と摘枝」については、2012～13 年、JICA 専門家と園芸作物研究所（Horticulture Research and Development Institute：HORDI）が共同でクンダサーレ農場とアルッタラマ農場において、技術的検証を実施した。その結果、当技術の有効性が確認された。これを受け HORDI では、2 耕作期分のデータを収集する予定であり、経済性分析の後、DoA の技術リリース委員会の承認を受けて、適用の指示が出される予定である。

以上から、指標 2-2 の達成度は限定的である。

指標 2-3 は、原種種子生産計画の達成度（計画・実績費比）を向上させることをめざしている。下図が示すとおり、いくつかの作物を除いて、毎耕作期、実績は計画を達成しておらず、改善の傾向にもない。SPMDC によれば、計画を達成できない直接の理由は、干ばつ、大雨、害虫、病気、野生動物による被害などが主なものであった。育苗用の雨よけや灌漑施設など、政府種子農場の生産施設が十分にないことも一因であろう。現行の栽培方法は生産性を重視する傾向になく、これも要因のひとつと思われる。

しかし、SPMDC の説明によれば、近年、いくつかの品種を除き、原種種子は十分な量の在庫が確保されており不足の状態にはないとのことである。在庫については約 2〜3 年保存できるという。

注：2013 年ヤラ期の実績、2013/14 年のマハ期の計画と実績の提出を依頼したが、取りまとめた情報は提出されなかった。
出典：JICA 専門家及び SPMDC から提出された情報を基に中間レビュー団が作成。

図３－１　SPMDC による原種種子の生産計画と実績

３－３－３　成果３：官民の野菜種子の品質管理技術が改善する。

＜まとめ＞

プロジェクト開始時の JICA 専門家の観察によると、SCPPC の下部組織である種子検査室（STL）では、国際的な種子検査ルール[11]に沿って種子検査が実施されていた。これを更に改善すべくプロジェクトで研修等を実施した結果、検査手順の合理化や発芽評価の標準化が進んだ。今後は、種子病理分野の技術向上、及び民間企業を対象とした種子検査訓練実施による、更なる効果発現が期待される。なお、中間レビュー時の協議を通して、市場の種子の品質の現状が把握されていないことが判明したため、これに関する現状把握を目的とした調査を行い、その結果に基づいた対策を立案することが重要と思われる。

下表は、成果３の指標とその進捗を示すものである。

指　標	進　捗
3-1　改善計画で提言された対応策が種子検査プロセスで実践される。	順調
3-2　種子検査の研修参加者の 75%が研修後のテストに合格する。	順調
3-3　年間の原種種子及び標準種子のサンプル数が増える。	（情報不足のため判断できず）
3-4　表で掲げた主要作物に関しモニタリングが実施され検査数が増加する。	進捗なし

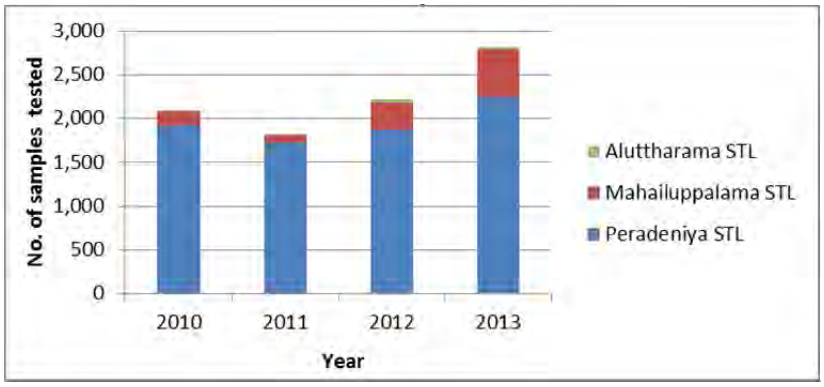
SCPPC は JICA 専門家からの提案や指摘事項のほとんどを実施しており、指標 3-1 は順調に達成されつつある。JICA 専門家の実施した研修や OJT の成果により、国際的なルールに沿った種子検査がより効率的に実施されるようになり、発芽評価検査の標準化も進んだ。SCPPC は今後、職員に対する研修などで、これらの努力を継続していくことが期待される。またプロジェクトでは、種子検査に必要な資機材もいくつか調達する予定であり、これにより種子検査の更なる効率化と正確さの向上が期待できる。また、JICA 専門家から種子病理ユニットの職員への技術移転が今後も継続して実施される予定であり、スリランカでこれまで行われていなかった種子病理の検査が、プロジェクトの終了までにはできるようになることが期待される。

指標 3-2 は、種子検査分野での研修参加者の理解度を計るものである。種子検査行程や発芽評価検査に関する研修が JICA 専門家により STL の職員に対して実施された。ほとんどの職員が研修終了後のテストに合格していることから、当指標は達成されている[12]。

指標 3-3 は、種子認証サービス（SCS）に持ち込まれた検査サンプルの数の増加をめざしている。これは、DoA の生産する標準種子の生産量の増加に加え、民間企業が DoA の種子検査をより積極的に活用するようになることを期待している。下図が示すとおり、2012 年と 2013 年は、前年比でサンプル数が増加している。しかし、2011 年のサンプル数は 2010 年より少なく、増加の傾向にあるかどうかは、引き続き観察が必要と思われる。2012 年と 2013 年にサンプル数が増加したのは、上述の、プロジェクトが期待した背景によるものか、デヴィネグマ・プログラム用のサンプルが取り扱われた結果によるものか、分析の必要もある。

[11] 国際種子検査協会（International Seed Testing Association：ISTA）ルール

[12] 研修終業後、研修で学んだことの理解度を確認するためクイズを実施した。58 名の参加者のうち 53 名が正しく回答した。



出典：STL

図３－２　STL で取り扱った野菜種子検査サンプルの数

指標 3-5 は、JICA 運営指導調査団の訪問時、カウンターパート職員と協議し、市場における野菜種子の品質管理のためにランダム・サンプリング調査が重要であるとの認識に至り、2013 年 12 月に追加されたものである。しかし、品種によってはサンプル購入費用が高額になるが、その予算が確保されていないため、現在のところ、SCS はランダム・サンプリング調査をごく小規模に行っているのみである。

３－４　プロジェクト目標の達成見込み

プロジェクト目標は「対象地域における野菜の認証種子の生産体制が改善される」であり、指標は「プロジェクト完了時、対象地域において、主な野菜[13]の認証種子の生産量が増加する」である。ここでは、指標の「標準種子の生産量」は、DoA が生産した標準種子と、民間が生産し DoA の認証を受けた種子の合計を指すとみなした。

DoA の生産した標準種子の近年の生産量については下図のとおりであり、増減のはっきりした傾向はつかめない。

表３－８　農業局（DoA）の生産した標準種子の近年の生産量

（政府種子農場と政府契約農家での生産量の合計：単位：kg）

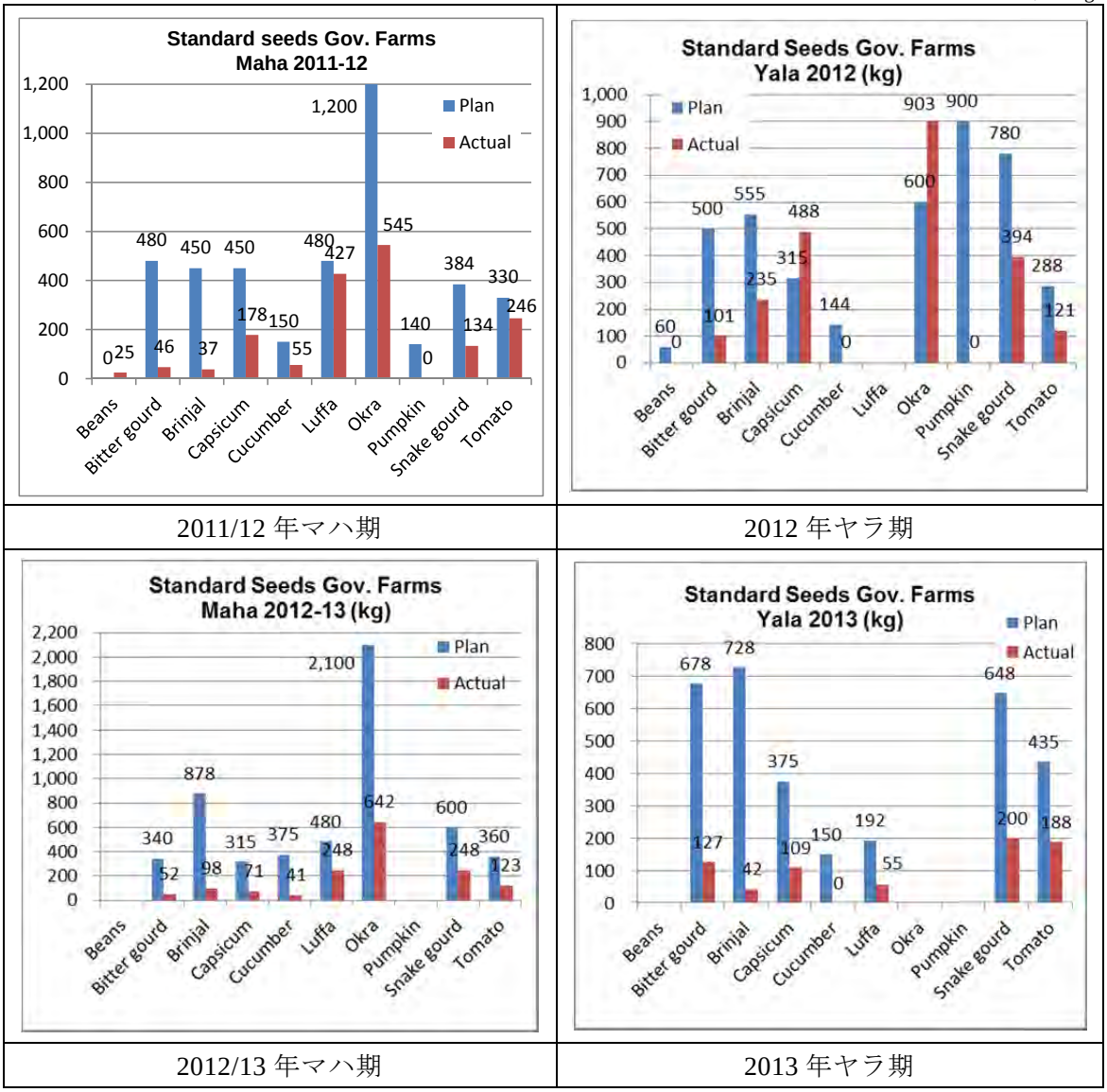
Crop/ Season	Maha11/12	Yala12	Maha12/13	Yala13
Beans	21,546	0	18,627	96
Bitter gourd	145	3,465	2,309	4,743
Brinjal	106	235	98	126
Capsicum	178	518	72	109
Cucumber	87	118	422	549
Luffa	499	665	1,207	55
Okra	814	1,087	3,101	0
Pumpkin	0	0	0	0
Snake gourd	294	1,255	2,145	2,613
Tomato	246	121	202	378
Total	23,915	7,464	28,182	8,669

出典：SPMDC 提出の資料を基に中間レビュー団が作成

[13] マメ、ニガウリ、ナス、トウガラシ、キュウリ、ヘチマ、オクラ、カボチャ、ヘビウリ、トマト

なお、政府種子農場と政府契約農家における、近年の標準種子生産の計画と実績は下図のとおりである。

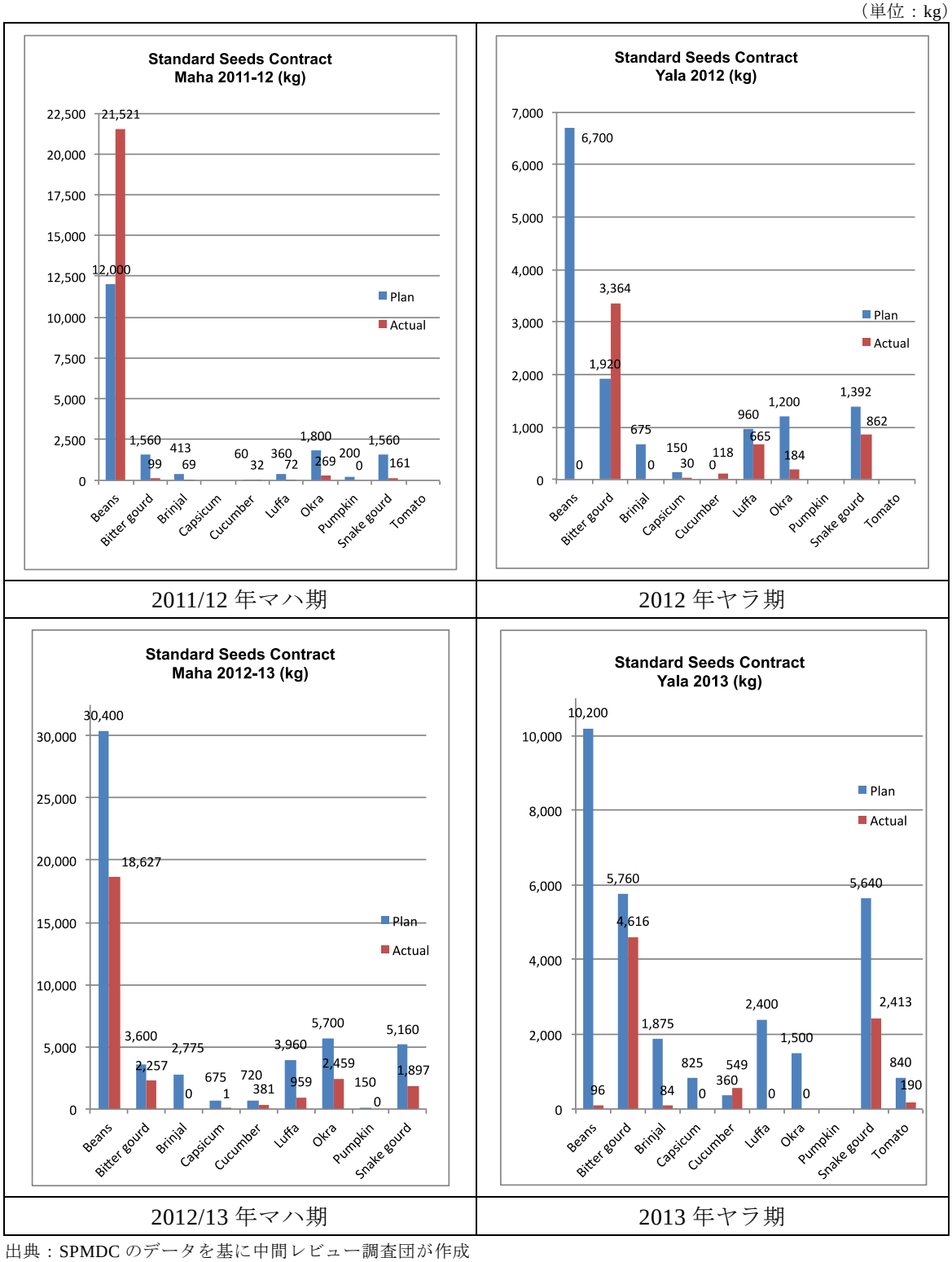
（単位：kg）



出典：SPMDC のデータを基に中間レビュー調査団が作成

図３－３　政府種子農場における標準種子生産量の計画と実績

（単位：kg）



出典：SPMDC のデータを基に中間レビュー調査団が作成

図３－４　政府契約農家における標準種子生産量の計画と実績

民間が生産し、DoA が認証した認証種子の生産量に関する既存のデータはない。しかし、SCS の検査に合格した野菜種子が認証種子の全生産量となることから、プロジェクトで取り扱う 10 種について、SCS に検査に持ち込まれ、その後検査に合格した種子サンプルの母数（kg）を調査しようとしたが、調査期間中に情報を得ることはできなかった。

このように指標に関する情報が十分得られなかったこと、プロジェクト目標が達成されるかについて、現時点で予測することは難しいことから、中間レビューではプロジェクト目標達成に関する貢献要因と懸念事項を、下記のとおり取りまとめるにとどめた。

官民の情報共有が促進され、種子検査に携わる職員の技術力が期待されたレベルに向上しつつあることは評価に値するが、種子生産研修で導入された技術が政府種子農場で積極的に取り入れられていないことは懸念事項である。プロジェクト目標達成のために、JICA 専門家チームと SPMDC は、政府種子農場で導入する技術の選定を行い、通達などで農場に導入の指示を出すこと、種子生産研修の内容や方法について精査し、対象者のニーズに応じた内容となるよう改善案を策定することが必要である。また、研修内容に知見のある SPMDC 職員を研修講師として選定・任命するとともに、研修の計画策定やフォローアップなどの実施主体を徐々に SPMDC に移行していくことも重要である。

以上のとおり、プロジェクト目標達成のためには、今後いくつかの課題を解決していく必要がある。

３－５　実施プロセス

３－５－１　PDM の改訂

当中間レビューまでに、PDM は以下のとおり改訂されている。

（１）第 1 回目のキックオフ・ミーティングで、ベースライン調査の結果を基に、活動、指標、投入が修正された。

（２）2013 年 12 月の JICA 運営指導調査団のプロジェクト訪問の機会に、プロジェクト目標が変更され、成果 4 が成果 1 の活動に統合された。また、プロジェクトが「Certified Seed」のみならず、「Certified/quality vegetable seed（認証種子および高品質の種子）」を対象とするとされた。市場に出回る種子の管理の一環として、ランダムサンプル検査の活動のモニタリングが活動として追加された。

（３）2014 年 7 月の合同調整会議にて、Quality Seed の定義づけが困難であることから、対象種子の表現が「Certified/quality vegetable seed（認証種子および高品質の種子）」から「認証種子」に変更された。

３－５－２　合同調整委員会会議（JCC Meetings）

プロジェクトの JCC 会議は、下表が示すとおり、計画どおり年 2 回開催されている。

表３－９　JCC 会議の開催記録

開催日	主な議題	参加者数（名）
2012 年 12 月 7 日	R/D と PDM の変更	13
2013 年 6 月 21 日	プロジェクトの進捗と今後の活動計画	16
2013 年 12 月 9 日	JICA 運営指導調査団の報告	27
2014 年 7 月 4 日	短期専門家西川氏の報告	23

出典: JICA 専門家

３－５－３　プロジェクトマネジメント・ユニット

プロジェクトの計画時、プロジェクト活動の調整とモニタリングのために、プロジェクトマネジメント・ユニット（Project Management Unit）が形成される予定であった。同ユニットは形成されておらず、調整・モニタリングの機能は次項で述べる月例会議で代用している。

３－５－４　月例会議（Monthly Meetings）

2012 年 9 月に最初の月例会議が開催されて以来、月例会議は 2013 年 3 月と 6 月、2014 年 6 月を除き、毎月開催されている。月例会議では、本邦研修での習得事項の報告、JICA 短期専門家や JICA 運営指導調査団による調査結果、PDM 改訂に関わる議論などが行われた。種子生産者協会（SPASL）からも同会議への継続的に参加があった。

３－５－５　効果発現に貢献した要因

（１）JICA 研修員の活躍

2003～2007 年に実施された JICA 国別研修に参加した SPMDC の職員が、研修で学んだ知見を生かし、本プロジェクトで種子生産研修の実技指導を担当し、同研修の効果的な実施に貢献している。また、JICA 研修員の同窓会組織（JICA Ex-participants' Association）は近年、契約種子農家や民間企業を対象に、種子生産研修を定期的に企画・実施している。これはプロジェクト目標や上位目標の達成に貢献するものとして評価できる。

（２）種子検査分野における技術移転の進捗

種子検査室（STL）の職員が、国際的な種子検査ルールにのっとって種子検査を実施するに必要な基本的な能力を有していたことが、種子検査分野の JICA 長期専門家による技術移転の早期完了に貢献した。

３－５－６　問題点及び問題を惹起した要因

（１）DoA による作業の遅延

プロジェクトに関連する DoA の作業や調整が大幅に遅れることがある。例えば、2013 年 11 月のプロジェクト月例会議で、プロジェクトで実施した種子生産研修で導入された技術を政府種子農場で適用するよう、DoA が通達を出すことが決まったが、現在においても通達は発行されていない。2013 年 12 月、JICA 運営指導調査団と SPMDC は DoA の種子販売所の改善に取り組むことに同意し、SPMDC はこれに関する提案書を提出することにな

っていたが、これに関連する書類が提出されたのは、2014 年の 9 月のことであった。

（2）プロジェクト活動開始や機材調達の遅延

プロジェクトのキックオフ会議が開催され、プロジェクト事務所が設置されたのは、JICA 専門家がスリランカに到着してから約 3 カ月後のことであり、プロジェクト活動の本格的な開始が遅延した[14]。また、プロジェクトに供与される機材のスペックの選定、税金の準備、見積もりの取り付けなどに予想以上の時間がかかっており、機材調達にも遅れがみられる。このため、供与機材を使った活動やそれによる効果発現が遅延している[15]。

[14] キックオフ会議の開催が遅延した主な理由は、DoA 設立 100 周年記念行事の準備でカウンターパート職員が多忙であったことである。

[15] 例えば、政府種子農場における生産環境を整備するため、育苗用雨よけや灌漑施設の調達と設置が計画されていたが遅延した。そのため、環境の整っていないなかで生産技術の実技研修やデモンストレーションを実施せざるを得ず、技術の効果を効果的に提示できないことがあった。また種子処理の機材の調達が遅れており、期待されていた、処理工程の効率化の実現が遅延している。

第４章　評価結果

４－１　評価５項目による評価結果

４－１－１　妥当性＜高いと思われるが要検討＞

（１）スリランカの開発計画との整合性

第１章１－１「調査団派遣の経緯と目的」でも述べたとおり、スリランカの中長期国家開発計画[16]では、①質の高い種苗を十分に使用していないことが農業分野の問題のひとつであること、②生産性の高い種子の使用と水管理の改善の実現は、政府の農業政策の目標のひとつであること、③質の高い種苗の不足が生産性の向上と生産の増加における主な課題であること、が示されており、よって本プロジェクトはスリランカの開発政策と整合性があると計画時に評価された。中間レビュー時においても同国の中長期開発政策には変更がなく、よってプロジェクトは引き続き同国の開発政策と整合性があるといえる。

（２）スリランカの開発ニーズとの整合性

上述の開発計画では、政府種子農場における生産性の向上のためには、同農場に近代的な技術を導入する必要があり、種子を途切れることなく供給するためには、認証種子の在庫を確保する必要があると述べられている。本プロジェクトの成果２では、種子の品質を向上させるための基本的で必要不可欠な技術の導入を実施しており、これは作物の生産性の向上に貢献するものである。成果１では、種子生産の計画の向上をめざしており、これは適正な量の種子の在庫の維持に貢献するものである。このように本プロジェクトの成果は、同開発計画に示されている同国の開発ニーズに応えるものである。

（３）日本の援助政策との整合性

中間レビュー調査時における日本の外務省の対スリランカ援助政策である、「対スリランカ国別援助計画（2012 年 6 月）」では、援助の重点分野として、①経済成長の促進、②後発開発地域の開発支援、③脆弱性の軽減が挙げられている。さらに、②後発開発地域の開発支援では、農業分野を中心とした産業育成、農業関連インフラの整備を支援する方針である。また、事業展開計画（2012 年）では、上述の②の一環として当プロジェクトの実施が位置づけられている。また、日本はスリランカの野菜種子分野におけるさまざまな支援をこれまで実施しており、本プロジェクトはこれらの支援とも整合性がある。

以上のとおり本プロジェクトは、現在のスリランカの開発計画に記載の政策や開発ニーズ、日本の援助方針と合致しており、妥当性は高いといえる。しかし中間レビューでは、計画時の認証種子の市場における位置づけに関する認識に一部齟齬があったこと、SPMDC は、認証種子の生産量を年々増加させる計画・方針にはないことなどがわかった。しかし中間レビューでは、これらがプロジェクトの妥当性に及ぼす影響について結論を導き出す

[16] *“Mahinda Chintana, The Vision for the Future”* (2010-2016)”, 2010.

ことはできなかった[17]。

４－１－２　有効性<中程度>

プロジェクト目標の達成に関し、SPMDC の種子生産計画能力の向上や、SCPPC による種子検査に関して一定の進捗がみられる。また、プロジェクトが官民連携を促したことにより、官民が情報を共有したり話し合いをもったりする機会が増えた。年間を通して随時民間企業から提出されていた、原種種子の供給量に関するリクエストが、年 2 回開催される原種種子生産セミナーにおいて、一度に提出されるようになったことも特筆できる。SPMDC へ種子関連のデータベースシステム導入の準備もされており、これにより、種子生産計画策定が効率化することが期待できる。一方、プロジェクトで実施した種子生産研修により導入された生産技術が、政府種子農場においてまだ積極的に取り入れられておらず、種子生産技術の向上における進捗は遅れている。このようなことから、現時点では本プロジェクトの有効性は中程度と判断する。

４－１－３　効率性 <中程度>

プロジェクト活動の開始は遅延したが、その後、ほとんどの活動が計画どおりに実施されている。また種子検査分野における技術移転は 5 年間の予定であったが、現時点でほぼ完了している。

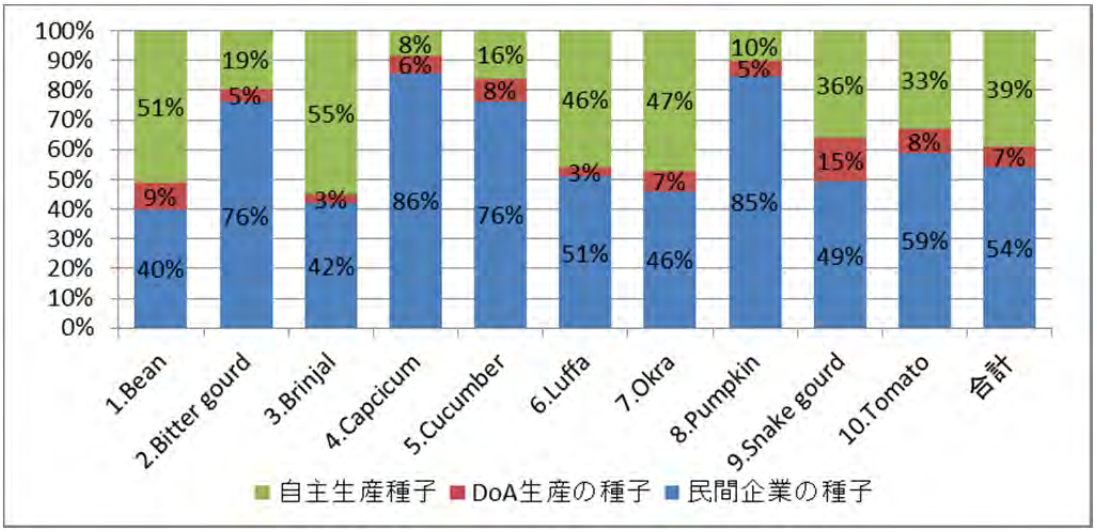
一方、機材調達の遅れがプロジェクトの効果発現に影響を与えていると考えられる。また、SPMDC の本部は、その下部機関である SPMDC 地域事務所、政府種子農場、種子加工場、及び州政府農業局などと連絡をとり、プロジェクト活動が円滑に実施されることが期待されていたが、現在、種子生産研修の計画や実施にあたっては、JICA 専門家がこれらの機関とそれぞれ連絡を取っている状況にあり、効率的とはいえない。なお、プロジェクトは計画どおり 5 年間で完了する予定であり、事業費も計画内に収まる見込みである。これらより、効率性は中程度と判断する。

４－１－４　インパクト＜情報不足のため判断できず＞

プロジェクトの上位目標は「全国の野菜の認証種子の利用が増える」であり、プロジェクトで取り扱う野菜の認証種子の利用が増えることが指標となっている。認証種子には、SPMDC 及びその契約農家が生産し SCS が認証したものと、民間企業が生産し SCS が認証したものの 2 種類がある。下図が示すとおり、前者の利用率は平均約 7%であることが、プロジェクトで実施したベースライン調査で分かった（2014 年）。

[17] 本プロジェクト計画時、①スリランカでは認証種子の生産量が少なく、②そのため良質の種子が不足しており、③よって同国は種子を輸入に頼らざるを得ない状況にある、と分析されていた。しかし現在、①SPMDC は標準種子の在庫を抱え、生産を控えている状況にあり、標準種子の生産量や生産能力に不足はみられない。②認証種子の生産量は、国内の種子生産量の約 10%と推測され、わずかであることに変わりはないが、「認証種子の量が少ない＝良質の種子がわずかである」という認識は正しくない。民営化に伴い DoA は、種子を生産している民間企業が企業内で品質検査・管理を行うことを奨励しており、このように企業が品質管理をした良質の種子も市場には相当量、流通しているからである。また、③認証種子の生産量と種子の輸入に直接の関係はないと考えられる。その理由は、上述のとおり国産種子のうち認証種子の量はわずかであることに加え、種子の輸入の背景には、高原野菜など、気温や日照時間の関係で種子を国内生産できない野菜があり、このような品種の種子は輸入せざるを得ないこと、農民が高い収穫量の見込めるハイブリッドの輸入種子を指向する傾向があることなどがあるためである。

（2013 年ヤラ期及び 2013/14 年マハ期の合計）（N＝2,176）



出典：JICA 専門家チーム作成の「Farmer saved seed, version 3」 May 28, 2014 年 5 月 28 日の表 13 を基に中間レビュー調査団が作成。
注：自主生産種子には村落単位で共有している「共有種子」を含む。

図４－１　農民の種子使用状況

民間企業が生産し SCS が認証した認証種子は、上図の「民間生産の種子」の一部であるが、種子認証制度の利用率については情報がなく不明であり、現状を把握することはできなかった。

以上のとおり、民間企業が生産し SCS の種子認証制度を利用する割合が不明であること、また、SPMDC 及びその契約農家が生産し SCS が認証した種子に関しても、ベースライン調査時の数値しかないことから、これらが増加傾向にあるかどうかは不明であった。

なお、SPMDC は認証種子の生産を在庫や需要予測を基に計画しており、毎年の生産量の増加をめざしているわけではない。そのため中間レビュー調査時、プロジェクトに期待するインパクトは何か、関係者間で協議を行った。その結果、DoA の認証種子（政府生産と民間生産）に限定せず、市場に出回る種子の品質改善をインパクトとしてめざすことで関係者は合意し、プロジェクトの上位目標についても同様の内容となるよう修正を行った。[18]

その他の正負のインパクトはみられない。

４－１－５　持続性<中程度>

（１）政策・制度

農業生産性の向上や、種子生産の改善を支持する政策は、今後も引き続き変化がないものと思われる。また、DoA は、2003 年の種子法の細則を整備すべく準備中であり、この施行が実現すれば本プロジェクトの効果の持続性を助長すると思われる。

（２）組織・体制

SPMDC と SCPPC は、役割分担や指示命令系統が明確であり組織上の問題はない。以前は欠員が多かったが、最近では充足される傾向にある。DoA は将来、職員数を更に増加さ

[18] プロジェクト期間内では認証種子の生産体制改善をめざすが、市場に出回る種子の品質改善につながる活動として、①種子の品質実態調査や②民間を対象とした生産・検査の研修実施等にプロジェクト後半で取り組むことで合意し、提言に盛り込んだ。

せる予定であるとの情報も得た。このようにSPMDCとSCPPCの組織的キャパシティの拡大が見込めることは、プロジェクト効果の持続に関する好ましい傾向である。原種種子生産セミナーや、種子生産研修は、プロジェクト完了後もSPMDCが継続していくことが期待されるが、現在、これらの計画や実施においてJICA専門家が中心的な役割を果たしており、SPMDCの組織的関与は十分ではない。これは持続性の面における課題である。

（3）技　術

プロジェクトで導入した種子生産技術は基本的なものである。SPMDCの現場職員は農業の専門教育を受けており、これらの技術を適用したり、指導したりすることに技術的な問題はないと思われる。しかし現時点でSPMDCが、これらの技術を農場や種子農家に導入することを決めておらず､現場職員へ明確な指示がでていないことが問題である｡SCPPC職員は、種子検査や認証に関する基本的な技能を有している。SCPPCには、在職者研修や新人研修を実施する仕組みがあり、近年、職員や民間企業を対象とした研修の数や内容が拡張されつつあることが確認できた。そのため、本プロジェクトで導入した種子検査に関する研修内容を、今後これらの研修に組み込んでいくことが可能と思われる。SPMDCが立案・実施した在職者研修や新人研修の実績は確認できなかった。そのため、本プロジェクトで導入した種子生産研修をプロジェクト完了後、何らかのかたちで継続的に実施するための技術的・制度的素地があるかについては不明である。

（4）財　務

下表のとおり、SPMDCの種子生産予算額は、年によって変動はあるものの、内戦の頃に比べると大幅に増加している。研修費用の予算確保については不明であった。

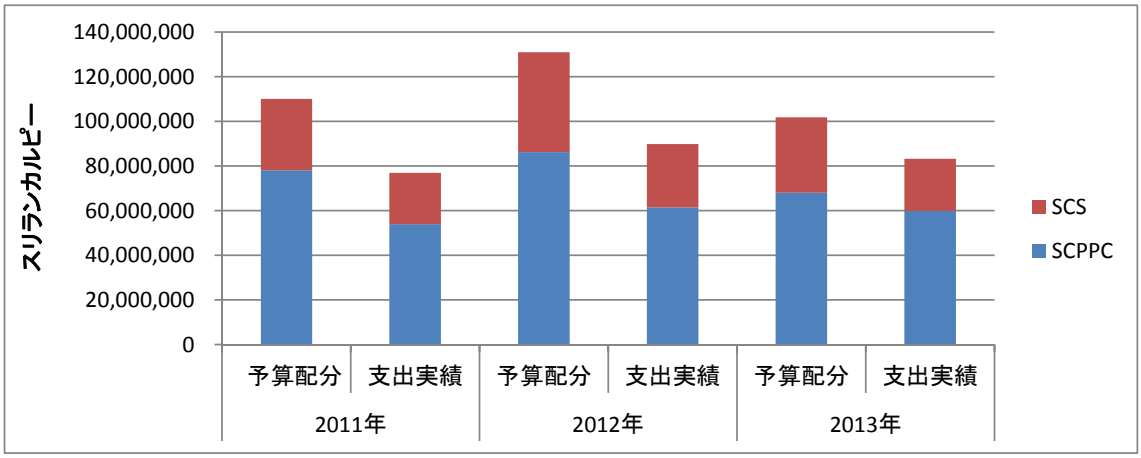
表４－１　SPMDCの種子生産年間予算

（単位: 百万ルピー）

年	2008	2009	2010	2011	2012	2013
金　額	115	137	177	496	745	479

出典：SPMDC

SCPPCにも、計画した業務を実施するに適当な予算が配分されており、在職者や新人のための研修費用もさまざまな形で確保しているとのことであった。下図は、SCPPCとその下部組織であるSCSの予算配分と支出実績を表す。同図が示すように、支出実績が予算を下回る年があるが、これは予算執行が遅れることがあり、やむを得ない事情により計画した活動を完了できないことがあるからとのことであった。研修に関しては、配分された予算に加え、種子法執行のために配分されている予算や、DoAの普及・トレーニングセンターの予算も活用して実施している。



注：上図の数値は SCS の予算項目のうち “strengthening seed certification”と“seed act”を除いたものである。

図４－２　SCPPC と SCS の年間予算配分と支出実績

以上からプロジェクト効果の持続性は中程度と見込まれる。

４－２　結論及びプロジェクト枠組みの改訂（PDM の改訂）

４－２－１　結　論

前項にて記述のとおり、いくつかの成果は順調に進捗しており達成見込みも高い。一方で、種子生産技術の導入、SPMDC による主体的な研修実施など、プロジェクト目標を達成するために取り組むべき課題がいくつか明らかとなった。また、後述のとおり、プロジェクトがめざす方向性につきカウンターパートと合意し、そのために必要となる活動を追加した。今後のプロジェクト活動にて、次章にて述べる提言を着実に実施していくことによって、プロジェクト目標の達成や、正のインパクトの発現が期待される。

４－２－２　プロジェクトの方向性

案件形成段階においては、DoA と SPASL の生産量を対象とした需給分析を行っており[19]、供給量が需要に対して絶対的に不足しているという前提でプロジェクトの設計がなされた結果、当初のプロジェクト目標、上位目標では認証種子の生産量及び利用の増加を目標とした指標設定がなされていた。一方で、中間レビュー調査では政府・民間ともにある程度の在庫を抱えていること、政府の原種種子に至っては需要があるときに在庫がない状況を回避するため、多めに在庫を抱えるよう 2～3 期の需給予測を基に生産計画がなされていることが明らかとなった。生産量の増加は SPMDC の目標のひとつではあるが、プロジェクトでめざすべき最重要課題ではないと考えられる。また、種子の質の向上に関して、DoA の認証種子の発芽率は 75%が最低基準であるが[20]、90%程度の種子が認証検査に合格しており、それ以上の向上をめざす必要性を政府がどの程度認識しているかは明らかではない。また、民間が認証を受けることは義務ではなく、政府としては「認証」を受けることを期待しているものの、「認証」種子の増加を推奨しているものではない。DoA として種子生産を民間に移譲していくという中・長期の展望に

[19] 輸入種子、民間会社による独自の品質保証種子、民間会社による非認証種子、自家採種種子はデータの入手が困難なこともあり、分析には含まれていない。

[20] SCS からの聞き取り結果。一部の作物は合格率が低い様子であり、実績データの収集が必要である。

ついて否定はなされないものの、DoA の役割を縮小する（例えば標準種子の生産を縮小する）といった具体的な計画はない。

一方で、DoA の認証種子（政府生産と民間生産）に限定せず品質の良い種子（民間による独自の品質保証種子を含む）を安定的に供給することに関して政府の役割は引き続き重要であり、民間セクターとの連携を強化し政府による原種種子の安定的供給を継続すること、市場に出回る種子の現状を把握し種子産業の品質コントロールを行っていくことの意義は引き続き確認された。上記のことから、プロジェクトがめざす方向性として、市場に出回る種子の品質改善をめざすことで合意した。プロジェクト期間内では認証種子の生産体制改善をめざすが、市場に出回る種子の品質改善につながる活動として、①種子の品質実態調査や、②民間を対象とした生産・検査の研修実施等にプロジェクト後半で取り組むこととする。

４－２－３　PDM の改訂

中間レビュー調査では、調査結果を踏まえて以下のとおり PDM の改訂につき合意した。

・プロジェクト目標指標：これまで認証標準種子の増加（量）を狙っていたプロジェクト目標につき、生産体制が強化されることによる生産量増加への貢献は、因果関係が十分ではないため、変更した。プロジェクト目標である「生産体制の強化」は、生産計画の策定、生産、認証の強化を意図しているため、各成果に関連する指標を設定する。
・上位目標：プロジェクト目標までは DoA による認証種子（DoA の生産種子、民間の生産種子）を対象としているが、上位目標では民間による独自の品質保証種子へのインパクト拡大を念頭に、それら種子が市場で増えていることを間接的に測る指標を設定する。指標として、「種子の品質調査」により品質の良い種子の割合が増加しているか、原種種子の安定的供給がなされているか、の 2 点を設定する。
・各成果の指標の精査
・活動 2-5 の追加（契約農家による技術の適用を促すフォローアップビジット）
・活動 3-5 の追加（市場に出回る種子の状況を種子サンプル検査やラベルチェック等を通じて行い、種子市場の現状を把握し、品質コントロールのアクションプランを作成する）

第５章　提言と教訓

５－１　提　言

（１）これまで JICA 専門家が主に企画・運営を担っていた原種種子生産セミナー[21]を、次回からは DoA 主導で開催すること。中小規模の種子生産業者のセミナーへの参加を促すこと。

（２）プロジェクトで導入した種子生産技術に関し、JICA 専門家チームと SPMDC が重要度、適用可能性などについて協議を行う。その結果、速やかに適用が可能と判断された技術については、政府農場での適用指示の通達を 2014 年 10 月中旬までに出す。また、これまでの研修内容･方法を精査し､マニュアルの内容や活用方法を含めた研修実施改善策の立案を進める。

なお、HORDI からはハイブリッド種子の生産技術向上が急務となっており、プロジェクトで取り組むべきとの要請が寄せられた。重要性は高く、成果２の活動に組み込んでいくことも一案である（既に研修を実施した実績もある)。

（３）種子生産研修で導入され、その後、DoA の園芸作物研究開発所による検証が進んでいる摘果・剪定に関し、技術リリース委員会の承認を 2015 年末までに取得し、実用に移す。

（４）種子生産研修の計画・立案・実施を SPMDC に徐々に移行する。過去の JICA 研修員等の活用も念頭に、JICA 専門家に代わって講義を担当する職員を任命する。

（５）研修で導入された生産技術の契約種子農家による採用を促すため、SPMDC 地域事務所によるフォローアップを行う。また、DoA の社会経済計画部（Social and Economic Planning Center：SEPC）は、本プロジェクトの評価活動（Independent Evaluation）を実施する予定であり、その際には、上述の契約種子農家の技術導入状況を含む、各成果の達成状況の調査・分析を行う。

（６）市場にある種子の現状調査（Seed Quality Survey）について、SEPC が中心となって調査手法を立案し、SCS と協力して調査を実施する。

（７）プロジェクトは官民へのインパクトをめざしているが、プロジェクト前半は政府職員への投入が主であった。後半は、民間を対象とした種子生産研修や種子検査研修を拡大する必要がある（民間技術者、普及員、契約農家等)。

５－２　教　訓

（１）本プロジェクトでは種子生産技術の向上をめざしているが、どのような生産技術を対象とするかに関して、JICA 専門家とカウンターパート機関の合意が十分に形成されておらず、導入された技術の活用度の低さの一因となっている。また、種子認証の分野では、プロジェクト開始後、カウンターパート機関は種子認証に必要な技能をおおむね習得していることが明

[21] プロジェクトの働きかけにより、これまで 4 回実施された。年 2 回の耕作期の前に実施され、官民からの参加がある。民間からの原種種子の生産量の要望を SPMDC が受領したり、各種の情報交換・討議が行われる場となっている。

らかとなり、大きな改善の必要性は認められなかった。プロジェクト成果の効率的な発現のためには、成果でめざす種子生産や種子認証の技術移転の内容に関し、案件形成時に現行技術の課題を調査し、計画時及びプロジェクト開始後、それらをいかに向上させるかについて、JICA とカウンターパート機関で同意を形成することが重要である。

（2）プロジェクトで供与した機材に係る関税や付加価値税などの税金を DoA が負担しているが、プロジェクト開始当時、DoA 職員や JICA 長期専門家はこの税金負担も必要性を認識していなかった。計画時の討議議事録（R/D）には免税措置がとられる旨の記載があるが、DoA の税金負担に関しては記載がない。そのため、輸入機材の税金を DoA が準備するのに約 1 年かかっており、機材調達の遅れにつながった。当該国の制度により、カウンターパート機関が供与機材の税金を支出する必要がある際には、カウンターパート機関がその旨を確認し、早めに準備するよう促す必要がある。

（3）本プロジェクトの主なカウンターパート機関は SPMDC と SCPPC の 2 つである。地域事務所や農場、販売所、検査室などの下部組織の職員も技術移転の対象である。また、プロジェクトの対象地域は 4 カ所あり、そのうちの 3 カ所は、プロジェクト事務所からの移動に片道 2〜3 時間を要する。キャパシティ・ビルディングをめざす案件では、JICA 専門家とカウンターパート機関職員が常に指導・相談できる距離で仕事をすることが望ましいこと、農作物の栽培技術の指導は、その成長段階や状態を常に把握し、タイミングよく行うことが望ましいことなどを考えると、上述のように多くの組織を相手に、複数で遠い現場において活動を推進し、成果を発現させるのは容易なことではない。キャパシティ・ビルディングの案件や農業案件においては計画時、カウンターパート機関や対象地域の数を限定することを十分検討すべきである。

（4）本プロジェクトは、種子生産の民営化が導入されたが政府も生産・販売に携わっており、種子法は施行されているが細則が決められていないため実効性が薄い、という複雑な状況のもとで実施されている。その影響もあり、計画時の標準種子の位置づけに関する認識の一部に齟齬が生じ、プロジェクト開始後にプロジェクト目標の変更が必要となり、当中間レビューでも PDM を大幅に改訂することになった。民営化が進みつつある状況下で、政府の役割を支援するようなプロジェクトにおいては、政府の果たすべき役割や当該セクターがめざす方向についてカウンターパート機関とも十分に協議を行ったうえで、プロジェクトの枠組みを慎重に策定する必要がある。

５－３　団長所感

JICA 農村開発部次長
田和　正裕

プロジェクト開始からこれまでの 2 年 4 カ月、日本側専門家チームは、スリランカ側と良好な関係を構築しながら真摯な活動を行っているといえる。しかしながら、プロジェクトの目標設定から実施まで、さまざまな問題を抱えている。プロジェクトとして今後取り組むべき事項は提言にまとめているが、以下の観点について留意して進めていくべきである。

（1）プロジェクト実施の必要性

農民に対し良質な種子を過不足なく供給することは、政府が担うべき重要な役割であり、本件プロジェクトの重要性は高い。

しかしながら、種子市場における種子の質、量ともに不明な部分も多く、スリランカ政府は、明確、かつ的を射た政策を策定できていないのが現状である。このため本協力の枠組みにおいて、市場の調査（データベース構築支援を含む）を支援し、スリランカ政府の種子政策の方向性を明らかにし、プロジェクト活動の有効性を明確にする意義は高いものと思料。

（2）ビジョンの明確化と共有

上記と同様、種子市場の状況が分かりにくいことから、プロジェクトの狙いが不明瞭な部分が残り、種子生産における質や需給における問題の所在やこれらに対応するアプローチに対するビジョンも不明瞭になっている。その結果、プロジェクト活動の実施段階では、セミナーや技術研修の企画／実施の多くを日本側専門家に頼るなど、スリランカ側のオーナーシップや関与が十分でないケースがみられ、プロジェクトの効果、効率性、持続性を減衰させる要因となるリスクを有している。このため、プロジェクトのビジョンや取り組むべきアプローチを明確にし、関係者と共有することにより、スリランカ側のオーナーシップを高めていくことが重要である。

（3）コミュニケーションとフォローアップ

専門家チームは、DoA との月例会議や JCC の開催の点では、良好なコミュニケーションの枠組みを有しているといえる。しかしながら、プロジェクトで抱える問題（例：新技術の導入、DoA の通達、機材等）が解決されるまでフォローされていない例がみられる。このため、会議の開催のみならず、責任者、履行期限等を明確にし、問題解決まで、フォローアップを行うことが肝要である。

JICA 本部及び事務所はこれらのフォローアップ状況について、モニタリングを行い、必要に応じ解決に向けた相談、指導、支援を行うことが必要である。

（4）持続性確保のためのハンドオーバーの必要性

プロジェクト活動においては、DoA 側のオーナーシップ、パフォーマンスの低さから、日本側専門家チームがプロジェクト目標達成に向けて、主体的に行っている活動も多い。しかしながら、これを継続させるとプロジェクトの持続性を損なうリスクも生じるため、段階的にスリランカ側に活動の主体を移していくなどキャパシティ・ビルディングを行っていく必要がある。

５－４　種子行政団員所感

農林水産省食料産業局新事業創出課
齋藤千栄美（種子行政担当）

（1）中間レビュー調査についての所感

1）全般事項

a）プロジェクト開始時に設定された目標が、開始後ある程度の現地の情報・意向がより

明確化された段階で変更されるという評価手法は、プロジェクトの成果を最大限にするために意義深いことと感じた。

b）DoA との意見交換のみならず、SPMDC、SCPPC、民間種苗業者、自家採種農家等から直接聞き取りをするという調査・評価方法、また、官民合同による会議の場で提言を確認することについては、問題点・責任分担を明確にする意味で非常に有意義であると思料する。

c）プロジェクトでは、種子生産技術研修を実施してきたが、SPMDC の職員が研修内容を理解するも、世界的に基本的な技術であるにもかかわらず、従来の生産方法を変更することに対して抵抗があるとのことで圃場における実践率が低いという懸案事項がある。一方で、大手民間種苗業者では、組織培養などの技術を積極的に導入しており、官主導の国において民が技術レベルでは上回っているのが現状である。

しかし、調査期間中、スリランカ側の官民関係者は、どの部署においても調査団に対して率直かつ丁寧に説明をされていたこと、また調査団からの提案に対して非常に熱心に検討されているので、今後のプロジェクトの成果として政府関係者の意識改革が進むことが期待できる。

2）種子病害検査の実施

現在、DoA では、プロジェクトによる研修の効果があり、種子品質については、発芽率、水分率を中心に検査が実施され認証種子として流通されている。

一方で、日本から派遣された種子病理の専門家の報告によると、スリランカ国内ではスイカの果実汚斑細菌病（Bacterial Fruit Blotch：BFB）及びトマトのかいよう病の発生が確認されている。両病害は、種子伝染性の重要病害であり、BFB については、他のウリ科野菜でも発生するおそれがある。今後は、今回改正された PDM で追加された「種子病理検査の実施」という指標を重視し、国内生産種子の病害検査を早急に実施していくとともに、種子消毒及び病害の発生した圃場における適正な株の処分を周知する必要がある。また、検疫当局における輸入種子の無病証明書の確認の徹底を求めることが必須と考える。

さらに、スリランカは熱帯性気候であり、病害虫が通年で繁殖されるため、この 2 病害に限らず、病害虫の発生の放置は、農家の生産性を著しく低下させるおそれがあるので要注意である。

（2）今後のスリランカ国野菜種子政策について

1）プロジェクト成果の更なる発展をめざして

a）種子法細則の施行・運用

スリランカでは、2003 年に種子法が制定されたが細則が施行されていない状況で、調査期間中わが国の種子検査制度について質問を受けることもあり、運用にあたっての迷いが見受けられた。今後は、他国の種子制度の運用方法を参考とし、スリランカで適用されていることが望まれる。

b）野菜種子の適正な需給計画

今回改正された PDM では、プロジェクトの活動に市場流通している野菜種子のサンプル調査の実施が追加されたので、今後は、これをベースとして、DoA 主導による国内生産・輸入を網羅した市場全体の完全データベース化を図ることが望ましい。データベ

ース化にあたっては、DoA の供給する種子は、主要種子でも 7%を占めるにすぎないため、民間種苗業者を含めたデータを収集する必要がある。このためには、種子法に基づく国内・輸入の種苗業者の登録の徹底が必須である。しかし、スリランカ種子生産者協会（SPASL）の会員となっていない個々の種苗業者に対して DoA が直接指導をするには限界があるため、団体から輸入業者を含めた種苗業者に対して加入を促進し、会員同士で意識の啓蒙を図っていくことも登録数の増加のためにはひとつの手段であると思料する。

以上のデータベースの完成によって野菜種子の供給量が正確に把握できるため、適正な需給計画の策定が可能になるものと判断する。

c）種子の表示項目の追加

今回の調査で政府の種子販売所等において野菜種子包装袋の表示を確認したところ、品種名、生産者名、包装年月日、発芽率について適正に表示されていた。

一方で、産地での農薬使用についての情報不足により、特に地下水を利用した野菜産地における住民の腎臓障害の発生の問題が起こっている。

わが国の制度では、種子の表示項目のひとつとして、種子の生産過程で使用した農薬名を記載することになっており、スリランカにおいても使用農薬名を表示義務づけ項目として追加されれば、農薬使用についての認識改善につながるものと期待する。

また、スリランカでは、粗悪な輸入種子も問題になっているが、表示制度の徹底は健全な種子の輸入のための効果的な対策であると思料する。

2）その他の種子政策

a）官民の役割分担の明確化

スリランカでは、原種種子及び基準種子の生産・検査・流通・販売までを農業省及び民間種苗業者の双方が行っている。しかし、制度等の諸条件が整備された段階で、販売まで農業省が所管すべきか、野菜の種類での分担ができないか検討すべきではないかと考える。例えば、わが国では、バレイショ及びサトウキビは、栄養繁殖性作物のなかでも生産性が低く、無病害虫性が求められるため、日本の独立行政法人種苗管理センターが原原種の生産のみを行っているので、そのような他国のシステムも参考にしていただきたい。

b）植物品種の保護制度の制定

スリランカにおいては、現在のところ植物品種保護に係る法令は制定されていない。しかし、農業省における種子生産基盤が整備されたのちには、次のステップとして育成者権の保護対策が重要と考える。育成者権の保護対策は、育成した品種の権利の保護によるスリランカの種苗業界の活性化のみならず、官民が保有する貴重な遺伝資源の保護に寄与するところも大きいと判断する。

付　属　資　料

１．調査日程表

２．主要面談者リスト

３．プロジェクト実施体制図

４．PDM 第４版（和文・英文）及び PO 第４版（英文）

５．PDM 第５版（和文・英文）及び PO 第５版（英文）

６．活動実績表

７．成果達成表

８．M/M（合同中間レビュー報告書含む）

１．調査日程表

No.	Date		Consultant (Ms. Tamura)	JICA (Mr. Tawa, Ms. Yokota)	Ministry of Agriculture, Forestry and Fisheries (Ms. Saito)	Review Team from Sri Lankan side			Place
						Dr. Chithral (SCPPC)	Mr. Weerakoon (SPMDC)	Ms. Ayoni (SEPC)	
1	9/1	Mon	Move (Colombo-Kandy) Meeting / Interview with experts						Colombo/ Kandy
2	9/2	Tue	Interview with SPMDC,VSC, Government seed sales centre Interview with PDOA Interview with HORDI				□	□	Kandy
3	9/3	Wed	Interview with SCPPC, SCS, STL Interview with SEPC Interview with ETC			□		□	Kandy
4	9/4	Thu	Field visit to Aluttarama Interview with DD and AO, Farm Manager Interview with SCS, STL			□	□	□	Aluttharama
5	9/5	Fri	Visit to CIC, Samarakoon, Baurs etc. Visit to Government Seed Sales Centre, Kegalle			□		□	Kandy/ Kegalla
6	9/6	Sat	Documentation						
7	9/7	Sun	Documentation						
8	9/8	Mon	Documentation	Arrival to CMB					
9	9/9	Tue	Field visit to Nikaweratiya Interview with DD and Government seed sales centre Interview with Contract seed growers Interview with PDOA	Meeting at JICA Sri Lanka Office CC to ERD CC to SPASL Move (Colombo-Kandy)		□	□	□	Nikaweratiya
10	9/10	Wed	Meeting with experts and local consultant Meeting with SPMDC, VSC, Seed sales centre Meeting with SCPPC, SCS, STL			□	□	□	Kandy
11	9/11	Thu	Field visit to Kundasale Interview with DD, Observing seed production training, Observing Processing Unit, Interview with SCS Government Seed sales centre & seed dealers			□	□	□	Kandy
12	9/12	Fri	Meeting with DG and C/Ps			□	□	□	Kandy
13	9/13	Sat	Internal MTG Documentation						Kandy
14	9/14	Sun	Internal MTG Documentation Move to Dambulla		Arrival to CMB Move to Dambulla				Kandy
15	9/15	Mon	Field visit to Mahailpallama Interview with SCS, STL Interview with DD, Observation of the farm Interview with Contract seed growers and self seed producers			□	□		Dambulla
16	9/16	Tue	Field visit to CIC and Hayleys farm and seed dealers			□	□		Dambulla
17	9/17	Wed	Interview with HORDI Discussion with C/P on draft review report			□			Kandy
						□	□	□	
18	9/18	Thu	JCC			□	□	□	Kandy
19	9/19	Fri	Meeting with Secretary of Agriculture Move (Kandy-Colombo), Report to JICA Office						Kandy/ Colombo
				Departure from CMB					

２．主要面談者リスト

名前	役職	所属
Dr. Rohan Wijekoon	Director General	Department of Agriculture
Mr. Sunil Govinnage	Director	SPMDC
Mr. Thilakarathne	Additional Director	SPMDC
Mr. O. P. K. Chandrasiri	Director	SCPPC
Dr. Rohini Nayanakkara	Deputy Director	SCS
Mr. N. P. S K Karunarathna	AI	SCS, Aluttharama
Mr. D. M.N. Ekanayaka	TA	SCS, Aluttharama
Mr. Wasantha Herath	OIC/ AI	SCS, Kundasale
Mr. Kulatunga	OIC/ AI	SCS, Mahaillupallama
Ms.C Wasanthi Gunasekara	OIC	SCS, Palwehera, Bambulla
Dr. Lakmal	Research Officer	Seed Health Unit
Ms. Yasantha	OIC	STL
Mr. J. W. K. Samaranayake	AO	STL, Aluttharama
Mr. Wijesekara	Director	ETC
Dr. Hemal Fernando	Director	HORDI
Dr. K.A.N.P. Bandara	Additional Director	HORDI
Mr. Stanley Perara	Director	SEPC
Dr. Kamal Karunagoda	Agriculture Economist	SEPC
Mr. Priyantha Wemarasena	Deputy Director	Regional Office of SPMDC, Aluttharama
Mr. Senevirathne	Deputy Director	Regional Office of SPMDC, Kundasale
Ms. D N M C K Nawarathna	AO	Regional Office of SPMDC, Kundasale
Mr. S M S B S Koralegedara	AI	Regional Office of SPMDC, Kundasale
Mr. H P J S Gunawardana	AI	Regional Office of SPMDC, Kundasale
Mr. H M J Herath	Deputy Director	Regional Office of SPMDC, Mahailuppalama
Mr. K M Pushpakumara	AI	Regional Office of SPMDC, Mahailuppalama
Ms. Subasinghe	Deputy Director	Regional Office of SPMDC, Nikawaratiya
Mr. Dissanayake	TA	Government Seed Farm, Aluttharama
Mr. Upali Gunathilaka	Farm Manager	Government Seed Farm, Kundasale
Mr. Abeyrathne	Contract seed grower	Mahailuppalama

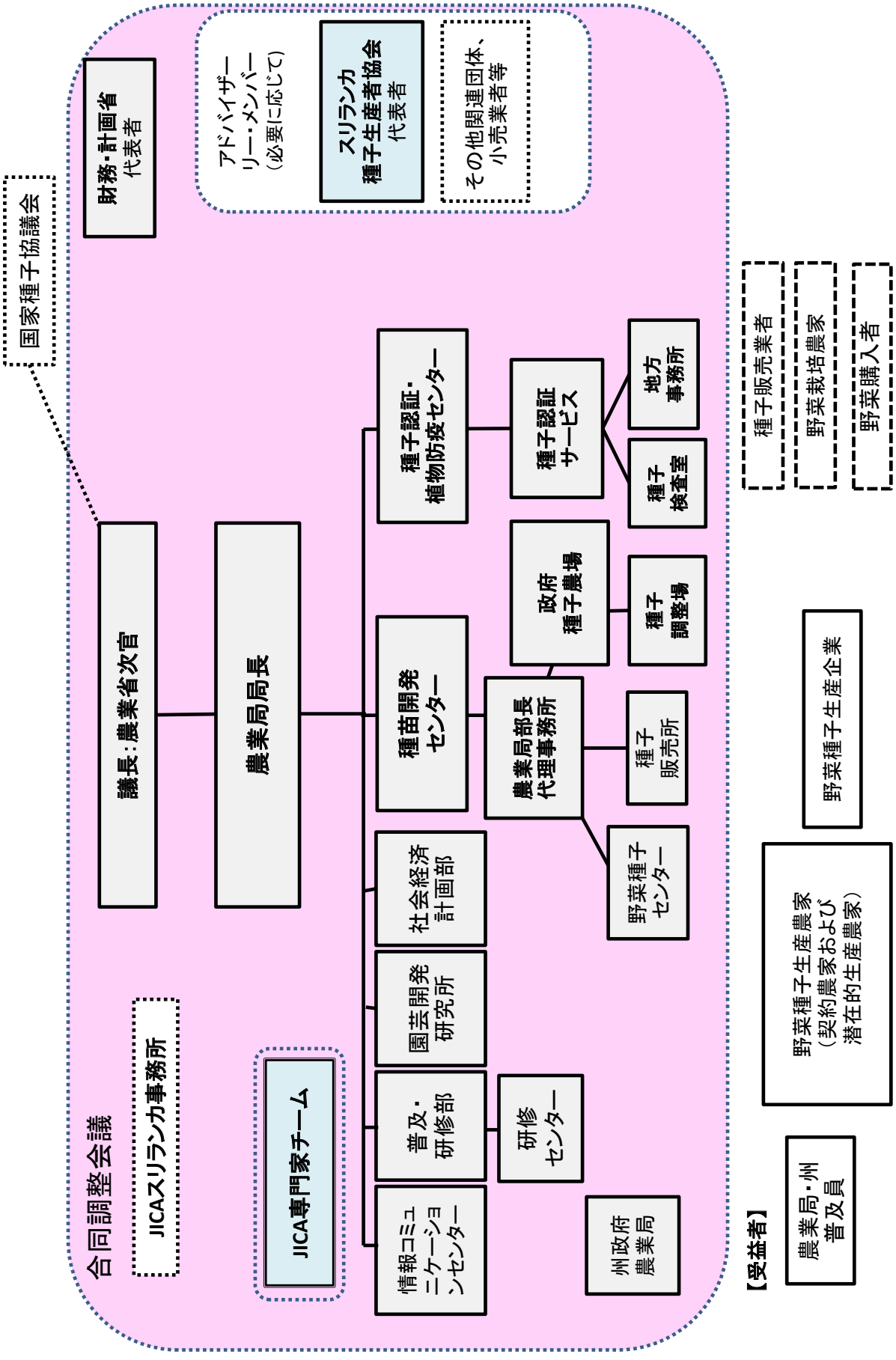
Mr. Imaka Harischandra	Contract seed grower	Mahailuppalama
Mr. A. M. Abeywickrama	Contract seed grower	Nikawaratiya
Mr. Senevirathne Bandara	Contract seed grower	Nikawaratiya
Mr. Muthubandara Dissanayae	Provincial Director of Agriculture	Department of Agriculture, Provincial Council, Central Province
Mr. Kithsiri, Director	Director	Department of agriculture, Provincial Council, North Western Province
Mr. Sirimewan Herath	Deputy Director	Department of agriculture, Provincial Council, North Western Province
Mr. Aruna Wijekoon	Farm Manager	Department of agriculture, Provincial Council, North Western Province
Mr. Leo Nanayakkara	Chairman	SPASL (Managing Director of Best Seeds)
Mr. Tilina Bandaranayaka	Assistant manager	Best Seeds Co. (Pvt.) Ltd.
Mr. Hemantha Galagoda	Senior Manager	CIC Seeds (Pvt) Ltd.
Mr. Anjana Leelaratne	General Manager	Seeds and Planting Material for National Agriculture Development, CIC Agri Business
Mr.Sunil Gamaethige	General Manager	Haylays Agriculture Holdings Ltd.
Mr. Senarath Samarakoon	Owner	Samarakoon Agriculture Services
Ms. Himali Perera	Assistant Director	Department of External Resources, Ministry of Finance & Planning
Ms. J.D. Gayoma Senanayake	Assistant Director	Department of External Resources, Ministry of Finance & Planning
高橋　順二	チーフアドバイザー/認証野菜種子生産システム	JICA 長期専門家
飯塚　協太	種子生産/販売	JICA 長期専門家
臼井　麻乃	業務調整/訓練	JICA 長期専門家
加来　久敏	植物病理	JICA 短期専門家
Dr. Sarath L. Weerasena	ローカルコンサルタント	JICA 専門家チーム

＜略称＞

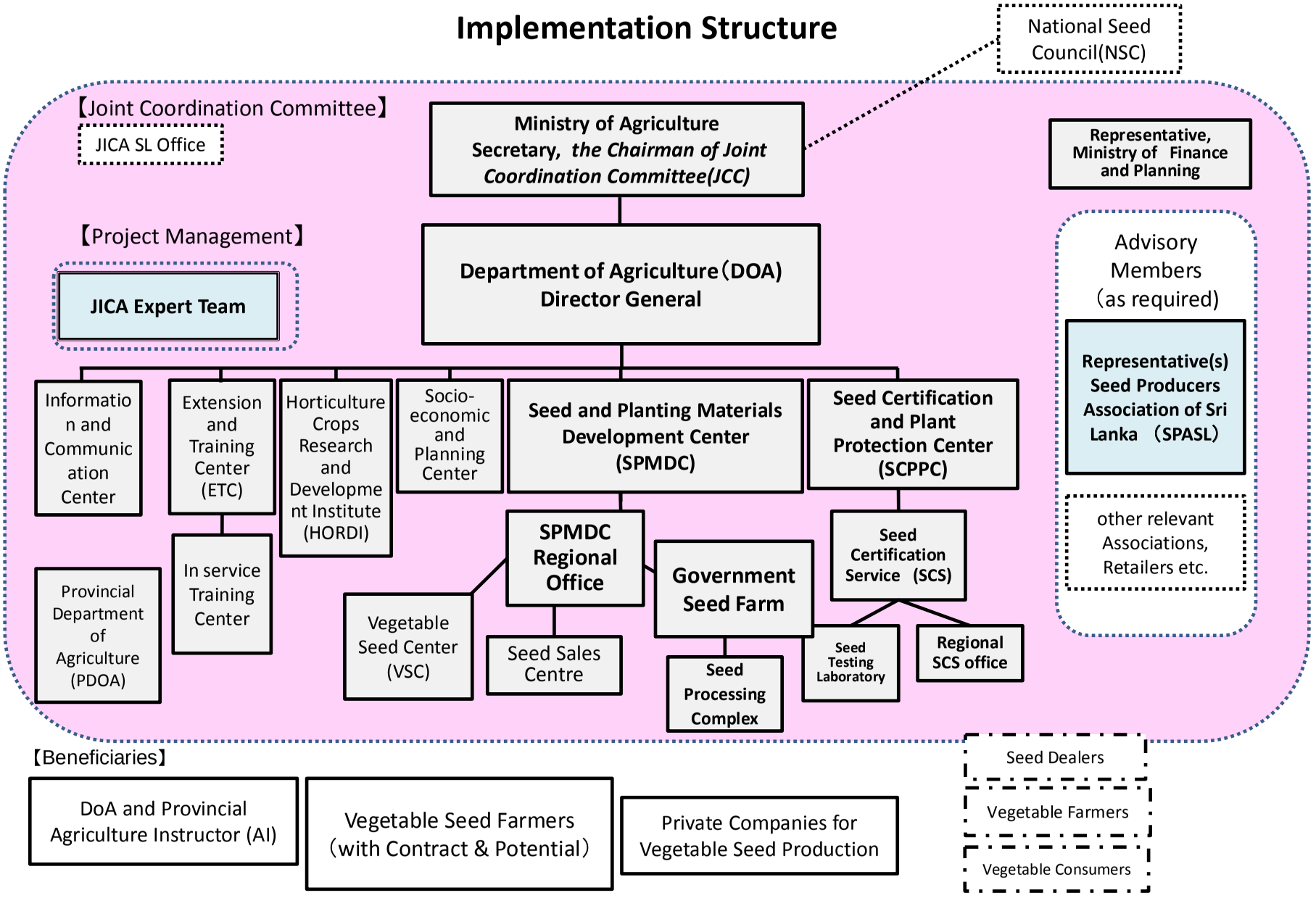
AI: 農業指導員　　AO: 農業オフィサー

OIC: 担当職員　　TA: 技術アシスタント

３．プロジェクト実施体制図



Implementation Structure



Project Design Matrix (PDM) Ver.4.0 （2014年7月4日のJCCにて合意）

プロジェクト名：スリランカ国認証野菜種子生産システム強化プロジェクト
期間：2012年5月から2017年5月（5年間）
対象地域：クンダサレ、アルッタラマ、マハイルパルマおよびニカウェラティヤ
裨益者：農業局職員（SPMDC、SCPPC、政府種子農場等）、民間企業、政府・民間契約種子農家、関連政府機関 (州政府農業局職員)

プロジェクト要約	指標	入手手段	外部条件
上位目標			
全国の野菜の認証種子の利用が増える	プロジェクト終了後3年経過時までに、表で掲げた主要作物の認証標準種子の利用量が増える**	VSC及びSPASLの記録	1. 種子生産を支持する種子政策が変更されない 2. 種子法が改定される 3. 改定種子法に基づく細則が策定され、運用される
プロジェクト目標			
対象地域における野菜の認証種子の生産体制が改善される	プロジェクト終了時までに、対象地域において、表で掲げた主要作物*の認証標準種子の生産量が増える**	SPMDC及びSPASLの記録	プロジェクト終了後に、種子生産に必要な予算および人員がスリランカ政府より配分される
成果			
1. SPMDCの種子生産・配布計画策定能力が向上する	1-1. ワークショップで民間から提起された課題に対する対応策が提言される	1-1 プロジェクト資料	プロジェクト実施中に、農業省から種子生産に必要な予算および人員が配分される
	1-2. 民間セクター育成を考慮した、原種種子及び標準種子の生産計画が策定される	1-2 SPMDCの種子生産計画（マハ期、ヤラ期）	
	1-3 計画に基づいて改善されるDoA販売所の数が増加する	1-3 プロジェクト資料	
2. 官民の野菜種子の生産技術が向上する	2-1 野菜種子生産の研修参加者の75%が、研修後のテストに合格する	2-1 プロジェクト資料	
	2-2. 野菜種子生産の研修参加者の25%が、プロジェクトで紹介した技術を採用する	2-2 プロジェクト資料	
	2-3 対象の政府種子農場において、表で掲げた主要作物の原種種子生産の計画達成率が増える	2-3 SPMDCの記録	
3. 官民の野菜種子の品質管理技術が改善する	3-1 改善計画で提言された対応策が、種子検査プロセスで実践される	3-1 プロジェクト資料	
	3-2 種子検査の研修参加者の75%が、研修後のテストに合格する	3-2 プロジェクト資料	
	3-3 年間の原種種子及び標準種子のサンプル数が増える	3-3 SCS及び検査室の記録	
	3-4 表で掲げた主要作物に関し、モニタリングが実施され、検査数が増加する	3-4 SCS及び検査室の記録	
	3-5 種子検査により不合格となるサンプル数が減少する***	3-5 SCS及び検査室の記録	

活動		投入		
		日本側	スリランカ側	
1-1	官民が参加する定期的会合及び合同ワークショップを開催する	**1. 専門家派遣** (1) 長期専門家：4名 (a. リーダー/認証種子生産システム、b. 種子検査、c. 種子生産/販売、d. 業務調整/研修) (2) 短期専門家：種子検査（圃場検査含む）、種子病理、植物病理、農家経済、営農、市場分析、種子の収穫後処理等（必要に応じて）	**1. C/Pの配置** (1)プロジェクトディレクター：DOA局長 (2)プロジェクトマネージャー：SPMDC所長、SCPPC所長 (3)カウンターパート (4)関係政府機関職員（HORDI研究員等必要に応じて）	1. 大規模な自然災害が起きない 2. 大規模な病虫害が発生しない 3. 研修を受けた技術職員が、継続してプロジェクトを通じて得た技術ならびに知識の普及に携わる **前提条件** 野菜種子産業において、民間の参加が保証され、促進される
1-2	対象地域における市場調査と生産・配布の実態調査を行う			
1-3	官民双方を対象とした、野菜種子の生産、輸入、配布、在庫に関するデータベースを構築する			
1-4	データベース及び昨期の生産計画のレビューに基づいて、種子の生産計画（マハ期、ヤラ期）を策定する			
1-5	種子販売サービスの現況評価を行い、改善計画を作成する	**2. 資機材** プロジェクト活動に必要な機材 （種子生産、調整、検査に関する機材等）	**2. プロジェクト事務所** 執務室内の電気、家具、インターネット接続など必要な施設	
1-6	DoAモデル販売所において、改善計画（1-5）に基づいたパイロット活動を実施する			
2-1	ハイブリッド種子、原種種子及び標準種子の生産に関する現状レビューを行う（ベースライン調査を含む）			
2-2	2-1に基づいて、適切な種子生産機材および施設の導入、ならびに政府種子農場の種子調整場の機材更新を行う	**3. 研修費用** カウンターパート研修（本邦/第三国）	**3 施設および機材** 研修会場、設備・機材、交換用部品等、プロジェクト実施に必要な項目で、日本側から供与される以外のもの	
2-3	種子の生産に関して、政府及び民間の技術職員、普及員、契約農家向けに実技研修を行う			
2-4	種子の生産に関して、生産者向けの技術マニュアルを作成する	**4. その他** ローカルコンサルタント及びローカルスタッフ雇用費	**4. ローカルコスト** プロジェクト実施のための必要経費（C/P向け国内研修用日当・旅費、プロジェクトオフィスの光熱費等）	
2-5	研修を受けた政府の技術職員および農家が、契約農家と潜在的契約農家に対して、標準種子の生産指導を圃場で行う			
3-1	種子認証システムの現行手順および施設の評価調査を実施し、改善計画を作成する			
3-2	種子検査に関する技術マニュアル及び研修教材を作成する			
3-3	政府及び民間の技術職員、普及員に対して、種子の品質管理（圃場検査と種子検査）に関する研修を行う			
3-4	種子生産者に対して、優良種子を準備するための研修を行う			
3-5	種子の品質管理についてモニタリングを促進する***			

* 主要作物名

1. マメ, 2. ニガウリ, 3. ナス, 4. トウガラシ, 5. キュウリ
6. ヘチマ, 7. オクラ, 8. カボチャ, 9. ヘビウリ, 10. トマト

** 上位目標及びプロジェクト目標の指標は中間レビュー時までに見直す
*** ランダム検査の活動及び指標は中間レビュー時までに見直す

Project Design Matrix (PDM) Ver.4.0 (Approved at JCC on July 4th, 2014)

Project Title: Project for Enhancement of Production System of Certified Vegetable Seed in Sri Lanka
Duaration: May 2012 to May 2017 (5 years)
Target Areas: Kundasale, Aluttarama, Mahailluppallama, and Nikaweratiya
Beneficiaries: DOA Officers (SPMDC, SCPPC, Government Seed Farms, and etc.), Private Companies, Government and Private Contract Farmers, and related Government Institutions (Provincial Department of Agriculture Officers)

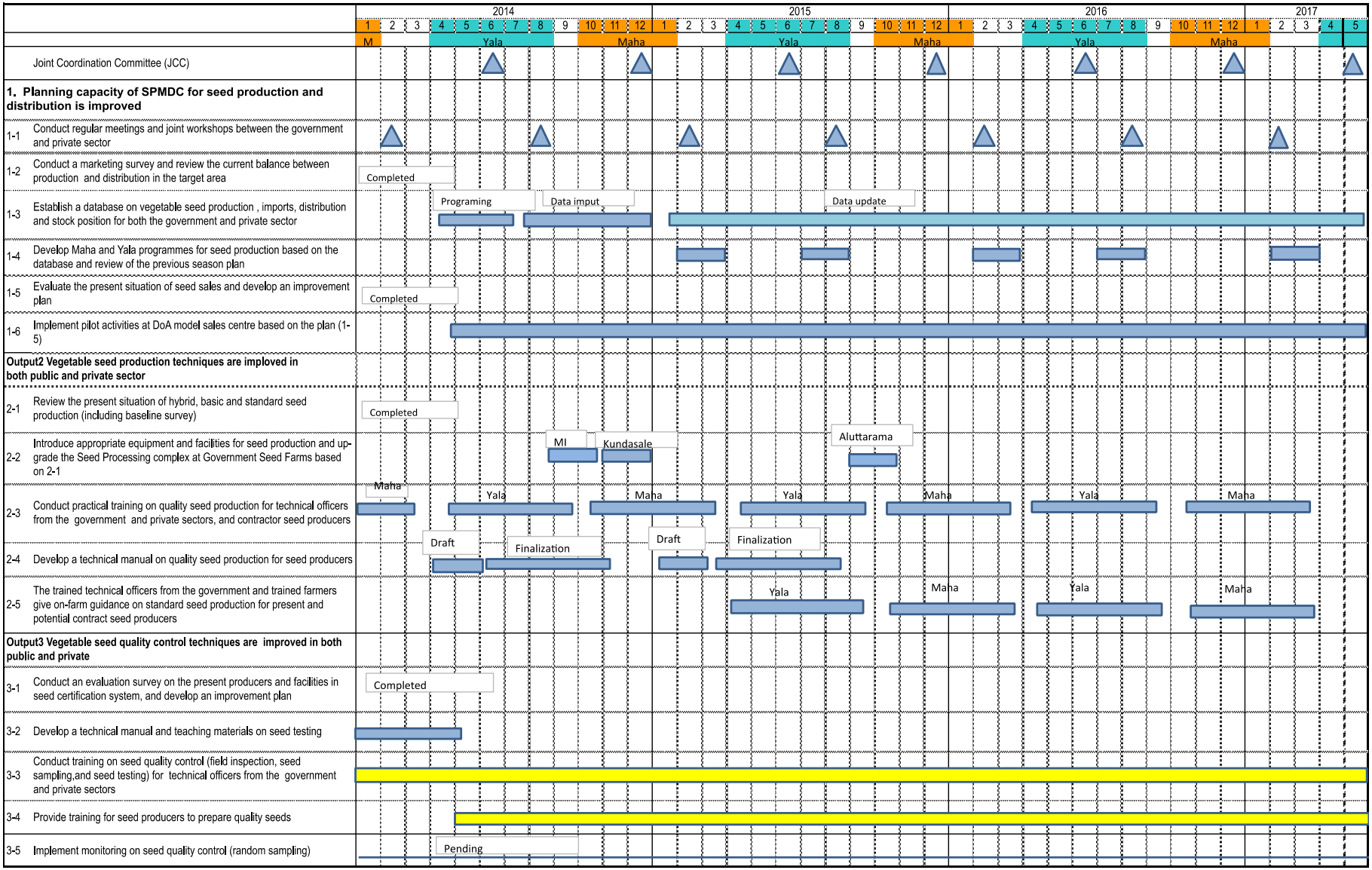
Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
Availability and use of certified vegetable seed in the whole country is increased	By 3 years after the Project completion, the use of certified standard seed of major vegetable crops as listed in the table* is increased**	Records of VSC and SPASL	1. The Seed Policy which supports seed production is not changed 2. The Seed Act is amended 3. Regulations are established based on the amended Seed Act, and implemented
Project Purpose			
Production system for certified vegetable seed is improved in the target areas	By the end of the Project, production of certified standard seed volume of major vegetable crops as listed in the table* in the target areas is increased**	Records of SPMDC and SPASL	Necessary budgets and personnel for seed production and promotion after the Project completion are allocated by the Government of Sri Lanka
Outputs			
1. Planning capacity of SPMDC for seed production and distribution is improved	1-1. Solutions to the issues presented by the private sector in the workshop are proposed	1-1 Records of the Project	Necessary budgets and personnel for seed production are allocated by the Ministry of Agriculture during the Project implementation
	1-2. Seed production plan for basic and standard seed are formulated considering development of private sector	1-2 Maha and Yala programmes of SPMDC	
	1-3 The number of DoA Sales Centres improved based on the plan is increased	1-3 Records of the Project	
2. Vegetable seed production techniques are improved in both public and private sector	2-1 75% of participants who attended trainings on vegetable seed production pass the exams	2-1 Records of the Project	
	2-2. 25% of participants who attended trainings on vegetable seed production adopt techniques introduced by the Project	2-2 Records of the Project	
	2-3 The achievement rate of the planned volume is increased on basic seed production of major vegetable crops as listed in the table in the targeted Government Seed Farms	2-3 Records of SPMDC	
3. Vegetable seed quality control techniques are improved in both public and private sector	3-1 Solutions proposed in the improvement plan are implemented in seed testing process	3-1 Records of the Project	
	3-2 75% of participants who attended trainings on seed testing pass the exams	3-2 Records of the Project	
	3-3 The annual number of basic and standard seed sample is increased	3-3 Records of SCS/Testing Lab	
	3-4 Monitoring for major vegetable crops as listed in the table is implemented and increased***	3-4 Records of SCS/Testing Lab	

Activities		Inputs		
		Japanese Side	Sri Lankan Side	
1-1	Conduct regular meetings and joint workshops between the government and private sector	**1. Dispatch of Japanese Experts** (1) Long-term Expert: 4 persons (a. Chief Advisor/Certified Seed Production System, b. Seed Testing, c. Seed Production/Seed Sales, and d. Project Coordinator/Training) (2) Short-term Expert: Seed Testing (including field inspection), Seed Health, Plant Disease, Farmers Economy, Farm Management, Market Analysis, Post Harvesting Technology for Seed, and others (If necessary)	**1. Assignment of Personnel** (1) Director General, DOA (2) Directors, SPMDC and SCPPC (3) C/Ps (4) Staff in related government institutions (as needed, ex. HORDI researchers)	1. Large natural calamities do not happen 2. Major pest and disease do not occur 3. The trained technical officers continue to extend acquired skills and knowledge to farmers
1-2	Conduct a marketing survey and review the current balance between production and distribution in the target areas			
1-3	Establish a database on vegetable seed production, imports, distribution, and stock position for both the government and private sector			
1-4	Develop Maha and Yala programmes for seed production based on the database and review of the previous season plan			**Pre-Conditions**
1-5	Evaluate the present situation of seed sales and develop an improvement plan	**2. Facilities and Equipment** Necessary equipment for the project activities (equipment for seed production, seed processing, seed testing, and etc.)	**2. Project Office** Necessary facilities such as electricity connection, furniture, Internet lines in the office space	
1-6	Implement pilot activities at model DoA Sales Centres based on the plan (1-5)			
2-1	Review the present situation of hybrid, basic and standard seed production (including baseline survey)			
2-2	Introduce appropriate equipment and facilities for seed production and up-grade the seed processing complex at Government Seed Farms based on 2-1	**3. Training Costs** C/P Training in Japan/third countries	**3 Facilities and Equipment** Necessary training space, machinary, equipment, instruments, tools, spare parts, and any other necessary for the implementation of the Project other than one(s) provided by Japanese side	
2-3	Conduct practical training on seed production for technical officers from the government and private sectors, and contract seed producers			
2-4	Develop a technical manual on seed production for seed producers	**4. Others** Cost for Local Consultants and Local Staff	**4. Local Costs** Necessary budget for the implementation of the Project (ex. Per diem & travel allowance for domestic training for C/P, electricity for the Project Office, and etc.)	Participation of private sector in vegetable seed industry is ensured and promoted
2-5	The trained technical officers from the government and trained farmers give on-farm guidance on standard seed production for present and potential contract seed producers			
3-1	Conduct an evaluation survey on the present procedures and facilities in seed certification system, and develop an improvement plan			
3-2	Develop a technical manual and teaching materials on seed testing			
3-3	Conduct training on seed quality control (field inspection, seed sampling and seed testing) for technical officers from the government and private sectors			
3-4	Provide training for seed producers to prepare quality seed lots			
3-5	Implement monitoring on seed quality control ***			

* Major Vegetable Crops
1. Beans 2. Bitter gourd 3. Brinjal 4. Capsicum 5. Cucumber 6. Luffa 7. Okra 8. Pumpkin 9. Snake gourd 10. Tomato

** Target % for Overall Goal and Project Purpose will be discussed at the time of Mid term review
***Action plan for 'Monitoring' is requested to be submetted by Sri Lankan side by the end of August, so it can be discussed during the course of the Mid-term Review.

PLAN OF OPERATION version 4



*Activities; trainings, improvement of package design and label information, etc.

------ Schedule of training will be set later

Project Design Matrix (PDM) Ver.5.0

Date: 19. 09. 2014

プロジェクト名：スリランカ国認証野菜種子生産システム強化プロジェクト
期間：2012年5月から2017年5月（5年間）
対象地域：クンダサレ、アルッタラマ、マハイルパルマおよびニカウェラティヤ
裨益者：農業局職員（SPMDC、SCPPC、政府種子農場等）、民間企業、政府・民間契約種子農家、関連政府機関 (州政府農業局職員)

プロジェクト要約		指標	入手手段	外部条件
上位目標				
市場に出回る野菜種子のうち、農業局が定める基準（※※）を満たしている種子の量（※）が増加する （※）農業局による認証種子（農業局の生産種子、民間の生産種子）及び民間による独自の認証種子 （※※）「種苗認証基準」（2009年種子認証サービス発行）	1	市場に出回る野菜種子のうち、農業局の基準を満たしている種子の割合が増加する	農業局が実施する「市場に出回る種子の品質調査」の結果	種子政策が変更しない
	2	民間の種子生産業者からSPMDCに原種種子の供給要請があった際、90%以上は供給がなされる	SPMDCの在庫記録 SPMDCのレポート	
プロジェクト目標				
対象地域における野菜の認証種子の生産体制が改善される	1	政府及び民間セクター双方の情報共有が進んだと答える関係者が増加する	SPASLへの質問票	1 プロジェクト終了後に、種子生産、品質管理（検査）、販売に必要な予算および人員がスリランカ政府より配分される 2 HORDIが重要な野菜の斉一な育種家種子を生産する
	2	農業局の職員の80％以上が「種子データベースによってデータ処理業務が効率化した」と考える	農業局のデータベース主要ユーザーへのインタビュー調査	
	3	種子生産研修に参加した契約農家の60％以上がプロジェクトで紹介した技術を適用する（※） （※プロジェクトで紹介した技術のうち一つ以上を使う）	契約農家へのインタビュー	
	4	SCPPCがプロジェクトで導入した芽生評価検査マニュアルや教材を使って在職者研修や新人研修を継続的に実施する	SCPPCの記録	
	5	「市場に出回る種子の品質調査」の結果に基づき作成したアクションプランが実施される	アクションプランの進捗報告	
成果				
1. SPMDCの種子生産・供給計画策定能力が向上する	1-1.	セミナーや定期会議で民間及び政府から提起された課題を解決するための対応策が実施される	1-1 プロジェクト資料	プロジェクト実施中に、農業省から種子生産、品質管理（検査）、販売に必要な予算および人員が配分される
	1-2.	民間セクターのニーズを考慮した、原種種子の生産計画が策定される	1-2 SPMDCの記録	
	1-3	プロジェクトで二か所のモデルDoA種子販売所の改善がなされたのち、さらに二か所のDoA種子販売所が改善される	1-3 SPMDCの記録	
2. 官民の野菜種子の生産技術が向上する	2-1	種子生産研修参加者の75%が、研修後のテストに合格する	2-1 研修後のテスト結果	
	2-2.	種子生産研修参加者の80％が研修が有用と考える	2-2 研修後の質問票	
	2-3	農業局の通達に沿って政府種子農場がプロジェクトで紹介した技術を採用する	2-3 農業局の通達 政府種子農場スタッフへのインタビュー	

3. 官民の野菜種子の品質管理技術が改善する	3-1 改善計画で提言された対応策が、種子検査プロセスで実践される	3-1 プロジェクト資料	
	3-2 種子検査の研修参加者の75%が、研修後のテストに合格する	3-2 研修後のテスト結果	
	3-3 種子検査手順のハンドブックが完成し、活用される	3-3 ハンドブック SCS/STLスタッフへのインタビュー	
	3-4 カビとバクテリアの種子病理検査が実施される	3-4 SCS/STLの記録	
	3-5 「市場に出回る種子の品質調査」の結果に基づきアクションプランが作成される	3-5 アクションプラン	

活動	投入		
	日本側	スリランカ側	
1-1 官民が参加する定期的会合及び合同セミナーを開催する 1-2 対象地域における市場調査と生産・供給の実態調査を行う 1-3 官民双方を対象とした、野菜種子の生産、輸入、供給、在庫に関するデータベースを構築する 1-4 データベース及び昨期の生産計画のレビューに基づいて、種子の生産計画（マハ期、ヤラ期）を策定する 1-5 種子配布・販売サービスの現況評価を行い、改善計画を作成する 1-6 農業局モデル種子販売所において、改善計画（1-5）に基づいた活動を実施する 2-1 ハイブリッド種子、原種種子及び標準種子の生産に関する現状レビューを行う（ベースライン調査を含む） 2-2 政府種子農場の種子生産、調整、品質管理にかかる機材を導入、更新する 2-3 優良種子の生産に関して、政府及び民間の技術職員、普及員、契約農家向けに実技研修を行う 2-4 優良種子の生産に関して、生産者向けの技術マニュアルを作成する 2-5 研修を受けた普及員が、研修を受けた契約農家による技術の適用を促すため、フォローアップ訪問を行い圃場で指導する 3-1 種子認証システムの現行手順及び施設の評価調査を実施し、改善計画を作成する 3-2 種子検査に関する技術マニュアル及び研修教材を作成する 3-3 政府及び民間の技術職員、普及員に対して、種子の品質管理（圃場検査と種子検査）に関する研修を行う 3-4 種子生産者に対して、優良種子を準備するための研修を行う 3-5 野菜種子マーケットの現状把握のため、種子検査やラベルチェックを含む「市場に出回る種子の品質調査」を実施する	**1. 専門家派遣** (1) 長期専門家：4名 （a. リーダー/認証種子生産システム、b. 種子検査、c. 種子生産/販売、d. 業務調整/研修） (2) 短期専門家：種子検査（圃場検査含む）、種子病理、植物病理、農家経済、営農、市場分析、種子の収穫後処理等（必要に応じて） **2. 資機材** プロジェクト活動に必要な機材 （種子生産、調整、検査に関する機材等） **3. 研修費用** カウンターパート研修（本邦/第三国） **4. その他** ローカルコンサルタント及びローカルスタッフ雇用費	**1. C/Pの配置** (1)プロジェクトディレクター：DOA局長 (2)プロジェクトマネージャー：SPMDC所長、SCPPC所長 (3)カウンターパート (4)関係政府機関職員（HORDI研究員等必要に応じて） **2. プロジェクト事務所** 執務室内の電気、家具、インターネット接続など必要な施設 **3 施設および機材** 研修会場、設備・機材、交換用部品等、プロジェクト実施に必要な項目で、日本側から供与される以外のもの **4. ローカルコスト** プロジェクト実施のための必要経費（C/P向け国内研修用日当・旅費、プロジェクトオフィスの光熱費等）	1. 大規模な自然災害が起きない 2. 大規模な病虫害が発生しない 3. 研修を受けた技術職員が、継続してプロジェクトを通じて得た技術ならびに知識の普及に携わる **前提条件** 野菜種子産業において、民間の参加が保証され、促進される

＊ 対象作物名

1. マメ, 2. ニガウリ, 3. ナス, 4. トウガラシ, 5. キュウリ, 6. ヘチマ, 7. オクラ, 8. カボチャ, 9. ヘビウリ, 10. トマト

Project Design Matrix (PDM) Ver.5.0 (approved at JCC on September 19, 2014)

Project Title: Project for Enhancement of Production System of Certified Vegetable Seed in Sri Lanka
Duaration: May 2012 to May 2017 (5 years)
Target Areas: Kundasale, Aluttarama, Mahailluppallama, and Nikaweratiya
Beneficiaries: DOA Officers (SPMDC, SCPPC, Government Seed Farms, and etc.), Private Companies, Government and Private Contract Farmers, and related Government Institutions (Provincial Department of Agriculture Officers)

Narrative Summary		Objectively Verifiable Indicators		Means of Verification		Important Assumptions
Overall Goal						
Quantity of vegetable seeds* in the market up to minimum standards stipulated by DOA is increased** ***DOA certified seeds (produced by DOA and the private sector) and self-certified seeds of the private sector** ****'Recommended seed certification standards for seed and planting materials' issued by SCS in 2009**		**1. The percentage of vegetable seeds available in the market which is up to the minimum standards stipulated by DOA is increased** **2. Over 90% of the requested basic seeds by the private sector seed producers is supplied by SPMDC.**		**Records of 'A survey on seed quality available in the market (Seed Quality Survey)' conducted by DOA** **Stock Information of SPMDC** **Reports by SPMDC**		1. The Seed Policy is not changed
Project Purpose						
Production system for certified vegetable seed is improved in the target areas		1	**Number of respondents of both public and private sectors who expressed that information sharing between both sectors is increased**	**Questionnaire survey with SPASL**		
		2	**More than 80% of DOA officials express that Seed related database make their data processing work efficient**	**Interview to main users of database of DOA**		
		3	**More than 60% of contract farmers who attended seed production trainings apply* techniques introduced by the Project** *** Use more than one of the techniques introduced by the Project**	**Interview to contract farmers**		
		4	**SCPPC continuously conduct in-service and induction trainings on seed certification using seedling evaluation manual and teaching materials introduced by the project**	**Records of SCPPC**		
		5	**Actions are taken in accordance with the action plan developed based on the results of 'the survey on seed quality available in the market (Seed Quality Survey)'**	**Progress reports of action plans**		
Outputs						
1.	Planning capacity of SPMDC for seed production and distribution is improved	1-1	**Actions are taken to** solve the issues **raised** by the private **and public sectors** in the **seminars and regular meetings**	1-1	Records of the Project	Necessary budgets and personnel for seed production,**quality control and promotion**, are allocated by the Ministry of Agriculture during the Project implementation
		1-2	Production plan for basic seeds are formulated considering **needs of** private sector	1-2	Records of SPMDC	
		1-3	**Additonal two** DoA Seed Sales Centres are improved **after the improvement of two model DoA Seed Sales Centres by the Project**	1-3	Records of SPMDC	
2.	Vegetable seed production techniques are improved in both public and private sectors	2-1	75% of participants of seed production trainings pass the **evaluation test**	2-1	Evaluation test conducted at the end of the trainings	
		2-2	**80% of participants of seed production trainings find the trainings was useful**	2-2	**Questionnaire survey conducted at the end of the trainings**	
		2-3	**Government Seed Farms adopt the techniques introduced by the Project in accordance with DoA Circular**	2-3	**DoA Circular** **Interview to Government Seed Farm staff**	
3.	Vegetable seed quality control techniques are improved in both public and private sector	3-1	Solutions proposed in the improvement plan are implemented in seed testing process	3-1	Records of the Project	
		3-2	75% of participants who attended trainings on seed testing pass the **evaluation test**	3-2	Evaluation test conducted at the end of the trainings	
		3-3	**Handbook on Seed testing procedure is completed and utilized**	3-3	**Handbook on Seed testing procedure** **Interview to SCS/STL staff**	
		3-4	**Seed health testings of bacteria and fungus are conducted**	3-4	**Record of SCS/STL**	
		3-5	**Action plan for improvement of quality control is developed based on the result of the 'survey on seed quality available in the market (Seed Quality Survey)'**	3-5	**Action plan**	

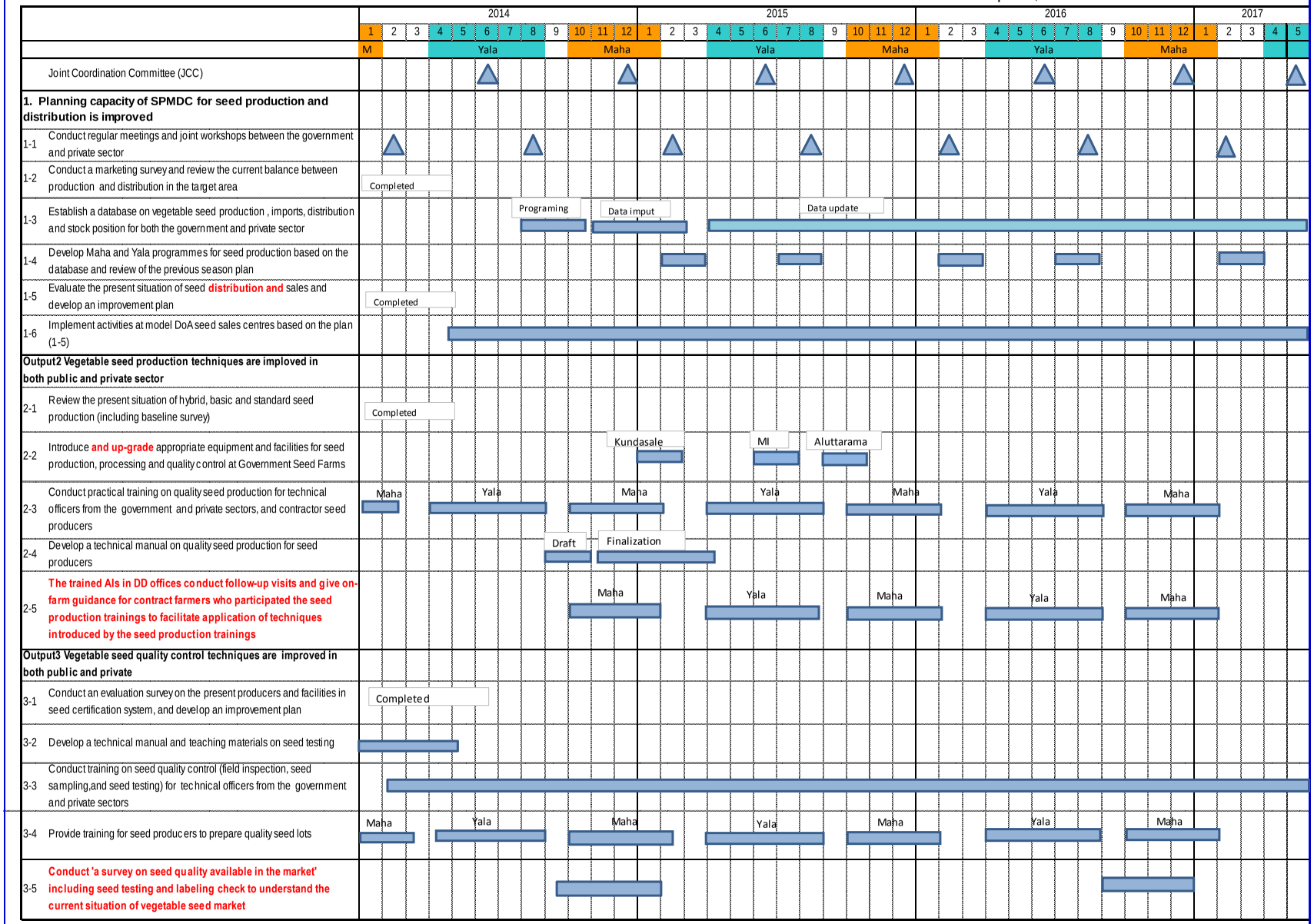
Activities		Inputs		
		Japanese Side	Sri Lankan Side	
1-1	Conduct regular meetings and joint **seminars** between the government and private sector	**1. Dispatch of Japanese Experts** (1) Long-term Expert: 4 persons (a. Chief Advisor/Certified Seed Production System, b. Seed Testing, c. Seed Production/Seed Sales, and d. Project Coordinator/Training) (2) Short-term Expert: Seed Testing (including field inspection), Seed Health, Plant Disease, Farmers Economy, Farm Management, Market Analysis, Post Harvesting Technology for Seed, and others (If necessary)	**1. Assignment of Personnel** (1) Director General, DOA (2) Directors, SPMDC and SCPPC (3) C/Ps (4) Staff in related government institutions (as needed, ex. HORDI researchers)	1. Large natural calamities do not happen 2. Major pest and disease do not occur 3. The trained technical officers continue to extend acquired skills and knowledge to farmers
1-2	Conduct a marketing survey and review the current balance between production and distribution in the target areas			
1-3	Establish a database on vegetable seed production, imports, distribution, and stock position for both the government and private sector			
1-4	Develop Maha and Yala programmes for seed production based on the database and review of the previous season plan			**Pre-Conditions**
1-5	Evaluate the present situation of seed **distribution and** sales, and develop an improvement plan	**2. Facilities and Equipment** Necessary equipment for the project activities (equipment for seed production, seed processing, seed testing, and etc.)	**2. Project Office** Necessary facilities such as electricity connection, furniture, Internet lines in the office space	
1-6	Implement activities at model DoA **Seed** Sales Centres based on the plan (1-5)			
2-1	Review the present situation of hybrid, basic and standard seed production (including baseline survey)			
2-2	Introduce **and up-grade appropriate** equipment and facilities **for seed production, processing and quality control at the Government Seed Farms**	**3. Training Costs** C/P Training in Japan/third countries	**3 Facilities and Equipment** Necessary training space, machinary, equipment, instruments, tools, spare parts, and any other necessary for the implementation of the Project other than one(s) provided by Japanese side	
2-3	Conduct practical training on seed production for technical officers from the government and private sectors, and contract seed producers			
2-4	Develop a technical manual on seed production for seed producers	**4. Others** Cost for Local Consultants and Local Staff	**4. Local Costs** Necessary budget for the implementation of the Project (ex. Per diem & travel allowance for domestic training for C/P, electricity for the Project Office, and etc.)	
2-5	**The trained AIs in DD office conduct follow-up visits and give on farm guidance for contract farmers who participated in the seed production trainings to facilitate application of technique introduced by the seed production trainings**			Participation of private sectoer in vegetable seed industry is ensured and promoted
3-1	Conduct an evaluation survey on the present procedures and facilities in seed certification system, and develop an improvement plan			
3-2	Develop technical manuals and teaching materials on seed testing			
3-3	Conduct training on seed quality control (field inspection, seed sampling and seed testing) for technical officers from the government and private sectors			
3-4	Provide training for seed producers to prepare quality seed **lots**			
3-5	**Conduct 'a survey on seed quality available in the market (Seed Quality Survey)' including seed testing and labeling check to understand the current situation of vegetable seed market**			

<Target Vegetable Crops>

1. Beans 2. Bitter gourd 3. Brinjal 4. Capsicum 5. Cucumber 6. Luffa 7. Okra 8. Pumpkin 9. Snake gourd 10. Tomato

PLAN OF OPERATION

Revised on Sept 18, 2014



Plan of operation (per item)						Project performance		(Final target) Plan hereafter	Achieved rate(%)
Large item	Sub item	Operation period 1st year	2nd year	3rd year	Person in charge (C/P, expert)	Activities	Results of the activities		
Output 1. Planning capacity of SPMDC for seed production and distribution is improved	1-1 Conduct regular meetings and joint workshops between the government and private sector	→	→	→	DG, Dir/SPMDC, ADD/SPMDC ADA/ SPMDC SPASL Takahashi	(1) 20 project monthly meetings were held with participation of public and private sector stakeholders. (2) Four basic seed production seminars were held (see Table 1 for detail) . Several request was made from the private sector to DoA including: 1) developing F1 hybrid variety, 2) selection of STL equipment, 3) F1 hybrid development technologies, 4) supply of tomato, winged bean and busitavo basic seeds which have technical problems.	(1) Progress of the Project was shared and issues regarding the seed production were discussed. (2)DoA is taking steps to meet the various request by the private sector, including development of F1 hybrid variety by HORDI, investigation and testing for the breeder seeds of some varieties which were found to have problems. (3) Lists of basic seed requirement were submitted by the private sector at the production seminars conducted one months before the cultivation seasons, whereas the lists were submitted just before the season or even during the season, which was too late for SPMDC to consider in planning. (4) DoA provided information to the private sector at the seminars, such as volume of production and inventory of the basic seeds in the previous year. Officers of SCPPC and JICA experts made presentations on topics such as, present situation of importation of seeds, implementation of seed act, seed pathology, etc. Private sector participants appreciate the information.(one company mentioned. To be double checked with others) (5)At the meeting in August 2014, DG of DoA made a decision to organize the meetings thereafter by the department, not by the JICA Expert Team.	(1) Continue organizing project monthly meetings and Maha and Yala basic seed production seminars. Active (2) DoA is expected to take a leadership in organizing the production seminars instead of JICA Expert Team. (3) Continuous participation of the private sector representatives should be encouraged. (4) Sharing of information between public and private sectors should be encouraged continuously.	50%
	1-2 Conduct a marketing survey and review the current balance between production and distribution in the target areas	→				(1) A local consultant of JICA Expert Team completed a baseline survey, including survey on use and marketing of seeds, in September 2012. (2) A short-team JICA expert on vegetable seed production planning completed a marketing survey in September 2013.	(1) A need for development of a database was identified. Currently, a database system is being developed by an IT firm. (2) Following baseline data was collected: a) seed requirement and anticipated supply for target extents since 2007, b) basic and standard seed stocks at SPMDC since 2002, c) standard seed production under farm and contract programs since 2005, d) basic seed production since 2005, etc.	The activities were completed.	100%
	1-3 Establish a database on vegetable seed production, imports, distribution, and stock position for both the government and private sector		→	→	ADA/SPMDC, Dir/ICC, ADD/AVC Takahashi	Series of meetings for development of "seed related database system" were held. Contents for the system were discussed and decided. An IT company was selected and is working for development of the system.	・An IT firm was selected and signed the contract for the database development. The IT firms is developing a seed related database.	(1) Database system will be installed to the government seed farms, seed sales centers, DS's office and SPMDC in Ocr. 2014. Training for operation of the database system will be provided to the staff of these institutions. (2) JICA Expert team is with opinion that input data to the system will not be a problem for staff of SPMDC as there are only a few items to be input only two times a year.	20%
	1-4 Develop Maha and Yala programmes for seed production based on the database and review of the previous season plan		→	→	Dir/SPMDC, ADD/SPMDC ADA/SPMDC Takahashi	Seed production programmes were developed for every cultivation season but not based on the database as it was not operated yet.t.	(1) Production programmes were developed but not based on the database.	(1) Production programme will be developed based on the database, once it is installed and operational. (2) Private sector will also be benefitted as important information for them, such as xxx, will be uploaded to the website of SPMDC and utilized to the private sector.	20%
	1-5 Evaluate the present situation of seed sales and develop an improvement plan		→		ADD/SPMDC ADA/SPMDC Takahashi	A short-team JICA expert conducted a survey and review present situation of seed distribution and sales. Considering the recommendations of the JICA expert, SPMDC submitted a report including a plan for improvement of sales and distribution in September 2014.	(1) The following reccomendations were given by the JICA Expert team to the DoA: *For improving the distribution of DoA seeds: a) need of a mid- and long-term distribution plan of SPMDC,b) a reserch by SPMDC/SEPC on consumer behavior, c) introduction of a database system for stock and customer management, e) Delivery service, f) improvement of labels, g) Purchasing of small vehicles for delivery (option) *For improvement of seed sales centers: a) instalattion of sign boards and price boards、b) Installation of cool room or siminar arrangement、c) provision of information on stocks, data for supply, d) training for sales staff	・The activity was completed.	100%
	1-6 Implement pilot activities at model DoA Sales Centres based on the plan				ADD/SPMDC ADA/SPMDC Takahashi	(1) SPMDC implemented the following activities during the time from 2012 to August 2014 in the country; a) two awareness creation programmes, b) opening of 9 new sales centers, c) purchasing of a seed packing machine d) mobile sales promotion campaign and e) introduction of new packs. These activities were conducted not as the project activities but conducted as a part of their ordinary work. (2) SPMEC and the JICA Experts decided to improve 2 sales centers, Batalagoda and Wagolla, among 8 in the project area.	(1) No activity was conducted yet. (2) SPMDC implement the followings in the country based on their plan: a) two awareness creation programmes were conducted, b) 7 new sales centers were opened. 3 existing sales centers were renovated, A sales promotion campaign was conducted in June and July 2014 by conducting mobile sales service. c) A packing machine was purchased for prepare the seed packets speedily d) Requested treasury to purchase 15 crew cabs for seed distribution and e) introduction of new packs made by triple laminated aluminum foils.	(1) The following activities will be implemented at the DoA sales centres at Batalagoda and Wagolla in 2014-2015: (a) Installation of sign boards and price lists. (b) Purchasing of a refrigerator.	20%
Prospect of sustainability	(1) Basic seed production seminars may be continued until the end of the project. However, there is a concern for continuation after the project as number of participants from the private sector is decreasing. Both parties should develop a firm trust. Each party should respond to the request of other parties in sincere attitude. They need to share information useful for each other, so that both parties will not loose interest to have meetings. (2) As for database, comprehensive information collection, prompt input, capacity of the staff of head office for utilization are some of the key factors for increasing accuracy in planning and also sustainability of the system. Cooperation of the private sector is needed to make the information comprehensive, but there are hesitation among them to submit information of production, sales and inventory A budget for service contract and periodical updating with an IT company should be secured by DoA.								

Output 2. Vegetable seed production techniques are improved in both public and private sector	2-1 Review the present situation of hybrid, basic and standard seed production (including baseline survey)	→			ADA/SPMDC, DDA/KU, DDA/AL, DDA/MI Iizuka	(1) Visited the government seed farms, private seed companies and seed producer's farms to study present situation and technical levels.	(1) It was found by the JICA expert Team that the current crop cultivation methods at seed farms in the target area were not up to the standard. For example, using pots/trays for raising seedlings, watering before sowing or transplanting, control of temperature, sunlight and water at nursery, soil sterilization, crop rotation, single planting, mulching, training and thinning, were not practiced in most of the seed farms.	・The activity was completed	100%
	2-2 Introduce appropriate equipment and facilities for seed production and up-grade the seed processing complex at Government Seed Farms based on 2-1		→		Dir/SPMDC ADD/SPMDC ADA/SPMDC, Iizuka	(1) Conducted a survey to estimate necessary equipment for each government seed farm (2) Selection and determination of the required equipment (3) Formation of the technical committees within DoA for each equipment (4) Purchasing and installation of facilities were conducted for some items.	(1) 2 nursery poly houses were built in Kundasale government seed farm (2) Irrigation system covering 5ha was installed in Kundasale government seed farm (3) It was planned to procure seed processing equipmen(Color sorter 、Gravity separator 、Seed extractor 、Seed carting machine) at the begining of the project period. However, they were not purchased yet.	(1) Complete procurementof seed processing equipment by the end of March 2015.	60%
	2-3 Conduct practical training on seed production for technical officers from the government and private sectors, and contract seed producers		→		ADA/SPMDC, DD/KU, DDA/AL, DDA/MI, DDA/NK FM/KU FM/AL FM/MI Iizuka	(1) 1,141 persons in total were participated from private and public sectors in the training as of the end of July 2014 (see Table 2 for detail).	Series of meetings for development of "seed-related database creation" were held. Contents for the system were discussed and decided. An IT company was selected in July 2014 and is working for development of the system.	(1) Training will be continued after being scruitinized its contents and training method. (2) It is expected that officers of SPMDC take more leadership for organization, lecturing, practical sessions in the training and give more attention to the demonstration in the pilot plots.	50%
	2-4 Develop a technical manual on seed production for seed producers		→		ADD/SPMDCA DA/SPMDC ADA/SCS, Iizuka	(1) Initiate writing of the first draft pages (2) Obtained opinions on the structure of the manual from the C/Ps (3) Photos and illustrations needed for the manuals are being collected.	(1) Almost all photos and illustrations for the manual have been acquired (2) Editing the contents is being done.	・Complete the draft and finalize the contents ・Translate into Sinhalese and Tamil ・Edit the layouts and print	30%
	2-5 The trained technical officers from the government and trained farmers give on-farm guidance on standard seed production for present and potential contract seed producers			→	ADA/SPMDC, DDA/KU DDA/AL, DDA/MI DDA/NK SPASL Iizuka	No activities were conducted especially for this purpose.	Meaning of indicator 2-5 is not clear and therefore, was understood as "Existing contract farmers and farmers might be engaged in seed production in future are applying techniques introduced in the seed production training programmes of the Project by obtaining on-farm guidance from technical officers". The Mid-term Review Team could not find evidence that the technical officers were giving on-firm guidance to the contract farmers after the training.	no special plan yet	0%
Prospect of the sustainability	Currently, only some techniques introduced in the trainings are practiced in a small scale at the government farm. At the moment, there is no prospect for sustainability.								

Output 3. Vegetable seed quality control techniques are improved in both public and private sector	3-1 Conduct an evaluation survey on the present procedures and facilities in seed certification system, and develop an improvement plan	Dir/SCPPC, DD/SCS, ADA/SCS, Ishikawa	JICA Expert Team and counterpart officers of SCPPC visited seed testing laboratories of public and private sectors. The JICA Expert made an observation of testing activities at STL at Peradeniya for a few months. Documentation of a paper on suggestions for improvement was completed by November 2013.	(1) The improvement plan was prepared and discussed with counterparts. The plan includes: computerization of testing information, omitung of unnecessary tests, calibration of electronic equipment, quality management of materials, standerization of germination test, seed health test, etc. (2) Some of suggestions were taken and implemented. For example, computerization of part of test information, optimizing testing procedure, checking electric balance before usage, daily and periodical checkign of machineries, quality controle of germination test paper by checking pH, understanding of need of standerization of evaluation of germination test.	・This activity was completed.	100%
	3-2 Develop a technical manual and teaching materials on seed testing	ADA/SCS OIC/STL/PD, OIC/STL/AL, OIC/STL/MI Ishikawa	(1) Teaching materials and operation manuals were prepared as follows:. - Operation manuals of electronic balance and measuring pH of germination papers. - Seedling evaluation manual. - Teaching materials for seed testing procedures and seed evaluation (power point)	Necessary instructions were made by the JICA Expert Team for SCS to document a handbook on seed testing procedure.	・conducted as planned and to be continued.	100%
	3-3 Conduct training on seed quality control (field inspection, seed sampling and seed testing) for technical officers from the government and private sectors	ADA/SCS OIC/STL/PD, OIC/STL/AL, OIC/STL/MI OIC/SCS/PD OIC/SCS/AL OIC/SCS/MI Ishikawa	(1) Training was conducted on seed testing procedures, seed evaluation, equipment operation for seed testing laboratory staff. (a) Seed testing procedutes: 4 programmes; 91 participants. (b) Seedling evaluation: 3 programmes; 32 participants (c) Seed health testing; 10 days; 129 participants.	(1) Standerization of seed testing technque was promoted as a result of instllation of new equipment, manual for cariblation and OJT. (2) Lectures in the Seedling evaluation test was conducted firstly by JICA Expert, but was conducted by SCPPC senior staff from the second time in Sinhala. (3) Rupe with light, flat-type pH meter, standard thermometer, standard balance, microscops for seed health testing, etc. were installed and contributed for improvement of testinc techniques. (4) DoA decided to construct a testing center for seed health. A foundation stone was laid recently for the construction.	(1) Training on seed testing for private sector staff will be conducted. (2) Construction of a testing center for seed health is planned to be completed by Dec. 2014. Technical transfer is going to be conducted by short-term JICA expert to the counterpart officers.	80%
	3-4 Provide training for seed producers to prepare quality seed lots	ADA/SCS OIC/SCS/PD OIC/SCS/AL OIC/SCS/MI Ishikawa	(1) Training for seed producers to prepare quality seed lots was conducted as a part of seed production training.	Training for seed producers for preparation of quality seed lots (post-harvesting) was conducted as a part of seed production training in September 2013 and March-May, 2014.	The training will be conducted as a part of seed production training in the future, too.	50%
	3-5 Implement monitoring on seed quality control (random sampling) by SCS	ADA/SCS OIC/SCS/PD OIC/SCS/AL OIC/SCS/MI	Monitoring of random sampling test was conducted by JICA Expert Team. See the following table for the result of monitoring conducted by SCS: ( ) is the number out of the total, which were conducted as result of farmer's complaint 2013: paddy 6, OFC 7 (3), veg 0. Figures of 2014 is as of the end of Aug. 2014. 2014: paddy 2, OFC 0, veg 5 (2) SCS carried out random sampling test in a small scale, mainly because it does not have a budget allocation for purchasing seed samples, which is very expensive for some crops. Hybrid papaw seeds cost around Rs. 10,000/10 g. SCS has not requested allocation for purchasing of seeds samples for random testing in the market, as the cost is high and there are other works indispensable.		SCS does not have a budget allocation to purchase test samples. There is no prospect that the numbers will go up, however, JICA Experts have no way to assist it, as it is not a technical problem but financial. This activity should be changed.	0%
Prospect of the sustainability	Discussion is needed about the need of 3-5.					

Abbreviation:

Designation	DG=Director General, Dir=Director, ADD=Additional Director, ADA=Assistant Director of Agriculture, DDA=Deputy Director of Agriculture, FM=Farm Manager, OIC=Officer in Charge, REP: Representative
Organization	DoA=Department of Agriculture, SPMDC=Seed & Planting Material Development Centre, SCPPC=Seed Certification & Plant Protection Centre, SCS=Seed Certification Service, STL=Seed Testing Laboratory, ICC=Information & Communication Centre, AVC=Audio Visual Centre, SPASL=Seed Producers Association of Sri Lanka, SEPC=Social and Economic Planning Unit
Location	PD=Peradeniya, KU=Kundasale, AL=Aluttarama, MI=Mahailluppallama, NK=Nikaweratiya

Table 1 No. of participants for the basic seed production seminars

Cultivation season	Date	No. of participants		
		Gov. officers	Private sector	Total
Yala 2013	2013.02.22	44	39	83
Maha 2013-14	2013.08.23	29	33	62
Yala 2014	2014.02.06	58	28	86
Maha 2014-15	2014.08.13	60	20	80

Table 2 Record of seed production training

Items		Yala 2013	Maha 2013-14	Yala 2014*
Kundasale				
Number of days conducted		6 days	4 days	5 days
Number of Participants for each day	-Officers	15, 14, 16, 15, 17	13, 12, 11, 17	24, 26, 24, 14, 23
	-Gov. contract farmers	13, 7, 8, 0, 3, 8	0, 11, 4, 17	20, 10, 4, 3, 4
Aluttharama				
No. of days conducted		5 days	5 days	3 days
Number of Participants for each day	-Officers	17, 16, 12, 14, 15	21, 15, 16, 14, 21	18, 20, 18
	-Gov. contract farmers	7, 5, 4, 7, 6	11, 3, 7, 7, 2	14, 11, 6
Mahailluppallama				
No. of days conducted		5 days	4 days	4 days
Number of Participants for each day	-Officers	19, 19, 18, 19, 15	18, 18, 19, 14	18, 22, 24, 20
	-Gov. contract farmers	29, 24, 10, 13, 22	17, 11, 11, 9	2, 2, 8, 2
	-Private sector			10, 9, 12, 7
Nikawaratiya				
No. of days conducted			4 days	
Number of Participants for each day	-Officers		15, 14, 6, 3	
	-Gov. contract farmers		24, 15, 17, 5	
One day F1 training		21 (for officers)		23 (for private sector)

*Note: as of end of August 2014

Progress of achievement *(A: Progress as Planned - B: Little Delay in Progress - C: Major Delay in Progress)*

Narrative Summary	Objectively Verifiable Indicators	Progress (A, B, C)	Achievement to the date	Reason of early progress/delay	Prospects for Achievement
Over all goal					
Availability and use of certified vegetable seed in the whole country is increased	By 3 years after the Project completion, the use of certified standard seed of major vegetable crops as listed in the table* is increased**	C	The word "certified standard seed" was understood as DoA standard seed and commercial seed certified by DoA. As for the use of DoA standard seed, according to the baseline surveys conducted by the JICA Expert Team, in the target area of the Project in 2014. Percentage of farmers using DoA standard seed was **seven per cen**t in average for ten crops targeted by the Project. There is no information available for the use of DoA certified commercial seed.		Mid-term Review Team has a difficulty to evaluate a possibility for the Project to achieve the overall goal after three years of project completion, because: (a) Present status of usage of DoA certified seed was not available. (b) The overall goal does not exactly show the impact expected to be created by the Project.
Project Purpose					
Production system for certified vegetable seed is improved in the target areas	By the end of the Project, production of certified seed volume of major vegetable crops as listed in the table* in the target areas is increased**	C	(1) Volume of certified seed production by DoA **was not increasing year by year** as targeted by the indicator (see Table 3 and 4) (2) The volume of DoA certified commercial seed in the target area was not availabe by the end of the period of mid-term review.		As information was not available, and it is too early to forecast whether the Project will achieve Project Purpose by the completion of the Project. Several positive changes were observed at this moment, which would contribute for the Project to achieve the Project Purpose successfully; for example, information sharing between public and private sectors was promoted, and technical capacity of the staff, who is engaging in seed testing is expanding as planned. However, techniques introduced by the seed production training have not been applied to their seed production in a progressive manner. It will be need for JICA Expert Team and SPMDC to scrutinize the content, teaching method and evaluation method, including test paper, of the present training programme for improvement of the programme in accordance with needs and applicability. 'This indicator is not suitable to measure the Project Purpose and to be changed.

Outputs				
1. Planning capacity of SPMDC for seed production and distribution is improved	1-1 Solutions to the issues presented by the private sector in the workshop are proposed	A	(1) Indicator 1-1 aims at promoting active communication between private and public sectors on seed production. It also expects that DoA respond to the request from the private sector in a responsible way. As a result of periodical meetings of Basic Seed Production Seminars organized by the Project, staff of DoA and representatives from private sector were provided more opportunities for sharing information, expressing their ideas and problems and making request to other party on production of seed. (2) For example, DoA provided the private sector with information such as volume of production and stocks of the basic seeds in the previous year at every seminars. Staff of SCPPC and SPDMC and JICA experts made presentations on topics such as, present situation of importation of seeds, implementation of seed act, seed pathology and others, which are important for the private sector. Lists of requirement amount of basic seed became available to SPMDC on time and at once, as the lists were submitted by the private sector at the time of the meeting; whereas they were used to be submitted irregularly throughout the year before the Project. DoA took some steps to meet the various requests made by the private sector at the seminar, such as developing F1 hybrid varieties, solutions for a problem for some varieties of breeder seeds and others. (3) There is a prospect that the seminars are going to be held continuously until the end of the Project because staff of DoA and private sector representatives, to whom the Mid-term Review Team had interviews, appreciate the seminars, and feel important for its continuation. However, there are some concerns and things to be improved in terms of sustainability of this activity. For example, (a) some participants from private sector might be losing their strong interest to the seminar from the fact that the number of participants is decreasing; (b) only a few participants from the private sector expressed their views while others are keeping quiet at the seminar: and (c) JICA Expert Team, not the staff of SPMDC, is taking initiatives for organizing the seminars.	(1) There is a prospect that the production seminars are going to be held until the end of the Project. It is a good sign for continuation that DoA decided to organize the seminar in future instead of JICA Expert Team. (2) It is a concern for sustainability that number of participants from private sector is decreasing (see Table 5). Information requested by DoA was not fully submitted by some of the representatives from the private sector. Only few participants express their pinion while others remain silent at the seminar. (3) To continue the seminars in meaningful and beneficial way for both parties, it is important for them to strengthen trusting relationship further, by responding requests of other party promptly and become more active in sharing of information.
	1-2 Seed production plan for basic and standard seed are formulated considering development of private sector (Meaning of the indicator is not clear and therefore was understood as **"Production plan for basic seed were formulated in consideration of the requirements by the private sector".)**	A	(1) Meaning of indicator 1-2 is not very clear and therefore, was understood as "Production programme for basic seed were formulated in consideration of the requirements by the private sector". It was also understood that this indicator expects that the production programme is formulated with more accuracy and efficiency by utilizing more information from private sector and use of database system to be developed by the Project. (2) Even before the Project, SPMDC was developing basic seed production programme considering the requirement of the private sector. However, after the Project, as mentioned above, by obtaining lists of requirement of basic seed from the private companies in time at the Basic Seed Production Seminars around one month before the cultivation seasons, DoA became able to develop the programmes more accurately and efficiently. (3) It was expected that accuracy and efficiency of SPMDC on planning of basic seed and standard seed production programme as well as their daily work of information management, will be improved by introduction of a database system. However, it is not happening yet, as the database system was not installed yet as mentioned earlier . (4) DoA feels a need to improve accuracy of planning of seed production also by obtained more information from private sector. They wish to have a three-years forecast of requirement of basic seeds from private sector for better planning. However, it seems difficult for private companies to do so, as market is unpredictable and always changing. They also need to have volume of production, sales and stocks from private sector. SPASL members provided a part of such information; however, other companies, mostly small-sized, are not willing to do so by being afraid of losing their competitiveness in the market.	(1) There is a prospect that SPMDC is going to formulate basic seed production programme in consideration of the requirement of the private sector in future, too. (2) The volume and items of information to be provided by private sector maybe increased if two parties share their interest more closely.
	1-3 The number of DoA Sales Centres improved based on the plan is increased (meaning of the indicator is not clear and therefore was understood as **"DoA sales centers in the target area are improved based on the reccomendations of the JICA Expert team"**	C	Meaning of indicator 1-3 is not very clear and therefore was understood as "number of DoA sales centers, which were improved by DoA based on the experience of improving the two sales centers conducted as an project activity. There was no progress yet for this indicator. DoA need to develop an action plan, discuss it with the JICA Expert Team and implement it without a further delay.	It is a positive sign that SPMDC already took some actions for improvement of seed sales. However, it is regrettable that there was almost no action taken for the two sales centers in Batalagoda and Wagolla, which were supposed to be improved under the Project. SPMDC need to have a specific action plan for improvement of the 2 sales centers and to improve others by using the result of improvement of the two.

2.Vegetable seed production techniques are improved in both public and private sector	2-1 75% of participants who attended trainings on vegetable seed production pass the exams	B	(1) Indicator 2-1 expects that the participants of the seed production training programmes understood what was taught in the training well. It was planned to measure the level of understanding by the test, which was conducted at the end of the training. The Project consider that a technical officer of DoA understood the training up to the expectation of the Project and passed the test if he/she gives more than 6 correct answers out of 7 questions. (2) According to the above-mentioned criteria, it was found that only 51 per cent of the technical officers passed the test. However, Mid-term Review Team found some officers, who participated in the training programme, showed a good understanding and interest to the techniques. Therefore, it was difficult for Mid-term Review Team to access the level of understanding of the technical officers in this regard. (3) The Project consider that a contract farmer understood the training up to the expectation of the Project and passed the test if he/she gives more than 4 correct answers out of 7 questions. It was found that 80 per cent of the contract farmers passed the test. Some staff of SPMDC head office and senior officers of the regional offices commented that the programme was not very attractive as it was too basic and included techniques they knew. Some of them added that they were expecting something new or advanced from the training.	The present situation on level of understanding of the training programme by the officers is confusing, as stated in the left column. Is it needed to study further to know if their level of understanding is adequate. It is also needed to revew the contents and training method of the programme for necessary improvement.
	2-2 25% of participants who attended trainings on vegetable seed production adopt techniques introduced by the Project	C	(1) Indicator 2 expects that the techniques introduced in the seed production training programmes are utilize by the participants of the training in their seed production work. The following techniques were mainly introduced in the training. These are the techniques that JICA Expert Team identified as most important and urgent to apply in seed production for improving the quality, after they analyzed current practices in the government seed farms and contract seed growers: (a) Sowing and raising nursery using seedling holders (trays and pots)/ (b) Watering before sowing or transplanting (c) Composition of nursery soil medium/ (d) Nursery management/ (e) Raised beds / (f) Soil sterilization/ (g) Crop rotation (h) Planting density (single planting)/ (i) Application of soil cover (mulching)/ (j) Application of additional fertilizer in line (k) Fruits and buds thinning and pruning/ (l) Using of net / (m) Artificial pollination (2) Mid-term Review team observed a few example of application of these techniques during its visit as follows: In Aluttharama government seed farm, “(a) sowing and raising nursery using seedling holders” had been practiced in a small scale. They used plastic bags instead of trays for the seedling holders, as the provision of trays by SPMDC head office is in the process. They introduced a net for a cultivation of hybrid cucumber seed production plots first time in the current season, which is listed as (l) in the above-mentioned list. (3) In the government seed farm at Mahailuppallama, (l) using of net was applied for cultivation of bitter gourd and (i) application of soil cover (mulching)” was applied for brinjol (eggplant) in the last season. In the government seed farm at Kundasale, a staff of SPMDC, who had participated in the Country Focused Training, had been practicing “(a) Sowing and raising nursery using seedling holders” even before the Project. It was expanded successfully as a result the Project provided two rain-sheds and several numbers of trays to the farm. Environment and production capacity of the farm was improve as a result that a drip irrigation system was installed by the Project. SPMDC does not have a seed farm at Nikawaratiya although it is one of the target areas of the Project. The seed production training was conducted at a farm of North Western Provincial Council at Wariyapola. None of the techniques was practiced at the farm, according to the information provided by JICA Expert Team (6) JICA Expert Team had found that some contract seed growers, who participated in the training, were using some techniques introduced in the training. Mid-term Review Team visited a contract grower in Mahailuppallama has been applying several techniques including (a) and (h) and was very satisfied with the result. Another contract grower, who supply seed to a private company was applying (a).	The techniques were applied in a limited extent in the government seed farms and to some extent by contract seed growers and private sector. It seems to be difficult for the government officers to change their practice in farms immediately after the training. Senior officers of SPMDC pointed out some reasons for the difficulty, such as shortage of labour in the government farms at the time of planting, soil condition, climate and others. The JICA Expert Team observed a vague feeling of hesitance for a change in the staff of SPMDC, including field officers; to change the practice they had been conducted for years and decades, to a new one. It was also found that field staff in the government seed farms seems to need a specific instruction from the management to change the practice.It was also found that senior officers of SPMDC were not sure about benefit or practicability of some techniques: for example, “single planting” and “soil cover”, for which may need more discussion and demonstration. As for “training and thinning”, JICA Expert Team and HORDI had conducted a research in 2012 and 2013 at Kundasale and Aluttharama seed farms for verification. The research work was completed with a successful result. HORDI is going to collect two seasons’ of data, conduct an economic analysis, obtain approval from a Technology Release Committee of DoA, and issue a recommendation.
	2-3 The achievement rate of the planned volume is increased on basic seed production of major vegetable crops as listed in the table in the targeted Government Seed Farms	C	There is no tendency for improvement for achievement rates (plan vs. actual production. See Table 6) . Except few cases, planned volume was not produced. However, SPMDC explained that there were no serious shortage of the basic seeds as they maintain stocks. Draught, heavy rain and damage by wild animals were the direct main causes that SPMDC could not produce planned volume in recent years. Onother reasons must be the present cultivation practices, which is not productivity-oriented. It was not improved apprently yet, as a result of training and advices provided by JICA Expert Team.	Technology introduced by the project would contribute to increase the production and productivity, if it is utilized well. However, there is no prospect that the achievement rates will be improved by the end of the project; because natural disaster, including draught and veavy rain, are the direct causes for SPMDC not achieving the target volume of production. This indicator to be changed.

3. Vegetable seed quality control techniques are improved in both public and private sector	3-1 Solutions proposed in the improvement plan are implemented in seed testing process	A	Indicator 3-1 was almost achieved as SCPPC is implementing most of the suggestions made by JICA Expert Team. They are following ISTA rules for seed testing more precisely and seedling evaluation became further standardized as a result of the training programmes and on-the-job training conducted by the JICA Expert Team. It is expected that SCPPC to continue their effort by conducting regular training to their staff. There is an expectation that seed testing work will become more accurate and efficient by procurement of some more equipment and tools. Seed health testing, which is not conducted in the country, is also expected to be conducted by staff of the Seed Health Unit, by the end of the Project, with assistance be continued by the JICA Expert Team.	The indicator will be achieved by the end of the project, as the expected output is being created.
	3-2 75% of participants who attended trainings on seed testing pass the exams	A	Indicator 3-2 is to measure level of understanding of the contents of the training programmes conducted by the Project by the participants of the programme. The trainings on seed testing procedures, seedling evaluation and seed health were organized by JICA Expert Team for the staff of STL. This indicator was achieved so far as almost all the staff passed the exam .A quiz was given to the participants to evaluate their knowledge at the end of the training programme. Fifty three participants out of 58 in total answered correctly.	Indicator is achieved so far. In-service and induction training for stff of STL and representatives of private sector will be conducted by counterpart officers of SCPPC.
	3-3 The annual number of basic and standard seed sample is increased	B	Indicator 3-3 aims at increase of number of samples brought to SCS for testing with an expectation that production of basic seed and standard seed by DoA is increased and private sector seed producers is more encouraged to bring their product for DoA certification.There was an increasing tendency of number of samples in 2012 and 2013, however, number of samples in 2011 was smaller than that of in 2010. It needs more record to keep observations in future. Reasons for increase in 2012 and 2013 should be studied, too, to verify whether the increase was realized as a result of the improvements the Project expected as mentioned above, especially as the numbers might be increased as a result the samples for Devi Neguma programme were brought to STL in these years.	The indicator to be changed.
	3-4 Monitoring for major vegetable crops as listed in the table is implemented and increased	C	Indicator 3-5 was added in December 2013 as JICA Consultation Mission and counterpart officers identified important of having more number of random sampling for strengthen quality control of vegetable seed in the market. As mentioned in "3-2 Activities", number of random samples was still very small and was not increasing. SCS carries out random sampling test in a small scale, mainly because it does not have a budget allocation for purchasing seed samples, which is very expensive for some crops.	The indicator to be changed.

* Major Vegetable Crops targeted by the Project
1. Beans 2. Bitter gourd 3. Brinjal 4. Capsicum 5. Cucumber 6. Luffa 7. Okra 8. Pumpkin 9. Snake gourd 10. Tomato

Table 1 No. of farmers using different seed categories in the year
(source: Formatted by the Review Team using the data in Table 13 of *"Farmer saved seed May 28 formatted version 3*", JICA Expert Team.)

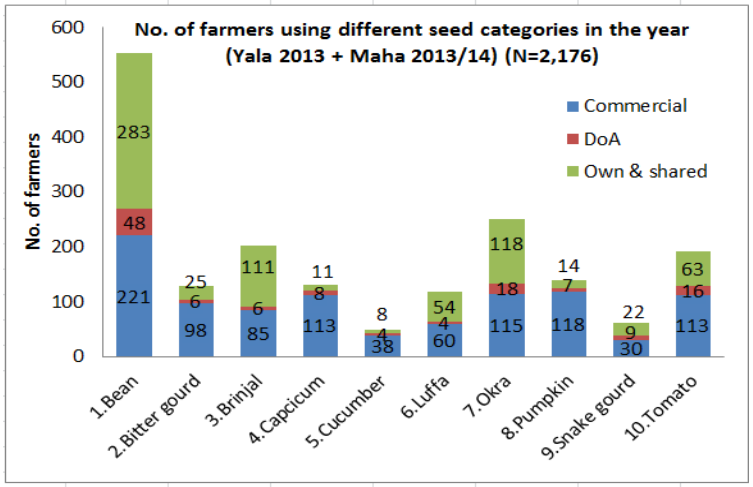


Table 2 Percentage of farmers using different categories of seed in the year

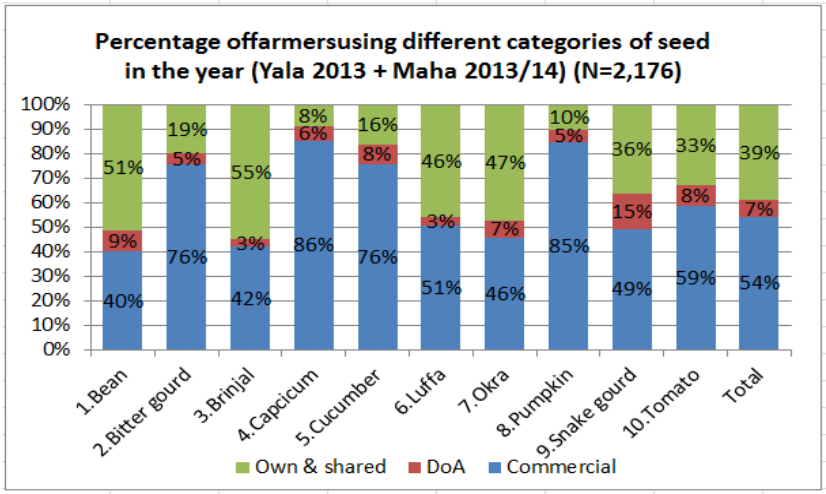
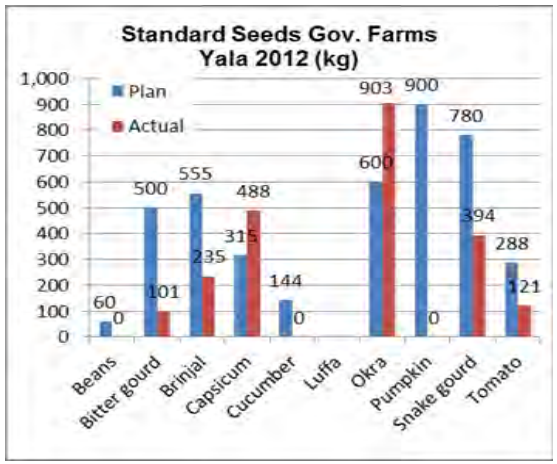
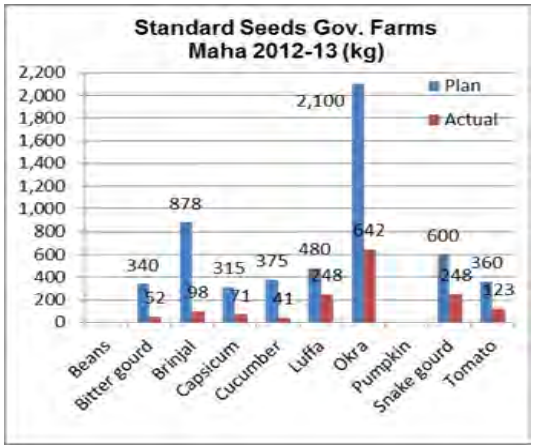


Table 3 Plan and actual production of standard seed at Government Farms by SPMDC (source; formatted by the Review Team using the data of SPDCM)





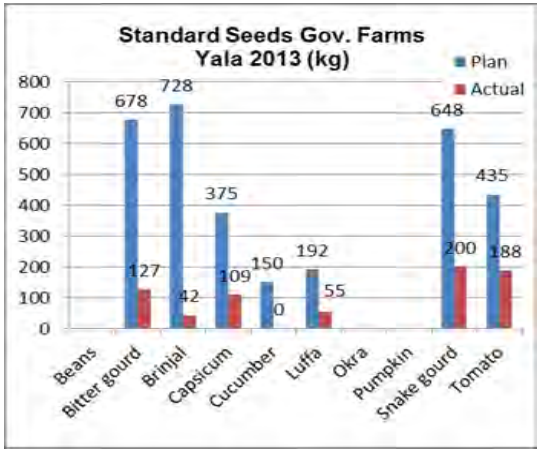
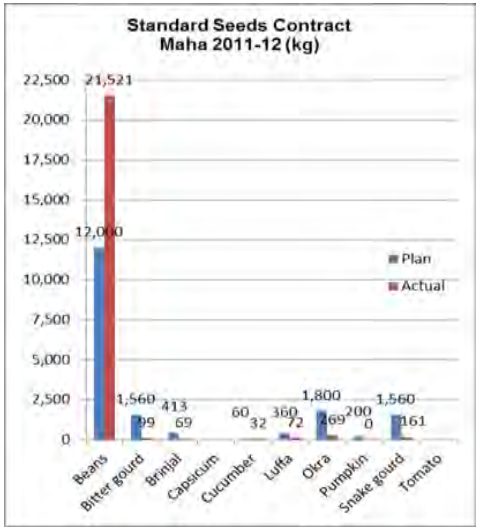
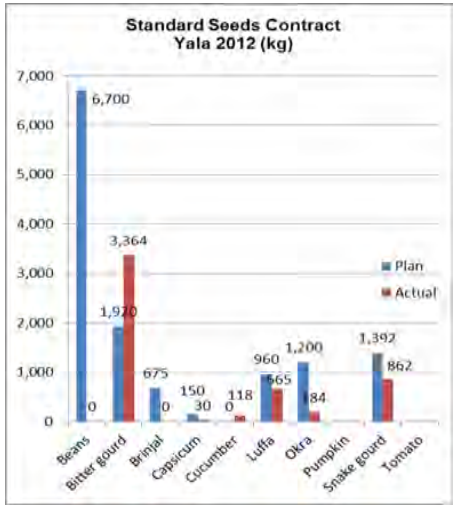
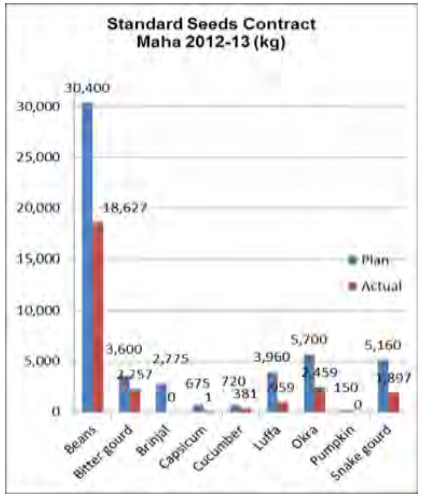


Table 4 Plan and actual production of standard seed by contract programme of SPDMC (source; formatted by the Review Team by using the data of SPDCM)







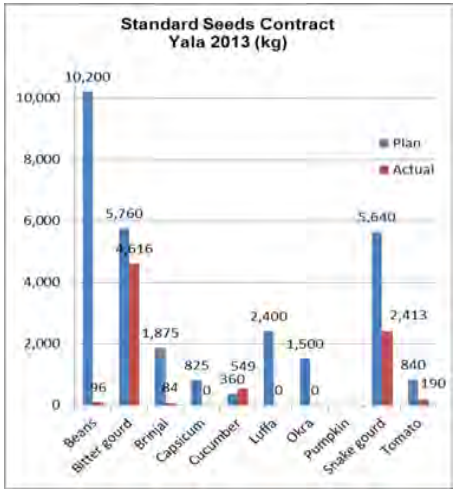
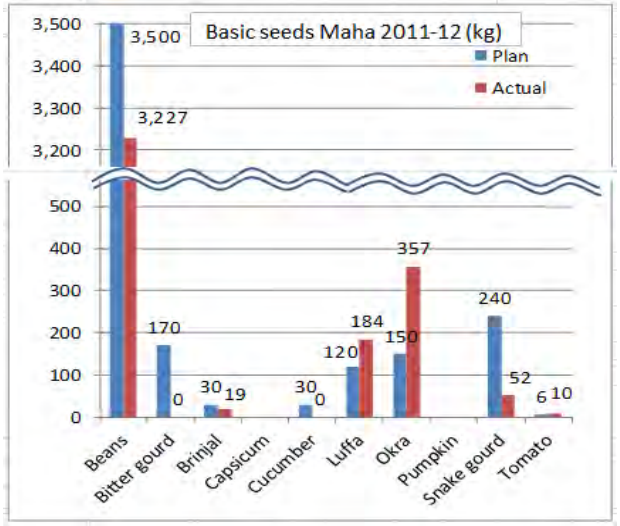
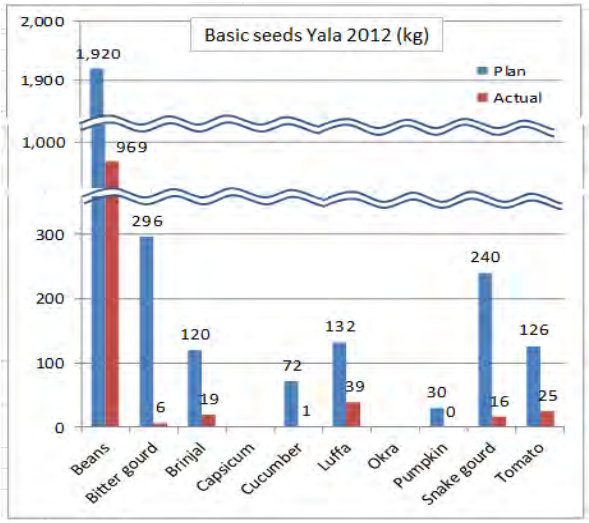


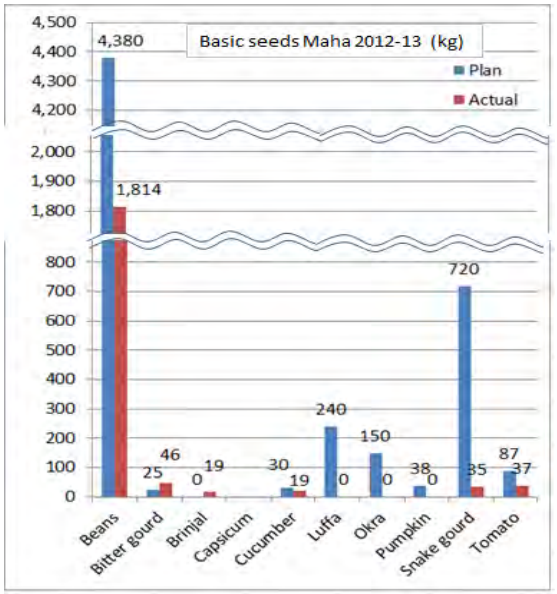
Table 5 No. of participants to the basic seed production seminar (source: JICA Expert Team)

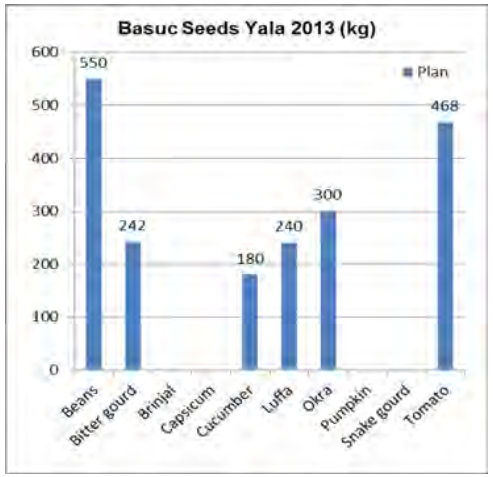
Cultivation season	Date	No. of participants		
		Gov. officers	Private sector	Total
Yala 2013	2013.02.22	44	39	83
Maha 2013-14	2013.08.23	29	33	62
Yala 2014	2014.02.06	58	28	86
Maha 2014-15	2014.08.13	60	20	80

Table 6 Plan and actual production of basic seeds by SPMDC (source; formatted by the Review Team by using the data of SPDCM)









MINUTES OF MEETINGS ON THE MID-TERM REVIEW FOR PROJECT FOR ENHANCEMENT OF PRODUCTION SYSTEM OF CERTIFIED VEGETABLE SEED IN THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched Mid-Term Review mission, headed by Mr. Masahiro Tawa, to the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "Sri Lanka") from 1st to 19th of September 2014, in order to conduct mid-term review for the Project for Enhancement of Production System of Certified Vegetable Seed in Sri Lanka (hereinafter referred to as "the Project").

The Japanese and Sri Lankan sides formed Joint Mid-Term Review Team (hereinafter referred to as "the Team") and evaluated performance and achievements of the Project through field visits, interviews and had a series of discussions in respect of desirable measures to be taken for the successful implementation of the Project.

The Team presented the contents of Joint Mid-Term Review Report in the Joint Coordinating Committee (hereinafter referred to as "JCC") and the following issues were raised, discussed and agreed attached hereto.

Kandy,
18th, September, 2014

Masahiro Tawa	Rohan Wijekoon
Leader	Director General
The Mid-term Review Team	Department of Agriculture
Japan International Cooperation Agency	Ministry of Agriculture

Attachment

1. The Mid-term Review Report

JCC accepted the Mid-term Review Report and took note of the recommendations by the Team. The Committee requested the personnel concerned with the Project to take necessary measures for smooth implementation of the Project.

2. Endorsement of the revision of Project Design Matrix (PDM) and Plan of Operation (PO) (attached as Annex-II and III)

JCC endorsed the revision of PDM and PO based on discussions among Sri Lankan Counterparts, the Project and the Review Team.

3. Minutes of the meeting on September 12th, 2014 (attached as Annex-IV)

Minutes of the meeting on September 12th, 2014, in which issues and the way forward were discussed with Director General of Agriculture of Department of Agriculture and counterpart officers, is endorsed.

End

Annex I: Joint Mid-term Evaluation Report
Annex II: Revised Project Design Matrix (PDM version 5)
Annex III: Revised Plan of Operation (PO version 5)
Annex IV: Minutes of the meeting on September 12th, 2014

ANNEX I

Joint Mid-Term Review Report
on
The Project
for
Enhancement of Production System of Certified Vegetable Seed
in Sri Lanka

Kandy,
18th, September, 2014

Masahiro Tawa

Leader
The Mid-term Review Team
Japan International Cooperation Agency

G. M.W. Chithral
Member, The Mid-term Review Team
Additional Director, Seed Certification and Plant Protection Center,
Department of Agriculture

Gamini Weerakoon
Member, The Mid-term Review Team
Assistant Director,
Seed and Planting Materials Development,
Department of Agriculture

V. D. N. Ayoni
Member, The Mid-term Review Team
Agricultural Economist,
Social and Economic Development Center,
Department of Agriculture

TABLE OF CONTENTS

Abbribiations

AIs	Agriculture Instructors
DD	Deputy Director
DG	Director General
DoA	Department of Agriculture
ETC	Extension and Training Center
HORDI	Horticulture Research and Development
ISTA	International Seed Testing Association
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
LKR	Sri Lankan Rupees
MT	Metric ton
OFC	Other Field Crops
PDM	Project Design Matrix
SCPPC	Seed Certification and Plant Protection Center
SCS	Seed Certification Services
SEPC	Social and Economic Development Center
SPASL	seed Producers Association of Sri Lanka
SPMDC	Seed and Planting Materials Development
STL	Seed Testing Laboratory

1. Introduction

1.1. Objectives of the Mid-term Review

The objective of this Mid-term Review was, (a) to confirm the progress of the project activities based on Project Design Matrix (PDM) and Plan of Operation (PO) of the Project, (b) to identify problems and issues on any aspects of the project implementation, (c) to review the present Project Design Matrix (PDM), (d) to evaluate the degree of achievement of the Project as per the five evaluation criteria; relevance, effectiveness, efficiency, impact, and sustainability and (e) to make recommendations for the necessary actions and measures to be taken by Sri Lankan Counterpart agencies and JICA Expert Team in order to achieve the Project Purpose by the end of the cooperation period of the Project.

1.2. Members of the Mid-term Review Team

Table 1 and 2 show the members of the Mid-term Review Team

Table 1 Members of the Mid-term Review Team – Japanese side

Name	Title	Assigned area
Mr. Masahiro TAWA	Deputy Director General, Rural Development Department, JICA Headquarters	Team Leader
Chiemi SAITO	Deputy Director for Seed Industry, Food Industry Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries	Seed Administration
Chieko YOKOTA	Deputy Director, Rural Development Department, JICA Headquarters	Cooperation Planning
Tomoko TAMURA	Consultant, Kaihatsu Management Consulting, Inc.	Project Analysis and Evaluation

Table 2 Members of the Mid-term Review Team – Sri Lankan side

Name	Title
Dr. G. M.W. Chithral	Additional Director, Seed Certification and Plant Protection Center (SCPPC)
Mr. Gamini Weerakoon	Assistant Director, Social and Economic Development Center (SPMDC)
Ms. V. D. N. Ayoni	Agricultural Economist, Social and Economic Development Center (SEPC)

1

1.3. Schedule of Activities of the Mid-term Review

The Mid-term Review was conducted from 25th of August, 2014 to 19th of September, 2014. Table 3 shows the schedule of the Review in summary (see ATTACHMENT 1 for detail schedule).

Table 3 Schedule of the Mid-term Review

Schedule	Aug. 25-	Sep. 1-	Sep. 8-	Sep. 15-
Document review	■			
Discussions and field visits by the consultant with Sri Lankan members of the Review Team (fact finding)		■		
Discussions and field visits by the Review Team			■	■
Joint Coordination Committee Meeting				●

2. Outline of the Project

2.1. Background of the Project

The mid- and long-term national development plan of "Mahinda Chintana, Vision for a New Sri Lanka (2006-2016)" emphasizes importance of improvement of self-sufficient rate of vegetables and other field crops (OFC) in Sri Lanka, and placed priority for increasing production and productivity.

The plan also stated that: (a) one of the problems the agriculture sector faces was inadequate use of quality seeds and planting materials, (b) one of the goals of the government's agriculture policy was to realize use of high yielding seeds and improved water management and (c) shortage of quality seeds and planting material remain a major issue in increasing production and productivity.

At the time of project planning, it was understood that only 4-35 per cent of the total vegetable seed requirement is supplied as quality certified seeds due to limitation of seed growers' capacity, poor processing and certifications system, under-developed seed distribution, and that Sri Lanka annually imports almost 250 MT vegetable seeds, whereas domestic vegetable seed production remains low level as of 90 MT at the time of project planning.

In these circumstances, government of Sri Lanka requested a technical cooperation project "the Project" to government of Japan, which aims to improve agricultural productivity and quality through development and disseminating applicable production technology for farmers of qualified vegetable seeds. Through a series of discussion and fields surveys, both sides agreed that the Project shall be focused to 1) planning stage of annual seed production

by SPMDC, 2) multiplication stage for basic and standard seeds, 3) seed certification stage at mainly SCS and 4) Seed distribution stage with attention to farmers and private sectors' participation.

It was also agreed that the Project should facilitate Public-Private Partnership for achieving the national target. Effective collaboration with other relevant initiatives taken by government of Sri Lanka

2.2. Summary of the Project

The project for Enhancement of Production System of Certified Vegetable Seed in Sri Lanka, a Technical Cooperation Project, is implemented with the objective of improving the production system of certified vegetable seed in the target areas. It is expected that the after completion of the Project, it will contribute to increase availability and use of certified vegetable seeds in the country. Table 4 shows outline of the Project.

Table 4 Outline of the Project

Overall Goal	Availability and use of certified vegetable seed in the whole country is increased
Project Purpose	Production system for certified vegetable seed is improved in the target areas
Outputs	1. Planning capacity of SPMDC for seed production and distribution is improved
	2. Vegetable seed production techniques are improved in both public and private sector
	3. Vegetable seed quality control techniques are improved in both public and private sector
Period of cooperation	14 May 2012 to 13 May 2017 (Five years)
Implementing Agency	Department of Agriculture (DoA)
Cooperation Agency in Japan	Ministry of Agriculture, Forestry and Fisheries
Project area	1. Kundasale Government Seed Farm and surrounding area 2. Aluttharama Government Seed Farm and surrounding area 3. Mahailuppallama Government Seed Farm and surrounding areas 4. Nikaweratiya, SPMDC Regional Office and surrounding areas
Target Groups	- Around 100 staff of DoA and other related institutions, including

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	SPMDC, SCPPC, government seed farms, Seed Certification Services (SCS), Seed Testing Laboratory (STL), seed sales centers - Around 100 households of government contract seed growers - Staff of private companies and contract seed growers
Relate Projects of JICA	- Grant aid a technical cooperation project for Plant Genetic Resource Center (1988 – 1995) - Dispatch of JICA long-term experts to Horticulture Research and Development (HORDI) (1999) - JICA Country Focused Training on "vegetable seed production" (2003 – 2007) and follow-up schemes for SCS, HORDI and government seed farms - Provision of equipment under 2nd Kennedy Round (2KR) project for government seed farms

Implementing Structure of the Project

The project is led by the Director General of Agriculture of DoA. The core counterpart organizations of the Project are; SPMDC together with its Regional offices of Deputy Director of Agriculture of SPMDC, Government Seed Farms, DoA Sales Outlets; and Seed Certification Service (SCS) and Seed Testing Laboratories (STL) under SCPPC. Project activities are carried out in collaboration with Horticultural Crop Research and Development Institute (HORDI), Extension & Training Centre (ETC) and Socio Economics & Planning Centre (SEPC) of DoA.

Participation of Private Sector to the Project

Private companies engaging in seed production and handling play a significant role in vegetable seed production industry in the country. It is expected that the private companies would play an important role in the project and also to be benefitted by the project.

Project Areas

At the time of project planning, both Japanese and Sri Lankan sides agreed that field activities shall be started at Kundasale and Aluttharama, since highest priority was given to these two areas by DoA for seed production in the country; and project areas of Mahailuppallama and/ or Nikawaratiya shall be considered as additional project area(s) from the 3rd year of the Project in accordance with the Project progress[1]. However, at the first JCC

[1] Record of Discussion signed by JICA Sri Lanka Office, Ministry of Agriculture of Sri Lanka, Ministry of finance and Planning of Sri Lanka on 29th, February 2012.

meeting on December 2012, it was decided that the field activities of the Project would be conducted at the four places from the beginning because Mahailluppallama and Nikawaratiya have many contract growers for vegetable seed and it was important to provide training programme for them from the beginning of the Project.

3. Methodology of Review

3.1. Method of data collection analysis

The Team reviewed relevant documents and collected information through interviews and discussions with JICA experts, officers of the Sri Lankan counterpart agencies and other stakeholders of the Project. The Team confirmed the progress of the Project based on the PDM version 4 and the PO version 4, which were approved at JCC meeting on July 4, 2014 (see ATTACHMENT 3), which was the latest version at the time of the Mid-term Review, and analyzed the Project from the viewpoints of (a) achievements of the Project, (b) implementation process and (c) the five evaluation criteria as per the following table:

Table 5 Five Evaluation Criteria

Criteria	Definition
1. Relevance	Degree of consistency of the Project with respect of development assistance and priority of policies of the target group, the recipient, and JICA.
2. Effectiveness	A measure of the extent to which the Project attains its objectives.
3. Efficiency	Efficiency measures the outputs -- qualitative and quantitative – in relation to the inputs. It is an economic term which is used to assess the extent to which aid uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted.
4. Impact	The positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main impacts and effects resulting from the activity on the local, social, economic, environmental and other development indicators.
5. Sustainability	Sustainability is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn. Projects need to be environmentally as well as financially sustainable.

3.2. Items Evaluated and Indicators

Achievements of the Project were measured in terms of Inputs, Outputs, Project Purpose, and Overall Goal in light of the Objectively Verifiable Indicators of the PDM version 4.

3-3. Limitation of the Review and Evaluation

The Mid-term Review Team found that meaning of several indicators for Outputs, were not clear. Therefore, the Team reviewed the level of progress of these indicators by re-wording them, by identifying things the Project really tried to achieve to create the expected outcomes.

The Team had interviews and discussions with most of the senior and middle-level managers, and some technical officers in the counterpart organizations. Exchange of information among the Team, especially between Sri Lankan members and Japanese members were very useful and important. Therefore, information provided from the Sri Lankan counterpart organizations in DoA was comprehensive in general. However, opportunities made available for the Team to have discussions with representatives of private sector seed producers and contract seed growers were very few. The team had discussion only 6 private companies and 4 contract seed growers. Therefore, there is a possibility that the information the Team obtained from these two parties were not sufficient to understand the situation comprehensively.

4. Project Performance and implementation process

4-1. Input

(1) Japanese side

Table 6 shows plan and actual input from Japanese side. See details in Attachment-4.

Table 6 Input – Japanese side

Inputs	Plan	Actual (as of end-June. 2014)
(1) Experts	222 man-months in total Long-term: 3 persons • Chief advisor /Certified seed production system • Seed testing/ Training • Project coordinator/Seed production Short-term: • Seed testing • Seed health	104.2 man-months in total Long-term: 4 persons (95.8 man-months) • Chief advisor/ Certified seed production system • Seed testing • Seed production • Project coordination/ Training Short-term: (8.4 man-months)

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Inputs	Plan	Actual (as of end-June. 2014)
	• Plant pathology • Farmers economy and farm management • Market analysis • Post harvesting technology of seed and others	• Vegetable seed production planning • Seed health • Plant pathology • Seed distribution and sales • Plant pathology • Quality seed evaluation
(2) Training in Japan/ third countries	Field of training: Seed production and certification (No plan for the numbers)	Training in Japan: 18 persons Training in Third Countries (Thailand): 2 persons Total 20 persons
(3) Equipment	Vehicles, sprinkler irrigation systems, drip irrigation systems, equipment for seed processing and testing	A drip irrigation system, nursery house, equipment for seed testing, research and others. 17 million LKR in total
(4) Project Cost	360 million JPY	104 million JPY

Experts

JICA planned to dispatch three long-term JICA experts for the Project. However, it was decided to increase the number of experts into four at the first JCC meeting held on December 2012. It was because volume of work for the expert on Project coordinator/Seed production had been increased as a result that the Project started working at four sites, instead of two, which was originally planned. The new expert on project coordination/ training assumed her duty in May 2013.

The long-term JICA expert on seed testing/ training completed his assignment in May 2014. It was decided not to assign his successor as technical transfer from Japanese side to SCS had been completed mostly as seed testing was conducted by STL according to the rules of ISTA (International Seed Testing Association) and further improvement was made in their work as a result of suggestions and training conducted by the long-term expert. Therefore, it was decided that thereafter, technical cooperation would be conducted mainly to the area of seed health and random sampling by short-term JICA experts.

A Sri Lankan consultant was employed from July 2013 to assist the JICA Experts.

Training in Japan/ third countries

As Table 7 shows, 18 persons participated in training in Japan and 2 persons participated in Thailand as of the end of June 2014. See details in Attachment-4.

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Table 7 Training in Japan and Thailand

Name of the training course	No. of participants	Training conducted in:
Seed administration	8	Japan
Vegetable seed production	5	Japan
Seed testing	3	Japan
Seed health	1	Japan
Plant pathology	1	Japan
International vegetable training course	2	Thailand

(Source: JICA Expert Team)

The Mid-term Evaluation Team obtained opportunities to have interviews with some of the participants of the training and found that the training was useful for them to update their knowledge and improve their skills. Some commented that it was encouraging and impressive to know the way Japanese people are working hard and efficient.

It is particularly notable that DoA made a decision to expand its capacity on testing of seed health, by constructing a building for laboratory, especially after a staff of seed health unit submitted a proposal for the expansion as a result of the training in Japan.

It was a disappointment for JICA that two participants, Director of SCPPC and a General Manager of a private company, were retired several months after the training. An Assistant Manager of a private company was resigned and an officer-in-charge of STL is on leave at this moment.

Equipment

Table 8 shows equipment purchased by JICA as of the end of June 2014. Total cost for the equipment was 17 million Sri Lanka Rupees.[2] All equipment and tools are utilized well and maintain in a good condition. See detail in Attachment-4.

Table 8 Equipment procured by JICA

Items	Usage
Nursery house, a drip irrigation system with water pump and pump house, planting trays, digital cameras, GPS	Seed production
Microscope camera, electric balances, magnifier lamps, optics carrier, HP meters, germination papers and other tools and	Seed testing

[2] Exchange rate of 1JPY=1.2464LKR (Central Bank of Sri Lanka on August 1st, 2014) was applied for the equipment purchased in Japan.

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equipment for seed testing,	
Microscope digital camera, compact rotary microtome, system microscope, moisture meter and others	Research with HORDI
Computers, a photocopy machine, air conditioners, a projector, office furniture and stationeries	Project office

(Source: JICA Expert Team)

JICA is going to procure several more tools and equipment, such as seed grinders and an incubator for seed testing by the end of 2014 and in 2015 respectively. A color sorter, a seed extractor, a seed coating machine and a gravity separator for seed processing were planned to be purchased in 2012. However, they were not purchased yet due to long delays in the procurement procedure, including decision of specifications by Technical Committee for purchasing of equipment of DoA, obtaining budget allocation for import taxes and duties by DoA, and obtaining price quotation for import items by JICA Expert Team. DoA and the JICA Expert Team are working hard to complete the process by March 2015. It was mutually decided by DoA and JICA Expert Team that they were not going to purchase vehicles as it was found to be difficult for DoA to obtain budget allocation for import taxes and duties for the time of vehicles needed for the Project.

Project cost

Project cost of Japanese side was planned as 360 million Japanese yen. Project cost as of the end of August 2014 was 104 million Japanese yen. It includes local cost of 21 million Sri Lankan Rupees.

(2) Input – Sri Lankan side

Table 7 shows plan and actual input from Sri Lankan side.

Table 9 Input – Sri Lankan side

Inputs	Plan	Actual (as of June. 2014)
(1) Assignment of Counterpart officers	<Project Director and Managers> - Project director: Director-General of DoA - Project managers: Directors of SPMDC and SCPPC <SPMDC> Staff of VSC, government seed farms, regional centers and seed	As planned 32 persons in total

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Inputs	Plan	Actual (as of June. 2014)
	processing centers and deputy directors of the regional centers <SCPPC> Staff of SCS head office and SCS regional centers and STL <Others> Staff of HORDI, SEPC, ETC, Agrarian Service Center under Ministry of Agrarian Services and Wildlife and others	
(2) Project Office	Project office in the premises of DoA, electricity, office furniture and internet connection	Project office in the premises of SCPPC. Basic office furniture and electricity and internet connection for the office.
(3) Facilities and equipment	Training space, equipment, instruments, tools, spare parts and any other facilities and equipment necessary for project implementation other than those provided by Japanese side	Classrooms, tools and materials for training, including seeds, pots, fertilizer, tea and refreshment and others necessary for training.
(4) Project cost	Local cost necessary for project implementation, including per-diem and travel allowance for domestic training for counterpart officers, electricity for project office and others	Total 2.8 million LKR as of the end of June 2014, including actual expenses for electricity, water and a security guard for the project office, and value for office rent. Per-diem and travel allowance for domestic training was provided. Necessary taxes and duties for equipment and facility purchased by the Project.

Assignment of counterpart officers

The counterpart officers started participating in the project activities in August 22nd, 2012 at the time of the Kick-off Meeting of the Project, around 3 months after the JICA long-term experts arrived in the country in May 14th, 2012. This delay was caused because they were busy for preparation of an event for celebrating 100 years anniversary of DoA and arrangement of around 150 million numbers of seed packs for *Devi Negma* programme[3]: and had difficulty in finding a time to arrange and participate in a kick-off meeting.

[3] Devi Negma: a livelihood programme conducted by Ministry of Economic Development of Sri Lanka.

Arrangement of a project office

There was a delay in arrangement of a project office. It was planned to be arranged in the premises of SPMDC as soon as the JICA long-term Experts arrived in the country in May 14th, 2012. However, there was no arrangement for the office at that time. Subsequently, DoA decided to arrange an office space for the Project in the office building of SCPPC as it was difficult to find a suitable space for an office in the premises of SPMDC. Two office rooms were made available for the JICA Experts after a renovation work was almost completed in August 2nd, 2012. Arrangement of telephone and internet facility and iron bars for the doors at the entrance of the office rooms for protection were made thereafter and completed only in January 2013.

Facilities and equipment

Classrooms, tools and materials for training, including seeds, pots, fertilizer, tea and refreshment and others, which are necessary for conducting training programmes. JICA Expert Team spent for some materials and tools necessary for training in the farm of North Western Provincial Council in Wariyapola as DoA could not make an arrangement for the cost for trainings conducted not in their farms.

Project cost

Project local cost, including per-diem and travel allowance for domestic training for counterpart officers, electricity for project office and others were provided by DoA as planned. There seems that DoA and JICA long-term experts were not aware that DoA should pay taxes and duties, including import taxes and VAT necessary for procurement of equipment and facility of the Project[4]. This was one of the causes that DoA took around one year to obtain budget allocation for taxes and duties for purchasing of seed processing machineries to be imported from abroad.

4-2. Activities

Project activities for Output 1 and 2 were conducted; however with some delays. Project activities for Output 3 were conducted as planned. Delay in commencement of the project activities and delays in procurement of some equipment and machineries gave a negative influence to the progress of the project activities.

[4] The Record of Discussion signed at the commencement of the Project explain that tax exemption for the equipment shall be arranged by government of Sri Lanka. There is no clause for payment of taxes and duties by DoA in PDM and ex-ante evaluation report.

Activities for Output 1

Six activities were planned to be conducted for Output 1 "Planning capacity of SPMDC for seed production and distribution is improved". Table 10 shows a summary of progress of the activities

Table 10 Progress of the Activities for Output 1

<table>
<tr><th>Activities</th><th>Achievement</th><th>Progress</th></tr>
<tr><td rowspan="2">1-1 Conduct regular meetings and joint workshops between the government and private sector</td><td>Project monthly meetings were held every month with participation from public and private sectors. Four basic seed production seminars were held around one month before commencement of cultivation season.</td><td>Conducted as planned and to be continued.</td></tr>
<tr><td><No. of participants for the Basic Seed Production Seminars>
<table><tr><th rowspan="2">Cultivation season</th><th rowspan="2">Date</th><th colspan="3">No. of participants</th></tr><tr><th>Gov. officers</th><th>Private sector</th><th>Total</th></tr><tr><td>Yala 2013</td><td>2013.02.22</td><td>44</td><td>39</td><td>83</td></tr><tr><td>Maha 2013-14</td><td>2013.08.23</td><td>29</td><td>33</td><td>62</td></tr><tr><td>Yala 2014</td><td>2014.02.06</td><td>58</td><td>28</td><td>86</td></tr><tr><td>Maha 2014-15</td><td>2014.08.13</td><td>60</td><td>20</td><td>80</td></tr></table></td><td></td></tr>
<tr><td>1-2 Conduct a marketing survey and review the current balance between production and distribution in the target areas</td><td>A local consultant of JICA Expert Team completed a baseline survey, including survey on use and marketing of seeds, in September 2012. A short-team JICA expert on vegetable seed production planning completed a marketing survey in September 2013.</td><td>Completed.</td></tr>
<tr><td>1-3 Establish a database on vegetable seed production, imports, distribution, and stock position for both the government and private sector</td><td>Series of meetings for development of "seed-related database creation" were held. Contents for the system were discussed and decided. An IT company was selected in July 2014 and is working for development of the system.</td><td>Conducted as planned.</td></tr>
<tr><td>1-4 Develop Maha and Yala programmes for seed production based on the database and review of the previous season plan</td><td>Seed production programmes were developed for every cultivation season but not based on the database as it was not operated yet.</td><td>Not conducted yet.</td></tr>
</table>

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1-5 Evaluate the present situation of seed sales and develop an improvement plan	A short-team JICA expert conducted a survey and review present situation of seed distribution and sales. Considering the recommendations of the JICA expert, SPMDC submitted a report including a plan for improvement of sales and distribution in September 2014.	Completed.
1-6 Implement pilot activities at model DoA Sales Centres based on the plan	SPMDC and the JICA Experts decided to improve 2 sales centers, Batalagoda and Wagolla, among 8 in the project area. They visited these centers in August, 2014*.	Conducted as planned and to be continued.

*Note: SPMDC implemented the following activities during the time from 2012 to August 2014 in the country; a) two awareness creation programmes, b) opening of 9 new sales centers, c) purchasing of a seed packing machine d) mobile sales promotion campaign and e) introduction of new packs. These activities were conducted not as the project activities but conducted as a part of their ordinary work.

Activities for Output 2

Five activities were planned to be conducted for Output 2 "Vegetable seed production techniques are improved in both public and private sector". Table 11 shows a summary of progress of the activities.

Table 11 Progress of the Activities for Output 2

Activities	Achievement	Progress
2-1 Review the present situation of hybrid, basic and standard seed production (including baseline survey)	JICA Expert Team and counterpart officers visited the government seed farms, private seed companies and seed producer's farms to study present situation and technical levels. A local consultant of JICA Expert Team completed a baseline survey, including survey on use and marketing of seeds, in September 2012.	Completed.
2-2 Introduce appropriate equipment and facilities for seed production and up-grade the seed processing complex at Government Seed	A survey was conducted to identify and estimate the price of necessary facilities and equipment for the government seed farms. Technical committees were formed to decide specifications. Two nursery house, planting trays and a drip irrigation system for 5 acres of land with a water pump and a pump house were purchased and installed in Kundasale farm.	Around one year delay.

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<table>
<tr><td>Farms based on 2-1</td><td></td><td></td></tr>
<tr><td>2-3 Conduct practical training on seed production for technical officers from the government and private sectors, and contract seed producers</td><td>Series of training programmes were conducted in 3 government farms in Yala 2013 and in Yala 2014. The training programmes were conducted in all four target area in Maha 2013/14. A training programme on hybrid seeds and pollination (1,141 man-days) was conducted in August 2013 in addition. 1,141 persons in total participated from private and public sectors in the training as of the end of July 2014.</td><td>Conducted as planned and to be continued.</td></tr>
<tr><td></td><td colspan="2"><Record of seed production training programmes>
<table>
<tr><th>Items</th><th></th><th>Yala 2013</th><th>Maha 2013-14</th><th>Yala 2014*</th></tr>
<tr><td>Kundasale</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Number of days conducted</td><td></td><td>6 days</td><td>4 days</td><td>5 days</td></tr>
<tr><td>Number of Participants for each day</td><td>-Officers
-Gov. contract farmers</td><td>15, 14, 16, 15, 17
13, 7, 8, 0, 3, 8</td><td>13, 12, 11, 17
0, 11, 4, 17</td><td>24, 26, 24, 14, 23
20, 10, 4, 3, 4</td></tr>
<tr><td>Aluttharama</td><td></td><td></td><td></td><td></td></tr>
<tr><td>No. of days conducted</td><td></td><td>5 days</td><td>5 days</td><td>3 days</td></tr>
<tr><td>Number of Participants for each day</td><td>-Officers
-Gov. contract farmers</td><td>17, 16, 12, 14, 15
7, 5, 4, 7, 6</td><td>23, 15, 16, 14, 21
11, 3, 7, 7, 2</td><td>18, 20, 18
14, 11, 6</td></tr>
<tr><td>Mahaillyppallama</td><td></td><td></td><td></td><td></td></tr>
<tr><td>No. of days conducted</td><td></td><td>5 days</td><td>4 days</td><td>4 days</td></tr>
<tr><td>Number of Participants for each day</td><td>-Officers
-Gov. contract farmers
-Private sector</td><td>19, 19, 18, 19, 15
29, 24, 10, 13, 22</td><td>18, 18, 19, 14
17, 11, 11, 9</td><td>16, 22, 24, 20
2, 2, 8, 2
10, 9, 12, 7</td></tr>
<tr><td>Nikawaratiya</td><td></td><td></td><td></td><td></td></tr>
<tr><td>No. of days conducted</td><td></td><td></td><td>3 days</td><td></td></tr>
<tr><td>Number of Participants for each day</td><td>-Officers
-Gov. contract farmers</td><td></td><td>15, 14, 6, 3
24, 15, 17, 5</td><td></td></tr>
<tr><td>One day F1 training</td><td></td><td>21 (for officers)</td><td></td><td>23 (for private sector)</td></tr>
</table>
*Note. as of end of August 2014</td></tr>
<tr><td>2-4 Develop a technical manual on seed production for seed producers</td><td>JICA Expert initiated writing of the first draft pages while obtaining opinions on the structure from SPMDC. Photos and illustrations needed for the manuals are being collected.</td><td>Conducted as planned and to be continued.</td></tr>
<tr><td>2-5 The trained technical officers from the government and trained farmers give on-farm guidance on standard seed production for present and potential contract seed producers*</td><td>The Mid-term Review Team had interviews with field officers and other senior managers of SPMDC and did not find evidence that the technical officers were giving on-farm guidance on the techniques introduced in the training to the contract farmers.</td><td>Delayed around one year.</td></tr>
</table>

*Note: Meaning of activity 2-5 is not clear and therefore, was understood as "Existing contract farmers and farmers who might be engaged in seed production in future are applying techniques introduced in the seed production training programmes of the Project by obtaining on-farm guidance from technical officers".

Activities for Output 3

Five activities were planned to be conducted for Output 3 "Vegetable seed quality control techniques are improved in both public and private sector". Table 12 shows a summary of progress of the activities.

Table 12 Progress of the Activities for Output 3

<table>
<tr><th>Activities</th><th>Achievement</th><th>Progress</th></tr>
<tr><td>3-1 Conduct an evaluation survey on the present procedures and facilities in seed certification system, and develop an improvement plan</td><td>JICA Expert Team and counterpart officers of SCPPC visited seed testing laboratories of public and private sectors. The JICA Expert made an observation of testing activities at STL at Peradeniya for a few months. Documentation of a paper on suggestions for improvement was completed by November 2013.</td><td>Completed.</td></tr>
<tr><td>3-2 Develop a technical manual and teaching materials on seed testing</td><td>The following teaching materials and operation manuals were prepared by the JICA Expert Team: (a) operation manuals of electronic balance and measuring pH of germination papers, (b) seedling evaluation manual, and (c) teaching materials for seed testing procedures and seed evaluation. Necessary instructions were made by the JICA Expert Team for SCS to document a handbook on seed testing procedure.</td><td>Conducted as planned and to be continued.</td></tr>
<tr><td rowspan="2">3-3 Conduct training on seed quality control (field inspection, seed sampling and seed testing) for technical officers from the government and private sectors</td><td>Training programmes were conducted as the following table shows. Training for field inspection was conducted as a part of seed production training.</td><td>Conducted as planned and to be continued.</td></tr>
<tr><td><Training programme on seed testing>
<table><tr><th>Name of the training programme</th><th>No. of programme or days</th><th>No. of participants</th></tr><tr><td>Seed testing procedures</td><td>4 programmes</td><td>91</td></tr><tr><td>Seedling evaluation</td><td>3 programmes</td><td>32</td></tr><tr><td>Seed health testing</td><td>10 days</td><td>129</td></tr></table></td><td></td></tr>
</table>

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<table>
<tr><td>3-4 Provide training for seed producers to prepare quality seed lots</td><td>Training for seed producers for preparation of quality seed lots (post-harvesting) was conducted as a part of seed production training in September 2013 and March-May, 2014.</td><td>Conducted as planned and to be continued.</td></tr>
<tr><td>3-5 Implement monitoring on seed quality control (random sampling)</td><td>Random sampling test has been conducted by SCS as their regular duty shown in the following table; however the number of random sampling test for vegetable was very limited. JICA requested SCPPC to submit an action plan on 'monitoring of seeds (random sampling)' in December 2013; however it has not been submitted. It was explained by SCPPC that they have a difficulty to expand number of conduct random sampling tests, as they do not have a budget allocation for purchasing seed samples in the market.
<Number of random sampling test conducted by SCS>
<table><tr><td></td><td>Paddy</td><td>OFC</td><td>Vegetables</td><td>Total</td></tr><tr><td>2013</td><td>6</td><td>10</td><td>0</td><td>15</td></tr><tr><td>2014</td><td>2</td><td>0</td><td>5</td><td>7</td></tr></table>(Source: Tabled by Mid-term Review Team based on the information submitted by SCS in September 2014.)</td><td>Not conducted.</td></tr>
</table>

Activities conducted by DoA and others related to the project

DoA conducted residential induction training for 85 newly recruited staff in January and March 2014. JICA Long-term Experts conducted a part of the training programme.

Training programme for contract seed growers, including lectures and field visit was conducted by JICA Ex-participants Association of Agriculture with financial assistance of JICA Sri Lana Office in August 2013 (training programme for vegetable seed producers at Nikawaratiya), December 2013 (training programme on vegetable seed production technology) and May 2014 (Field visit to seed testing lab at Peradeniya).

4-3. Output

4.1.1. Output 1

Output 1 is "Planning capacity of SPMDC for seed production and distribution is improved". The follow table shows the 3 indicators for Output 1 and status of achievement.

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indicators	Progress
1-1. Solutions to the issues presented by the private sector in the workshop are proposed	In good progress
1-2. Seed production plan for basic and standard seed are formulated considering development of private sector.	In progress with a delay
1-3. The number of DoA Sales Centres improved based on the plan is increased.	No progress yet

Indicator 1-1 aims at promoting active communication between private and public sectors on seed production. It also expects that DoA respond to the request from the private sector in a responsible way. As a result of periodical meetings of Basic Seed Production Seminars organized by the Project, staff of DoA and representatives from private sector were provided more opportunities for sharing information, expressing their ideas and problems and making request to other party on production of seed.

For example, DoA provided the private sector with information such as volume of production and stocks of the basic seeds in the previous year at every seminars. Staff of SCPPC and SPDMC and JICA experts made presentations on topics such as, present situation of importation of seeds, implementation of seed act, seed pathology and others, which are important for the private sector. Lists of requirement amount of basic seed became available to SPMDC on time and at once, as the lists were submitted by the private sector at the time of the meeting; whereas they were used to be submitted irregularly throughout the year before the Project. DoA took some steps to meet the various requests made by the private sector at the seminar, such as developing F1 hybrid varieties, solutions for a problem for some varieties of breeder seeds and others.

There is a prospect that the seminars are going to be held continuously until the end of the Project because staff of DoA and private sector representatives, to whom the Mid-term Review Team had interviews, appreciate the seminars, and feel important for its continuation. However, there are some concerns and things to be improved in terms of sustainability of this activity. For example, (a) some participants from private sector might be losing their strong interest to the seminar from the fact that the number of participants is decreasing; (b) only a few participants from the private sector expressed their views while others are keeping quiet at the seminar: and (c) JICA Expert Team, not the staff of SPMDC, is taking initiatives for organizing the seminars.

Meaning of indicator 1-2 is not very clear and therefore, was understood as "Production programme for basic seed were formulated in consideration of the requirements by the

private sector". It was also understood that this indicator expects that the production programme is formulated with more accuracy and efficiency by utilizing more information from private sector and use of database system to be developed by the Project.

Even before the Project, SPMDC was developing basic seed production programme considering the requirement of the private sector. However, after the Project, as mentioned above, by obtaining lists of requirement of basic seed from the private companies in time at the Basic Seed Production Seminars around one month before the cultivation seasons, DoA became able to develop the programmes more accurately and efficiently.

It was expected that accuracy and efficiency of SPMDC on planning of basic seed and standard seed production programme as well as their daily work of information management, will be improved by introduction of a database system. However, it is not happening yet, as the database system was not installed yet as mentioned earlier[5].

DoA feels a need to improve accuracy of planning of seed production also by obtained more information from private sector. They wish to have a three-years forecast of requirement of basic seeds from private sector for better planning. However, it seems difficult for private companies to do so, as market is unpredictable and always changing. They also need to have volume of production, sales and stocks from private sector. SPASL members provided a part of such information; however, other companies, mostly small-sized, are not willing to do so by being afraid of losing their competitiveness in the market.

Meaning of indicator 1-3 is not very clear and therefore was understood as "number of DoA sales centers, which were improved by DoA based on the experience of improving the two sales centers conducted as an project activity. There was no progress yet for this indicator. DoA need to develop an action plan, discuss it with the JICA Expert Team and implement it without a further delay.

<Summary of Output 1>

It is important that as a result of promotion of private-public partnership by the Project, they obtained more opportunities to share information and conduct discussions. It is noteworthy that lists of requirement of basic seeds, which were submitted from the private companies to SPMDC anytime throughout the year, were become available for SPMDC at

[5] Mid-term Review Team observed that senior officers of SPMDC sometimes took a lot of time to produce a summary of information on seed production requested by the Team. It is expected that by introduction of a database system, more information, for example, volume of crops and varieties, which are on process of cleaning and testing, will be available. Information will be provided in real time, whereas they have to wait to receive it by fax or E-mail currently. The time for summarizing and analyzing the data will be also shortened[5]. It is also expected that SPMDC will upload some important information of seed production to their website for the use of private sector in future.

the Basic Seeds Production Seminars, which helped SPMDC's planning of basic seed production programme. Introduction of a database system to SPMDC would further improve efficiency in the planning of seed production programme. It is crucial to achieve Output 1 to strengthen public-private partnership further and to install the database system without a delay. It is also needed that the staff members of SPMDC, who engage in operation of the system, to master the operation and usage of the system and that SPMDC to expedite the activities for improvement of two model sales centers so that others will also be improved by DoA by the end of the Project.

4.1.2. Output 2

Output 2 is "Vegetable seed production techniques are improved in both public and private sectors". The followings are three indicators for Output 2 and their status of achievement.

indicators	Progress
2-1. 75% of participants who attended trainings on vegetable seed production pass the exams	In progress partly
2-2. 25% of participants who attended trainings on vegetable seed production adopt techniques introduced by the Project	In progress with a delay
2-3. The achievement rate of the planned volume is increased on basic seed production of major vegetable crops as listed in the table[6] in the targeted Government Seed Farms	Not in progress

Indicator 2-1 expects that the participants of the seed production training programmes understood what was taught in the training well. It was planned to measure the level of understanding by the test, which was conducted at the end of the training. The Project consider that a technical officer of DoA understood the training up to the expectation of the Project and passed the test if he/she gives more than 6 correct answers out of 7 questions.

According to the above-mentioned criteria, it was found that only 51 per cent of the technical officers passed the test. However, Mid-term Review Team found some officers, who participated in the training programme, showed a good understanding and interest to the techniques. Therefore, it was difficult for Mid-term Review Team to access the level of understanding of the technical officers in this regard.

The Project consider that a contract farmer understood the training up to the expectation

[6] There are ten vegetable crops targeted by the Project: beans, bitter gourd, brinjal (eggplant), capsicum, cucumber, okra, pumpkin, snake gourd and tomato.

of the Project and passed the test if he/she gives more than 4 correct answers out of 7 questions. It was found that 80 per cent of the contract farmers passed the test.

Some staff of SPMDC head office and senior officers of the regional offices commented that the programme was not very attractive as it was too basic and included techniques they knew. Some of them added that they were expecting something new or advanced from the training.

Indicator 2 expects that the techniques introduced in the seed production training programmes are utilize by the participants of the training in their seed production work. The following techniques were mainly introduced in the training. These are the techniques that JICA Expert Team identified as most important and urgent to apply in seed production for improving the quality, after they analyzed current practices in the government seed farms and contract seed growers:

(a) Sowing and raising nursery using seedling holders (trays and pots)
(b) Watering before sowing or transplanting
(c) Composition of nursery soil medium
(d) Nursery management
(e) Raised beds
(f) Soil sterilization
(g) Crop rotation
(h) Planting density (single planting)
(i) Application of soil cover (mulching)
(j) Application of additional fertilizer in line
(k) Fruits and buds thinning and pruning
(l) Using of net
(m) Artificial pollination

Mid-term Review team observed a few example of application of these techniques during its visit as follows:

In Aluttharama government seed farm, "(a) sowing and raising nursery using seedling holders" had been practiced in a small scale. They used plastic bags instead of trays for the seedling holders, as the provision of trays by SPMDC head office is in the process. They introduced a net for a cultivation of hybrid cucumber seed production plots first time in the current season, which is listed as (l) in the above-mentioned list.

In the government seed farm at Mahailuppallama, (l) using of net was applied for cultivation of bitter gourd and (i) application of soil cover (mulching)" was applied for brinjol (eggplant) in the last season.

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. In the government seed farm at Kundasale, a staff of SPMDC, who had participated in the Country Focused Training, had been practicing "(a) Sowing and raising nursery using seedling holders" even before the Project. It was expanded successfully as a result the Project provided two rain-sheds and several numbers of trays to the farm. Environment and production capacity of the farm was improve as a result that a drip irrigation system was installed by the Project.

SPMDC does not have a seed farm at Nikawaratiya although it is one of the target areas of the Project. The seed production training was conducted at a farm of North Western Provincial Council at Wariyapola. None of the techniques was practiced at the farm, according to the information provided by JICA Expert Team

JICA Expert Team had found that some contract seed growers, who participated in the training, were using some techniques introduced in the training. Mid-term Review Team visited a contract grower in Mahailuppallama has been applying several techniques including (a) and (h) and was very satisfied with the result. Another contract grower, who supply seed to a private company was applying (a).

Field staff of the private sector companies, who participated in the training programme advice their contract growers to apply some techniques, including (a). They are appreciating the benefit as a result.

From the above observations, it can be concluded that the techniques were applied in very limited extent in the government seed farms and to some extent by contract seed growers and private sector. Mid-term Evaluation Team found from the interviews with the participants of the training programme that they appreciated and acknowledged the importance of the techniques. Some of them even commented that they are practiced in most of the country in the world. However, it seems to be difficult for them to change their practice in farms immediately after the training.

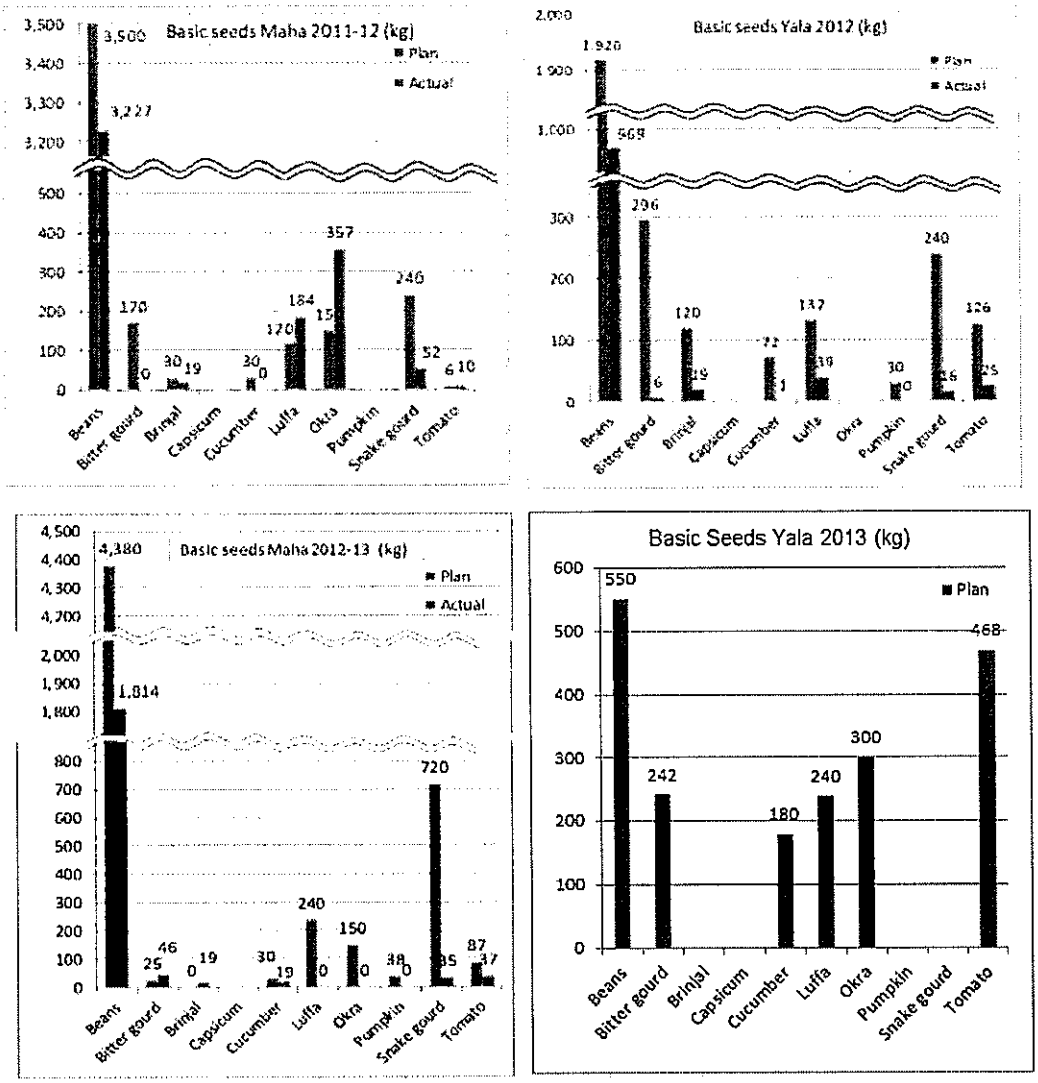
Senior officers of SPMDC pointed out some reasons for the difficulty, such as shortage of labour in the government farms at the time of planting, soil condition, climate and others. The JICA Expert Team observed a vague feeling of hesitance for a change in the staff of SPMDC, including field officers; to change the practice they had been conducted for years and decades, to a new one. It was also found that field staff in the government seed farms seems to need a specific instruction from the management to change the practice. Team also found that senior officers of SPMDC were not sure about benefit or practicability of some techniques: for example, "(h) single planting" and "(i) soil cover", for which may need more discussion and demonstration.

As for "(k) training and thinning", JICA Expert Team and HORDI had conducted a research in 2012 and 2013 at Kundasale and Aluttharama seed farms for verification. The

research work was completed with a successful result. HORDI is going to collect two seasons' of data, conduct an economic analysis, obtain approval from a Technology Release Committee of DoA, and issue a recommendation.

In summary, indicator 2-2 was achieved only to a limited extent at this moment.

Indicator 2-3 expects improvement of achievement rates (plan vs. actual production) of the basic seed production programme. As shown in Figure 1, actual amount of production did not meet the plan, except a few crops, every season; and there was no clear tendency for improvement. According to SPMDC, draught, heavy rain, pest, diseases and damage by wild animals were the direct main reasons that they could not produce planned volume in recent years. Another reason could be lack of basic facility in the government seed farms, such as rain-sheds for nurseries and irrigation systems. Present cultivation practices, which are not quality and productivity-oriented, should be one of the reasons, too.



Note: Summary of information in a manner that the Mid-term Review Team had requested was not available for actual production amount of Yala 2013, plan and actual amount of 2013/14 Maha.
Source: Illustrated by Mid-term Review Team based on the information submitted by JICA Expert Team and SPMDC.

Figure 1 Plan and Actual Amount of Production of Basic Seed by SPMDC

However, SPMDC explained that there had been no serious shortage of the basic seeds, except a few varieties, in recent years, as they maintain enough amounts of buffer stocks, which can be stored around two to three years.

<Summary of Output 2>

It is appreciated that the seed production training programmes were conducted as planned. However, at this moment, level of understanding for the various techniques introduced in the

training by the participants, especially the government officers, are not up to the expected level and application of the techniques at their workplace is still in a limited scale. Some of the counterpart officers pointed out some practical difficulties to apply these techniques in their farms. There are some questions about the feasibility of the techniques[7]. There seems to be a hesitation among them to change their cultivation method, which had been practiced for years. Therefore, Output 2 is not progressing up to the expected level.

Achievement rates of production of basic seed did not show an improvement. However this figure seems to be not an appropriate indicator to show the level of achievement of Output 2, which aims at technical improvement: because technical improvement would not improve the achievement rate significantly, as direct causes to determine production are, draught, heavy rain, pest, disease and damage by wild animals. In addition to that, SPMDC aims at supplying basic seed to the seed producers anytime they requested by maintaining adequate amount of buffer stock of them; and consider achievement of the planned amount of production every season not as crucial, as it is somewhat unconformable.

4.1.3. Output 3

Output 3 is "Vegetable seed quality control techniques are improved in both public and private sector". The followings are four indicators for Output 3 and their status of achievement.

Indicators	Progress
3.1. Solutions proposed in the improvement plan are implemented in seed testing process	In progress
3.2. 75% of participants who attended trainings on seed testing pass the exams	In progress
3.3. The annual number of basic and standard seed sample is increased	(Need more information)
3.4. Monitoring for major vegetable crops as listed in the table is implemented and increased	Not in progress

Indicator 3-1 was almost achieved as SCPPC is implementing most of the suggestions made by JICA Expert Team. They are following ISTA rules for seed testing more precisely

[7] According to the interview the Mid-term Review Team had with the Director, HORDI, among the techniques introduced in the training programme, "(k) Fruits and buds thinning and pruning" needs HORDI's verification and recommendation of the Technical Release Committee for the government seed farms to apply; and other techniques are well known and do not need HORDI's verification.

and seedling evaluation became further standardized as a result of the training programmes and on-the-job training conducted by the JICA Expert Team.

It is expected that SCPPC to continue their effort by conducting regular training to their staff. There is an expectation that seed testing work will become more accurate and efficient by procurement of some more equipment and tools. Seed health testing, which is not conducted in the country, is also expected to be conducted by staff of the Seed Health Unit, by the end of the Project, with assistance be continued by the JICA Expert Team.

Indicator 3-2 is to measure level of understanding of the contents of the training programmes conducted by the Project by the participants of the programme. The trainings on seed testing procedures, seedling evaluation and seed health were organized by JICA Expert Team for the staff of STL. This indicator was achieved so far as almost all the staff passed the exam[8].

Indicator 3-3 aims at increase of number of samples brought to SCS for testing with an expectation that production of basic seed and standard seed by DoA is increased and private sector seed producers is more encouraged to bring their product for DoA certification. As Figure 2 shows, there was an increasing tendency of number of samples in 2012 and 2013, however, number of samples in 2011 was smaller than that of in 2010. It needs more record to keep observations in future. Reasons for increase in 2012 and 2013 should be studied, too, to verify whether the increase was realized as a result of the improvements the Project expected as mentioned above, especially as the numbers might be increased as a result the samples for *Devi Neguma* programme were brought to STL in these years.

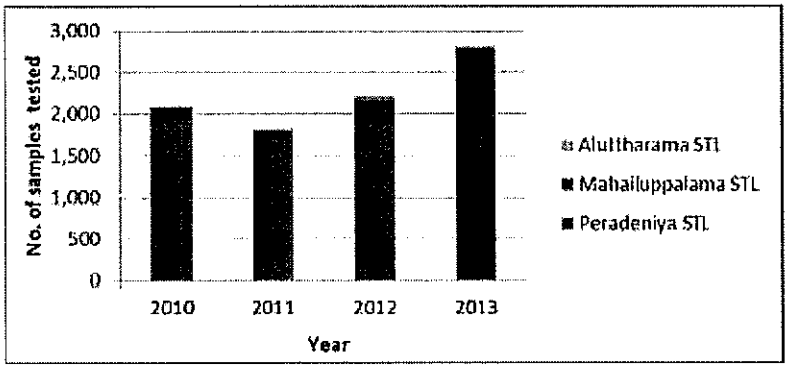


Figure 2 Number of Vegetable Seed Samples brought for Testing of STL

(Source: STL)

[8] A quiz was given to the participants to evaluate their knowledge at the end of the training programme. Fifty three participants out of 58 in total answered correctly.

Indicator 3-5 was added in December 2013 as JICA Consultation Mission and counterpart officers identified important of having more number of random sampling for strengthen quality control of vegetable seed in the market. As mentioned in "3-2 Activities", number of random samples was still very small and was not increasing. SCS carries out random sampling test in a small scale, mainly because it does not have a budget allocation for purchasing seed samples, which is very expensive for some crops.

<Summary of Output 3>

The Project has shown a steady progress in the area of seed testing. It is expected to continue the improvement especially in the area of seed testing and technical transfer to the private sector. Number of the random test samples, will not be increased significantly in future, too, as SCS does not have a budget allocation for the testing. However, it seems that the number of random test samples may not indicate the level of achievement of this Output, as DoA does not place a great emphasis on it in their services of quality control, but conducting other activities, such as awareness creation and education programmes for the stakeholders as a priority, at the moment. The Mid-term Review Team also found that it is important for SCPPC to conduct a survey firstly to learn present situation of commercial seeds in the market with an assistance of the Project.

4-4. Project Purpose

Project purpose is "Production system for certified vegetable seed is improved in the target areas". Indicator for Project Purpose is "By the end of the Project, production of certified seed volume of major vegetable crops as listed in the table[9] in the target areas is increased"

The wording in the indicator; "production of certified seed volume" was not clear and therefore was understood as "volume of seed produced by DoA and volume of standard seed produced by private companies and then certified by DoA".

Information of total volume of seed lot, which passed SCS laboratory test was needed for 10 crops to study about the above-mentioned indicator. However, unfortunately, it was not available by the time the Mid-term Review Team completed this report.

As information was not available as mentioned above, and it is too early to forecast whether the Project will achieve Project Purpose by the completion of the Project, the Mid-term Review Team just analyzed contributing factors and concerns the Project has at this moment, for achieving the Project Purpose.

[9] See footnote 6 in this report.

Several positive changes were observed at this moment, which would contribute for the Project to achieve the Project Purpose successfully; for example, information sharing between public and private sectors was promoted, and technical capacity of the staff, who is engaging in seed testing is expanding as planned.

However, techniques introduced by the seed production training have not been applied to their seed production in a progressive manner. It will be need for JICA Expert Team and SPMDC to scrutinize the content, teaching method and evaluation method, including test paper, of the present training programme for improvement of the programme in accordance with needs and applicability.

4-5. Implementation Processes

(1) Revisions of PDM

PDM of the Project was revised mainly in the following manner:

(a) Several activities and indicators in the PDM were modified at the Kick-off Meeting of the Project held in August 2012, as a result of baseline survey.

(b) Project Purpose was revised, Output 4 was integrated in the activities of Output 1, and an activity of monitoring random sampling was added in December 2013, at the time the JICA Consultation Mission was visited the Project.

(c) "Certified/quality vegetable seed" in the narrative summary of Project Purpose was revised as "certified vegetable seed" in the JCC meeting held in July 2014.

(2) JCC Meetings

JCC meetings were conducted two times a year as planned and chaired by the Secretary of Ministry of Agriculture or his representative. Table 14 shows the date, major topics and number of attendants of the meetings.

Table 13 Summary of JCC meetings

Date	Major topics	No. of attendants
7 December 2012	Revision of R/D and PDM	13
21 June 2013	Project Progress Report and Future Activities	16
9 December 2013	Report of the JICA project consultation team	27
4 July 2014	Report of Prof. Nishikawa, Short-term Expert on Seed Quality Evaluation	23

(Source: JICA Expert Team)

(3) Project Management Unit

At the time of project planning, it was planned to establish a Project Management Unit

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(PMU) to coordinate related government institutions and monitor the Project progress. However, PMU was not formed and monthly meeting with participation of key stakeholders seems to be substituting its function.

(4) Monthly Meetings

The first monthly meeting was held on September 26th, 2012. The meetings were held every month thereafter, except March 2013, June 2013 and June 2014. Discussion on progress and issues of the Project, presentation on the findings in the trainings in Japan, presentation and discussion on findings of the JICA short-term Experts and the JICA Consultation Mission and discussion on revision of PDM were conducted in the meetings. Representative of SPASL participated in the meeting regularly.

(5) Factors Contributed to Progress of Project Implementation

(a) Mid-term Review Team observed that some of the ex-trainees of the Country Focused Training of JICA conducted during 2003-2007, was playing an active and important role in a practical session in the seed production training programme. Training programmes on seed production and certification was conducted for contract seed growers and DoA officers by JICA Ex-participants' Association, of which consists of ex-trainees of various training programmes conducted by JICA as mentioned earlier in "3-2 Activities". In this way, ex-trainees of JICA are contributing in implementation of the project activities and project-related activities.

(b) One of the reasons that the technical transfer in the area of seed testing was almost completed earlier than the plan was that at the commencement of the Project, the staff of STL had basic techniques for seed testing and was conducting the testing in accordance with rules of ISTA.

Factors Hindered Progress of Project Implementation

(a) Mid-term Review Team found that several important actions, expected to be taken by DoA, took a long time to realize or had not been realized yet. For example, it was decided at the monthly meeting held in November 2013, that a technical circular would be issued by DoA to instruct the government seed farms to apply the techniques introduced by the Project at the government seed farms. However, it is not issued yet. In December 2013, JICA Consultation Mission and SPMDC agreed to implement activities on improvement of DoA sales center; and SPMDC agreed to submit a proposal for improvement. It was in September that a document including a list of activities identified to be implemented was submitted to the JICA Expert Team.

(b) There was a delay in the commencement of the Project. A kick-off meeting was held

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after around 3 months from the day JICA Expert Team arrived in the country. A Project Office was provided with around 3 months' delay. There are also along delay for procurement of equipment and facility as mentioned in "3-1 Input". These delays gave negative influence for the progress of the project activities and achievement of Outputs.

5. Analysis by the by Five Evaluation Criteria

5.1. Relevance <High>

(1) Consistence with Development Policy of Sri Lanka

At the time of project planning, it was evaluated that the Project Purpose was consistence with middle- and long-term national development plan of Sri Lanka[10] mainly because the plan stated that: (a) one of the problems the agriculture sector faces was inadequate use of quality seeds and planting materials, (b) one of the goals of the government's agriculture policy was to realize use of high yielding seeds and improved water management and (c) shortage of quality seeds and planting material remain a major issue in increasing production and productivity, as mentioned in "2.1 Background of the Project". At the time of the Mid-term Review, the national development policy of the country is remaining same and therefore, the Project is still consistent with development policy of Sri Lanka.

(2) Consistence with Development Needs of Sri Lanka

The above-mentioned national development policy emphasized the needs of developing the government seed farms with modern technology aimed at increasing the yield and importance of maintaining buffer stocks of certified seeds to ensure uninterrupted supply of seeds. Output 2 of the Project is promoting technological improvement, not modern, but basic and crucial for increasing quality of the seeds, which will contribute to increase the yield. Output 3 of the Project aims at improving planning capacity of the production of seed, which will contribute for maintaining proper volume of buffer stocks. In this way, the Outputs of the Project have consistency with the development needs of the country stated in the policy document.

(3) Consistence with Japanese Assistant Policy

"Sri Lanka Country Assistance Policy" (June 2012) of Ministry of Foreign Affairs of Japan, which is the Japanese policy of assistance to Sri Lanka at the time of the Mid-term Review stated the following ae three most important areas for assistance; (a) advancement of economic

[10] *Mahinda Chintana "The Visio for the future"* (2010 – 2016), 2010.

development, (b) assistance for development of less-developed area and (c) Reduction of vulnerability. Assistance for industrial development with more emphasis on agriculture; and development of agriculture-related infrastructure were included in the above-mentioned (b). "Development of agriculture, fisheries and rural villages programme" was planned to be implemented for improving productivity and profitability in rural areas, as a part of "Project Implementation Plan" (2012), in accordance with the policy of "(b) assistance for development of less-developed area". This Project is implemented as a part of the above-mentioned programme.

As mentioned in Table 4, Japan had been assisting Sri Lanka in the area of vegetable seeds for a long time in various ways; therefore, this Project has consistency with the preceding programme.

In this way, Project Purpose of the Project still has consistency with national development plan and development needs of Sri Lanka and assistance policy of Japan. Therefore, relevancy of the Project remains high.

5.2. Effectiveness <Fair>

The Project has made a certain progress for achieving the project purpose, especially in the area of planning capacity of SPMDC and seed testing conducted by SCPPC. As a result of promotion of private-public partnership by the Project, they obtained more opportunities to share information and conduct discussions. It is noteworthy that lists of requirement of basic seeds, which were submitted from the private companies to SPMDC anytime throughout the year, were become available for SPMDC at the Basic Seeds Production Seminars. Introduction of a database system to SPMDC would further improve efficiency in the planning of seed production programme. However, progress in the area of improvement of seed production technique was making a slow progress, as techniques introduced by the Project have not been applied for seed production of SPMDC yet. Therefore, at this moment, effectiveness of the Project is fare.

5.3. Efficiency <Fair>

The planned activities, except a few, were conducted as planned, although commencement of the Project was delayed. However, delays in procurement of machinery and equipment, as mentioned in "3-1 Input" gave a negative influence for the Project to achieve the Outputs. Technical transfer for seed testing for Output 3, to the staff of STL was planned to be conducted for five years, however has been almost completed at this moment.

It was expected that SPMDC head office will coordinate its institutions under its preview, such as SPMDC Regional Offices, government seed farms, seed processing center and

provincial council for implementation of project activities. However, currently, JICA Expert Team has to communicate with these institutions, especially at the time of planning, implementation and follow-up of the training programme in most of the time; this is not efficient and coordination role of SPMDC for the project need to be improved.

When it comes to the schedule, the Project plans to complete the activities within the period of cooperation. With regard to the project cost, there is no concern that the actual expenses will exceed the planned amount.

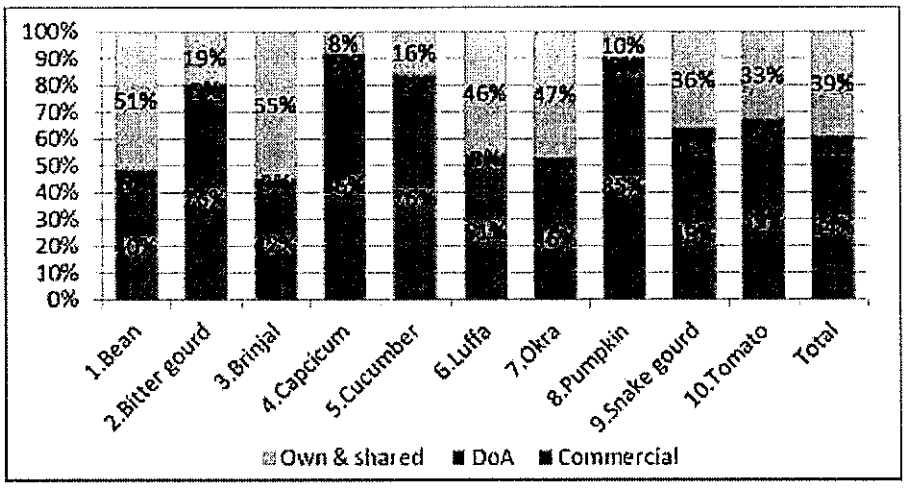
Therefore, so far, efficiency of the Project is fair.

5.4. Impact <No information>

Overall goal of the Project is "Availability and use of certified vegetable seed in the whole country is increased". Indicator for Overall Goal is "By 3 years after the Project completion, the use of certified standard seed of major vegetable crops as listed in the table is increased".

The word "certified standard seed" was understood as DoA standard seed and commercial seed certified by DoA.

As for the use of DoA standard seed, the Project has a baseline data. As Figure 3 shows, according to the baseline surveys conducted by the JICA Expert Team, in the target area of the Project in 2014. Percentage of farmers using DoA standard seed was seven per cent in average for ten crops targeted by the Project.



Source: Illustrated by Mid-term Review Team based on the information in Table 13 of *Farmer saved seed, version 3*, May 28, 2014, JICA Expert Team

Figure 3 Percentage of farmers using different categories of seed in the year (Yala 2013 + Maha 2013/14) (N=2,176)

There is no information available for the use of DoA certified commercial seed, which is a

part of the "commercial" seed shown blue in Figure 3.

Mid-term Review Team has a difficulty to evaluate a possibility for the Project to achieve the overall goal after three years of project completion, as baseline information for DoA certified seed was not available and updated information, to see the tendency of increase, was not available for both DoA standard seed and DoA certified commercial seed.

Mid-term review Team did not identify any other positive or negative impact created by the Project.

5.5. Sustainability <Fair>

(1) Policy

National development plan, which places emphasis on increase high quality seed and improve seed production, will not be changed in future as increasing productivity in agriculture will remain as one of the most important policy of the government of the country.

DoA is working on preparation of the regulations for full-implementation of the Seed Act 2003. This includes the regulations with regard to the quality of seeds in the market. Enforcement of the regulation will support sustainability of the effect of the Project.

(2) Institutional Aspect

Organizational structure and places of responsibility of SPMDC and SCPPC is well-defined. They had a serious shortage for staff for some years ago during the time the country had a war situation[11]. Mid-term Review Team was informed that DoA would recruit some more new staff in future, too. Therefore, it is expected that institutional capacity of SPMDC and SCPPC will be strengthened in future, which is a positive factor for sustainability of the effect of the Project.

At the moment, JICA Expert Team is playing a leading role in planning, implementation and follow-up of the Basic Seed Production Seminar, training programme on seed production conducted by the Project and involvement of SPMDC to these processes is limited so far, although it is expected for SPMDC to continue and expand these activities after the Project. This is a concern in respect of sustainability for the effect of the Project.

(3) Technical aspect

The seed production techniques introduced by the Project are basic and simple. The field officers of SPMDC, agricultural officers and instructors are university graduates or diploma

[11] As for SCPPC, Seed Certificating and Plant Protection Center has 10 vacancies for 56 approved cadre; SCS has one vacancy for 116 approved cadre: and Plant Genetic Resource Center has one vacancies for 94 approved cadre and other institutions do not have any vacancies. As for SPMDC, detail information was not submitted to the Mid-term Review Team.

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holders specialized in agriculture. There is no problem for them to apply the techniques in the government seed farms and to provide guidance for contract seed growers if there is an instruction and supervision from the higher authority. However, it is a problem that SPMDC has not identified sets of techniques they are going to adopt in their seed farms and to the contract seed growers as a result of the Project.

There is no critical concern about the technical capacity of the staff of SCPPC, as they had basic technical capacity for seed testing even at the commencement of the Project and improved it further by the Project.

In-service training and induction training will be further important for SPMDC and SCPPC as they are going to recruit number of new staff in future. They have a system for such training, in which they can continue the training programme conducted by the Project. The Mid-term Review Team was informed that SCPPC conducted 2, 6 and 11 programmes in 2011, 2012 and 2013 respectively, which include in-service training, induction training and training for seed farmers and seed handlers in private sector[12].

(4) Financial aspect

It is a positive factor for sustainability of the effect of the Project that budget allocation for SPMDC for seed farm development and seed purchasing has been increased significantly after the end of the war situation although there was ups and downs in recent years (see Table 14).

Table 14 Budget Allocation for SPMDC for Seed Farm Development an Seed Purchasing Programme

(Unit: Million LKR)

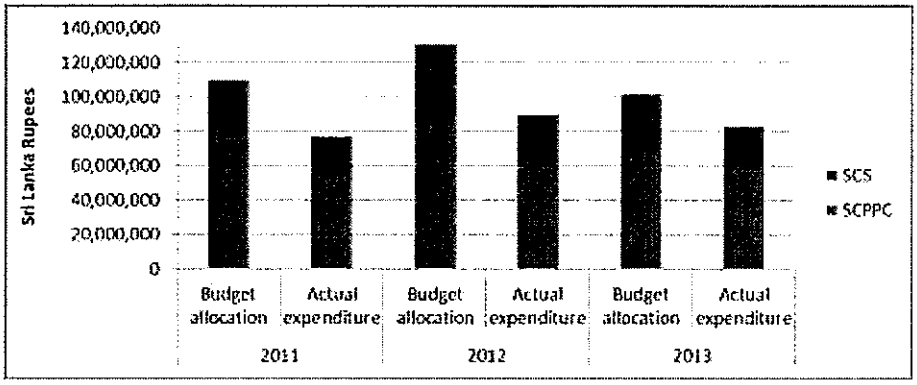
Year	2008	2009	2010	2011	2012	2013
Amount	115	137	177	496	745	479

(Source: SPMDC)

Table 15 shows budget allocation and actual expenditure for SCPPC and SCS in recent years. Amount of actual expenditure was smaller than that of the budget allocation, because disbursement of the budget sometimes delay. Sometimes, they were not able to complete all the planned activities due to unavoidable circumstances. According to the senior officers of SPMDC, there was no serious shortage for the budget allocation for them to implement planned activities throughout the year. For training programme, they utilize not only the recurrent budget allocated, but also budget allocated for Seed Act project and of Extension

[12] Record of in-service training conducted by SCPPC was not submitted for the Mid-term Review Team.

and Training Center of DoA.



Note: the figures excluded budget and expenditure for the projects of "strengthening seed certification" and "seed act – SCS)

Source: SCPPC

Figure 4 Budget Allocation and Actual Expenditure of SCPPC and SCS

6. Conclusion

The Project has been addressing to mainly three areas; planning, production and certification. Planning includes public-private seminars and database development, which are appreciated by the private sector as they provide more opportunities for information sharing. It is expected that continuous implementation of the seminars and introduction of database would further enhance the planning capacity of DoA as well as partnership between private and private sectors. Some improvements were made in seed testing and certification in the areas of seed testing procedures and seedling evaluation. It is expected for SCPPC to include training on these areas in the in-service and induction trainings by SCPPC for further improvement. As for seed production, training programmes were implemented in every season for government officers, contract seed growers and field staff of private companies. The training programmes were appreciated by the participants in general. However, the techniques introduced in the training have not utilized well at this moment. In order to improve the production system, it is necessary for SPMDC and the JICA Expert Team to scrutinize the contents and teaching methodology of the training programmes and reach a consensus on the way forward. Overall, the Project is making a progress towards attaining the project purpose of improving production system to some extent; however, to ensure effectiveness and sustainability of the Project, below recommendations should be carried out without a delay.

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7. Recommendations to DoA

(1) Organize Basic seed production seminars

Basic seed production seminars have been successfully carried out for the last four production seasons, and private sector stakeholders appreciate such an opportunity of information sharing. It is recommended that the DoA organize the seminar from next season in collaboration with JICA Expert Team from the planning stage. It is important that DoA continues its effort in strengthening trusts between public and private sectors, and in making the seminar more attractive to the private sector, considering the fact that the number of participants were reducing. It is also recommended that DoA to pay more attention to the smaller-sized seed producers, who have a certain volume of share of commercial seed in the market in total.

(2) Review the techniques introduced in the seed production training programme and issue a DoA Circular by middle of October, 2014, before Maha 2014/15.

Some of the seed production related techniques introduced by the seed production training programme of the Project are being utilized and applied by government seed farms and contract seed growers, such as using trays and pots for nursery. However, the application has not been promoted up to the expected level. It seems to be difficult for the field officers to change their practice in farms immediately after the training. JICA Expert Team observed a vague feeling of hesitance for a change among the officers of SPMDC. Some senior officers of SPMDC pointed out several reasons for the difficulty, such as shortage of labour in the government farms at the time of planting, soil condition, climate and others.

It is recommended that DoA, with a participation of JICA Expert Team to have a meeting by the end of September 2014, to discuss the set of techniques as to why they are important in seed production, and why they are not applied yet, and what are the solutions. Based on the consensus as a result of the discussion, techniques which all can agree for immediate adoption should be recommended to the seed farms by issuing a DoA Circular by middle of October, 2014, before commencement of Maha 2014/15. Likewise, subjects and contents of the seed production training and usage of technical manual, which are prepared by the JICA Expert Team on seed production should be scrutinized and updated by the counterpart officers of SPMDC and the JICA Expert Team, considering the specific needs of the target groups.

(3) Issue DoA Recommendation on fruits & buds thinning and pruning by end of 2015

A research work for training and thinning of fruits and buds for brinjal was completed by HORDI and JICA Expert Team with a successful result. The technique is expected to

contribute increase quality of seeds of SPMDC. To realize this without a delay, it is necessary for a Technology Release Committee of DoA to issue a recommendation by the end of 2015, after completing further data collection by HORDI and an economic analysis by SEPC.

(4) Take more leadership in the seed production training programmes and assign appropriate counterpart officers as trainers

Planning and management of the seed production training programmes were conducted with a leadership of the JICA Expert Team. As this training will be incorporated into the in-service trainings of SPMDC after the Project, it is necessary that planning and management of the training programmes are gradually handed over to SPMDC from JICA Expert Team. It is recommended that SPMDC to undertake responsibility of planning and management of the training from next trainings programmes.

Similarly, currently, JICA Expert Team is taking major role for giving lectures in the training programmes. It is expected that this role, too, should gradually handed over to Sri Lankan side as the Project is already in the latter half of the project period. It is effective if two to three counterpart officers, especially those who learned farming practices in Japan by participating in JICA Country-focused Training, are assigned for this purpose, to work as trainers by taking turns.

(5) Ensure Regional Offices of SPMDC to make follow-up visits to the contract seed growers who participated in seed production trainings

Regional Offices of SPMDC have a role of visiting contract seed growers regularly to provide advice necessary for their production of quality seeds. In order to facilitate utilization and application of the techniques introduced in the seed production training by the seed growers, it is important that the Regional Offices of SPMDC to monitor and give necessary advices to them during their regular visits by making a special attention to the application of the techniques. Therefore, it is also recommended for SPMDC to instruct the Regional Offices to conduct follow-up visits for this purpose.

Based on the decision taken at the JCC meeting, SEPC is planning to conduct an independent evaluation for the Project, including contract seed growers' application of techniques introduced by the Project. The result of the independent evaluation should be shared among the stakeholders of the Project for improvement. It is recommended to implement such an independent evaluation before the terminal evaluation, so the result can be reflected to the terminal evaluation results.

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(6) Conduct "a survey on seed quality available in the market (Seed Quality Survey)" and formulate an action plan

It was suggested that random sampling tests should be expanded to enhance quality control of seeds in the market. However, due to lack of budge allocation of purchasing seeds, random sampling tests have not been conducted in a substantial manner by SCS. Alternatively, it was agreed during the mid-term review to conduct 'a survey on seed quality available in the market (Seed Quality Survey)' as a part of the project activities with an aim to understand current situation of vegetable seeds in the market. The survey will apply the stratified sampling method, and will include test and study on seed quality, packaging and labeling, registration and others for the ten crops targeted by the Project in the target area. It is expected that SCPPC to identify future direction for quality control of the seeds in the market and formulate an action plan accordingly. It is recommended to complete the survey by the end of November, 2014 so that the result of the survey would be utilized for the project activities during the rest of the project period.

(7) Put more focus to the private sector

The project aims at giving an impact to both public and private sector. However, so far, the Project placed a greater emphasis to conduct technical transfer to the public sector. To ensure the impact of the Project to the private sector, it is especially expected that SPMDC to encourage more number of participants from private sector to the seed production training programmes, and SCPPC to conduct training programmes for seed testing for private sector.

ANNEX-1 Schedule of the Med-term Review Team

No.	Date		Consultant (Ms. Tamura)	JICA (Mr. Tawa, Ms. Yokota)	Ministry of Agriculture, Forestry and Fisheries (Ms. Saito)	Review Team from Sri Lankan side			Place
						Dr. Chithrat (SCPPC)	Mr. Weerakoon (SPMDC)	Ms. Ayoni (SEPC)	
1	9/1	Mon	Move (Colombo-Kandy) Meeting / Interview with experts						Colombo/ Kandy
2	9/2	Tue	Interview with SPMDC,VSC, Government seed sales centre Interview with PDOA Interview with HORDI				O	O	Kandy
3	9/3	Wed	Interview with SCPPC, SCS, STL Interview with SEPC Interview with ETC			O		O	Kandy
4	9/4	Thu	Field visit to Aluttarama Interview with DD and AO, Farm Manager Interview with SCS, STL			O	O	O	Aluttharama
5	9/5	Fri	Visit to CIC, Samarakoon, Baurs etc. Visit to Government Seed Sales Centre, Kegalle			O		O	Kandy/ Kegalla
6	9/6	Sat	Documentation						
7	9/7	Sun	Documentation						
8	9/8	Mon	Documentation	Arrival to CMB					
9	9/9	Tue	Field visit to Nikaweratiya Interview with DD and Government seed sales centre Interview with Contract seed growers Interview with PDOA	Meeting at JICA Sri Lanka Office CC to ERD CC to SPASL Move (Colombo-Kandy)		O	O	O	Nikaweratiya
10	9/10	Wed	Meeting with experts and local consultant						Kandy
			Meeting with SPMDC, VSC, Seed sales centre Meeting with SCPPC, SCS, STL			O	O	O	
11	9/11	Thu	Field visit to Kundasale Interview with DD, Observing seed production training, Observing Processing Unit, Interview with SCS Government Seed sales centre & seed dealers			O	O	O	Kandy
12	9/12	Fri	Meeting with DG and C/Ps			O	O	O	Kandy
13	9/13	Sat	Internal MTG Documentation						Kandy
14	9/14	Sun	Internal MTG Documentation Move to Dambulla		Arrival to CMB Move to Dambulla				Kandy
15	9/15	Mon	Field visit to Mahailpallama Interview with SCS, STL Interview with DD, Observation of the farm Interview with Contract seed growers and self seed producers			O	O		Dambulla
16	9/16	Tue	Field visit to CIC and Hayleys farm and seed dealers			O	O		Dambulla
17	9/17	Wed	Interview with HORDI			O			Kandy
			Discussion with C/P on draft review report			O	O	O	
18	9/18	Thu	JCC			O	O	O	Kandy
19	9/19	Fri	Meeting with Secretary of Agriculture						Kandy/ Colombo
			Move (Kandy-Colombo), Report to JICA Office						
				Departure from CMB					

ANNEX-2 List of persons consulted

Name	Title	Organization
Dr. Rohan Wijekoon	Director General	Department of Agriculture
Mr. Sunil Govinnage	Director	SPMDC
Mr. Thilakarathne	Additional Director	SPMDC
Mr. O. P. K. Chandrasiri	Director	SCPPC
Dr. Rohini Nayanakkara	Deputy Director	SCS
Mr. N. P. S K Karunarathna	AI	SCS, Aluttharama
Mr. D. M.N. Ekanayaka	TA	SCS, Aluttharama
Mr. Wasantha Herath	OIC/ AI	SCS, Kundasale
Mr. Kulatunga	OIC/ AI	SCS, Mahaillupallama
Ms.C Wasanthi Gunasekara	OIC	SCS, Palwehera, Bambulla
Dr. Lakmal	Research Officer	Seed Health Unit
Ms. Yasantha	OIC	STL
Mr. J. W. K. Samaranayake	AO	STL, Aluttharama
Mr. Wijesekara	Director	ETC
Dr. Hemal Fernando	Director	HORDI
Dr. K.A.N.P. Bandara	Additional Director	HORDI
Mr. Stanley Perara	Director	SEPC
Dr. Kamal Karunagoda	Agriculture Economist	SEPC
Mr. Priyantha Wemarasena	Deputy Director	Regional Office of SPMDC, Aluttharama
Mr. Senevirathne	Deputy Director	Regional Office of SPMDC, Kundasale
Ms. D N M C K Nawarathna	AO	Regional Office of SPMDC, Kundasale
Mr. S M S B S Koralegedara	AI	Regional Office of SPMDC, Kundasale
Mr. H P J S Gunawardana	AI	Regional Office of SPMDC, Kundasale
Mr. H M J Herath	Deputy Director	Regional Office of SPMDC, Mahailuppalama
Mr. K M Pushpakumara	AI	Regional Office of SPMDC, Mahailuppalama
Ms. Subasinghe	Deputy Director	Regional Office of SPMDC, Nikawaratiya
Mr. Dissanayake	TA	Government Seed Farm, Aluttharama
Mr. Upali Gunathilaka	Farm Manager	Government Seed Farm, Kundasale
Mr. Abeyrathne	Contract seed grower	Mahailuppalama
Mr. Imaka Harischandra	Contract seed grower	Mahailuppalama
Mr. A. M. Abeywickrama	Contract seed grower	Nikawaratiya
Mr. Senevirathne Bandara	Contract seed grower	Nikawaratiya
Mr. Muthubandara Dissanayae	Provincial Director of Agriculture	Department of Agriculture, Provincial Council, Central Province
Mr. Kithsiri, Director	Director	Department of agriculture, Provincial Council, North Western Province
Mr. Sirimewan Herath	Deputy Director	Department of agriculture, Provincial Council, North Western Province
Mr. Aruna Wijekoon	Farm Manager	Department of agriculture, Provincial Council, North Western Province
Mr. Leo Nanayakkara	Chairman	SPASL (Managing Director of Best Seeds)
Mr. Tilina Bandaranayaka	Assistant manager	Best Seeds Co. (Pvt.) Ltd.
Mr. Hemantha Galagoda	Senior Manager	CIC Seeds (Pvt) Ltd.
Mr. Anjana Leelaratne	General Manager	Seeds and Planting Material for National Agriculture Development, CIC Agri Business
Mr.Sunil Gamaethige	General Manager	Haylays Agriculture Holdings Ltd.
Mr. Senarath Samarakoon	Owner	Samarakoon Agriculture Services
Ms. Himali Perera	Assistant Director	Department of External Resources, Ministry of Finance & Planning
Ms. J.D. Gayoma Senanayake	Assistant Director	Department of External Resources, Ministry of Finance & Planning
Dr. Junji Takahashi	Chief Advisor/ Certified Seed Production System	JICA Expert Team
Mr. Kyota Iizuma	Seed production/ Seed sales	JICA Expert Team
Ms. Asano Usui	Project coordinator/ Traiing	JICA Expert Team
Dr. Hisatoshi Kaku	Plant pathology	JICA Expert Team
Dr. Sarath L. Weerasena	Local consultant	JICA Expert Team
AI: Agriculture instructor	AO: Agriculture officer	
OIC: Officer in-charge	TA: Technical Assistant	

ANNEX page 2

ANNEX-3 PDM and PO (Ver.4.0)

Project Design Matrix (PDM) Ver.4.0 of July 4, 2014

Project Title: Project for Enhancement of Production System of Certified Vegetable Seed in Sri Lanka
Duration: May 2012 to May 2017 (5 years)
Target Areas: Kundasale, Aluttarama, Mahailluppallama, and Nikaweratiya
Beneficiaries: DOA Officers (SPMDC, SCPPC, Government Seed Farms, and etc.), Private Companies, Government and Private Contract Farmers, and related Government Institutions (Provincial Department of Agriculture Officers)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
Availability and use of certified vegetable seed in the whole country is increased	By 3 years after the Project completion, the use of certified standard seed of major vegetable crops as listed in the table* is increased**	Records of VSC and SPASL	1. The Seed Policy which supports seed production is not changed 2. The Seed Act is amended 3. Regulations are established based on the amended Seed Act, and implemented
Project Purpose			
Production system for certified vegetable seed is improved in the target areas	By the end of the Project, production of certified standard seed volume of major vegetable crops as listed in the table* in the target areas is increased**	Records of SPMDC and SPASL	Necessary budgets and personnel for seed production and promotion after the Project completion are allocated by the Government of Sri Lanka
Outputs			
1. Planning capacity of SPMDC for seed production and distribution is improved	1-1. Solutions to the issues presented by the private sector in the workshop are proposed	1-1 Records of the Project	Necessary budgets and personnel for seed production are allocated by the Ministry of Agriculture during the Project implementation
	1-2. Seed production plan for basic and standard seed are formulated considering development of private sector	1-2 Maha and Yala programmes of SPMDC	
	1-3 The number of DoA Sales Centres improved based on the plan is increased	1-3 Records of the Project	
2. Vegetable seed production techniques are improved in both public and private sector	2-1 75% of participants who attended trainings on vegetable seed production pass the exams	2-1 Records of the Project	
	2-2. 25% of participants who attended trainings on vegetable seed production adopt techniques introduced by the Project	2-2 Records of the Project	
	2-3 The achievement rate of the planned volume is increased on basic seed production of major vegetable crops as listed in the table in the targeted Government Seed Farms	2-3 Records of SPMDC	
3. Vegetable seed quality control techniques are improved in both public and private sector	3-1 Solutions proposed in the improvement plan are implemented in seed testing process	3-1 Records of the Project	
	3-2 75% of participants who attended trainings on seed testing pass the exams	3-2 Records of the Project	
	3-3 The annual number of basic and standard seed sample is increased	3-3 Records of SCS/Testing Lab	
	3-4 Monitoring for major vegetable crops as listed in the table is implemented and increased***	3-4 Records of SCS/Testing Lab	

Activities		Inputs	
		Japanese Side	Sri Lankan Side
1-1	Conduct regular meetings and joint workshops between the government and private sector	**1. Dispatch of Japanese Experts**	**1. Assignment of Personnel**
1-2	Conduct a marketing survey and review the current balance between production and distribution in the target areas	(1) Long-term Expert: 4 persons (a. Chief Advisor/Certified Seed Production System, b. Seed Testing, c. Seed Production/Seed Sales, and d. Project Coordinator/Training) (2) Short-term Expert: Seed Testing (including field inspection), Seed Health, Plant Disease, Farmers Economy, Farm Management, Market Analysis, Post Harvesting Technology for Seed, and others (If necessary)	(1) Director General, DOA (2) Directors, SPMDC and SCPPC (3) C/Ps (4) Staff in related government institutions (as needed, ex. HORDI researchers)
1-3	Establish a database on vegetable seed production, imports, distribution, and stock position for both the government and private sector		
1-4	Develop Maha and Yala programmes for seed production based on the database and review of the previous season plan		
1-5	Evaluate the present situation of seed sales and develop an improvement plan	**2. Facilities and Equipment**	**2. Project Office**
1-6	Implement pilot activities at model DoA Sales Centres based on the plan (1-5)	Necessary equipment for the project activities (equipment for seed production, seed processing, seed testing, and etc.)	Necessary facilities such as electricity connection, furniture, Internet lines in the office space
2-1	Review the present situation of hybrid, basic and standard seed production (including baseline survey)		
2-2	Introduce appropriate equipment and facilities for seed production and up-grade the seed processing complex at Government Seed Farms based on 2-1	**3. Training Costs**	**3 Facilities and Equipment**
2-3	Conduct practical training on seed production for technical officers from the government and private sectors, and contract seed producers	C/P Training in Japan/third countries	Necessary training space, machinary, equipment, instruments, tools, spare parts, and any other necessary for the implementation of the Project other than one(s) provided by Japanese side
2-4	Develop a technical manual on seed production for seed producers	**4. Others**	**4. Local Costs**
2-5	The trained technical officers from the government and trained farmers give on-farm guidance on standard seed production for present and potential contract seed producers	Cost for Local Consultants and Local Staff	Necessary budget for the implementation of the Project (ex. Per diem & travel allowance for domestic training for C/P, electricity for the Project Office, and etc.)
3-1	Conduct an evaluation survey on the present procedures and facilities in seed certification system, and develop an improvement plan		
3-2	Develop a technical manual and teaching materials on seed testing		
3-3	Conduct training on seed quality control (field inspection, seed sampling and seed testing) for technical officers from the government and private sectors		
3-4	Provide training for seed producers to prepare quality seed lots		
3-5	Implement monitoring on seed quality control ***		

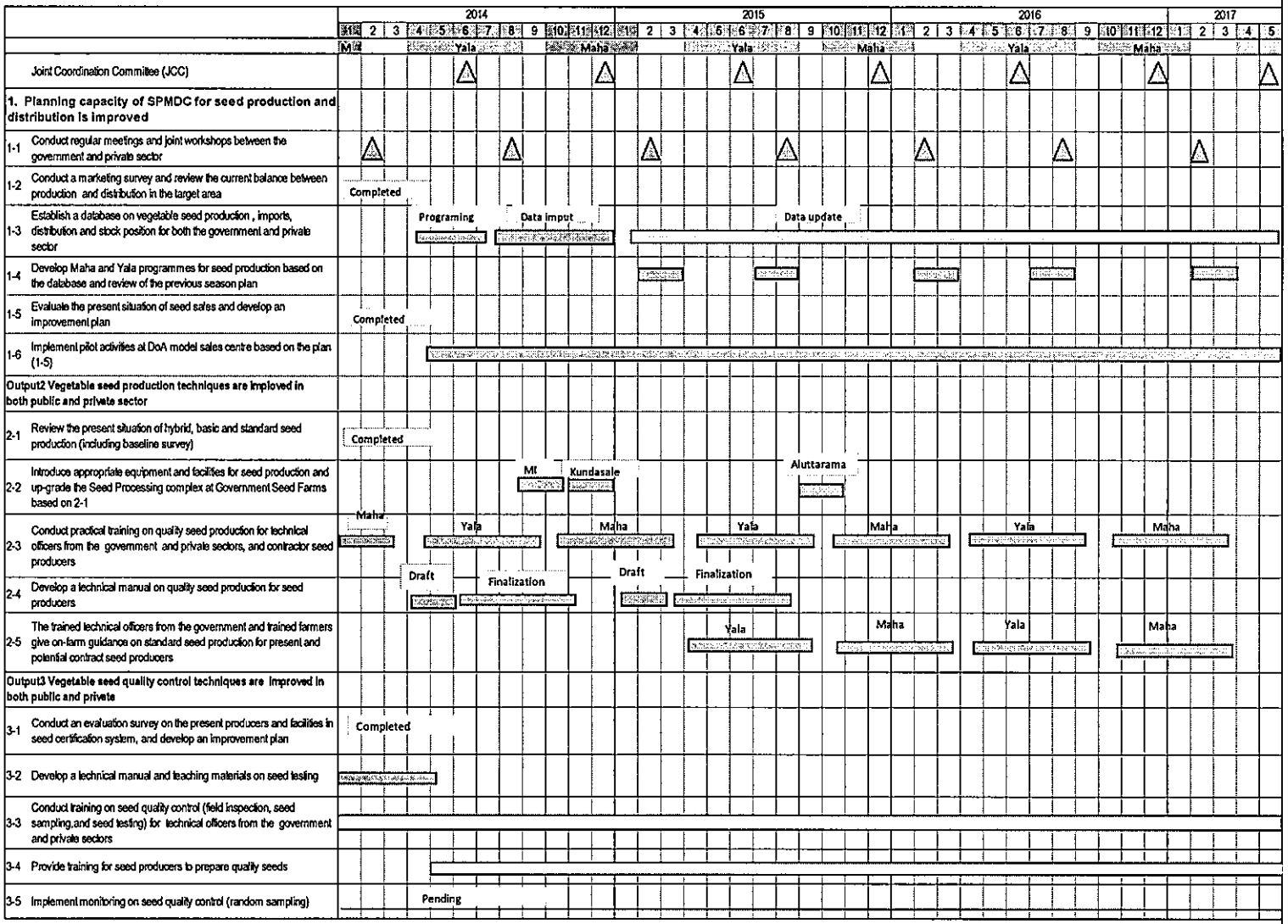
Pre-Conditions
1. Large natural calamities do not happen 2. Major pest and disease do not occur 3. The trained technical officers continue to extend acquired skills and knowledge to farmers
Participation of private sector in vegetable seed industry is ensured and promoted

* Major Vegetable Crops
1. Beans 2. Bitter gourd 3. Brinial 4. Capsicum 5. Cucumber 6. Luffa 7. Okra 8. Pumpkin 9. Snake gourd 10. Tomato

** Target % for Overall Goal and Project Purpose will be discussed at the time of Mid term review

***Action plan for 'Monitoring' is requested to be submetted by Sri Lankan side by the end of August, so it can be discussed during the course of the Mid-term Review.

PLAN OF OPERATION version 4



ANNEX-4 List of Input

ANNEX 4-1. Dispatch of JICA Experts

1-1 Short-term

No.	Name	Specialty	Period_from	Period_to	Days	Affiliation
1	Atsushi Suzuki	Vegetable Seed Production Planning	2012/8/28	2012/10/16	49 days	A&M Consultant Co., LTD
2	Masatoshi Sato	Seed Health	2012/12/17	2013/1/15	29 days	National Centre for Seeds and Seedlings
3	Hisatoshi Kaku	Plant Pathology	2013/1/6	2013/2/5	30 days	Sakata Seed Corporation
4	Nobuki Toyooka	Seed Distribution and Sales	2013/7/3	2013/9/3	62 days	Chuo Kaihatsu Corporation
5	Hisatoshi Kaku	Plant Pathology	2013/12/22	2014/2/8	48 days	Sakata Seed Corporation
6	Yoshiaki Nishikawa	Quality Seed Evaluation	2014/6/28	2014/7/4	6 days	Ryukoku University
7	Hisatoshi Kaku*	Plant Pathology	2014/8/3	2014/9/30	58 days	Sakata Seed Corporation
					282 days	

1-2 Long-term

	Name	Specialty	Period_from	Period_to	Days	Affiliation
1	Juniji Takahashi	Chief Advisor/Certified Seed Production System	2012/5/14	2014/11/13	913 days	Japan International Cooperation Agency
2	Kimikazu Ishikawa	Seed Testing	2012/5/14	2014/5/13	729 days	Ministry of Agriculture, Forestry and Fisheries
3	Kyota Iizuka	Seed Production	2012/5/14	2015/5/13	1094 days	
4	Asano Usui	Coordination/Training	2013/5/22	2015/5/21	729 days	M & Y Consultants Co., Ltd.

ANNEX 4-2. Assignment of Counterpart Personnel

No.	Name	Affliation	Areas of Speciality	Remarks
1	K.G. Sriyapala	Department of Agriculture	Supervision	
2	R. Wijekoon	Department of Agriculture		
3	G.M.W. Chitral	SPMDC	Seed production	SPMDC till July 2013
4	D. J. L. Sunil Govinnage			SPMDC fom August 2013
5	Gamini de Silva	SCPPC	Seed Certification	
6	O.P.K. Chandrasiri			
7	K.B.Wahundeniya	HORDI	Horticulture Research/Variety Development	Retired in May
8	H.H.D. Fonseka			
9	T.H.C.S. Perera	SEPC	Socio Economic and Planning	
10	W.G.M.Dayawansa	ETC	Extension and Training	ETC till October
11	R.S. Wijesekara			ETC from November
12	H.P.Thilakarathne	SPMDC	Seed production	
13	Gamini Weerakoon			
14	M.M.S. Bandara	DDA, Kundasale		
15	H.M.Upali Gnanathilaka	GSF, Kundasale		
16	W.M.I. Weerasekara	DDA, Aluttharama		
17	R.A.P.S. Wimalasena			
18	W.A.Karunarathna	GSF, Aluttharama		
19	H.M.J.K. Herath	DDA, Mahailluppallama		
20	T.M.K. Tennakoon	GSF, Mahailluppallama		
21	S.A.C.C. Subasinghe	DDA, Nikaweratiya		
22	R.Nanayakkara	SCS	Seed Certification	
23	S.A.M.R. Abeykoon	SCS		
24	H.M.W.A. Herath	SCS, Kundasale		
25	P.W.G. Jayarathne	SCS, Aluttharama		
26	L.H.P. Kulathunga	SCS, Mahailluppallama		
27	A.M.R.A. Ekanayake	SCS, Nikaweratiya		
28	Y.M.H. Liyagage	STL, Gannoruwa		
29	R.M.S. Ratnayaka	STL, Aluttarama		
30	J.W.K. Samaranayake			
31	T.D.M. Ramyalatha	STL, Mahailluppallama		
32	Leo Nanayakkara	SPASL	Public and Private Partnership	

ANNEX 4-3. Counterpart Staff Training

	Name of participant	Affiliation	Position at that time	Current Position	Field of training/ Name of the Course	Contents	Period_from	Period_to	Days	Implementing Institution
1	G. De Silva	Department of Agriculture	Director, SCPPC	Retired	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2012/10/13	2012/10/25	12 days	JICA, NCSS, MAFF, Takii Seed Co., etc.
2	G.W.R. Weerakoon	Department of Agriculture	Assistant Director, SPMDC	Same	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2012/10/13	2012/10/25	12 days	JICA, NCSS, MAFF, Takii Seed Co., etc.
3	U.M. Gunasinghe	Ceylon Agro Development Co.	General Manager	Retired	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2012/10/13	2012/10/25	12 days	JICA, NCSS, MAFF, Takii Seed Co., etc.
4	R.Nanayakkara	Department of Agriculture	Deputy Director, SCS	Same	Seed Testing	Practices on seed testing	2012/10/13	2012/10/27	14 days	NCSS, NIAS, Takii Seed Co., JICA, etc.
5	Y.H.M. Liyanage	Department of Agriculture	Officer in Charge, STL Peraden	Same	Seed Testing	Practices on seed testing	2012/10/13	2012/10/27	14 days	NCSS, NIAS, Takii Seed Co., JICA, etc.
6	R.M.S. Rathnayake	Department of Agriculture	Officer in Charge, STL Aluttara	Leave of Absence	Seed Testing	Practices on seed testing	2012/10/13	2012/10/27	14 days	NCSS, NIAS, Takii Seed Co., JICA, etc.
7	G.M.W. Chitral	Department of Agriculture	Director, SPMDC	Additional Director, SCPPC	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2013/6/30	2013/7/10	10 days	
8	O.P.K. Chandrasiri	Department of Agriculture	Acting Director, SCPPC	Same	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2013/6/30	2013/7/10	10 days	
9	P.W.N. Galagama	Hayleys Agriculture Holdings	Assistant Manager	Resigned	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2013/6/30	2013/7/10	10 days	
10	H.P. Thilakarathne	Department of Agriculture	Additional Director, SPMDC	Same	32nd International Vegetable Training Course in Thailand	Lectures and practical works on vegetable production	2013/9/15	2013/10/12	27 days	AVRDC
11	S.M.S.B.S. Koralegedara	Department of Agriculture	Agricultural Instructor, SPMDC (Kundasale Seed Farm)	Same	33rd International Vegetable Training Course in Thailand	Lectures and practical works on vegetable production	2013/9/15	2013/10/12	27 days	AVRDC
12	M.G.D.L Priyantha	Department of Agriculture	Research Officer, Seed Health Testing Unit	Same	Seed Health	Management for seed health testing	2013/9/16	2013/11/2	47 days	
13	D.A.P.G. Weerarathne	Department of Agriculture	Research Officer, HORDI	Same	Plant Pathology	Visit universities and institutions dealing with plant disease	2013/9/29	2013/10/12	13 days	
14	I.R. Jayasinghe	Department of Agriculture	Agricultural Instructor, SPMDC (Kundasale)	Assistant Farm Manager (Kundasale)	Vegetable Seed Production	Lectures and practical works on vegetable seed production	2013/10/20	2013/11/2	13 days	
15	A.P. Dikkumbura	Department of Agriculture	Agricultural Instructor, SPMDC (Mahailluppallama)	Agricultural Officer, SPMDC (Kantale)	Vegetable Seed Production	Lectures and practical works on vegetable seed production	2013/10/20	2013/11/2	13 days	
16	R.A.P.S. Wimalasena	Department of Agriculture	Agricultural Officer, SPMDC (Aluttarama)	Deputy Director, SPMDC (Aluttarama)	Vegetable Seed Production	Lectures and practical works on vegetable seed production	2013/10/20	2013/11/2	13 days	
17	W.K.A. Karunarathna	Department of Agriculture	Farm Manager, SPMDC (Aluttarama)	Farm Manager, SPMDC (Polonnaruwa)	Vegetable Seed Production	Lectures and practical works on vegetable seed production	2013/10/20	2013/11/2	13 days	
18	H.A. Karunarathna	Department of Agriculture	Agricultural Instructor, SPMDC (Nikaweratiya)	Same	Vegetable Seed Production	Lectures and practical works on vegetable seed production	2013/10/20	2013/11/2	13 days	
19	R.M.D.B Meegasmulla	Ministry of Agriculture	Secretary	Same	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2014/7/27	2014/8/2	6 days	
20	R.R. Wijekoon	Department of Agriculture	Director General of Agriculture	Same	Seed Administration (Seed Production, Technology and Policy)	Visit and observation of seed related institutions in Japan	2014/7/27	2014/8/2	6 days	

ANNEX 4-4. Training Programme implemented by the Project

	Year	Name of the Course	Period_from	Period_to	Days	No. of Participants	Target Participants	Remarks
1	2013	Seed Testing Procedure in Peradeniya	2013/5/6	2013/5/6	1 days	27	AIs (SCS), AIs (STL)	
2	2013	Yala Seed Productioin in Kundasale	2013/5/7	2013/9/13	5 days	116	AIs (Seed Farm), AIs (DDA), AIs (SCS), Contract Seed Producers	Crops: Tomato, Capsicum
3	2013	Yala Seed Production in Mahailluppallama	2013/5/8	2013/9/25	5 days	188	AIs (Seed Farm), AIs (DDA), AIs (SCS), AIs (STL), Contract Seed Producers, Private Company Officers	Crops: Tomato, Brinjal, Snake gourd
4	2013	Yala Seed Production in Aluttarama	2013/5/14	2013/9/11	5 days	103	AIs (Seed Farm), AIs (DDA), AIs (SCS), AIs (STL), Contract Seed Producers	Crops: Brinjal, Snake gourd, Watermelon
5	2013	Seed Testing Procedure in Aluttarama	2013/6/7	2013/6/7	1 day	15	AIs (SCS), AIs (STL)	
6	2013	Inspection of Electrical Balance	2013/6/12	2013/6/12	1 day	2	OIC, AI (STL)	
7	2013	Seed Testing Procedure in Mahailluppallama	2013/8/1	2013/8/1	1 day	35	AIs (SCS), AIs (STL) and other staff	
8	2013	Seed Testing Procedure in Mahailluppallama	2013/8/10	2013/8/10	1 day	35	AIs (SCS), AIs (STL)	
9	2013	Hybrid Seed Production for Public Officers	2013/8/15	2013/8/15	1 day	21	Officers from DDAs & Seed Farms	Crops: Tomato, Brinjal
10	2013	Seed Testing Procedure in Bataatha	2013/9/16	2013/9/16	1 day	14	AIs (SCS), AIs (STL) and other staff	
11	2013/2014	Maha Seed Production in Kundasale	2013/10/10	2014/3/11	4 days	85	AIs (Seed Farm), AIs (DDA), AIs (SCS), Contract Seed Producers	Crops: Cucumber, Bitter gourd
12	2013/2014	Maha Seed Production in Mahailluppallama	2013/11/7	2014/5/20	4 days	117	AIs (Seed Farm), AIs (DDA), AIs (SCS), AIs (STL), Contract Seed Producers, Private Company Officers	Crops: Capsicum, Okra
13	2013/2014	Maha Seed Production in Aluttarama	2013/11/14	2014/5/9	5 days	117	AIs (Seed Farm), AIs (DDA), AIs (SCS), AIs (STL), Contract Seed Producers	Crops: Brinjal, Bitter gourd
14	2013	Seedling Evaluation in Peradeniya	2013/11/18	2013/11/18	1 days	21	AIs and other officers (STL)	
15	2013/2014	Maha Seed Production in Nikaweratiya	2013/11/22	2014/5/13	4 days	99	AIs (DDA), Contract Seed Producers, Seed Producers, AIs (Provincial DoA)	Crops: Tomato, Brinjal
16	2014	Training on Seed production for new Technical Assistants	2014/1/28	2014/1/31	4 days	54	New recuruites officers	
17	2014	Training on Palnt Pathology	2014/1/28	2014/1/28	1 day	18	Research officer and programme assistant in HORDI	
18	2014	Training on Palnt Pathology	2014/2/5	2014/2/5	1 day	18	Research officer and programme assistant in HORDI	
19	2014	Training on Seed production for new Technical Assistants	2014/3/4	2014/3/7	4 days	31	New recuruites officers	
20	2014	Yala Seed Production in Kundasale	2014/4/30	ongoing			AIs (Seed Farm), AIs (DDA), AIs (SCS), Contract Seed Producers, AIs (Provincial DoA)	Crops: Tomato, Brinjal
21	2014	Seedling Evaluation in Mahailluppallama	2014/5/5	2014/5/5	1 day	18	AIs (STL) and other staff	
22	2014	Seedling Evaluation in Mahailluppallama	2014/5/7	2014/5/7	1 day	31	AIs (STL) and other staff	
23	2014	Yala Seed Production in Aluttarama	2014/6/10	ongoing			AIs (Seed Farm), AIs (DDA), AIs (SCS), AIs (STL), Contract Seed Producers, AIs (Provincial DoA), AIs (Inter-provincial Office)	Crops: Snake gourd, Brinjal
24	2014	Yala Seed Productioin in Mahailluppallama	2014/6/19	ongoing			AIs (Seed Farm), AIs (DDA), AIs (SCS), AIs (STL), Contract Seed Producers, AIs (Provincial DoA), AIs (Inter-provincial Office)	Crops: Bitter gourd, Cucumber
25	2014	Hybrid Seed Production for Private Officers	2014/7/23	2014/7/23	17 days	1	Officers from Private Seed Companies	Crops: Tomato, Brinjal

ANNEX 4-5. Provision of Equipment

No.	Arrival Date to Sri Lanka	Name of Equipment	Product No	Unit/ set	Unit Price	Total Price	Purpose of Use	Installation Place	Frequency fo Use	Condition
JFY 2012										
1	7 June 2012	Laser printer (Monochrome)	Cannon LBP6300dn	1	LKR 35,500.00	LKR 35,500.00	Office work	Project office	A	A
2	14 June 2012	Photocopy machine	Cannon imageRunner2520	1	LKR 300,000.00	LKR 300,000.00	Office work	Project office	A	A
3	18 June 2012	Money safe	Alpha 530EN	1	LKR 32,200.00	LKR 32,200.00	To keep cash and valuables	Project office	A	A
4	19 June 2012	UPS	East 1200VA	1	LKR 9,750.00	LKR 9,750.00	To save desktop computers from power cut	Project office	A	A
5	19 June 2012	Voltage regulator	Unitec SVC-1000VA	3	LKR 6,500.00	LKR 19,500.00	To keep stable currunt for using laptop computers	Project office	A	A
6	19 June 2012	Extension outlet	Dong Yi DY955	3	LKR 1,400.00	LKR 4,200.00	To connect computer and printers from the sockets	Project office	A	A
7	19 June 2012	Stand fan	Sanyo EF-1630SFR	2	LKR 8,395.00	LKR 16,790.00	To avoid heat	Project office	A	A
8	12 July 2012	Telephone and fax machine	Panasonic KX-FT983CX	1	LKR 17,100.00	LKR 17,100.00	Office work	Project office	A	A
9	12 July 2012	Colour laser printer	Cannon LBP7018C	1	LKR 37,900.00	LKR 37,900.00	Office work	Project office	A	A
10	12 July 2012	Color Scaner	Cannon LiDE 110	1	LKR 6,900.00	LKR 6,900.00	Office work	Project office	A	A
11	13 July 2012	Projector Screen	Redleaf 6ft×6ft	1	LKR 8,200.00	LKR 8,200.00	Meeting	Project office	A	A
12	16 July 2012	Desktop computer	HP Pro 6300 MT	2	LKR 289,500.00	LKR 579,000.00	Office work	Project office	A	A
13	7 July 2012	White board	6ft×4ft	1	LKR 4,070.00	LKR 4,070.00	Office work	Project office	A	A
14	19 July 2012	Digital camera	Sony DSC-W620	5	LKR 18,750.00	LKR 93,750.00	Data collection	Farms and Project office	A	A
15	19 July 2012	Digital projector	Sony VPL EX 100	1	LKR 85,000.00	LKR 85,000.00	Training and meeting	Project office	A	A
16	19 July 2012	Laptop computer	Toshiba C655-S5547	1	LKR 82,200.00	LKR 82,200.00	Training and meeting	Project office	A	A
17	2 August 2012	Office desk	Alpha CT-04	2	LKR 12,950.00	LKR 25,900.00	Office work	Project office	A	A
18	3 August 2012	Office chair	Damro OCTO15	2	LKR 7,576.50	LKR 15,153.00	Office work	Project office	A	A
19	13 August 2012	Cellular phone	Nokia 100	2	LKR 4,150.00	LKR 8,300.00	Communication	Project office	A	A
20	15 August 2012	UPS (3KV)	Prolink PRO903S	1	LKR 81,600.00	LKR 81,600.00	To save desktop computer, photocopy machine and telephone and fax machine from power cut	Project office	A	A

No.	Arrival Date to Sri Lanka	Name of Equipment	Product No	Unit/ set	Unit Price	Total Price	Purpose of Use	Installation Place	Frequenc y fo Use	Condition
21	16 August 2012	Refrigerator	Whirlpool 13057	1	LKR 39,900.00	LKR 39,900.00	To keep seeds	Project office	A	A
22	16 August 2012	Library cupboard	Alpha 72inch×36inch×18inch	2	LKR 15,850.80	LKR 31,701.60	To store documents	Project office	A	A
23	16 August 2012	Medium cupboard	Alpha 48inch×36inch×18inch	1	LKR 9,738.40	LKR 9,738.40	To store documents	Project office	A	A
24	28 August 2012	GPS	Garmin eTrez 10	4	LKR 30,800.00	LKR 123,200.00	Data collection	Farms and Project office	A	A
25	19 September 2012	Extension outlet	Switchel	2	LKR 1,300.00	LKR 2,600.00	Office work	Project office	A	A
26	20 September 2012	Modem router	Trendnet TEW-658BRM	1	LKR 10,500.00	LKR 10,500.00	Office work	Project office	A	A
27	20 September 2012	Wireless USB adapter	Trendnet TEW-649UB	1	LKR 38,500.00	LKR 38,500.00	Office work	Project office	A	A
28	27 September 2012	Electronic stabilizer	IE 100VA	2	LKR 6,950.00	LKR 13,900.00	Office work	Project office	A	A
29	27 September 2012	IC Recorder	Sony ICD-PX312	1	LKR 9,500.00	LKR 9,500.00	Meeting	Project office	A	A
30	28 September 2012	External hard disk	Transcend TSITSJ253	1	LKR 17,010.00	LKR 17,010.00	Office work	Project office	A	A
31	2 October 2012	Binding Machine	MBM100	1	LKR 7,200.00	LKR 7,200.00	Binding documents	Project office	A	A
32	5 October 2012	Petri Dishes (Glass)	Marienfeld	100	LKR 285.00	LKR 28,500.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
33	5 November 2012	Eletric Kettle	Kundhan KEK-0170 ARWA	1	LKR 1,530.00	LKR 1,530.00	Office equipment	Project office	A	A
34	18 December 2012	Black light	Switchel 5ft bulb and 5m code	2	LKR 3,020.00	LKR 6,040.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
35	20 December 2012	Optics carrier	Leika M125	1	JPY 314,685	JPY 314,685	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
36	20 December 2012	Inclined binocular Tube 45°	Leika No. 10450252	1	JPY 63,105	JPY 63,105	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
37	20 December 2012	Focus drive coarse/fine 420mm	Leika No. 10450504+10445661	1	JPY 112,035	JPY 112,035	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
38	20 December 2012	Objective Planapo 1.0X	Leika No. 10450028	1	JPY 107,520	JPY 107,520	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
39	20 December 2012	LED5000 SLI, Spotlight illumination 2-arm	Leika No. 10450548+10450205	1	JPY 61,320	JPY 61,320	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
40	20 December 2012	ICB80 HD Microscope camera/w software integrated device for Leika	Leika No. 12730216+12730228	1	JPY 399,840	JPY 399,840	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A

No.	Arrival Date to Sri Lanka	Name of Equipment	Product No	Unit/ set	Unit Price	Total Price	Purpose of Use	Installation Place	Frequency fo Use	Condition
41	20 December 2012	Incident light base	Leika No. 10450049	1	JPY 26,200	JPY 26,200	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
42	20 December 2012	Eyepiece 10X/23B	Leika No. 10450023X2	1	JPY 42,300	JPY 42,300	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
43	20 December 2012	Dust Cover	Leika No. 10450287	1	JPY 4,200	JPY 4,200	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
44	20 December 2012	23 inch HD Monitor	Leika No. 8101192	1	JPY 37,200	JPY 37,200	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
45	31 December 2012	Programme timer	Yuyao yingte electric YTS-E11	1	LKR 1,350.00	LKR 1,350.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
46	8 January 2013	Extension outlet	Borl BL-603	1	LKR 1,000.00	LKR 1,000.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
47	22 January 2012	Microwave Oven	Panasonic NN-SM330M	1	LKR 12,990.00	LKR 12,990.00	Plant pathology	HORDI	A	A
48	7 March 2013	Test sieve	Endecotts Diameter 2mm	1	LKR 13,500.00	LKR 13,500.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
JFY2013										
49	18 April 2013	Calibration Weight 10g	Axis F1 Class	1	LKR 24,300.00	LKR 24,300.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
50	18 April 2013	Calibration Weight 100g	Axis F1 Class	1	LKR 25,342.99	LKR 25,342.99	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
51	18 April 2013	Calibration Weight 200g	Axis F1 Class	1	LKR 29,480.62	LKR 29,480.62	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
52	18 April 2013	Magnigier Lamp	Forestry Supplier	2	LKR 224,107.14	LKR 448,214.28	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
53	23 April 2013	Planting Tray	CIC	100	LKR 95.00	LKR 9,500.00	Seed Production	Government Seed Farms	A	A
54	20 May 2013	Air conditioner	Panasonic CS-S18PKH	1	LKR 159,800.00	LKR 159,800.00	Office work	Project office	A	A
55	20 May 2013	Air conditioner	Panasonic cs-S24PKH	1	LKR 199,500.00	LKR 199,500.00	Office work	Project office	A	A
56	22 May 2013	Digital Thermometer	TECPEL DTM307	1	LKR 39,780.00	LKR 39,780.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
57	22 May 2013	Immersion Probe	TECPEL TPK03	1	LKR 0.00	LKR 0.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
58	22 May 2013	Bottle-top Dispenser	ISOLAB 12569979 and 12484890	2	LKR 46,480.00	LKR 92,960.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
59	14 June 2013	Presenter Wireless	PROLINK	1	LKR 6,500.00	LKR 6,500.00	Meeting and training	Project office	A	A
60	13 August 2013	pH meter	Wissenschaftlich-Technische erkstätten GmbH pH3110	1	LKR 194,000.00	LKR 194,000.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A

No.	Arrival Date to Sri Lanka	Name of Equipment	Product No	Unit/ set	Unit Price	Total Price	Purpose of Use	Installation Place	Frequency fo Use	Condition
61	9 October 2013	Portable pH meter	Gondo 7200	1	LKR 17,400.00	LKR 17,400.00	Seed Production	Project office	A	A
62	9 October 2013	Germination paper	Frisenette APS 123.143202	4000		LKR 433,024.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
63	9 October 2013	Germination paper	Frisenette APS 127.143202	4000			Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
64	9 October 2013	Germination paper	Frisenette APS 160.143202	1500			Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
65	28 October 2013	Punch	KANGARO DP-800	1	LKR 2,450.00	LKR 2,450.00	Office work	Project office	A	A
66	28 October 2013	Laptop computer	TOSHIBA L50-A102X	1	LKR 81,000.00	LKR 81,000.00	Meeting and training	Project office	A	A
67	28 October 2013	Planting Tray	CIC	100	LKR 82.00	LKR 8,200.00	Seed Production	Government Seed Farms	A	A
68	15 November 2013	Digital Camera	Sony DSC-W710	1	LKR 13,990.00	LKR 13,990.00	Seed Production	Government Seed Farm, Kundasale	A	A
69	14 December 2013	Compact Rotary Microtome	Yamato Kohki Industrial Co., Ltd. PR-50	1	JPY 450,000	JPY 450,000	Plant pathology	HORDI	A	A
70	14 December 2013	Microtome holder	Feather 130AE	1	JPY 70,000	JPY 70,000	Plant pathology	HORDI	A	A
71	14 December 2013	Spare knife	Feather A22	1		JPY 0	Plant pathology	HORDI	A	A
72	14 December 2013	Paraffin expander	Ikemoto Scientific Technology Co, Ltd. PS-53	1	JPY 240,000	JPY 240,000	Plant pathology	HORDI	A	A
73	14 December 2013	Staning jar	Ikemoto Scientific Technology Co, Ltd. 803-121-04	20	JPY 1,680	JPY 33,600	Plant pathology	HORDI	A	A
74	14 December 2013	Staning jar	Ikemoto Scientific Technology Co, Ltd. 803-121-02	10	JPY 1,250	JPY 12,500	Plant pathology	HORDI	A	A
75	14 December 2013	Staning jar	Ikemoto Scientific Technology Co, Ltd. 803-121-92	10	JPY 1,350	JPY 13,500	Plant pathology	HORDI	A	A
76	29 January 2014	Sysem Microscope	Olympus CX41	1	JPY 372,000	JPY 372,000	Plant pathology	HORDI	A	A

No.	Arrival Date to Sri Lanka	Name of Equipment	Product No	Unit/ set	Unit Price	Total Price	Purpose of Use	Installation Place	Frequency fo Use	Condition
77	29 January 2014	Microscope digital camera, Plan Achromat Objectie 20x, 2million pixel high resolution CCD, Cable to desktop computer and aoftware with compatible branded desktop compute and UPS	Olympus DP21	1	LKR 1,160,000.00	LKR 1,160,000.00	Plant pathology	HORDI	A	A
78	10 March 2014	Electric balance	Ohaus PA-313	6	LKR 82,900.00	LKR 497,400.00	Seed Testing	STL, Aluttharama, Bataatha, Mahailluppallama and Peradeniya	A	A
79	12 March 2014	Protected house (Nursery house)	-	2	LKR 1,102,260.09	LKR 2,204,520.18	Seed Production	Government seed farm, Kundasale	A	A
80	31 March 2014	Drip Irrigation System		1	LKR 6,435,215.00	LKR 6,435,215.00	Seed Production	Government Seed Farm, Kundasale	A	A
JFY 2014										
81	30 May 2014	Petri Dishes (Glass)	Isolab 100mm×20mm	100	LKR 276.270	LKR 27,627.00	Seed Testing	Seed Testing Laboratory, Peradeniya	A	A
82	7 July 2014	Grain Moisture Meter	G-WON GMK-303RS	1	LKR 114,500.00	LKR 114,500.00	Seed Production	HORDI	A	A

ANNEX 4-6. Local Cost borne by Japanese Side

JFY 2012 (May 2012 to March 2013)

Contents	Amount(JPY)*	Amount(LKR)
Project implementation	3,058,482	3,920,627.970
Travelling allowance(Execept for air ticket)	104,109	133,456.000
Honoraium and reward	147,837	189,510.600
Conference	100,060	128,266.000
Total	**3,410,488**	**4,371,860.570**

JFY 2013 (April 2013 to March 2014)

Contents	Amount(JPY)*	Amount(LKR)
Project implementation	8,849,046	11,343,476.370
Air ticket	98,761	126,600.000
Travelling allowance(Execept for air ticket)	861,843	1,104,785.750
Conference	274,790	352,249.700
Total	**10,084,440**	**12,927,111.820**

JFY 2014 (April 2014 to June 2014)

Contents	Amount(JPY)	Amount(LKR)
Project implementation	2,958,228	3,792,113.460
Travelling allowance(Execept for air ticket)	184,688	236,749.000
Conference	15,074	19,323.000
Total	**3,157,989**	**4,048,185.460**

*Exchange rate in July 2014: JPY 1 = LKR 0.7801

ANNEX 4-7. Local Cost borne by Sri Lankan Side

JFY 2012 (May 2012 to March 2013

Contents	Amount(JPY)*	Amount(LKR)
Electricity	57,294	72,800
Water	16,134	20,500
Office rent	432,850	550,000
Office security	432,850	550,000
Total	**939,127**	**1,193,300**

JFY 2013 (April 2013 to March 2014)

Contents	Amount(JPY)*	Amount(LKR)
Electricity	68,469	87,000
Water	24,791	31,500
Office rent	472,200	600,000
Office security	472,200	600,000
Total	**1,037,660**	**1,318,500**

JFY 2014 (April 2014 to June 2014)

Contents	Amount(JPY)*	Amount(LKR)
Electricity	17,314	22,000.00
Water	8,185	10,400.00
Office rent	118,050	150,000.00
Office security	118,050	150,000.00
Total	**261,599**	**332,400.00**

*As of August 2014 LKR 1=JPY 0.787

ANNEX 4-8. Input of infrastructures provided by Sri Lankan side

No.	Item	Place	Component
	F.Y. 2012		
1	Office	Seed Certification and Plant Protection Centre	Two(2) rooms
2	Desk	Office	Three(3) desks
3	Chair	Office	Four(4) chairs
4	Shelf	Office	Two(2) shelves
	F.Y. 2013		
1	Computer desk	Office	Two(2) computer desks
2	Chair	Office	Two(2) chairs

Project Design Matrix (PDM) Ver.5.0 (approved at JCC on September 19, 2014)

Project Title: Project for Enhancement of Production System of Certified Vegetable Seed in Sri Lanka
Duaration: May 2012 to May 2017 (5 years)
Target Areas: Kundasale, Aluttarama, Mahailluppallama, and Nikaweratiya
Beneficiaries: DOA Officers (SPMDC, SCPPC, Government Seed Farms, and etc.), Private Companies, Government and Private Contract Farmers, and related Government Institutions (Provincial Department of Agriculture Officers)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
Quantity of vegetable seeds* in the market up to minimum standards stipulated by DOA** is increased *DOA certified seeds (produced by DOA and the private sector) and self-certified seeds of the private sector **'Recommended seed certification standards for seed and planting materials' issued by SCS in 2009	1. The percentage of vegetable seeds available in the market which is up to the minimum standards stipulated by DOA is increased 2. Over 90% of the requested basic seeds by the private sector seed producers is supplied by SPMDC.	Records of 'A survey on seed quality available in the market (Seed Quality Survey)' conducted by DOA Stock Information of SPMDC Reports by SPMDC	1. The Seed Policy is not changed
Project Purpose			
Production system for certified vegetable seed is improved in the target areas	1 Number of respondents of both public and private sectors who expressed that information sharing between both sectors is increased	Questionnaire survey with SPASL	
	2 More than 80% of DOA officials express that Seed related database make their data processing work efficient	Interview to main users of database of DOA	
	3 More than 60% of contract farmers who attended seed production trainings apply* techniques introduced by the Project * Use more than one of the techniques introduced by the Project	Interview to contract farmers	
	4 SCPPC continuously conduct in-service and induction trainings on seed certification using seedling evaluation manual and teaching materials introduced by the project	Records of SCPPC	
	5 Actions are taken in accordance with the action plan developed based on the results of 'the survey on seed quality available in the market (Seed Quality Survey)'	Progress reports of action plans	
Outputs			
1. Planning capacity of SPMDC for seed production and distribution is improved	1-1 Actions are taken to solve the issues raised by the private and public sectors in the seminars and regular meetings	1-1 Records of the Project	Necessary budgets and personnel for seed production,quality control and promotion, are allocated by the Ministry of Agriculture during the Project implementation
	1-2 Production plan for basic seeds are formulated considering needs of private sector	1-2 Records of SPMDC	
	1-3 Additonal two DoA Seed Sales Centres are improved after the improvement of two model DoA Seed Sales Centres by the Project	1-3 Records of SPMDC	
2. Vegetable seed production techniques are improved in both public and private sectors	2-1 75% of participants of seed production trainings pass the evaluation test	2-1 Evaluation test conducted at the end of the trainings	
	2-2 80% of participants of seed production trainings find the trainings was useful	2-2 Questionnaire survey conducted at the end of the trainings	
	2-3 Government Seed Farms adopt the techniques introduced by the Project in accordance with DoA Circular	2-3 DoA Circular Interview to Government Seed Farm staff	

3.	Vegetable seed quality control techniques are improved in both public and private sector	3-1	Solutions proposed in the improvement plan are implemented in seed testing process	3-1 Records of the Project
		3-2	75% of participants who attended trainings on seed testing pass the evaluation test	3-2 Evaluation test conducted at the end of the trainings
		3-3	Handbook on Seed testing procedure is completed and utilized	3-3 Handbook on Seed testing procedure Interview to SCS/STL staff
		3-4	Seed health testings of bacteria and fungus are conducted	3-4 Record of SCS/STL
		3-5	Action plan for improvement of quality control is developed based on the result of the 'survey on seed quality available in the market (Seed Quality Survey)'	3-5 Action plan

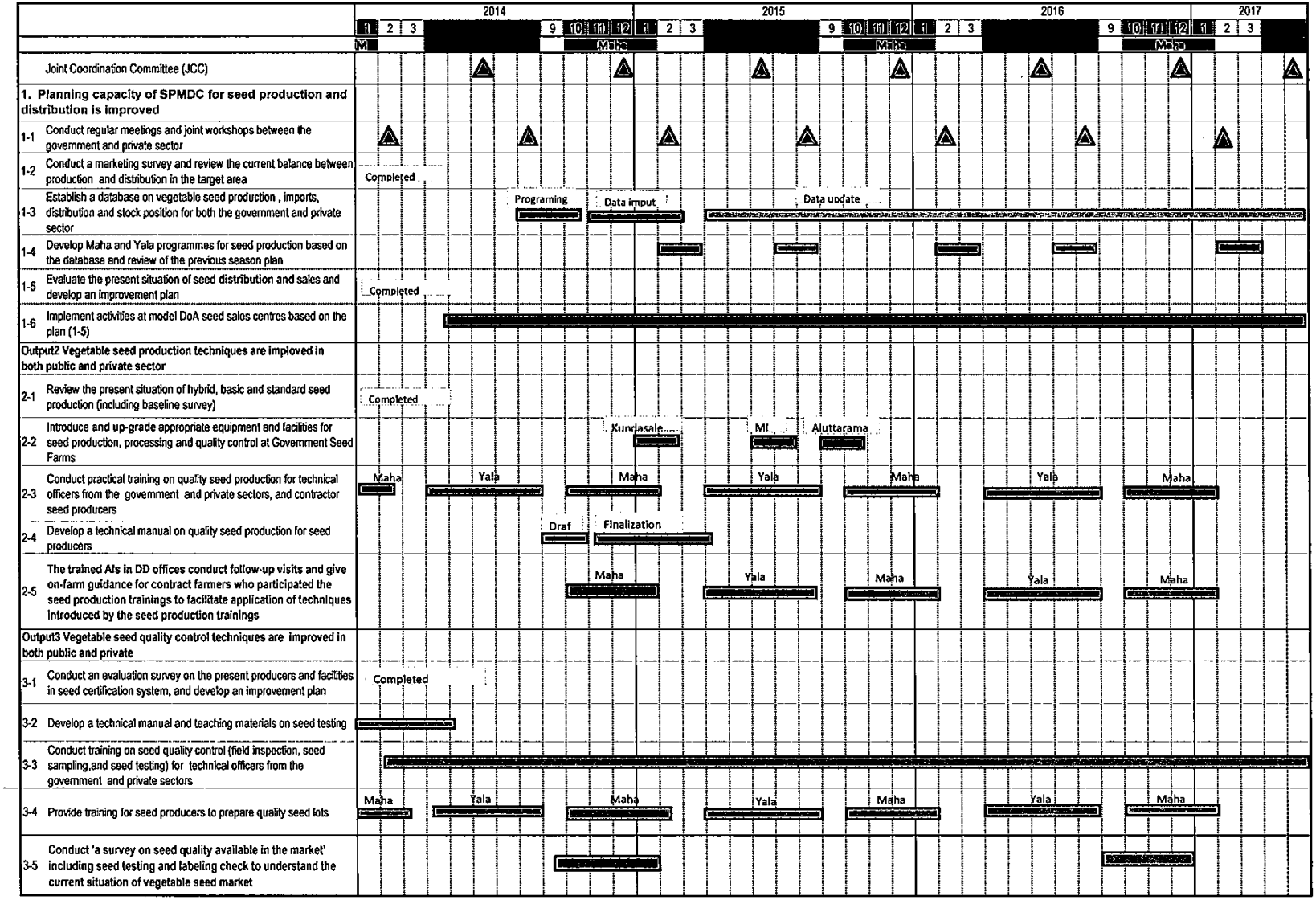
Activities		Inputs		
		Japanese Side	Sri Lankan Side	
1-1	Conduct regular meetings and joint seminars between the government and private sector	1. **Dispatch of Japanese Experts** (1) Long-term Expert: 4 persons (a. Chief Advisor/Certified Seed Production System, b. Seed Testing, c. Seed Production/Seed Sales, and d. Project Coordinator/Training) (2) Short-term Expert: Seed Testing (including field inspection), Seed Health, Plant Disease, Farmers Economy, Farm Management, Market Analysis, Post Harvesting Technology for Seed, and others (If necessary)	1. **Assignment of Personnel** (1) Director General, DOA (2) Directors, SPMDC and SCPPC (3) C/Ps (4) Staff in related government institutions (as needed, ex. HORDI researchers)	1. Large natural calamities do not happen 2. Major pest and disease do not occur 3. The trained technical officers continue to extend acquired skills and knowledge to farmers
1-2	Conduct a marketing survey and review the current balance between production and distribution in the target areas			
1-3	Establish a database on vegetable seed production, imports, distribution, and stock position for both the government and private sector			
1-4	Develop Maha and Yala programmes for seed production based on the database and review of the previous season plan			**Pre-Conditions**
1-5	Evaluate the present situation of seed distribution and sales, and develop an improvement plan	2. **Facilities and Equipment** Necessary equipment for the project activities (equipment for seed production, seed processing, seed testing, and etc.)	2. **Project Office** Necessary facilities such as electricity connection, furniture, Internet lines in the office space	
1-6	Implement activities at model DoA Seed Sales Centres based on the plan (1-5)			
2-1	Review the present situation of hybrid, basic and standard seed production (including baseline survey)			
2-2	Introduce and up-grade appropriate equipment and facilities for seed production, processing and quality control at the Government Seed Farms	3. **Training Costs** C/P Training in Japan/third countries	3 **Facilities and Equipment** Necessary training space, machinary, equipment, instruments, tools, spare parts, and any other necessary for the implementation of the Project other than one(s) provided by Japanese side	
2-3	Conduct practical training on seed production for technical officers from the government and private sectors, and contract seed producers			
2-4	Develop a technical manual on seed production for seed producers	4. **Others** Cost for Local Consultants and Local Staff	4. **Local Costs** Necessary budget for the implementation of the Project (ex. Per diem & travel allowance for domestic training for C/P, electricity for the Project Office, and etc.)	Participation of private sectoer in vegetable seed industry is ensured and promoted
2-5	The trained AIs in DD office conduct follow-up visits and give on farm guidance for contract farmers who participated in the seed production trainings to facilitate application of technique introduced by the seed production trainings			
3-1	Conduct an evaluation survey on the present procedures and facilities in seed certification system, and develop an improvement plan			
3-2	Develop technical manuals and teaching materials on seed testing			
3-3	Conduct training on seed quality control (field inspection, seed sampling and seed testing) for technical officers from the government and private sectors			
3-4	Provide training for seed producers to prepare quality seeds lots			
3-5	Conduct 'a survey on seed quality available in the market (Seed Quality Survey)' including seed testing and labeling check to understand the current situation of vegetable seed market			

<Target Vegetable Crops>

1. Beans 2. Bitter gourd 3. Brinjal 4. Capsicum 5. Cucumber 6. Luffa 7. Okra 8. Pumpkin 9. Snake gourd 10. Tomato

PLAN OF OPERATION

Revised on Sept 18, 2014



Draft Minutes of discussion

Date and time: September 12th, 2014 14:00pm - 18:30pm
Venue: The office of Director General of Agriculture
Participants:

Counterparts

1. Dr. R. Wijekoon, Director General of Agriculture (DGA), Department of Agriculture (DOA)
2. Mr. D.J.L.S. Govinnage, Director, Seed and Planting Material Development Centre (SPMDC), DOA
3. Mr. T.H.C.S. Perera, Director, Socio Economic and Planning Centre (SEPC), DOA
4. Dr. G.M.W. Chithral, Additional Director, Seed Certification and Plant Protection Centre (SCPPC), DOA
5. Mr. H.P. Thilakarathne, Additional Director, SPMDC, DOA
6. Dr. R. Nanayakkara, Deputy Director, Seed Certification Service (SCS), DOA
7. Mr. G.W.R. Weerakoon, Assistant Director, SPMDC, DOA
8. Mr. S.K. Karunagoda, Agri. Economist, SEPC, DOA
9. Ms. V.D.N. Ayoni, Agri. Economist, SEPC, DOA

Mid-term review mission and Vegetable seed project

1. Mr. M. Tawa, Deputy Director General, Rural Development Department, Japan International Cooperation Agency (JICA)
2. Ms. C. Yokota, Deputy Director, Rural Development Department, JICA
3. Ms. T. Tamura, Kaihatsu Management Consulting, Inc.
4. Dr. J. Takahashi, Chief Advisor, Vegetable Seed Project (VSP)
5. Mr. K. Iizuka, Expert, VSP
6. Ms. A. Usui, Expert, VSP

The meeting was chaired by Dr. Wijekoon, DGA.

Agenda 1. Major Findings so far

Output 1: Planning capacity of SPMDC for seed production and distribution is improved.

Ms. Yokota pointed out that basic seed production seminars have been successfully carried out for four seasons already, and private sectors appreciate information exchange with DOA. Ms. Yokota pointed out the database is under preparation and it will contribute to improvement to gather information of the status of seed production. Dr. Wijekoon questioned about the contract with the company which was selected by bid carried out in March 2014. Ms. Usui informed that DOA and VSP signed the contract on August 1st with E-W- Information Systems Ltd. and VSP made payment of 40% of the total costs. Dr. Wijekoon questioned the part which is going to be covered by DOA. Ms. Usui informed that DOA is responsible for maintenance cost for next nine (9) years and its amount is about LKR 200,000.00 per year[1].

[1] The cost of software development is LKR 952,900.00 which is going to be paid by Vegetable Seed Project. DOA is going to pay LKR 208,980.00 every year as total: LKR 131,280.00 as annual maintenance fee, LKR 72,000.00 as

Output 2: Vegetable seed production techniques are improved in both public and private sector
Ms. Yokota pointed out that nursery trays and pots are utilized in Government Seed Farm (GSF), Kundasale, and also by some contract seed growers, along with other tequniques introduced by the Project However, she expressed the concern on low application rate of those techniques in GSFs and by contract seed growers.

Output 3: Vegetable seed quality control techniques are improved in both public and private sector.
Ms. Yokota pointed out that seed testing in DOA is carried out under the procedures prescribed by the International Seed Testing Association (ISTA), and the improvement of procedures introduced by a Japanese expert are duly practiced in daily work in SCS and STL. She expressed that the team found it encouraging that SCS is going to expand its seed health section. .

Agenda 2. Organizing Basic seed production seminars by DOA
According to the discussion held on August 13th, 2014at 4th Public and private joint seminar on basic vegetable seed production, counterparts agreed that next seminar is going to be organized by DOA. Dr. Wijekoon instructed Mr. Weerakoon to organize the seminar in every February and August and invite leading farmers before every season.

Ms. Tamura expressed the concern about the declining number of participants from the private sector in the last seminar compared with the previous seminars. Dr. Chithral pointed out after sending invitations, phone calls should be made to request their participation. Dr. Wijekoon questioned about the participants from Jaffna or not. Mr. Weerakoon infromed that there is no sale of basic seed in Jaffna.

→ **Follow-up: Assistant Director, SPMDC**

Agenda 3. Issuance of DOA Circular on techniques introduced by VSP
Mr. Govinnage informed that SPMDC has already sent a letter to utilize nursery tray and pot technology. Dr. Wijekoon instructed that the technical circular should be sent by ~~SMPDC~~SPMDC since former instruction was made for Director, Information and Communication Centre who is not the specialist for this activity. Ms. Yokota requested to hold a meeting on what technique to be included in the circular as soon as possible.

→ **Follow-up: Director, SPMDC**

Agenda 4. Issuance of HORDI Recommendation on fruits and buds thinning
Dr. Wijekoon phoned that Dr. Fonseka, Director, Horticultural Crop Research and Development Institute (HORDI) and instructed to submit recommendations on fruits and buds

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hosting charge and LKR 5,700.00 as domain fee.

thinning. Mr. Weerakoon informed that cultivation of eggplant is now in progress in GSF, Aluttharama and Kundasakle based on the results of trials which were presented at Annual Symposium of the Department of Agriculture (ASDA) 2013.

Dr. Wijekoon informed that DOA is going to select techniques introduced by VSP and make the recommendation.

Single planting

Dr. Takahashi pointed out that maintaining single seedling per hill is not implemented in GSFs although VSP introduced it. Dr. Wijekoon instructed Mr. Weerakoon to go to see the fields and report back.

→ **Action: Assistant Director, SPMDC**

Fertilizer recommendations for seed production

Dr. Chithral pointed out that there should be a clear recommendation on fertilizer for seed crops and there is no research carried out regarding the requirement of fertilizer. Dr. Wijekoon instructed that Research Officers at HORDI be informed to carry out the research.

→ **Action: DOA and Director, HORDI**

Post-harvest

Mr. Iizuka explained that techniques of post-harvest was introduced in seed production training. Dr. Nanayakkara pointed out ISTA provides clear guideline on seed testing.

Soil covering/mulching

Dr. Wijekoon pointed out that scarcity of material is the problem regarding soil mulching. Mr. Thilakarathne expressed his concern that moisture may build up at the root zone and cause pest infection in GSF, Kundasale. Mr. Iizuka pointed out that soil covering is useful in GSF, Aluttharama and Mahailluppallama since water scarcity is prevailing. He mentioned that paddy straw is useful material for soil covering.

→ **Action: DOA to select techniques**

Agenda 5. Assignment of counterparts and their active involvement (involvement of DOA staff who were trained in Japan)

Ms. Yokota pointed out that 34 officers were trained in Japan before the commencement of VSP. She pointed out that implementation of seed production training should be gradually handed over to SPMDC. Dr. Wijekoon instructed Mr. Thilakarathne to identify the officers who can play the role of master trainers and arrange a meeting of ex-participants in the last week of September. Ms. Yokota pointed out that SPMDC should take a lead in planning and management of trainings, while currently VSP is taking a lead.

→ **Action: Additional Director, SPMDC**

Agenda 6. A system to ensure AIs follow up visits to contract seed growers who participated in JICA trainings

Participants agreed that Deputy Directors of Agriculture should instruct their AIs to visit contract seed growers and the system needs to be organiszed in Aluttharama, Kundasale and Mahaillupplama target areas. In addition, SEPC is going to conduct an independent evaluation on how contract seed growers are applying techniques.

→ **Action: Directors, SPMDC and SEPC**

Agenda 7. Procurement of equipment

Dr. Wijekoon informed that he is going to request the tax amount of LKR 10 million for the budget of the next year. Mr. Tawa requested to prepare the letter which states the tax amount is going to be paid by DOA in 2015 and send it to JICA Sri Lanka office. Dr. Wijekoon instructed Mr. Govinnage to prepare the letter early next week.

→ **Action: Director, SPMDC**

Agenda 8. Implementation of a Market Survey and formulation of an action plan

Participants agreed to conduct the survey to understand the quality of seeds in the market to come up with an action plan of quality control. Mr. Perera informed that the proposal is under preparation and going to be completed on September 16th.

→ **Action: Director, SEPC**


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