

4. 評価用PDM

マラウイ国ロビ地区適正園芸技術普及計画終了時評価調査・評価グリッド

情報源	隊員	元隊員	農業省	LADD	カウンターパート	ロビ園芸組合	プロジェクト対象農民	対象外農民
調査項目								
0. 本プロジェクトの前提条件 貧困削減のための小規模農民への支援が政策課題として維持され、ロビ農業普及所が必要な投入をマラウイ政府から受け続けるか。	I		I	I	I			
1. 投入の実績	I			I	I	I		
1.1. 日本側の投入 ・研修員受入の効果	S			S	S	S		
1.2. マラウイ側の投入	D			D	Q			
2. 活動の実績	I			I	I	I		
2.0. 諸活動の重点の置き方、および支援対象グループの量的拡大と支援の密度の向上のバランス	S			S	S	S	I	
2.1. 実証実験の実績	D			D	Q			
2.2. 普及活動の実績								
2.3. 販売力強化活動の実績								
3. 成果の達成度	I			I	I	I	I	
3.1. 適正園芸技術は形成されたか。	S			S	S	S	S	
3.2. 適正園芸技術は農民に普及したか。 ・土地利用権が確保されたか。	D			D	Q			
3.3. 生産物の販売力は強化されたか。								
4. 目標の達成度 持続的な適正園芸作物生産量は増加したか。	I			I	I	I	I	
4.1. 持続的な適正園芸作物生産量は増加したか。	D			D	Q			
5. 上位目標の達成とその見通し 園芸作物の栽培普及をとおしてロビ地区のコミュニティは強化されたか。 協力による蓄積は隊員やカウンターパートの離任後も維持されるか。 本プロジェクトの他地域への影響は。	I		I	I	I	I	I	I
5.1. 園芸作物の栽培普及をとおしてロビ地区のコミュニティは強化されたか。	D		D	D	Q			
5.2. 協力による蓄積は隊員やカウンターパートの離任後も維持されるか。								
5.3. 本プロジェクトの他地域への影響は。								
6. ボランティア事業としての達成度	I							
6.1. 相手国への貢献度	Q							
6.2. 両国間の相互理解の促進度		Q						
6.3. 日本社会への還元								
6.4. 国際協力分野の人材育成効果								
6.5. 協力隊事業・施策への意見								

I=インタビュー調査 S=現場視察調査 D=資料調査 Q=質問票調査

## 計画達成度

### 1. 上位目標

園芸の普及と並行してロビ地区のコミュニティは強化されてきているとみられる。園芸生産による平均年間収入は本プロジェクト開始前の5.1米ドル相当から15.7米ドル相当に増加した。農民への聞き取りによると、園芸の導入が農家に二面で貢献していることが強く示唆される。ひとつは彼らが野菜を食べられるようになったことであり、もうひとつは収入の増加によって生活に必要な日用品を買うことができるようになったことである。農民グループ内で積極的に協力することによって高収量を得ているという元気づけられる事例がいくつも見られる。

本プロジェクトとロビ園芸組合はロビ地区にもっとも相応しい園芸作付け体系を普及してきており、さらなる拡大と改良を進めている。

ロビ地区はすでに地区外から多くの関係者の訪問を受けており、その技術と主体的な取り組みは全国に伝搬しつつある。

### 2. プロジェクト目標（議事録付録7参照）

トマト、キャベツ、葉野菜、タマネギ、アイリッシュポテトの収量は大幅に増加した。野菜の作付け面積は驚異的に拡大した一方、果樹増殖の拡大はそれほど大幅ではなかった。野菜、果樹ともに生産農民数は増加した。

### 3. 成果（議事録付録7参照）

#### 3.1. 適正園芸技術の実証

野菜、土壌・肥料、病虫害に関する実証実験により種々の適正技術が実証されており、現時点で有意な結果が得られていないものについては実験が継続されている。果樹に関する実証実験も進行中である。

分野ごとの成果は以下のとおりである。

#### (1) 野菜

苗育成、生育に対するコンポストの役割、適切な栽培時期、異なった種類の作付けの重要性などが明らかにされた。

#### (2) 果樹

品種比較、接ぎ木技術、育成制御法、植え付け期の土壌管理法などが明らかにされた。

## 5. 投入

### 5.1. 日本側の投入

#### (1) 隊員の派遣

計画に従いチーム派遣の枠内で計 12 名の隊員が派遣された。(議事録付録 2 参照。)内訳は、シニア隊員 2 名、野菜隊員 3 名、果樹隊員 2 名、土壌・肥料隊員 3 名、病虫害隊員 2 名である。

#### (2) 研修員受入

本プロジェクトに関して、7 名のプロジェクトスタッフが野菜・果樹栽培の日本での研修に参加した。(議事録付録 3 参照。)さらに、5 名が滝川市による高地野菜生産研修に受け入れられた。

#### (3) 機材供与と現地業務費

2003 年 3 月までに、機材供与(議事録付録 4 参照)として計 6,887,000 円、現地業務費として計 7,814,000 円が支出されている。

また本プロジェクトに関しては、日本政府の草の根無償資金協力によって、ロビ園芸組合がトラック 1 台を供与されている他、ロビ地区は電化拡大のための援助を受けている。(議事録付録 5 参照)

### 5.2. マラウイ側の投入

#### (1) カウンターパートの配置

シニア隊員のカウンターパートであるプロジェクトマネジャー、および野菜、果樹、土壌・肥料、病虫害担当の計 5 名のカウンターパートが配置された。

#### (2) 支援スタッフの配置

本プロジェクトの活動を支援するため、技術労務者 13 名、警備員 2 名が配置された。

#### (3) 事業運営費の負担

支出に遅れもあったが、事業運営費の負担額は十分であった。結果として本プロジェクトの現地での支出の 26%をマラウイ政府が負担した。(議事録付録 6 参照。)

#### (4) 土地、施設、付帯設備の提供

十分な土地、施設、住居が提供された。

## 5. プロジェクト実績データ

### 農地での面談抜粋

#### 4月29日(1)

問題は苗木を買ったり整地をするための資金が無いことだ。

病虫害も大きな問題である。予防のための薬品を買う資金が無い。

このグループを担当している普及員の受け持ちは1,200人あまりと多数である。

#### 4月29日(2)

調査団の視察に際して、成績の悪いグループの集まりは悪いという明らかな傾向がある。

欠席の理由は、アップランドでのトウモロコシ栽培、本人や家族の病気、葬式など。4割が女性世帯主でその理由は死別、離婚、シングルマザーなど。

組織力が弱いと作業の時期を逸することによって技術面、市場面で失敗する傾向が強い。

育成に失敗したり、作物ができてその時期には市場価格が下げているなどである。

普及員は定収入(3,000K程度かそれ未満)であり成績に対する金銭的なインセンティブはない。

#### 4月29日(3)

各グループには議長(、副議長)、秘書(、副秘書)、会計(、副会計)がいる。

農地は村のチーフ(グループ員でもある)から無償で提供されている。

農地は各自の部分に分かれているため農産物の所有は明確である。グループ全体にかかわる共同作業もある。

メイズは食糧確保のために野菜は売るためである。メイズと比較して、野菜栽培はコストがかかるが利益も高い。例えば、野菜=10K/kg、ニンニク=120K/kg、トマト=40K/kg。

#### 4月29日(4)

組織力やリーダーシップが弱いなどの理由で作付けの時期をはずすと水不足や病虫害の可能性が高くなる。

乾期には水不足が問題となる。井戸を掘ることが望まれる。

野菜を栽培し始めて以来、少額ではあるが追加的な収入があるので石けんなどの日用品を買うことができる。

#### 4月29日(5)

野菜栽培は自分達の食べ物と石けんなどを買う現金をもたらす。以前は食糧不足の問題があったが今では解決し、服、時計、家財道具などを買うことができる。

この農地は所有者から年間1,200Kで借りている。ロビ園芸組合の契約フォームを使っている。3年契約だが延長が可能である。

## 面談のまとめ（マラウイ側発言要旨）

### Ministry of Agriculture, Irrigation and Food Security

2003年4月28日 08:00～09:15 農業灌漑食糧確保省

出席： Dr. Ellard Malindi, Principal Secretary

Mr. George Chande, Principal Economist

Mr. McDonald H.L. Sande, Deputy Director of Crop Production、他  
洲崎、石原、亘、鶴田、丹羽

#### 1. 農業の重要性と主な課題

本省は新大臣による新体制となった。省の名称にも食糧確保がついた。

マラウイ人の大多数の生計は農業によっており、このことはすくなくとも近い将来においても変わらないであろう。マラウイにとって農業はきわめて重要である。

マラウイの農業の課題としては以下の4点があげられる。

- (1) 食糧の確保を持続する必要がある。
- (2) 農業を多様化する必要がある。タバコはマラウイの主要輸出農産品であるが近年需要の低減に直面している。したがってタバコを代替する作物が求められている。
- (3) マラウイの農産加工品としてはビール、繊維製品などがある。農産加工をさらに発展させるためにはその原料となる農産物を生産する必要がある。
- (4) マラウイでは従来からの農業生産により土地の肥沃度が低下している。土壌に対する特別な配慮によって資源としての土壌を回復しなければならない。

#### 2. 園芸における小規模農業の位置づけ

大規模農業は、タバコ、コーヒー、茶など特定の輸出産品に集中しており従事者や受益者も限られる。一方、小規模農民は大多数を占める。通常、乾期には主食のトウモロコシは栽培されないので、この時期に園芸栽培を行うことは所得増加をもたらす。しかも所得増加は全国的に均等に生じる。

またマラウイでは栄養失調者が多くとくに5歳以下の子供や妊婦の栄養不足が深刻な問題となっている。ビタミンを始めとする栄養の供給のために園芸は重要である。

#### 3. 能力開発

本省は実際の仕事を通じてスタッフのトレーニングを継続しており、農民の能力開発も進めている。ロビのようなプロジェクトも大いにトレーニングになる。技術指導とインフラ整備によって市場の需要にこたえる生産が可能になろう。市場は当面は国内だが将来は輸出も望まれる。ただし現在は収穫後に対応できる施設は整備されていない。

Lilongwe Agricultural Development Division (LADD)  
Ministry of Agriculture, Irrigation and Food Security

2003年4月28日 10:00~11:00 リロングウェ農業開発局

出席： Dr. B. Munthali, Programme Manager

Mr. Kamanga, Principal Economist

Mr. Wavisanga R. C. Munyenyembe, Evaluation Officer

Mr. A. W. Phiri, Project Manager of

Lobi Horticultural Appropriate Technology Extension Project、他  
洲崎、石原、亘、鶴田、丹羽

#### 1. LADD

LADD は Central Region の一部を管轄しており、Lilongwe District, Dedza District, Ntcheu District の3ディストリクトからなる。ロビプロジェクトは Dedza District の一部を対象としている。つまり、Lobi Extension Planning Area (Lobi EPA)は Dedza District より小さい単位である。

#### 2. 本プロジェクトの特徴

本プロジェクトは園芸農業を通じて貧困削減に資するものであり、コミュニティの能力強化に焦点を当てている。

#### 3. 本プロジェクトの予算

一般的には、セクター投資プログラムに沿って、外国からの援助資金とマラウイ政府の予算がいっしょになり、マラウイ政府が予算全体に対して予測能力や説明責任を持つことが望ましい。しかし本プロジェクトの予算はふたつの別々の部分からなる。JICA の予算とマラウイ政府の予算である。JICA の場合はマラウイの予算化されないことは了解している。JICA の予算は LADD 経由ではなく直接ロビに対して支給される。一方マラウイ政府予算は LADD 経由である。

政府予算の編成は12月から6月までに行われ、7月から支出される。(新規プロジェクトについてはこうした支払時期のスケジュールは無い。)ただし予算の支出の不規則さや遅れが生じることもある。

#### 4. 今後の展開

本プロジェクトのすべての項目が達成されたわけではないので本プロジェクトの総まとめが必要である。いくつかの技術的課題は5年を超える期間を要する。またロビでは1,600の農家を目指しているが、ロビ全体の農家数は14,000である。したがってロビの今まで対

## Lobi Horticultural Association

2003年4月30日 14:30～15:30 ロビ園芸組合事務所

出席：組合議長、組合秘書、組合事務局秘書、その他

Chiotha 氏 (カウンターパート)、鶴田

### 1. 組織の概要、構成員、組織は cooperative ではないか。

現在組合は 71 農民グループを擁している。1 グループは 15～20 人の農民からなる。(例えば 1 家族に 2 人農民がいれば 2 人と数える。) 組合に登録するには年間 1 グループで 300K を支払う。(調査時点で約 90 クワチャが 1US\$。) これは主として月々のグループ代表による会議の際の食事代に充てられる。

組合の役員としては、議長、副議長、秘書、副秘書、会計がいる。また、輸送・マーケティング委員会、融資・作物委員会、財務委員会の 3 委員会があり各委員会は 3 人のメンバーからなる。

輸送・マーケティング委員会は、市場調査を行う。またトラック (1 台) を管理し税金を支払う。

融資・作物委員会は、農地に行き作物をチェックし、出荷できそうかどうか報告する。また農業普及員の支援を得て作況報告を作成する。

財務委員会は 4 人の従業員 (事務局秘書 (組合役員としての秘書とは別)、トラック運転手、守衛、農業者) の給与を支払う。

組合事務所は組合の所有物であるが土地は政府所有である。

組合は Association と称している。Cooperative という言葉の意味は分からない。

### 2. 組合の活動範囲は。

組合の活動としては以下があげられる。

- ・各グループを訪問して農民が新しい作物を生産することを奨励している。
- ・種子や肥料を購入し農民に販売している。
- ・各グループを訪問して、いろいろな誤解、協力の不足、リーダーシップの欠如、土地問題などを解決しようとしている。
- ・野菜を集荷して販売している。

現在資金不足のために、ローン活動としては、5kg のアイリッシュポテトを農民に貸し、収穫時に 7kg を受け取る事業を行っているのみである。雨よけなどのためのビニールシートのローンを始めたいのだが、資金不足のためにまだ始まっていない。

### 3. 組合はどのように運営・管理されているか。

グループ代表からなる月例会議が開催されている。委員会が会議に先立って議題を作成

組合の発展計画書はないが、リロングエ市に恒久的な店舗施設を持ちたい。当面は、簡単なシェルターを持ちたい。どうしたらよいか検討している。施設の借用がよいかもわからない。

10. 組合、農民グループ、農民の能力向上はどのように行っているか。

現時点で仮に資金があれば、農民に対して肥料や種子のためのソフトローンを提供したい。

11. 組織をつかさどる規則は明記されているか。

組合レベルとグループレベルの規則が存在している。

1999年に署名された5ページのConstitutionと呼ばれる組合規約がある。

12. 将来のリーダーを育成する青年農民部会は設立されているか。

設立されていない。

13. 共同輸送、販売、入荷はどのように行われているか。

現在の共同出荷方式で農民は利益を受けているが、組合の利益は低い。

14. 組合の成果についての報告書はあるか。

以下が作成されている。

- ・ 作況報告
- ・ 月例報告（接ぎ木などの技術面、売上面、財務面など）
- ・ 月例会議の報告
- ・ 財務報告
- ・ 販売報告（組合による野菜の作物別・農民グループ別・月別売上記録）

15. JOCVの活動をどう評価するか。

JOCVは助けになった。自分たちが以前は知らなかったことについて技術支援をもらった。

以上



## 6. アンケート集計結果

ボランティア事業の視点からの質問に対する回答のまとめ

### 0. 質問対象者

チーム派遣以前を含む本件参加者 (農業省デッサ農業開発プロジェクトの草地隊員 OB を除く)	14名
回答者	13名
現・元シニア隊員 (野菜隊員からシニア隊員になった2名を含む)	3名
現・元野菜隊員 (野菜隊員からシニア隊員になった2名を含む)	5名
現・元果樹隊員	2名
現・元土壌・肥料隊員	4名
現・元病虫害隊員	1名

### 1. マラウイへの貢献

1.1. 自分は狭義の任務において、(おおいに、かなり、普通に、少し) 貢献した。

回答数	主な貢献の内容	
おおいに	1	・野菜栽培技術の導入・果樹苗木生産技術の紹介。
かなり	5	・接ぎ木技術の普及、栽培品種苗の普及。 ・適正栽培技術の発掘、普及、定着。 ・ロビの土壌のデータを取り検討するとともに、伝統的な土壌肥培法を見直すこと、また現地でする土壌肥培法を検討し、試験業務をはじめた。 ・CPをはじめ現地農業普及員ならびに農民に対して発酵肥料の紹介、製造方法確立のための実験をおこなうと共にその成分分析を計画した。また、伝統的に農民が施肥してきた緑肥についてもその科学的根拠を理解するため、成分分析の委託実施と展示圃場における比較対照実験を実施し、農民に視覚的理解を促した。乾季において、放置されているメイズの茎葉を有効利用するため燻炭化させることにより土壌改良材としての活用が可能であることを展示圃場で検討した。普及活動において、事前にその巡回指導の計画を行なうことで農民とのニアミスを避け、効果的な指導を心がけた。また各農民グループにおける現状を把握した上で適宜指導を行なった。とくに農民のおかれた生活あるいは季節的条件等を重視するため、農民の意見を積極的に聞き入れた。
普通に	5	・自分の貢献は少ない。長年の歴代・現隊員の努力の積み重ねが今つぼみをつけている。 ・普及活動と展示圃場でのデモンストレーション。 ・品種比較試験、ジャガイモ・ニンニク種芋増加、農民組織巡回指導、農民依託試験、気象データ、統計手法マニュアル化等。 ・業務で。 ・野菜生産グループへの栽培指導。指導対象部グループを増やし、種子、農薬の共同購入や収穫物の共同出荷を試みた。
少し	2	・播種～定植までの基本技術をある程度定着させた。 ・従来から作られているものよりも良質の堆肥作りと、その普及をはじめました。私の時は手始めであり広められませんでした。後任の山内さん、佐々木さん、山田さんが引き継いでやっているそうなので、うれしく思っています。
貢献したの計	13	

または、(あまり、全然) 貢献しなかった。

回答数	主な理由	
あまり	0	
全然	0	
貢献しなかったの計	0	

または、(あまり、全然) 促進しなかった。

回答数		主な理由
あまり	1	・日本での栽培手法を導入するよりも任地で実際に行われる手法に改良を加える方が現実的であった。カウンターパートに『日本』の手法を理解してもらう必要性を感じなかった。
全然	0	
促進しなかったの計	1	

2.2. 自分はカウンターパート以外との間で(おおいに、かなり、普通に、少し) 促進した。

回答数		主な例
おおいに	2	・時間の許す限り村内の市場に出かけ、公民館で多くの村民と交流をもった。また上記 1.2 のような機会を計画・実施することにより多くの村民との接点をもった。 ・多くの友人ができた。
かなり	5	・ハウスキーパー、警備員、職場の上役、同僚と互いの考えをかわす機会が多くとれた。 ・各部門のカウンターパート達の仕事に対する情熱、熱心な態度はすばらしい。(他のマラウイ人と比較した上で) ・近所の人達と両国の文化の違いについてよく話した。自分はマラウイの文化に強い興味を持った。 ・現在、大学院生であり、伝統農業リサーチ場所として、ロビの農民との関係も持っていること。サッカーチーム関係。
普通に	4	・冠婚葬祭への出席。家にマラウイ人の友人を招いてのホームパーティ。 ・カウンターパートの奥さん、近所のおばさん、学生。 ・近所の人に日本食を紹介したり、日本語を教えたりした。また、逆に食事をごちそうになったり、チェワ語を教えてもらったりした。
少し	2	・帰国後、当時のカウンターパートではなかったが、スタッフの1人が農業研修で来日した際コンタクトを取った。
促進したの計	13	

または、(あまり、全然) 促進しなかった。

回答数		主な理由
あまり	0	
全然	0	
促進しなかったの計	0	

または、(あまり、全然) 日本社会に還元 (できなかった。できていない。できそうにない。)

回答数		主な理由
あまり	1	・帰国後一度だけですが、学生を対象として協力隊での活動経験を紹介する機会を持ちました。
全然	0	
還元不可の計	1	

#### 4.国際協力分野の人材育成

##### 4.1.自分は協力隊に参加して専門技術面で(おおいに、かなり、普通に、少し)成長した。

回答数		主に成長した事項
おおいに	3	<ul style="list-style-type: none"> <li>・野菜栽培に関する基本的知識を学んだ。また普及に関してもおおいに学んだ。</li> <li>・農業隊員であるにもかかわらず、実際の農業経験が乏しかったため、マラウイでは苦勞も多かったが、実践的な農業を学ぶという面で多いに成長できたと感じる。このことは、同期の隊員やカウンターパートの協力により実現できたと思う。また、大学で学んできた理論を実際にフィールドで見てみる事ができ、勉強になった。</li> <li>・野菜、果樹そして病虫害という専門の隊員ならびにカウンターパートと共に活動したため、土壌肥料という専門の観点からだけでなく、多岐に渡る幅広い視点をもつことができた。また常にそれぞれの専門についても話を聞くことができ、それらの専門についても本プロジェクトの中から学ぶことができた。</li> </ul>
かなり	4	<ul style="list-style-type: none"> <li>・現場での経験が不足していたので現場でいろいろな視点から物事を見られるようになった。専門知識に関してもいろいろ学んだ。</li> <li>・マネジメントまで含めないと技術をいくら持っていても役に立たない等の厳しい現状が分かったことなど。</li> <li>・他のコンポーネントと相談でき、知識を増やせた。</li> <li>・熱帯農業に関して理解を深めることができた。</li> </ul>
普通に	3	<ul style="list-style-type: none"> <li>・試験栽培のやり方、レポートの書き方を学んだ。熱帯農業についての知識を得た。</li> <li>・プロジェクトマネジメント、調整等の面では成長したと思う。</li> <li>・大学などで主に学んでいた分野以外について(野菜、亜熱帯果樹等)。</li> </ul>
少し	2	<ul style="list-style-type: none"> <li>・日本とは非常に異なるマラウイの果樹に関する知識が増えた。</li> </ul>
成長したの計	12	

または、((あまり、全然)成長しなかった。退化した。)

回答数		主な理由
あまり成長しなかった	1	
全然成長しなかった	0	
退化した	0	
成長しなかったの計	1	

回答数		主な理由
あまり上達しなかった	3	<ul style="list-style-type: none"> <li>・聞く能力は少し上達したが、話すことに関してはチェワ後が主なので上達しなかった。</li> <li>・あまり使わなかったから。</li> <li>・赴任時のレベルで大きな問題がなかったため、英語学習の優先順位が低かった。</li> </ul>
全然上達しなかった	0	
退化した	0	
上達しなかったの計	3	

4.3.2.チェワ語が（(多いに、かなり、普通に、少し) 上達した。(あまり、全然) 上達しなかった。）

回答数		主な理由
おおいに	0	
かなり	3	<ul style="list-style-type: none"> <li>・農民グループへの普及活動の際にどうしてもチェワ語で直接話したかったので話せるように努力した。</li> <li>・周囲の人も教えてくれたし、日常的に使っていたため。</li> <li>・活動上で、常にチェワ語による会話が耳に入る環境にあり、都市隊員と比較すればかなり習得した方だと思われる。</li> </ul>
普通に	3	<ul style="list-style-type: none"> <li>・チェワ語を使うことにより、より農民または現地の人々の興味を引き、より早く深く溶け込めた。</li> <li>・英語の方に集中していた。</li> <li>・日本では使う機会がないから分からないが、生活に困らない程度はいけると思う。</li> </ul>
少し	2	<ul style="list-style-type: none"> <li>・仕事の内容なら多少農民と話ができる。</li> <li>・言語を習得するには時間がかかる方で、十分にコミュニケーションを取れるようにはなりませんでしたが。しかし、5年半経った今でも、覚えたことはあまり忘れていません。</li> </ul>
上達したの計	8	

回答数		主な理由
あまり上達しなかった	3	<ul style="list-style-type: none"> <li>・英語が話せない農民と接する機会がシニア隊員になって減ったため。</li> <li>・取り敢えず、英語だと考えていた。</li> <li>・活動目標が自身の中である程度明確であったので、任地の言葉を使い文化を理解する積極的な努力をしなかった。任務を行う上ではカウンターパートを通じたコミュニケーションが最も効率的だった。習得したチェワ語は挨拶程度。</li> </ul>
全然上達しなかった	2	<ul style="list-style-type: none"> <li>・日本語を使って農民とコミュニケーションをとった。時々通じないこともあったが、過度な身振り手振りがよく笑いをさそい、いい関係が持てたと思う。</li> <li>・英語での業務遂行（通訳してもらうことを含む）に大きな問題がなかった。</li> </ul>
上達しなかったの計	5	

農業隊員の個別派遣または短期的な派遣にはいろいろな限界がある。農村開発であれば、ある地域を理解・把握し、隊員が住民・農民に認知・受け入れられ、協力隊員ができることを模索・明らかにし、最終的には普及員・農民に見せられるものを示す必要があり、それは長期を要し、かつ、それなりの投入が必要となるプロセスである。その点、グループ派遣、チーム派遣という派遣形態は農村開発・農業分野に馴染む分野なのではないか、と感じる。

何かの案件の代替案として、また何かの案件のフォローアップとして、協力隊を入れるのはひとつのアプローチとして必要なことと思う。その場合、JICA 側は相手側・住民側に明確に「この協力隊派遣はフォローアップ型の派遣です」と伝えるべきである。相手側・住民は基本的に日本側の投入には感謝するし、ある案件がだめになったとしても、その理由をきちんと説明すれば納得するし、日本側を責めるようなことはしない。その説明の部分を JICA 側がせず、相手側・住民側にとっては不透明な状態で隊員派遣を開始すると、現場隊員は大変苦勞することになる。また、ある一定期間の混乱は不可避となる。提言としては、ある案件のフォローアップ型ならそれはそれで、そういう場合のモデルというものを作るのもいいと思う。ロビプロジェクトはダム案件がだめになった後に代替案として始まった協力隊派遣であり、そういう意味でのモデルになるのではないかと思う。

貴重な体験に感謝しています。また、この経験を活かせるように自分を磨きたいと思います。

フォローアップについて、農民組織・DTC・テクニカルレイバー・EPAがキーワードになると考える。何とか、プロジェクトが終了してもこの4点は活かせる内容にしていきたい。

また、このロビでの反省点を踏まえた、ダンボでの農業プロジェクトの道によって、点から線へと繋がりを作り上げてゆくことがODAとしても望ましいのではないかと考えている。それは、ロビのような広いダンボ・チェワ族というバックグラウンドを含む地域は少ないが、少なくともここでの経験を活かすことで、タブーや傾向はつかめているからである。

ロビでは、参加型として、農民だけでなく、省庁や試験場をも参加して行う方法をとった。試験場とEPAのつながりは、普及員からの問題提起を試験場にハンドオーバーできたりと、マラウイ共和国の縦割り行政や、バジェットの upper 階級での停滞などの面から見ても打破しうる方法ではないかと考えている。また、地域特産物生産面へのアプローチによって、プロジェクトとしての足跡を色濃く残すことができると思う。今後10年間の、ロビの果樹生産・ニンニク・ジャガイモと農民組織は、追跡してゆくことが望ましいものとして考えています。

受益者の希望に合ったフォローアップが良いと考えています。

本プロジェクトは、現地側との話し合いのもとで方針を決めており、実際に私が活動しているときもマラウイ側の人々が誇りを持ってこの仕事に携わってくれているように感じた。だから、マラウイ政府の協力も多く得られたのだと思う。また、私たちが活動していた2年と2ヶ月間は、現地の農業をブラッシュアップしていく方向で進めていこうとチーム内で何度も話し合った。それらは、業務内容に反映されていると思うし、間違っていないと感じる。しかし、農民を取り巻く環境はいつまでも同じわけではない。気象、土壌、土地問題、現金収入の増加やマラウイ政府の方針の変更、さまざまな要因が考えられる。今最善であるとしてもそれは普遍的なものではないということを理解してもらいたいと思う。そして、そのような状況に直面したときに彼ら自身がそれに対応できる力をもつことができるようになって欲しいと考える。

チーム派遣については、私はとてもよかったと思っている。お互いの専門分野を尊重し意見を聞くことでよりよい仕事をする事ができた。また、プロジェクト全体のことも複数の人数で話し合うことでさまざまな角度から物事が見え、よかったと思う。このような話し合いの場を奈良部シニアが積極的に設けてくれたことには感謝したい。

表 日本人ボランティアのカウンターパートスタッフへの質問票に対する回答

	Mr. Phiri / Project Management	Mr. Chiputu / Vegetable Component	Mr. Nkhoma / Fruit Component	Mr. Chiotha / Soil and Fertilizer Component	Mr. Mpembeka / Pest and Disease Component
1. プロジェクトを通じて新たに得た知識や技術について					
1.1. 野菜/果樹栽培のプロジェクト活動を通じてあなたほどのような知識を得ましたか。	実証試験、データ分析、結果のまとめ、プレゼンテーション(普及員や農民への技術移転を含む)における研究・知識。	<ul style="list-style-type: none"> <li>・苗床管理 (Kneaded bed, ボックス、ポット)</li> <li>・正しい種まき</li> <li>・混作</li> <li>・野菜の正しいスペーシング</li> <li>・水管理</li> </ul>	<ul style="list-style-type: none"> <li>・実証試験のレイアウト</li> <li>・実証試験における作物のランダム化</li> <li>・大小の果樹の接ぎ木</li> <li>・<u>Leaves to fruit ratio for good quality fruits</u></li> <li>・果樹の剪定と整枝</li> </ul>	<ul style="list-style-type: none"> <li>・土壌分析</li> <li>・苗床 <u>media</u> の準備</li> <li>・バイオマス利用法</li> <li>・果樹の接ぎ木と芽接ぎ</li> <li>・<u>野菜の接ぎ穂(Grafting of some vegetables)</u></li> </ul>	<ul style="list-style-type: none"> <li>・野菜・果樹の病虫害の特定(現場での診断と顕微鏡の使用による)。</li> <li>・病虫害の管理</li> <li>・各種実験の実施とコンピュータによるデータ分析</li> <li>・野菜・果樹の体系的な栽培</li> </ul>
あなたのような活動を自慢できますか。	実証技術の発掘およびその技術を必要としている農民に普及する手法を習得したこと。	<ul style="list-style-type: none"> <li>・野菜の品種選定</li> <li>・Sef onion 生産</li> <li>・苗床管理</li> <li>・正しい種まき</li> </ul>	<ul style="list-style-type: none"> <li>・果樹園の開発</li> <li>・果樹の接ぎ木</li> <li>・果樹の整枝</li> <li>・研究活動の知識の習得</li> </ul>	<ul style="list-style-type: none"> <li>・アグロフォレストリーとしての農地周辺の灌木</li> <li>・農民のためのマニュアル配合肥料</li> <li>・マニュアルとしての地元バイオマスの普及</li> </ul>	<ul style="list-style-type: none"> <li>・野菜・果樹の病虫害の特定</li> <li>・組合を通じた園芸普及活動</li> <li>・組合の組織化</li> </ul>
1.2. あなたは、隊員の助言がなくても、野菜/果樹を上手に栽培する方法を、栽培法を知らない友人、親類、他の村の人などに、説明し指導すること	園芸への興味と奉職精神により、私はマラウイにおける果樹/野菜栽培の10人の中心的な指導者のひとりである。このように、私は果樹/野菜栽培の知識・技能を持たないどのよ	はい。	はい。	はい。	はい。ただしコンピュータによるデータ解析については現時点で得意とは言えないので隊員の助けを必要とする。

	するための現場の経験と 実的な技術を獲得する 機会に恵まれている。				
--	---	--	--	--	--

		のマラウイ滞在期間を延長する。			<ul style="list-style-type: none"> <li>・日本人専門家の継続的派遣。</li> <li>・ロビと日本の県との姉妹関係締結。</li> </ul>
2.3. 野菜/果樹の栽培をするにあたって、主な困難は何だったですか。	主な困難は果樹の普及である。新しく植えた果樹を家畜が荒らす。	<ul style="list-style-type: none"> <li>・グループによる土地取得。</li> <li>・理解レベルの低さ。</li> <li>・種子が手に入らないことがある。</li> </ul>	<ul style="list-style-type: none"> <li>・土地需要。</li> <li>・農民の理解レベルの低さ。</li> <li>・家畜と果樹の管理。</li> </ul>	<ul style="list-style-type: none"> <li>・土地所有。</li> <li>・識字率の低さ。</li> <li>・野菜の種子が手に入らないことがある。</li> </ul>	<ul style="list-style-type: none"> <li>・高い原材料費。</li> <li>・夏期における灌漑用水の不足</li> <li>・病虫害問題</li> <li>・野菜・果樹生産において女性従事者が多いこと。</li> <li>・導入が迅速に進まない技術の存在。</li> <li>・安定した市場の不足。</li> </ul>
それを克服することはできましたか。	果樹の保護のための助言、果樹園の柵の実際的な展示、果樹農家のための柵の設置が家畜被害を克服する方法である。	自分はある程度克服できた。	ある程度。	ある程度。	自分達で克服できる問題もあるができない問題もある。
2.4. 現在も解決されていない困難・問題はありますか。	2~3 期にわたる試験結果に整合性のないものがある。これらはプロジェクトの延長を必要としている。	<ul style="list-style-type: none"> <li>・土地がとりあげられること。</li> <li>・野菜の種子が手に入らないことがあること。</li> </ul>	<ul style="list-style-type: none"> <li>・芽接ぎ/接ぎ木材料の不足</li> <li>・農民にとって芽接ぎ材料が高価なこと。</li> </ul>	<ul style="list-style-type: none"> <li>・野菜の種子の問題</li> <li>・土地所有</li> </ul>	<ul style="list-style-type: none"> <li>・農民と普及所スタッフのマーケティング技術の不足。</li> <li>・野菜生産の季節変動性。</li> <li>・乾期における水問題。</li> <li>・野菜・果樹加工技術の不足。</li> </ul>
3. プロジェクトの進捗の促進要因について					
3.1. 野菜/果樹栽培	日本人ボランティアの活	はい。	はい。	はい。	はい。



	Mr. Phiri / Project Management	Mr. Chiputu / Vegetable Component	Mr. Nkhoma / Fruit Component	Mr. Chiotha / Soil and Fertilizer Component	Mr. Mpembeka / Pest and Disease Component
4. 対象村の状況と村民の取り組み方の変化について					
4.1. 村落開発について、村民は隊員の助言が無くても自分たちで課題を話し合えるようになりましたか。	はい。ロビ園芸組合のメンバーは月例会議を持ち生産と販売の問題、対策、その月以降の計画を議論している。	部分的に可能。	部分的に可能。	部分的に可能。	はい。
そうになっている場合、前回ほどのような課題が話し合われましたか。	リロング市の市場で好まれる野菜の種類、各種作物の生産の各地区への配分、冬野菜生産の準備、新しくつくられた果樹園の家畜からの保護、市場に出荷する前の等級付けの必要性。	<ul style="list-style-type: none"> <li>・早期出荷のため、農地を早期に準備すること。</li> <li>・生産計画。</li> <li>・新種の野菜を生産することの重要性。</li> <li>・継続的な野菜の種まき。</li> </ul>	いつ dimba/冬作物の栽培を始めるか。	<ul style="list-style-type: none"> <li>・生産計画。</li> <li>・コンポスト作り。</li> </ul>	野菜・果樹への家畜による被害を防ぐ方法。
4.2. ワークショップ、見学会などにより新たな知識や技術を得た村民は、他の人に知識を伝えることができますか。	コンポスト作りと施肥、バイオマス利用、殺虫剤としての <i>Tephrosia vogelii</i> などの簡単でユーザーフレンドリーな技術は実際的なデモの後に農民から農民へ移転することが可能である。	プロジェクトの普及部分は短期であったため部分的にしか可能でない。	普及期間が短かったため部分的にのみ可能。	普及期間が短かったため部分的にのみ可能。	はい。全面的にはないが可能。
4.3. 村民のプロジェクトへの参加状況は変化しましたか。	農民の参加は高まってきた。	はい。	はい。	はい。	はい。

					<ul style="list-style-type: none"> <li>・スタッフの追加</li> <li>・信頼性のある交通手段 (オートバイ)</li> <li>・資金確保</li> </ul>
5.2. マラウイ国内の他の地域へ適用するためには、どのような考慮が必要だと思いますか。	気候・天候、土壌、市場、さらに労働に対する考慮が必要である。	<ul style="list-style-type: none"> <li>・その地域でのスタッフと農民のトレーニング。</li> <li>・輸送手段。</li> <li>・その地域への日本人ボランティアの投入。</li> </ul>	<ul style="list-style-type: none"> <li>・新地区の対象グループ</li> <li>・スタッフと農民のトレーニング</li> <li>・知識を拡げるための会議</li> <li>・新地区での計画マトリックス</li> </ul>	<ul style="list-style-type: none"> <li>・スタッフと農民のトレーニング</li> <li>・輸送手段</li> <li>・文房具</li> <li>・デモンストレーション用材料</li> </ul>	<ul style="list-style-type: none"> <li>・適切なフィージビリティ調査</li> <li>・対象農家の特定</li> <li>・スタッフの確保</li> <li>・資金確保</li> <li>・プロジェクト期間の設定</li> </ul>

	らである。	る。			
6.4. 研修に関して何か提言はありますか。例えば、研修期間の短縮とか延長。	深く詳細な知識や技術の獲得のために、日本での研修期間は延長されるべきであろう。自分は、管理者として、下記の分野の知識と技術を必要としている。 (i)プロジェクトプロポーザルの作成 (ii)プロジェクトサイクルマネジメント (iii)組合の運営・管理 (iv)フルスケールのマーケティングコース 上記が実現すれば、自分はロビと全国のスタッフと農民を支援し訓練することができよう。	自分の研修は4か月と短すぎいくつかの実証試験は完了しなかった。他のマラウイ人スタッフは10～11か月で差異が生じた。どのような基準によって研修が選ばれたのか。	研修期間は diploma または degree を授与するにたるものであるが実際の証書は昇進を助けるほど強くない。diploma または degree が授与されればよいだろうに。	自分の研修は4か月と非常に短期間であった。野菜によっては既に自分の参加する以前に種を蒔かれたものがあつたし、自分の離日時にトマトなどはまだ収穫されず実証試験の結果を得ることはできなかつた。時間はタイトであり忙しかつたため技術によっては十分習得できなかつた。	10か月間の研修は良い。しかしいくつかの短期的な特化したコースもカウンターパートを対象に開催されるとよいのではないか。例えば、普及技術、灌漑、野菜・果物の加工。
7. 普及員と技術労務者の位置づけと役割は何ですか。	普及員の役割は、(i)農民に技術を普及すること、(ii)技術導入を進めるべく新技術に対する農民の姿勢を変えること、(iii)多くの農民が裨益するようにグループ形成や運営においてプロジェクトスタッフを支援すること、(iv)農民教育を支援することである。(技術メッセージ(マニュアル)の普及を含む。) 技術労務者の役割は、(i)現場における各種の実証試験の実施を補佐すること、(ii)実証試験の手作業を補佐し、プロジェクトチームと日本人ボランティアによる展示を実行することである。(耕作、水まき、データ収集などを含む。)				

# LILONGWE AGRICULTURAL DEVELOPMENT DIVISION

## LOBI HORTICULTURAL APPROPRIATE TECHNOLOGY EXTENSION PROJECT

A PROJECT IMPLEMENTATION COMPLETION REPORT  
1<sup>ST</sup> NOVEMBER 1998 TO MAY 2003

The Program Manager  
Lilongwe ADD  
F.O. Box 259,  
Lilongwe

## EXECUTIVE SUMMARY

### PROJECT DESCRIPTION

#### *Funding Agency of the Project*

The Government of Malawi (GoM), in collaboration with Japan International Cooperation Agency (JICA) formulated Lobi Horticultural Appropriate Technology Extension Project (LHATEP) in order to assist farmers in the project site to become food self-sufficient. The project was formulated in November 2001 and was designed to run from 1998 to 2003. The project was planned to run verification and participatory trials and generate technologies for dissemination to the farmers in the project site.

#### *Project Site*

LHATEP was localized in Thiwi/Lifidzi Rural development Project in the southwestern part of Dedza district. The outstanding feature of the area is that about 30 percent of the farming families are female headed characterized as resource poor farmers with limited access to inputs, labor, land and holding less than 0.5 ha piece of land. With the area's relatively favorable climatic conditions and close proximity to the major market in Lilongwe city, it is well situated for horticultural crops production.

#### *Goals and Objectives*

The main goal of the project was to reduce poverty by increasing household incomes. Specifically the project had the following objectives: -

- Increase productivity of horticultural crops in Lobi EPA
- Improve nutritional status of local residents in Lobi
- Promote sustainable horticultural crop production
- Improve soil fertility in the project sites
- Improve marketing of horticultural crops in Lobi area

## *Implementation Strategy Of The Project*

*The implementation strategy of the project was built on participatory approaches. Farmers were initially involved in the selection process of technologies for verification especially the indigenous ones. Day Training Center and farmer field participatory research verification trials were used. The verified technologies were profiled and used to develop messages for dissemination to the beneficiaries of the project. Horticultural campaign meetings, DTC and on farm demonstrations, farmer trainings and field days were vehicles used for dissemination of the verified technologies. The project also worked in close collaboration with research stations and the Department of Agricultural Research and Technical services, in addition to existing Non Governmental Organizations (NGOs) in the project area.*

## *Expected Benefits Of the Project*

*The expected benefits of the LHATEP were- increased incomes of the resource poor farmers; nutritional status of Lobi residents improved by consumption of horticultural products; improvement in the research, extension and marketing of horticultural crops in rural and urban markets improved, Improved cultural practices for the horticultural production in Lobi area adopted, reduced soil degradation and increased horticultural crop yields.*

## *Activities*

*Some of the major project activities were: to conduct verification, observation and participatory trials, analysis and collate research findings, conduct technical adaptability meetings, train staff/ farmers in principles of marketing, facilitate seed multiplication programs, fruit tree seed propagation, conduct campaign meetings on horticultural technologies, demonstrations and field days*

*These activities were implemented through the five components of the project namely: Vegetable component, Fruit component, Soil fertility component, pest and diseases component and the management component.*

## *Vegetable Component*

*The vegetable components main objective was to establish appropriate new techniques and extension messages such as the use of the kneaded nursery beds, pots and trays made from local materials to procure healthy seedlings free from root damage.*

## *Fruit Component*

*The fruit component aimed at increasing the percentage of “takes” on grafting of tropical fruits such as mangoes with the use of plastic film and cheese cloth, and the production of improved fruit tree seedlings.*

## *Soil Fertility component*

*The soil fertility component main objective was to reduce environmental degradation and to improve soil fertility through the usage of local materials such as maize husks, also to promote the planting of leguminous trees such as hedges to reduce soil erosion, water runoff, wind damage and livestock injury.*

## *Pest and Disease component*

*Pest and disease component aimed at examining the use and effects of using local materials such as tephrosia vogelli, tobacco, hot-pepper production and develop extension messages to be disseminated to farmers.*

## *Management Component*

*The management component, the overall project management was vested in the Director of Crop Production in the Ministry of Agriculture, Irrigation and Food Security. The Leader of Lobi JOCV Team assisted the Local Project Manager in running the administrative and managerial matters of the project. The component aimed at providing technical and administrative support to the project and supervise project activities and lastly to provide guidance on scientific and technical issues.*

## ACHIEVEMENTS

### *Trials Conducted and Verified*

*A total number of 15 technologies have so far been verified following implementation of 34 trials against 18 planned. Although 7 trials were dropped in the process of implementation, conduction of trials in the project could be rated extremely good at 189 % of the project target.*

*Even if some trials are on going, the verification exercise has so far released a total number of 15 technologies that farmers are using. It was observed that the number of trials verified is low when compared to the number of trials so far conducted.*

### *Farmer Group/Association formation*

*The analysis of the progress reports indicates a tremendous increase in the number of groups formed and in the membership of the association. The project has achieved 95% in-group formation of what was targeted. As for the association membership it has achieved 92% of its target.*

### *Role Of The Lobi Horticulture Association*

*From the analysis it is evident that the Lobi Horticulture Association played two major roles. Identification of wholesale markets where all its members sold/sell their produce as a group in the City of Lilongwe was one of the roles. The number of selling points and association's market outlet both geometrically grew over the initial numbers and extremely above the targets. The number of farmers selling a graded crop has also tremendously increased by 4483% over the baseline and 1619% over the mid-term evaluation. Identification of reliable wholesale markets in supermarkets in the city of Lilongwe could be used to explain the position of these achievements. The association in addition, mobilized production inputs it sold to its members.*



## *Farmer Empowerment and Participation In The Project Activities*

*The participation of farmers in the project was through the Lobi Horticulture Association, which was formed in 1998. The number of groups in the association has increased from 50 at mid term evaluation representing 52% growth, while its membership has increased by 54 % over midterm evaluation. It could also be concluded that the patronage of women in the association was quite high.*

### *Vegetable Component*

*The vegetable trial component mostly centered on verifying yield levels of different varieties of vegetables that were subjected to different treatments in different seasons of the year. The component has also produced a profile of verified technologies for tomatoes, cabbages and onion varieties. Performance of the vegetable component trials has led to an increase in the yields of vegetable crops. Records show that yields have increased from 6% for onions to 153% for potatoes. 88% of the targeted campaign meetings and 87% of the targeted demonstrations achieved helped to disseminate the verified vegetable technologies to the farmers.*

### *A Profile Of Technologies Verified*

*Generally a total of 4 trials against 18 were verified and this has resulted into the verification of 15 technologies for various horticultural crops. It is recommended that a manual should be developed to properly document these technologies.*

### *Soil Fertility Component*

*There has been a reduction in the maize yields in Malawi with decreasing use of inorganic fertilizer as a result of the removal of the fertilizer subsidies by government in 1994. In view of this the project had a soil fertility component that promoted the use of organic fertilizers to supplement chemical fertilizers. Trials under this component have been verified; many technologies have since been passed on to farmers for adoption. In essence a total number of 14 trials were conducted and 6 of these representing an*

achievement of 43% were successfully verified. The number of farmers using organic manure has also increased from 460 in 1998 to 1337 in 2003, representing an increase of 191%.

### *Pest and Disease Control*

The project has been conducting verification trials at Lobi Day Training Center as well as participatory ones on farmers' fields to identify low cost and sustainable disease and pest control technologies. Two trials were successfully completed and has released 2 technologies that farmers have already started using. In this vain the number of farmers using bio-pesticides or cultural practices has tremendously increased from 156 in 1998 to 1337 in 2003, representing a 957% increase. This achievement is way above the project target of 800 by 67% signifying the fact that farmers have accepted the technologies due to low cost associated with them.

### *Training*

The project provided training in various fields such as vegetable production, cooperatives/associations, group management, pest and diseases control and soil improvement practices. This training was offered to officers working closely with the project (Malawi counterparts), AEDOs and farmers. To date 12 Malawians have been trained in 12 different training sessions in Japan. The project also organized tours for farmers to various Horticulture associations. The project also attached 5 volunteers from Japan. These worked hand in hand with their Malawian counterparts.

### *Project Funding*

Although funding for the project activities was erratic during certain times of the project implementation period, it could be concluded that it was generally satisfactory from both the donor and the government of Malawi. MK15320102 was the total funding at the assessment period implying that about MK200000 is pending funding for finally winding up the project activities in October 2003.

## A TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
PROJECT DESCRIPTION	2
1.0 INTRODUCTION	12
2.0 DESCRIPTION AND BACKGROUND OF THE PROJECT	13
2.1 Project Site	13
2.2 Goal And Objectives Of LHATEP	13
2.3 Implementation Strategy Of The Project	14
2.4 Expected benefits of The Project	14
2.5 Project Activities	15
2.6.0 Components Of The Project	15
2.6.1 Vegetable Component	15
2.6.2 Fruit Component	16
2.6.3 Soil Fertility Component	17
2.6.4 Pest And Disease Component	18
2.6.5 Management	18
3.0 METHODOLOGY	19
4.0 ACHIEVEMENT OF PROJECT OUTPUTS BY COMPONENT	19
4.1.0 General Achievements	19
4.1.1 Trials Conducted And Verified	19
Component	19
Trials under verification	19
Trials verified	19
Technologies Verified	19
TOTAL	19
4.1.2 A Profile Of Technologies Verified	20
4.1.3.0 Farmer Empowerment And Participation In The Project Activities	21
4.1.2.3.1 Farmer Group/Association Formation	21
4.1.2.3.2 Economic Empowerment Of Farmers	22
4.1 Vegetable Component	23
4.2 Fruit Component	24
4.3 Soil Fertility Component	25
4.4 Pest And Disease Control Component	26
4.5.0 Management	26
4.5.1 Training	26
4.5.2 Procurement.	27

5.0	Project Costs And Financing	29
6.0	CONCLUSION AND RECOMMENDATIONS	30

## LIST OF ACROMYNS

AEODs	:	<i>Agricultural Extension Development Officer</i>
ATCC	:	<i>Agricultural Technology Clearing Committee</i>
DTC	:	<i>Day Training Centre</i>
EPA	:	<i>Extension Planning Area</i>
GoM	:	<i>Government of Malawi</i>
JICA	:	<i>Japanese International Cooperation Agency</i>
JOVC	:	<i>Japanese Overseas Volunteer Cooperation</i>
LHATEP	:	<i>Lobi Horticultural Appropriate Technology Extension Project</i>
NGOs	:	<i>Non Governmental Organisations</i>
RDP	:	<i>Rural Development Project</i>
SRDP	:	<i>Sub Rural Development Project</i>

## A LIST OF TABLES

<i>Table 1. Number of trials conducted and verified.</i>	19
<i>Table 2: A Profile Of The Technologies Verified</i>	20
<i>Table 3: Farmer Participation In The Project Activities</i>	22
<i>Table 4: Role Of The Association In The Economic Empowerment Of Farmers</i>	22
<i>Table 5: Yield Levels Of Various Vegetable Crops</i>	23
<i>Table 6: Influences Of The Vegetable Component trials.</i>	24
<i>Table 6: Influences Of The Vegetable Component trials.</i>	25
<i>Table 7. Type of equipment procured under the project</i>	27
<i>Table 8: Provisions and Expenditure up to May 2001</i>	29

## LILONGWE AGRICULTURAL DEVELOPMENT DIVISION

### A STATUS TERMINAL REPORT FOR THE LOBI HORTICULTURAL

#### APPROPRIATE TECHNOLOGY EXTENSION PROJECT

##### 1.0 INTRODUCTION

The Malawian economy is basically agricultural based and the majority of the people depend on the agricultural sector for their livelihoods. About 85 per cent of the population living in rural areas is employed in the agricultural sector. The contribution of agriculture to the country's Gross Domestic Product (GDP) ranges from 35 to 37 per cent. Besides about 90 per cent of the national export earnings come from agriculture. The agricultural benefits the country realizes come from local as well as export sales of both food and cash crops produced in estate and smallholder sectors.

The major cash crops of the country include tobacco, tea, cotton, and sugar cane while the important food crops are maize, groundnuts, and Cassava. Many horticultural crops such as paprika, potatoes, vegetables and some fruits have recently been observed that they have the potential to emerge as reliable cash crops.

Until the 1980s Malawi has been experiencing food self-sufficiency at the national level and had been exporting some crops like maize to its neighboring countries like Mozambique. But the food self-sufficiency at the national level hardly, however, trickled down to the beneficiaries at household level as was evidenced by, among other things such as chronic malnutrition, poverty and "Ganyu" (casual) labour - as a way of coping mechanism.

A number of factors including drought, decrease in the agricultural productivity associated with low adoption rates of improved technologies and low access to high productive inputs and the deterioration of the economy in general were blamed for a reversal in high national food self-sufficiency. Current studies also indicate that the position of indicators associated with diminishing food self-sufficiency levels has not changed. In some cases the situation has actually worsened.

In view of the above, the Government of Malawi with its donor partners has adopted several strategies for increasing agricultural production in order to revert to the old days of food self-sufficiency of the 1980s and even excel by implementing a multiple of localized as well nationalized agriculture projects. A good example of a localized project is the Lobi Horticultural Appropriate Technology Extension Project (LHATEP).

The Malawi Government in collaboration with Japan International Cooperation Agency (JICA) formulated LHATEP with the participation of farmers in the area in order to empower the smallholder farmers so that they move towards beyond food self-sufficiency. The project formulated in 1998, November 1 was designed to run in two phases with the first phase that ran from 1998 to 2001. The first phase focused on running verification and adaptive trials while the second was planned to generate technologies for dissemination to the smallholder farmers in the project areas. The second phase ran from 2001/2002 to 2002/2003.

## 2.0 DESCRIPTION AND BACKGROUND OF THE PROJECT

### 2.1 Project Site

LHATEP was localized in Lobi Extension Planning Area (EPA) located in Thiwi/Lifidzi Rural Development Project (RDP) in the southwestern part of Dedza district. Thiwi/Lifidzi is a sub-Rural Development Project of Dedza in the current decentralization era (SRDP). The outstanding feature of the area is that about 30 percent of farming families are female headed who are mostly characterized as resource poor farmers with limited access to inputs, labour, and in most cases with land less than 0.5 hectares. With the area's relatively favorable horticultural climatic conditions and the proximity to major market of Lilongwe, it is well situated for horticultural production for both income generation and household consumption.

### 2.2 Goal And Objectives Of LHATEP

The main goal of the project was to empower the rural smallholder farmers for the purpose of poverty reduction at household level in Lobi EPA area with the following specific objectives:

- To verify horticultural crop production technologies by running trials to increase horticultural production;
- To increase income of resource poor farmers through the promotion of horticultural crops;
- To improve the nutritional status of local residents in Lobi area by promotion of horticultural crops cultivation;
- To improve the agricultural practices for horticultural production in Lobi area;
- To improve the marketing of horticultural crops;
- To promote the use of soil fertility improvement techniques.



### 2.3 Implementation Strategy Of The Project

The project was built on participatory approaches. It was planned to run in two phases. The first phase with an implementation period of 3 years (1998-2001) was designed to undertake research verification trials of the recommended and indigenous technologies on horticultural crops. Farmers were involved in the selection of these crops. They were also given a chance to indigenous technologies for verification. Two forms of research verification trials were adopted. The Day Training Center Trials were set up at EPA Headquarters. These did not only generate appropriate horticultural technologies for farmers in the EPA but were also used as training tools for the proven technologies. Besides the center was used as a proven technology access point for non-beneficiaries of the project.

The participatory research verification trials were a second set of trials that the project ran in selected individual farmers' sites. These were run simultaneously with those of the Day Training Centers. The only difference is that individual farmers were the operators of these trials. Both the Day Training Center and Participatory Trials were mounted to produce a profile of technologies that are low cost, sustainable and suitable to produce tangible results in Lobi EPA. Special advice on the implementation of verification trials was sought from the Government Research Stations especially Chitedze and Bvumbwe Research Stations.

Besides the Department of Research Station the project also collaborated NGOs. Initial results from the verification trials were assessed at quarterly and semi-annual review meetings of the project. A profile of verified technologies was declared fit for public use in Lobi EPA at Agriculture Technology Clearing Committee (ATCC) meetings.

These technologies were disseminated and continue to be disseminated through the existing extension system of the Ministry of Agriculture, Irrigation and Food Security. The profiling and dissemination of technologies comprised the second phase of the project and started in 2001.

By the end of its implementation period, the project was expected to reach about 1,600 farm families who have access to both dambo and upland cultivation for year round horticultural crop production.

### 2.4 Expected benefits of The Project

- (a) The resource poor farmer incomes increased from increasing horticultural productivity as a result of increased adoption of appropriate technologies;
- (b) The nutritional status of local residents in Lobi area improved by the consumption of horticultural products;

- (c) Improvements in the research, extension and marketing of horticultural crops; and
- (d) A catalogue of improved cultural practices for the horticultural production in the Lobi area in place
- (e) Reduced soil degradation
- (f) Increasing yields for horticultural crops.

## 2.5 Project Activities

The major activities of the project were

- Conduct verification, observation and participatory trials.
- Review and refine indigenous technologies for horticultural crop production.
- Analyze and collate research findings.
- Conduct technical adaptability meetings.
- Develop appropriate extension messages on cleared appropriate horticulture technologies.
- Conduct campaign meetings on appropriate horticulture technologies.
- Conduct demonstrations on water management for horticultural crops.
- Conduct participatory rural appraisal in the project sites.
- Facilitate seed multiplication program.
- Conduct fruit tree seedling production.
- Form farmer groups/association in the project area
- Train staff/farmers in principles of marketing.

These activities were implemented through five components of the project and the components were:

- (i) Vegetable Component
- (ii) Fruit Component
- (iii) Soil fertility Component
- (iv) Pest and Disease Control Component
- (v) Management Component

### 2.6.0 Components Of The Project

#### 2.6.1 Vegetable Component

The main objective under the Vegetable Component was to establish appropriate new techniques and extension messages such as the use of kneaded nursery beds, pots and trays made from local materials to produce healthy seedlings free from root damage. Other objectives were

- To establish shelf nursery technology and appropriate extension messages (to avoid high temperature injury to vegetable seedlings and insect damage).
- To establish proper vegetable nursery management and cultivation techniques and develop associated extension messages such as the use of charcoal that are made from grasses and crop residues for improving water holding capacity and drainage, as well as establishing a strong root system.
- To establish and train farmers in appropriate manure practices for major vegetables emphasizing on use of organic matter, such as fermented organic fertilizer, green and compost manure for increased horticultural production.
- To establish cultural and biological pest and disease control measures in the vegetable growing sub-system and provide training to farmers. It is envisaged that the control will be undertaken with improving local control methods and use of local materials such as *Tephrosia vogelii*, Garlic, Hot pepper, etc.
- Establish and introduce shelter tomato cultivation during rainy season to reduce infection especially fungal diseases such as late blight. The aim is to ensure tomato production from April to June when tomatoes are scarce and ensure year round production for more income generation.

#### 2.6.2 Fruit Component

The fruit component aimed at increasing the percentage of “takes” on grafting of tropical fruits such as mangoes with the use of plastic film and cheese cloth, and the production of improved fruit tree seedlings. Besides the above objective, the component aimed at achieving the following:

- To establish and train farmers on effective method of top-working to change local cultivars to improved varieties.
- To produce improved sub-tropical fruit tree seedlings such as tangerines and oranges, and develop appropriate extension messages for farmers on the budding techniques to be used.
- To produce improved temperate fruit tree seedlings such as peaches, and develop appropriate extension messages for farmers on the budding techniques to be used.
- To train extension staff/farmers on pruning for health fruit tree growth.

- To train extension staff/farmers on fruit thinning to increase yields and quality of the product produced.
- To establish appropriate organic manure practices and communicate these to the farmers.
- To establish a system of pest and disease control which utilize local materials and develop appropriate extension messages to be disseminated to farmers.
- To establish an annual operational calendar for recommended fruit production.

### 2.6.3 Soil Fertility Component

The major objectives of this component were:

- To amend the existing compost making method using local and low cost materials through establishment and dissemination of appropriate messages such as green grass compost making for field staff on the new method.
- To establish fermented fertilizer making method by utilizing local materials such as maize husks which are readily available at village level, and develop extension message to be disseminated to farmers.
- To establish appropriate leguminous biomass utilization method for horticultural crops and disseminate the techniques to farmers.
- To promote the planting of leguminous trees as hedges to reduce soil erosion, water runoff, wind damage and livestock injury.
- To establish and introduce an annual operational calendar for organic matter making and its use.
- To examine the effects of a zero cultivation system for the experimental dimba garden and orchard.
- To establish and disseminate technologies through the extension system for improvement of nursery soil for vegetable and fruit seedlings production.
- To establish an effective method of charcoal making and develop the extension messages to be disseminated.

#### 2.6.4 Pest And Disease Component

The aims of this component were:

- To examine the use and effects of using local materials such as *Tephrosia Vogelli*, tobacco, hot pepper, garlic and chinese leek in controlling pests and diseases in horticultural production, and develop extension messages to be disseminated to farmers.
- To examine the use of natural enemies against pests in horticultural production in the project area.
- To examine the use and effects of local materials such as ash and maize husk against fungal diseases, and improve the method.
- To improve appropriate field and nursery hygiene techniques and disseminate the developed messages to farmers.
- To improve and disseminate through the extension system appropriate field-planning method such as rotation of crops.
- To assist in establishing a mixed cultivation system for the diverse eco-system of the project area and disseminate through the extension system, the information to farmers.
- To advise farmers on proper and safe use of agricultural chemicals through the extension system.

#### 2.6.5 Management

The overall project management was vested in the Director of Crops Production in the Ministry of Agriculture and Irrigation. The Leader of Lobi JOCV Team is assisting the Project Manager. They bear the responsibility of administrative and managerial matter of the project. The component aimed at providing the following:

- Technical and administrative support to the project team
- Supervise project activities and provide guidance on scientific and technical issues.

### 3.0 METHODOLOGY

Production of this report relied on annual progress reports the project implementation team used to collate. These annual reports were used to update a mid-term evaluation report that was conducted in 2001. This was done with a view of establishing the current status of the project. An examination of the project appraisal document was also done to see if implementation was in line with the original idea of the project. In some cases the project implementation team was consulted for information beef up where the progress reports used were deficient. Back to office reports from field visits were also used.

### 4.0 ACHIEVEMENT OF PROJECT OUTPUTS BY COMPONENT

#### 4.1.0 General Achievements

##### 4.1.1 Trials Conducted And Verified

One of the activities of LHATEP was to conduct participatory, observation and verification trials at the Day Training Center and farmers' fields. Targets for each component were set. Table 1 shows that a total of 15 technologies have so far been verified following implementation of 34 trials against 18 planned. Although 7 trials were dropped in the process of implementation, conduction of trials in the project could be rated extremely good at 189% of the project target. It was observed that more trials were conducted due to a repeat of some of them on the same crops to verify their performance in different seasons of the year (cool, hot and rainy seasons). The Soil Fertility Component conducted most trials with the least number conducted by the fruit component. This could be as a result of long maturity period of fruits. Out of the 18-targeted trials only 4 in total were successfully completed.

*Table 1. Number of trials conducted and verified.*

Component	Trials under verification		Trials verified		Technologies Verified
	Target	Achieved	Target	Achieved	
Vegetable	7	10	7	0	8
Fruit	4	2	4	0	0
Soil fertility	6	14	6	2	5
Pest and Disease	1	8	1	2	2
TOTAL	18	34	18	4	15

*Note: 12 trials still on-going.*

#### 4.1.2 A Profile Of Technologies Verified

Even if some of the trials are still on going, the verification exercise has so far released a total of 15 technologies that farmers are using or could use for increasing horticultural production in Lobi EPA (Table 1). Table 2 gives a profile of the technologies from the verification activity of the project.

*Table 2: A Profile Of The Technologies Verified*

Project Component	Technology Verified	Strength Of Technology
Vegetable	Tomato variety selection (Zeal and Zest selected)	High yielding in cool, hot and rainy seasons
	Cabbage variety trial (Golden Acre selected)	High yielding in winter
	Cabbage variety trial (Hercules selected)	High yielding in rainy season
	Onion variety selection (Granex selected)	High yielding
	Onion variety selection (Texano selected)	High yielding
	Nursery management (Kneaded bed, pots and boxes for leaf mustard)	Reduce transplanting shock for high yields
	Nursery management (Kneaded bed and pots for tomato)	Reduce transplanting shock for high yields
Soil Fertility Improvement	Tomato/leaf mustard nursery media with top soil, compost and charcoal in the ratio of 1:1:1	Promote tomato production in cool and hot seasons
	Onion nursery media with top soil, compost and charcoal in the ratio of 1:1:1	Promote onion production in cool season
Pest and Disease Control	Use of <i>Tephrosia vogelli</i>	Controls cabbage sawfly and cabbage webworm
	Use of Shelter in tomatoes	Shelters tomatoes against pests and diseases in rainy season

It was further observed that generally, the number of trials verified is low when compared to the number of technologies so far conducted. The analysis in the verification trials revealed that this was as a result of the following reasons:

- (i) Delay of the Project Management Unit to open up new land for the trials. This in turn delayed the laying out of trials.
- (ii) Repeat process of the failed trials. Most trials failed due to variability in moisture content of the dambo soils where they were mounted.
- (iii) Delay in the analysis of organic matter content for the soil fertility improvement component. Most of the trials were dependent on the results of the organic material analysis. The delay made inhibited conduction of trials.
- (iv) Extension activities started earlier than scheduled.
- (v) Land shortage on fruit component
- (vi) It took time for the government to attach counterpart staff to the project
- (vii) Labour shortage during initial stage of project implementation.

#### 4.1.3.0 Farmer Empowerment And Participation In The Project Activities

##### 4.1.2.3.1 Farmer Group/Association Formation

The analysis of progress reports indicate that the participation of farmers in the project activities was through the Lobi Horticulture Association formed in 1998 with an original membership of 346. The analysis further shows that at mid-term evaluation the Lobi Horticultural Association had a membership of 959 farmers and of these farmers 862 (89.9%) were women while 97 (10.1%) were men.

The same analysis has revealed that since then there have been remarkable changes in the activities of the association. The number of groups in the association has increased from 50 to 76 representing a 52% growth while its membership has increased by 54% with a membership growth from 959 to 1478. Membership of women, however, in the association continued to dominate. Out of 862 as woman membership at mid-term evaluation, its membership was 1252 at project terminal assessment representing an increase of 45% over it. Although membership of men has extremely been kept lower than that of women, there has been a tremendous growth in the membership of men since a mid-term evaluation. The number of men since then has increased from 97 to 226 representing an increase of 133% over it. The analysis further shows that the project, however, failed to meet its set targets in the number of groups and membership for the association, the achievement in the number of groups fell short by 4 while it fell short by 122 for the targeted membership (Table 3).



Table 3: Farmer Participation In The Project Activities

Association	Target	98/99	99/00	00/01	01/02	02/03	% Over Target	% Over baseline
Groups	80	23	46	50	66	76	95	230
Membership	1600	346	843	1011	1337	1478	92	327

#### 4.1.2.3.2 Economic Empowerment Of Farmers

The project mobilized farmers to form the association in order to increase their levels of empowerment through pooling of social and economic resources. The analysis in the preceding paragraph indicates that the project made a substantial progress in social empowerment as the number of groups that joined the association continued to grow within the implementation period of the project. To date the growth is put at 230% over the 1998/99 achievements (Table 3). The association so formed made a positive impact on the economic activities of its members. For example

- The association made it easy for its members to access inputs for growing their horticultural crops. By buying inputs in bulk from dealers from the city of Lilongwe, the association sold them to its members (Mid-term evaluation).
- The association played a major role in the identification of wholesale markets where all its members sold/sell their produce as a group in the City of Lilongwe. Use of a lorry donated to the association by the Japanese Government eased this association's role. Table 4 shows that the project made tremendous gains in the economic empowerment of farmers. The number of selling points and association's market outlet has both geometrically grown over the initial numbers and extremely above the targets. What is more encouraging is the fact that the number of farmers selling a graded crop has also tremendously increased by 4483% over the baseline and 1619% over the mid-term evaluation. Identification of reliable wholesale markets in supermarkets in the city of Lilongwe could be used to explain these achievements.

Table 4: Role Of The Association In The Economic Empowerment Of Farmers

Empowerment Indicator	98/99	99/00	00/01	01/02	02/03	% Over target	% Over baseline
Selling points	23	35	50	63	65	1083	183
Farmers selling graded crop	18	27	48	572	825	103	4483
Association Market Outlets	3	5	8	10	12	200	300
Per capita income (US\$)	8	9.94	10.57	15.7	15.7	196	74

- In addition to an increase in the number of selling points, farmers selling a graded crop and the association's market outlets, it has been observed that

the farmer's per capita income has increased by 58% over the baseline (Table 4). This could be linked to increasing production and levels of sales as the lorry easily connects the farmers to the market source.

#### 4.1 Vegetable Component

The vegetable trial component mostly centered on verifying yielding levels of different varieties of vegetables that was subjected to different treatments in different seasons of the year. Traditional methods of growing vegetables were also looked into by this component. It should be noted that trials in this component were performed jointly with other components. Table 2 above outlines a set of the first benefits from running vegetable component trials. The component has produced a profile of verified technologies for tomato, cabbage and onion varieties. Farmers in Lobi EPA could tap from this profile with the help of Extension Workers. Since some of the trials were observed to have not been concluded the technology profile for the vegetable component is likely to grow.

The analysis further indicates that performance of vegetable trials has increased yield levels of various vegetable crops. Table 5 shows that the yield increases range from 6% for onions to 153% for potatoes over the yields in 1998/99 when the project took off the ground. The performance over their project targets was quite excellent. All of them except tomato exceeded their targets.

*Table 5: Yield Levels Of Various Vegetable Crops*

Vegetable	Target Yield Kg/Ha	98/99 Yield Kg/Ha	99/00 Yield Kg/Ha	00/01 Yield Kg/Ha	01/02 Yield Kg/Ha	02/03 Yield Kg/Ha	% Over Target	% Over Baseline
Tomato	23838	19865	20000	15060	20000	21150	89	6
Onion	5246	4372	14000	12000	15000	15000	286	243
Cabbage	12480	10400	12000	12050	12000	17100	137	64
Potato	8051	6709	11942	12053	15800	17000	211	153
Leafy vegetables	13518	11265	11200	12050	12000	15000	111	33

The fact that farmers had been participating in the implementation of these trials gives an indication that some of the benefits have already accrued to them. There is, however, need to make a deliberate efforts to ensure technologies from these trials reach many farmers bearing in mind that the target population number of the project was much lower than the current population of the EPA.

The observation that some of the benefits from this component are under utilization by farmers is evidenced by the encouraging performance of some of the indicators under the component (Table 6). For example area under high yielding vegetables among others has increased by 191% over the baseline. When compared to its set

target the achievement is put at 96% of it. The number of farmers growing high yielding varieties has also shown an increasing trend. The analysis shows that the number has increased by 286% over the 1998/99 achievements, as has been the case for the other indicators (Table 6).

*Table 6: Influences Of The Vegetable Component trials.*

Vegetable Indicator Observed	Target	98/99	99/00	00/01	01/02	02/03
Area under vegetable crops (Ha)	1844	1229	1193	1998	21064	22545
No. of farmers growing vegetables	17235	11490	18736	23345	24745	26853
Farmers practicing appropriate water management practices in vegetables	1600	207	326	479	854	1016
Farmers practicing appropriate cropping methods in vegetables	1600	173	272	431	645	1245
Area under high yielding vegetables (Ha)	30	9.85	19.1	21.5	25.8	28.7
Farmers using high yielding vegetables	1600	346	544	959	1016	1337
Farmers growing high nutritive vegetable	1600	187	293	556	676	845

The rapid increases in the achievements could be as a result of an early start in the activities of the technology dissemination component of the project through field days, DTC/On farm demonstrations and numerous campaign meetings on horticultural technologies the project has been conducting. The analysis shows that 88% of the targeted campaign meetings were accomplished. As for demonstrations, 87% of those targeted were achieved. These likely increased awareness to farmers on issues of increasing vegetable and fruit production. Campaign meetings, demonstrations and field days did not only facilitate dissemination of fruit and vegetable technologies, these were also used as vehicles for technologies in the soil improvement and disease control components. Besides good achievements in the development messages might have supported the project various motives as 50% of the targeted messages were developed and probably disseminated to the farmers through campaign meetings and the field days it conducted.

#### 4.2 Fruit Component

Though most of the fruit trials have not been concluded the project made some gains in a number of indicators associated with it. Table 7 outlines performance of these indicators. A good example in point is the number of improved fruit tree varieties propagated by the project that has grown from 84276 in 1998/99 to 112487 in 2002/03 representing an increase of 33%. Other than these top working in mangoes in which local mango varieties are grafted with improved mango scions has made positive strides as well. A total of 4700 mangoes have been top worked. This achievement is 94% of the set project targets. The fruit tree propagation and top working activities are likely to improve fruit production in the EPA.

Table 6: Influences Of The Vegetable Component trials.

Vegetable Indicator Observed	Target	98/99	99/00	00/01	01/02	02/03
Fruit trees propagated	126414	84276	102203	105106	107288	112487
Farmers growing fruit trees	43323	2882	30874	31245	33427	38626
Farmers practicing appropriate water management practices in fruits	1600	68	146	183	460	641
Farmers practicing appropriate cropping methods in fruits	1600	92	195	245	323	355
Area under high yielding vegetables (Ha)	35	2.64	5.37	6.96	7.6	13
Farmers using high yielding fruits	1600	158	222	600	678	710
Farmers growing high nutritive	1600	74	131	437	489	521

Table 1 shows that 0 out of 4 trials have been verified in this component with no technologies profiled. Its initial results, however, are already in use (Table6). It is important to note that one of the reasons for the low achievement in the component is due to long maturity period of fruits. For most fruits, it takes between 3 to 4 years before they start producing. This has led to a delay in concluding its trials. Since farmers prefer technologies that produce quick results in order to solve their immediate problems, it is unlikely that a majority of them would go for the technologies the component has generated in the post period of the project. The current impact the project has made on the beneficiaries could be as a result of the current technical, material and financial support the project renders.

The mid-term evaluation observed that some NGOs are distributing fruit tree seedlings free of charge in the project area. This may worsen the situation if post project cost fruit tree seedling propagation proves prohibitive. The project, however, continues addressing these problems by trying to increase farmer awareness on the importance of improved fruit trees for their diets as well as economic status.

#### 4.3 Soil Fertility Component

The increases in chemical fertilizer prices in the country due to removal of subsidies by Government has made fertilizer to be one of the commodities beyond reach of most farmers in the country. This trend has caused a decline in production of some crops particularly maize that is a staple food in Malawi and horticulture crops that are grown under intensive conditions.

The project had a soil fertility component that promoted the use of organic fertilizer to supplement chemical fertilizers. Trials under this component have verified many technologies that have since been passed on to farmers for adoption. An analysis in table 1 shows that a total of 14 trials have been conducted and 6 of these representing an achievement of 43% have been successfully verified. Table 2 gives details of technologies actually verified from where messages for farmer consumption have been developed. The number of farmers in Lobi area observed

using organic manure is growing as expected. For instance, the number of farmers using organic manure has increased from 460 in 1998 to 1,337 in 2002/03 representing an increase of 191%. The achievement is also encouraging when compared to what was its target at 84% of it. These results are encouraging considering the fact the cost of fertilizers has of late become quite prohibitive. In the post project period, the Extension system should perpetuate and replicate these technologies to reverse deteriorating situation of most soils. Eventually it is hoped that agricultural productivity for these will increase. If this is dream comes true, then it may improve the income levels of the farmers and thereby reducing their poverty, currently a serious stumbling block of development in Malawi.

#### 4.4 Pest And Disease Control Component

The project has been conducting verification trials at Lobi Day Training Center as well as participatory ones on farmers' fields to identify low cost and sustainable disease and pest control technologies. Since most farmers in the area cannot afford to buy chemicals, most of the low cost technologies used to verify their effectiveness to control pests and diseases were cultural and bio-pesticide methods. Use of *Tephrosia Vogelli* to control insets like cabbage sawflies, cabbage webworms and diamondback moth was the most commonly verified bio-pesticide. Table 1 shows that the disease and pest control component managed to conduct 8 trials against 1 targeted. 1 trial has since been verified and released 2 technologies (Table 2)

Promotion of use of low cost technologies that the component has been undertaking is likely to make a positive impact on farmers' crop production ventures in Lobi Area. The analysis done already signals to this observation in that a good proportion of farmers have begun to reduce the use of chemical pesticides in favour of bio-pesticides or cultural practices. For example in 1998 there were only 156 farmers using cultural and bio-pesticide control methods. The number has now geometrically increased to 1337 (757%). This achievement is way above the project target of 800 by 67% signifying the fact farmers have accepted the technologies probably because of their low cost nature.

#### 4.5.0 Management

##### 4.5.1 Training

The project provided different types of training to project staff at different levels. The analysis shows that Agricultural Extension Development Officers (AEDOs), Officers working closely with project (Malawian counterparts) and farmers. The main objective of these trainings was to improve knowledge and skills in horticultural production (vegetable production, cooperatives/association/group

management, pest and disease control and soil improvement practices, fruit production and agro-forestry). The Malawian counterparts have benefited through external training they underwent in Japan. To date 12 Malawian Officers have so far been trained in Japan in various areas of horticultural production in 12 training sessions.

Apart from staff, farmers were trained in various areas (group dynamics and financial management of the Association). The project has also been organizing farmers' tours to various associations and farms in the country such as Shire Highlands Organic Growers Association, Mwanza Zipatso Association Njolomole Horticultural Association, Thyolo Banana Association and Freedom Gardens with the aim of assisting farmers appreciate what their fellow farmers are doing.

In addition, the project has attached five volunteers from Japan. These do help the Government staff in implementing various components of the project. In so doing they impart skills and knowledge to local staff. This is necessary for the sustainability of the project beyond the project life where the local staff will be able to execute the activities on their own.

The project also provided resources to purchase vehicles, motorcycles and various types of equipment to be used by the project as outlined in the table 7 below. These to some extent have assisted the project to implement most of its activities without depending much from resources outside the project.

#### 4.5.2 Procurement.

The Project received a number of equipment from the Japan international Cooperation Agency (Table 7).

*Table 7. Type of equipment procured under the project*

Item	Remarks
1. Vehicle (1)	Purchased
2. Motor cycles (4)	Purchased and distributed
3. Extension of electricity	Completed
4. Heliograph (1)	Purchased
5. Camera (1)	Purchased
6. Fruit hardness tester (2)	Purchased
7. Anemometer (1)	Purchased
8. Meteorological shelter (1)	Purchased
9. Magnify glass (10)	Purchased
10. Max and Min thermometers	Purchased
11. Metal pipe cases	Purchased
12. Meteorological set	Purchased
13. Refractometer (2)	Purchased

14. Thermometers	Purchased
15. Photocopier (1)	Purchased
16. Calipers (4)	Purchased
17. Scales (10)	Purchased
18. Soil nutrient tester (1)	Purchased
19. Chemical for soil analysis	Purchased
20. Laboratory utensils	Purchased
21. Microscopes (2)	Purchased
22. Grafting knives (21)	Not arrived in Malawi
23. Slashing machines (2)	Not arrived in Malawi - purchased
24. Treadle pumps (2)	Purchased
25. Laser Jet Printer (1)	Purchased
26. Refrigerator (1)	Purchased
27. Helmets (2) and tyres	Purchased
28. Borehole drilling (1)	Completed
29. UPS and Printer	Purchased
30. Computer (1)	Purchased
31. Tyre, Sprockets	Purchased
32. Furniture	Purchased
33. Fence Construction	Purchased
34. Grindstone	Purchased
35. Store room construction.	Completed
36. Sugar content testers (2)	Purchased
37. Pruning scissors (40)	Purchased
38. Sprayers (5)	Purchased

It should be noted that there are a number of items, which were proposed for procurement but were not and these include:

- (i) Wireless message equipment (4)
- (ii) Video camera and video (1) – to be procured
- (iii) Tractor and attachments (1)
- (iv) Refrigerator (1)
- (v) Power tiller
- (vi) Green meters (2)
- (vii) Grafting knives (19) – to be procured
- (viii) Training room (1)

The under procurement was as a result exclusion of some of the equipment that felt unnecessary. This reflects the way the project was formulated that there was no in-depth analysis on the requirements of the project.

## 5.0 Project Costs And Financing

The JICA and Government of Malawi were responsible for financing the project. The total project cost was estimated at MK 15,120,179.86. JICA was to contribute MK 11,867,100.00 (78% of total project costs) with GoM contributing the balance of MK 3,253,079.86 (22% of total cost). At present, the actual expenditure totaled MK15320101 (101% of the provision) with JICA<sup>1</sup> financing MK 11371580 (75% of total provision) and GoM MK3948521 (26% of total provision). (Table8).

*Table 8: Provisions and Expenditure up to May 2001*

FINANCIAL YEAR	PROVISION		EXPENDITURE	
	Part I	Part II	Part I	Part II
1998/1999	897,048.90	202,000.00	897,048.90	476120.00
1999/2000	2,719,283.5	463,102.20	2,719283.51	1,171,364.00
2000/2001	6,312,554.24	2,800,000.00	6,312,554.00	989202.00
2001/2002	665,505	412,650	586,164.83	1,009,018.00
2002/2003	534,505	412,650	856,528.66	302,817.50
Total	11,128,896.64	4,290,402.2	11,371,579.9	3,948,521.5

In general, both governments adequately funded the project activities although with hiccups characterized by financial stale periods within the project life. About MK200000 in total is yet to be released from both governments. It is hoped that this will be released during the remaining period of the project.

<sup>1</sup> The actual expenditure for JICA includes cost for procurement of equipment and construction works.



## 6.0 CONCLUSION AND RECOMMENDATIONS

- Overall, the performance of the project can be rated as satisfactory. The project achieved in reaching the target group of women, conducting trials and to some extent improving the income levels of the farmers.
- After three years of project implementation, 1478 farmers have been reached, an achievement slightly falling below the project target. It is therefore recommended that mechanisms to ensure that this achievement does not wane but is maintained or increased be put in place. It is suggested that one such mechanism would be an introduction of the Post Lobi Horticulture Project. This project would take into account issues associated with a late start of LHATEP and finishing up issues of reaching the targeted number of beneficiaries. Such a project would also be able to replicate the benefits of the LHATEP to more farmers in Lobi EPA and other areas in Lilongwe ADD with a potential for horticultural production. Lobi EPA has a total of over 13000 households. Out of this, LHATEP only targeted 1600. The fact that a relatively smaller number of households was targeted by the project could be looked at as one of the factors justifying a call for an extension of LHATEP.
- The project anticipated to screening technologies that would be profiled for easy use by farmers in Lobi EPA area. The analysis has revealed that 22% achievement has been attained. This is much below the intended output implying that the number of technologies consolidated from them is relatively low. This may not, therefore, form a bulk of technologies so needed to increase horticultural production in the EPA. With 12 trials still underway, this observation calls for a special fund to be identified to enable the farmers with the help of the Malawi Counter Part Staff develop more technologies to beef up the current list. In order to enhance the use and proper custody of the already verified and those technologies to be verified with the fund-to-established, it is recommended once again that documentation in form of training manual be done. The training manual could be used as a reference material by the frontline staff working in the project area. The need to accomplish the 12 remaining trials could also be used to justify the need to go into the Post Lobi Project.
- Achievements in the marketing activities of the project improved over what was observed at mid term evaluation. The number of selling points and association's market outlet both geometrically grew over the mid-term evaluation results including the baseline statistics and extremely above the project targets. The number of farmers selling a graded crop also

tremendously increased by 4484% over the baseline and 96% over the mid-term evaluation results. Identification of reliable wholesale markets in supermarkets in the city of Lilongwe could be used to explain these achievements. What it means is that farmers produced with a market in mind. It is, therefore, recommended the government should identify a Marketing Economist to work with the Lobi Horticulture Association on the understanding that the officer perpetuates the achievements attained or even improve upon them.

- Although achievements in the marketing activities of the project are encouraging, the project design was not clear on matters of agro-business and marketing of produce. Implementation emphasized on production issues and extension of the developed technologies to the farmers. It is, therefore, recommended that in the design of post Lobi Horticulture Project if there will be any or any other similar project, these issues should be properly built in and given priority they deserve during implementation. This is especially important for horticultural projects that tend to have high investment costs and intensive operations. Building in agro-business and marketing elements in the project at design stage will give it proper direction at implementation.
- It is appreciative that about 12 Malawian officers from the project area benefited from an overseas training in Japan. It is clear that these trainings helped to propel the activities of the project. We also recommend that future projects should adequately consider issues of capacity building. Such considerations should not only concentrate on short-term courses but also long term courses leading to attainment higher certificates. These may have lasting impressions on solving the development problems of the country other than short courses.
- We would also like to recommend the continuation of provision of JICA counter part staff in similar future projects. The analysis has revealed that the approach beefed up the local staff capacity in the management and implementation of the project activities. To further promote contact with the counter part staff from Japan, there is need to introduce a quarterly counter part newsletter where matters of the project could further be depicted in the course of project implementation and post project periods. It is, therefore, suggested that the counter part staff establish a private fund that could be used to run the activities of the newsletter.
- Although funding for the project activities was erratic during certain times of the project implementation period, it could be concluded that it was generally satisfactory from both the donor and the government of Malawi. MK15320102 was the total funding at the assessment period

implying that about MK200,000 is pending funding for finally winding up the project activities by October 2003. We would like also to commend this effort. While we do that, we would also like to suggest that proper accountability procedures be introduced for the part 1 funds. In this project part 1 funds were not flowing through the government machinery. Instead funding was made direct to the counter part Project Manager.

- We would also like to recommend that in the event of absence of a post Lobi Horticulture Project, the functioning project resources such as vehicles, office equipment and Malawian Counter parts of the project be handed over to the RDP that will take over activities of the project. These will enhance the process of perpetuating implementation of the activities in the post project period.

# LILONGWE AGRICULTURAL DEVELOPMENT DIVISION

## LOBI HORTICULTURAL APPROPRIATE TECHNOLOGY EXTENSION PROJECT

PROGRESS REPORT FOR THE PERIOD FROM  
1<sup>ST</sup> NOVEMBER 1998 TO APRIL 2003

The Programme Manager  
Lilongwe ADD  
P.O. Box 259,  
Lilongwe

A progress Report for Presentation to the Final Evaluation Team from Malawi and Japan  
28th April – 5th May, 2003

# LOBI HORTICULTURAL APPROPRIATE TECHNOLOGY EXTENSION PROJECT PROGRESS REPORT FOR THE PERIOD FROM 1<sup>ST</sup> NOVEMBER, 1998 TO 30<sup>TH</sup> APRIL, 2003.

A.W. Phiri<sup>1</sup>, K. Niwa<sup>2</sup> and B.F.R Mtika<sup>3</sup>

## 1.0 INTRODUCTION

Lobi Horticultural Appropriate Technology Extension Project is located in Thiwi/Lifidzi Rural Development Project of the Lilongwe Agricultural Development Division. It is a five-year Project co-funded by the Japanese and Malawian Governments through JOCV/JICA and Ministry of Agriculture, Irrigation and Food security, funding part I and part II respectively. The project life span is from 1<sup>st</sup> November, 1998 to 31<sup>st</sup> October, 2003.

## 2.0 THE PROJECT GOAL

The major goal of the project is to empower the Lobi Horticultural Community economically at the same time improving their health through the production, sales and consumption of horticultural products.

Specifically the project has been conducting verification trials on the technologies recommended by research and the existing indigenous technologies in order to develop area specific low cost and sustainable technologies for Lobi Horticultural farmers. The existing and verified technologies are disseminated to farmers through the existing Extension System assisted by the Project team.

## 3.0 THE CHALLENGES FOR THE PROJECT

The project aims at attaining the following specific objectives: -

- a) To increase horticultural production
- b) To promote sustainable production of horticultural crops
- c) To promote the cultivation of high nutritive value horticultural crops
- d) To build staff and farmer capacity in farmer organization and production
- e) To improve staff welfare and work output

## 4.0 STAFFING POSITION

The activities of the project are implemented through five components which are each manned by a Malawian and a Japanese counterpart as follows:-

Type of Component	Name of Counterpart
1. Project Management	Mr A.W.Phiri and K.Niwa
2. Fruit Production	H.K.Nkhoma and K.Yuasa
3. Vegetable Component	J.K.Chiputu and G.Akiyama

4. Soil Fertility Component	S.S.Chiotha and S.Yamada
5. Pests and Disease Control	F.B.Mpembeka and H.Yokota

#### 4.1 OPERATIONAL ARRANGEMENTS

The overall custodian of Lobi Horticultural Project is the Programme Manager of Lilongwe ADD. The Project Manager who reports to the Chief Agricultural Officer (Crops) is the head of the project and is assisted by the Senior Volunteer as a counterpart. There are four Malawian Horticultural Officers working under him and each is responsible for one of the following components: - Vegetables, Fruits, Soil Fertility, Pests and disease control. In addition, each Malawian Specialist is attached to a Japanese volunteer specialist for each component on a counterpart basis. There are a total of 15 support staff members including 2 watchmen working on the trial plots at Lobi Day Training Centre farm.

#### 5.0 FUNDING

From the inception of the Project in 1998 the annual funding has been as follows:-

#### 5.1 PROJECTION

##### Original five-year Projected Project Budget as of 26<sup>th</sup> Nov.1998

Source	1998/99	1999/00	2000/01	2001/02	2002/03	Total	%
Part I	580,900	6,741,900	3,480,700	665,505	534,505	12,003,510	82
Part II	194,000	987,650	623,650	412,650	412,650	2,630,600	18
<b>Total</b>	<b>774,900</b>	<b>7,729,550</b>	<b>4,104,350</b>	<b>1,078,155</b>	<b>947,155</b>	<b>14,634,110</b>	<b>100</b>

#### 5.2 EXPENDITURE

##### Actual five-year Project Budget Expenditure to date as of 27/04/03

Source	1998/99	1999/00	2000/01	2001/02	2002/03	Total	%
Part I	897,048.90	2,719,283.50	6,312,554.24	586,164.83	856,528.66	11,371,580.13	74.23
Part II	476,120.00	1,171,364.00	989,202.00	1,009,018.00	302,817.50	3,948,521.50	25.77
<b>Total</b>	<b>1,373,168.90</b>	<b>3,890,647.50</b>	<b>7,301,756.24</b>	<b>1,595,182.83</b>	<b>1,159,346.16</b>	<b>15,320,101.63</b>	<b>100</b>

It should be noted that funding of Part I is from the Japanese Government Funds through the Japan International Cooperation Agency (JICA) while as part II funding is from the Malawi Government through the Ministry of Agriculture, Irrigation and Food security (MAIFS) and Lilongwe Agricultural Development Division (LADD).

The current flow of funds for the 2002/2003 financial has been as shown below: -

#### 5.3 Part II Malawi Government –flow of funds 2002/2003

Month	Amount Funded(Mk)	Annual Provision(Mk)	Total Expenditure	%Expenditure on budget
July 02	0			
August02	60,000.00			
Sept. 02	0			
Oct. 02	99,960.00			
Nov. 02	0			
Dec. 02	142,857.00			
Jan. 03	0			

Feb. 03	0			
March 03	0			
April 03	0			
Total	302,817.50	1,200,000.00	302,817.50	25.23

The erratic flow of funds hampered the implementation of some project activities such as fruit tree propagation, literature review, farmer training in marketing and farmer tour to a cooperative on coffee in Mzuzu.

#### 5.4 Japanese Government (JICA) Flow of funds 2002/2003

Quarter	Months	Amount Funded(Mk)	Annual Provision(Mk)	TotalExpend .(Mk)	% Expend.
1	Apr-Jun 02	0			
2	Jul-Sept.02	150,517.53			
3	Oct-Dec.02	314,873.33			
4	Jan-Mar 03	391,137.80			
Total		856,528.66	954,222.00	856,528.00	89.76

## 6.0 OTHER RESOURCES FOR THE PROJECT

### 6.1 TRANSPORT

There is one new Toyota Twin-cab registration BM 694 for the project. In addition there are 8 motorcycles for the project team, a lorry and 8 bicycles for the Lobi Horticultural Association. These were provided to the project by JICA/JOCV.

### 6.2 OTHER FACILITIES, SERVICES AND EQUIPMENT

Lobi rural growth centre electricity with the funding from the Japanese Embassy. There are two storerooms which were funded by both part I and part II. In addition, there are two computers and printers one from part I and the other from part II. Further more, the following materials were procured from part I: - 1 Heliograph, 2 Fruit hardness testers, 1 Anemometer, 1 Stevenson screen, 10 Magnifying lenses, 2 Thermometers, 1 Metrological equipment, 2 Refractometers (Brix meter), 1 Green house, 2 Shade houses, 1 Photocopier, 4 Calipers, 10 weighing scales, 1 Soil nutrient beater, Chemicals for simple soil analysis, Various lab utensils, 2 Microscopes, 1 still Camera, 1 Video Camera, 1 TV Screen, 1VTR(Video Deck), 2 Motorized Slashers, 21Grafting and Budding Knives and sharpening stones, 8 Chairs, 3 Book shelves and 1 bore hole.

## 7.0 TARGET BENEFICIARIES

The Project is targeting 1600 horticultural farmers in 80 groups. The target beneficiaries are those who have easy access to both wet land and upland areas for year - round horticultural crop production. The farmers are organized into groups under the umbrella

organization called Lobi Horticultural Association legally registered on 26<sup>th</sup> June 2000. The total number of groups achieved to date is 76 with a total membership of 1478 of which 1252 are women.

## 8.0 THE VARIOUS PROJECT ACHIEVEMENTS

### 8.1 SUMMARY OF TRIALS CONDUCTED AND VERIFIED BY COMPONENT

The following trials were conducted and verified :-

COMPONENT	TRIALS TARGETED	TRIALS CONDUCTED	TECHNOLOGIES VERIFIED	% ACHIEVED	REMARKS
FRUIT	4	2	0	0	1 On-going 1 Dropped
VEGETABLE	7	12	7	100	2 On-going 3 Dropped
SOIL FERTILITY	6	20	7	117	10 On-going 3 Dropped
PESTS & DISEASE	1	8	2	200	2 On-going 4 Dropped
<b>TOTAL</b>	<b>18</b>	<b>42</b>	<b>16</b>	<b>89</b>	<b>15 On-going 11 Dropped</b>

#### Remarks

The trials conducted were more than the trials targeted because some trials on same crop were conducted in different seasons such as cool, hot and rainy seasons.

### 8.2 THE TYPES OF TECHNOLOGIES VERIFIED BY COMPONENT

#### 8.2.1 VEGETABLE COMPONENT

- i. Onion Variety selection for production.
- ii. Kneaded bed and pots on leaf mustard nursery management.
- iii. Kneaded bed, pots and boxes on tomato nursery management.
- iv. Cabbage Variety selection in cool season
- v. Cabbage Variety selection in rainy season
- vi. Tomato Variety selection in cool season
- vii. Tomato Variety Selection in hot season

#### 8.2.2 THE SOIL FERTILITY COMPONENT

- i. The effect of nursery media on leaf mustard in hot season with top soil, compost and charcoal in the ratio of 1:1:1



- ii. The effect of nursery media on tomato in cool season with top soil, compost and charcoal in the ratio of 1:1:1
- iii. The effect of nursery media on leaf mustard in cool season with top soil, compost and charcoal in the ratio of 1:1:1
- iv. The effect of nursery media on Onion in cool season with top soil, compost and charcoal in the ratio of 1:1:1
- v. Organic matter application on leaf mustard in cool season
- vi. Organic matter application on Onion in cool season
- vii. Organic matter application on tomato in cool season

### 8.2.3 THE PESTS AND DISEASE CONTROL COMPONENT

- i. *Tephrosia Vogellii* control against insect pests (Cabbage sawfly and Cabbage webworm)
- ii. Shelter tomato in rainy season.

### 9.0 THE ON-GOING TRIALS

*The following are the number of on-going trials by component: -*

Fruits	Vegetables	Soil Fertility	Pests & Disease control	Total
1	2	10	2	15

### 9.1 FRUIT PRODUCTION COMPONENT

The trial is on Mandarin Variety verification and four varieties are involved (Dancy, Fair Child, Mwanza and Clementine)

### 9.2 VEGETABLE COMPONENT

- 1. Tomato variety selection verification trial in rainy season
- 2. Kneaded bed block size verification trial

### 9.3 SOIL FERTILITY COMPONENT

*The work on this component concentrates on the following: -*

- i. Different Organic material combination verification on compost
- ii. Compost material combination application on leaf mustard in hot season
- iii. Organic matter on cabbage in rainy season
- iv. Liquid manure application on leaf mustard in cool season

*The following trial results were not consistent after 2-3 times and were discontinued due to inadequate time for repetition:-*

- v. Nursery media on tomato in hot season
- vi. Organic matter application on tomato in hot season
- vii. Organic matter application on tomato in rainy season

- viii. Organic matter application on garlic
- xi. Organic matter application on leaf mustard in hot season
- x. Fallow system verification with Mucuna, Crotalaria, Tephrosia vogelli and Tithonia diversifolia

#### 9.4 PESTS AND DISEASE CONTROL COMPONENT

*The work on the ground under this component involved verifying*

- i. Crotalaria and Marigold control effects against nematodes on Tomato
- ii. Tephrosia vogelii control dosage and safety period

#### 10.0 THE TRIALS WHICH WERE DROPPED

*The trials, which were dropped by component, were the following: -*

Fruits	Vegetables	Soil Fertility	P & D control	Total
1	3	3	4	11

#### 10.1 REASONS FOR DROPPING SOME TRIALS

##### 10.1.1 Fruit Trials

The water retention verification trial on citrus (pit beds beside citrus trees) was difficult to obtain meaningful results based solely on response to moisture from the pit bed. This was because of the inclusion of various types of trash in the pits, which were likely to release some nutrients upon decomposition. This could have an added effect on results.

##### 10.1.2 Vegetables Trials

The cabbage re-growth verification trials showed that the yields from re-growths from all cabbage varieties were too low therefore deemed not economical to farmers.

For the paprika fertilizer rate observation it was found that the quality analysis in terms of ASTA Levels, a parameter which was crucial to the trial could not be done in the country due to lack of facilities but in Zambia which was found to be very expensive.

Set onion variety trial – the high percentage of rotten mable size bulbs in storage before planting and high bulb splitting renders the technology not economical to smallholder farmers.

##### 10.1.3 Soil fertility component

- (a) Organic matter application on leaf mustard in pots in cool season
- (b) Organic matter application on leaf mustard in pots in hot season
- (c) Organic matter application on mandarin in pots

We were advised by the researchers to discontinue the trials because there was no uniformity in the media from one pot to the other and that could bring variations in terms of nutrient availability so it would be difficult to obtain meaningful results.

#### 10.1.4 Pests and Disease control Trials

- a) *The Tephrosia vogelii* control effects verification trial against insect pests on leaf mustard in cool season was found to be difficult to obtain meaningful data due to low insect occurrence in cool season.
- b) The ash repellent effects verification trial against late blight on Tomato in cool season was observed that ash had some negative impact on the crop by reducing leaf area for photosynthesis.
- c) *The Allium* crops (onion, garlic, Chinese leek) repellent effects verification trial against red spider mites on Tomato in hot season revealed that the results were not significant which means that these crops were not effective at scaring the red spider mites.
- d) The Marigold repellent effects verification trial against aphids on Rape could not be continued because it was observed that Marigold was not effective as a repellent.

### 11.0 GENERAL ACHIEVEMENTS AGAINST PLANNED OUTPUTS

#### 11.1 Horticultural crop production increased.

Parameter	1998/99	Target	2002/2003	% Achieved
Number of groups	23	80	76	95
Number of grower	346	1600	1478	92
Area (Ha) under horticultural crop	105.9	680	443.4	65
Holding size on horticultural (ha)	0.2	0.4	0.3	75

The number of horticultural groups had increased from 23 to 76, the number of growers had also increased from 346 to 1478, so too are the area under horticultural crops and the holding size from 1998/99 when the project started to 2002/2003 season.

#### 11.2 Horticultural crops diversified

The life of the project has seen introduction of new horticultural crops and improving the existing crops as shown below:-

Crop Types 1998/99	Crop Types 2002/2003
Leaf mustard	Leaf mustard ✓

Cabbage	Cabbage ✓
Onion	Onion ✓
Tomato	Tomato ✓
Mango (local)	Garlic T
Orange (local)	Carrot T
Peach	Paprika T
Banana	Okra T
Tangerine	Mango (improved) T
Guava	Orange (improved) B
Potato	Mandarin T
Sweet potato	Tangerine ✓
Green maize	Banana ✓
	Peach ✓
	Apple T
	Guava ✓
	Green maize ✓
	Potato ✓
	Sweet potato ✓
	Chinese cabbage

✓ = Existing, T = New introductions, B = Improved existing crop

### 11.3 Yield level of horticultural crops increased

There has been considerable increase in horticultural crop yields from 88.7 in tomatoes to 285% for onion in relation to the target as shown in the table below:-

Crop	1998/99	Target	2002/2003	% improvement
Tomato	19865	23838	21150	88.7
Onion	4372	5246	15000	285.9
Cabbage	10400	12480	17100	137
Garlic			5500	
Irish Potato	6709	8051	17000	211
Leafy vegetables	11265	13518	14000	103.6

### 11.4 Day Training Centre yields kg/Ha 1998/1999 to 2002/2003

The yield of horticultural crops for the Day Training Centre Demonstration farm had increased from 25% over 1998/99 season for cucumber to 125% for tomatoes as shown in the table below:-

Crop	1998/99	2002/2003	% improvement
Tomato	16000	36000	125
Onion	15000	20000	33
Cabbage	10000	22000	120
Garlic	16000	21000	31
Ginger	7000	12000	71
Leaf mustard	11000	15000	36
Carrot	15000	20000	33

Egg plant	10000	15000	50
Cucumber	20000	25000	25

### 11.5 Average yields from verification trials (Kg/Ha)

The average yields obtained from verification trials are higher than those from farmer managed fields (Table 12.3) and Day Training Centre Demonstration (Table 12.4) as compared table 12.5 below:-

Crop	Average	Maximum	Minimum
Tomato	29400	45700	15950
Onion	36300	49980	21000
Cabbage	20510	22640	16730
Garlic	53660	74170	34830
Leaf mustard	26740	32940	22640

### 11.6 Farmers per Capita Income by Year

The farmers per capita income had increased from MK244 (5.1US\$) to MK1212 (15.7US\$) in 2002/2003 as shown in the table below :-

1998/99	1999/2000	2000/2001	2001/2002	2002/2003	Target	% Increase
771.89	792.06	667.73	1212	1256	390.4	414.8

The base was equivalent to 5.1US\$.

### 11.7 The Horticultural Crop yield trend for the past Five Years

#### 11.7.1 Yield (Kg/Ha) of horticultural crops increased by 20%

Crop	Target Yield (Kg/Ha)	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	% Increase
Tomato	23838	19865	20000	15060	20000	21150	6.5
Cabbage	12480	10400	12000	12050	12000	17100	64.4
Onion	5246	4372	14000	12000	12000	15000	243.1
Leafy Vegetables	13518	11265	11200	12050	12000	14000	24.3
Irish potato	8051	6709	11942	12053	12000	17000	153.4

There has been a considerable increase in horticultural crops over both the target yields and the yields of 1998/99.

## 11.8 Area planted to horticultural crops increased by 50%

The project has registered quite considerable increases in area under horticultural crops as shown in the table below: -

Crop	Target	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	% Increase
Vegetables (Ha)	1844	1229.34	1613.8	1998.3	2106.4	2254.6	83.4
Fruits (no. of trees)	126414	84276	102203	105106	108306	112487	33.5

## 11.9 LOBI HORTICULTURAL ASSOCIATION

The project has seen the mushrooming of horticultural groups in Lobi from 23 in 1998/99 to 76 to date. The participation of female farmers is also quite high.

Year	Participation Target	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	% Increase
Groups	80	23	46	50	66	76	95
Membership	1600	346	843	1011	1337	1478	92
		314 w 32 m	753 w 90 m	881 w 130 m	1158 w 179 m	1252 w 226 m	

## 12.0 FACTORS WARRANTING AN EXTENSION PHASE

### 12.1 Production period for Fruit Trees

There was an oversight in determining the period of the project because the fruit component was not accommodated as a long-term crop, which required three (3) more years for yield assessment.

### 12.2 Staff Deployment

There was a delay in the dispatch and attachment of both Malawian counterparts and Japanese volunteers to be assigned to the Project components. The team came in full by July 1999 for Malawians and by September, 2000 for the volunteers. This contributed to the late start of the work and loss of three years which has to be taken care of.

### 12.3 Land Acquisition

Acquisition of land and clearing for the various verification trials also took some time delaying the implementation on the ground.

### 12.4 Authority for Recruitment of Labourers

There was a delay in granting authority to recruit labourers for the Project by the Ministry.

### **12.5 Repetition of some trials**

Some verification trials, whose results were not consistent after conducting 2 to 3 seasons, require more time for repeating and the required time will go beyond the Project deadline of 31st October, 2003 for meaningful results.

### **12.6 Staff Turnover**

The two-year contract for the volunteers does not work in favour of consistency which research work demand in data collection and analysis. A new person will always take time to get oriented before being effective. This also needs more compensatory time.

### **12.7 Dissemination of Verified Technologies to Farmers**

By design the first three years were for verification trials and the last two years were for full time extending the verified technologies to farmers. Not much time had been spent on intensive extension activities to disseminate the verified technologies.

## **13.0 RECOMMENDATIONS**

13.1 The factors discussed above led to the delays in timely implementation of the Project activities. Therefore, it is still recommended that the Project be continued for three (3) more years from 1<sup>st</sup> November 2003 to 31<sup>st</sup> October 2006.

13.2 As a follow up to the project phasing out period a community development component with a bias to farmer organization, farm management and marketing is required to ensure a stable farmer involvement and participation in order to assure a sustainable production. A volunteer conversant in this field is urgently required.

13.3 During the community mobilization phase it is strongly recommended that a Japanese volunteer well versed in the operations of agricultural associations and marketing be urgently recruited.

## **14.0 CONCLUSION**

Lobi Horticultural Project is crucial not only to the farmers in Lobi but also to the urban dwellers for the supply of horticultural products.

The Project has significantly influenced increases in yields, production and area of horticultural crops. In addition, there has also been a considerable increase in household farm incomes and household food security for the target beneficiaries.

It is strongly recommended that the project be extended to 31<sup>st</sup> October, 2006 to have meaningful impact on the target beneficiaries.

We would like to use Lobi Project model to have a replica in another EPA of Lilongwe ADD.

In the extension phase we need a Public Health Nurse to address clinical malnutrition and HIV/AIDS mainstreaming.

1. A.W.Phiri, Dip(Agric)Malawi, Cert.FruitGrowing(Japan), Cert.Veg.Prod.&Marketing (USA&Japan), Cert.Irrigation Extension(Israel), Cert. Floriculture(Taiwan), Project Manager, Lobi Horticultural Project, Lilongwe ADD, P.O. Box 259, Lilongwe. Tel (265) 756760 ; 223 610.
2. K. Niwa, BSc (Agric) Japan, Senior Volunteer, Japan Overseas Cooperation Volunteers, JOCV, JICA, Malawi Office, P.O. Box 30321, Lilongwe, Tel: (265) 771 644; Fax: 771 125.
3. B.F.R Mtika, MSc (Agric. Ext) (UK), BSc (Agric), Dip (Agric) Malawi, Cert. Mgt Dev. (Swaziland), Cert. Mgt Agric. Pj (Israel), Chief Agricultural Officer (Crops), Lilongwe ADD, P.O. Box 259, Lilongwe.



8. 実施協議ミニッツ (1998年9月11日締結)

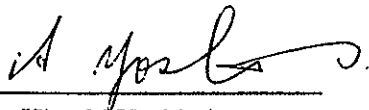
THE MINUTES OF THE MEETING BETWEEN THE JAPANESE  
IMPLEMENTATION STUDY TEAM AND THE AUTHORITIES  
CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF MALAWI ON THE  
PROGRAM OF JAPAN OVERSEAS COOPERATION VOLUNTEERS  
FOR THE LOBI HORTICULTURAL APPROPRIATE TECHNOLOGY  
EXTENSION PROJECT

The Japanese Implementation Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), visited the Republic of Malawi from September 6 to September 13, 1998 for the purpose of working out the details of the Japan Overseas Cooperation Volunteers (hereinafter referred to as "JOCV") program for the LOBI HORTICULTURAL APPROPRIATE TECHNOLOGY EXTENSION PROJECT in the Republic of Malawi (hereinafter referred to as "the Project").

During its stay in the Republic of Malawi, the Team exchanged views and had a series of discussions with the authorities concerned of the Government of the Republic of Malawi in respect of the desirable measures to be taken by both Governments for the successful implementation of the Project.

As a result of the discussions, both parties agreed to recommend to their respective Governments the matters referred to in the documents attached hereto.

Lilongwe, 11 September, 1998



Mr. Hiroshi Yoshimitsu  
Leader, Implementation Study Team  
Japan International Cooperation Agency



Mr. M. T. Chiundira  
Principal Secretary  
Ministry of Agriculture and Irrigation  
The Republic of Malawi

The Attached Document

I. PROJECT TITLE

Lobi Horticultural Appropriate Technology Extension Project

II. PERIOD OF COOPERATION

Five years from the 1st of November, 1998 to the 31st of October, 2003

III. PROJECT SITE

The Project Site will be in the Lobi Extension Planning Area, (hereinafter referred to as "Lobi EPA" in Dedza District

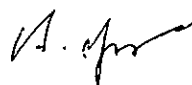
IV. OBJECTIVE OF THE PROJECT

The objective of the Project is to conduct farm trials for establishing and finding appropriate horticultural technologies, and to extend technical knowledge to farmers

V. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and Government of the Republic of Malawi will cooperate with each other in implementing the Project for the objective above-mentioned

2. The Project will be implemented in accordance with the MASTER PLAN which is given in Annex 1.



## VI. APPLICATION OF AGREEMENT

The Project is to be implemented based on the EXCHANGE OF NOTES BETWEEN THE GOVERNMENT OF JAPAN AND THE GOVERNMENT OF THE REPUBLIC OF MALAWI CONCERNING THE DISPATCH OF JOCV VOLUNTEERS

signed on the 2nd of July, 1971 which stipulates the understanding on the dispatch of the volunteers regarding the privileges, exemptions, and benefits granted to the volunteers by the recipient Government.

## VII. MEASURES TO BE TAKEN BY BOTH GOVERNMENTS

1. The Government of Japan will take necessary measures in accordance with the laws and regulations in force in Japan, and will undertake the following through the JOCV program:

1.1 To provide services of JOCV volunteers in accordance with the requests.

1.2 To bear the purchase of the equipment, other materials and some local cost necessary for the activity of Volunteers according to Malawi's own budgetary effort, in accordance with the budgetary appropriation.

1.3 To accept Malawian counterpart personnel for training in Japan in accordance with budgetary appropriation.

2. The Government of the Republic of Malawi will take necessary measures in accordance with the laws and regulations in force in Malawi, and will undertake the following at its own expense:

2.1 To provide the services of full time administration personnel as the Project manager and Malawian counterpart personnel to work with each of the JOCV volunteers.



- 2.2 To provide funding necessary for the implementation of the Project.
- 2.3 To provide land, buildings and facilities at the Project site.
- 2.4 To provide funding necessary for the purchase of the equipment as well as for the installation, operation and maintenance thereof.
- 2.5 To provide technical support and follow-up at the field level by the Department of Crops, Ministry of Agriculture and Irrigation (hereinafter referred to as "DC")

#### VIII. EXECUTING AGENCY

Lilongwe Agricultural Development Division,  
Ministry of Agriculture and Irrigation (hereinafter referred to as "LADD")

#### IX. ADMINISTRATION OF THE PROJECT

1. The Principal Secretary, Ministry of Agriculture and Irrigation, will bear overall responsibility for implementation of the Project.
2. The Program Manager of LADD will manage to the implementation of the Project.
3. The Project Manager (concurrently as a counterpart of the team Leader of the JOCV team), will bear responsibility for the administrative and managerial matter of the Project and coordination with other agencies.



4. The team leader of the JOCV team will bear responsibility for coordination of volunteer activities and will discuss with the Project Manager any matters pertaining to the implementation and coordination of the Project.
5. The Deputy Project Manager, will be designated counterpart of the JOCV volunteers, and will bear responsibility for the coordination of the practical implementation and management of the Project under the supervision of the Project Manager.
6. A JOCV volunteer other than the JOCV team leader will serve as an assistant team leader when necessary.
7. The team leader and other volunteers will give necessary support and advice on technical matters pertaining to the implementation of the Project.

The administrative relation described above is given in Annex 2.

#### X. COMMITTEES

A Steering Committee and the Project Implementation Committee will be established by the Malawian side for effective and successful implementation of the Project Functions and the composition of the committee is described in Annex 3.

*A. H. S.*

*[Handwritten signature]*

## XI. MONITORING AND EVALUATION

1. Monitoring of the Project will be conducted by the Steering Committee of the Project, at least once a year or when necessary.

2. Mid-term and final evaluations of the Project will be conducted jointly by both government's authorities.

2.1 The Mid term evaluation will be conducted during the third year of the Project to evaluate the achievement of the Project, review the project implementation plan and study the Verifiable Indicators for the final evaluation.

2.2 The final evaluation will be conducted during the last six (6) months of the Project.

## XII. TENTATIVE SCHEDULE OF IMPLEMENTATION

The tentative schedule of Implementation of the Project is shown in Annex 4.

## XIII. MUTUAL CONSULTATION

There will be mutual consultation between both sides on any major issues arising from, or in connection with this document.



ATTENDANT LIST

Ministry of Agriculture and Irrigation

Mr. M. T. Chiundira, Principal Secretary  
Dr. E. S. Malindi, Chief of Agricultural Services  
Mr. I. N. Kumwenda, Chief of Agricultural Planning Services  
Dr. D. V. Kampani, Director of Crops Production  
Mr. C. C. Nyirongo, Senior Economist, Planning Division  
Dr. A. P. Mtukuso, Deputy Director of Agricultural Research and Technical Services  
Mr. B. J. Sizilande, Principal Agricultural Officer  
Mr. B. W. Ngauma, Senior Agricultural Officer

Lilongwe Agricultural Development Division

Mr. D. Kamputa, Program Manager

Thiwi-Lifidzi Rural Development Project

Mr. D. L. Yona, Project Officer

Lobi Extension Planning Area

Mr. W. S. Maganga, Development Officer

JICA Implementation Study Team

Mr. H. Yoshimitsu, Team Leader  
Dr. S. Murayama, Technical Adviser  
Ms. S. Iwamoto, Team Coordinator

JOCV volunteers

Mr. T. Narabu, Senior volunteer  
Mr. K. Niwa, Volunteer of vegetable growing  
Mr. T. Yamauchi, Volunteer of Soil and fertilizer

JICA Malawi Office

Mr. H. Murakami, Resident Representative  
Mr. A. Kagawa, Assistant Resident Representative  
Mr. R. Tachikawa, JOCV coordinator

*Handwritten signature*

*Handwritten mark*

## MASTER PLAN

### I. OVERALL GOAL OF THE PROJECT

Contribute to empowering the community in Lobi EPA

### II. OBJECTIVE OF PROJECT

Conduct farm trials for establishing and finding appropriate horticultural technologies, and extend technical knowledge to farmers

### III. OUTPUT EXPECTED

- 3.1 Production of horticultural crops will be increased
- 3.2 Production of horticultural crops will be stabilized
- 3.3 High nutritive value horticultural crops will be cultivated
- 3.4 The income of farmers will be increased

### IV. IMPLEMENTATION POLICY

- 4.1 To establish and extend implementable horticultural technology by the Malawian staff.
- 4.2 To generate and disseminate appropriate technology which is sustainable for farmers.
- 4.3 To promote participatory rural development approaches with an aim of empowering the community.





## V. TECHNICAL FIELDS AND ACTIVITIES

Titles of volunteers and counterparts and contents of activities and technical fields are as follows:

### 1. JOCV Team Leader

#### 1-1. Technical Field

Coordination and management

#### 1-2. Counterpart

the Project Manager

#### 1-3. Activities

1-3-1 To liaise with the JICA and LADD on the problems encountered in the Project and the overall progress of the Project.

1-3-2 To liaise with the Project Manager on technical, financial and managerial issues.

1-3-3 To submit the report and conduct a basic study with the Project Manager in order to gain a better understanding of the present condition.

1-3-4 To establish with the Project Manager an operational plan for the running of the project.

1-3-5 To assist the Project Manager as follows

(1) In the preparation of the progress reports to the Project Implementation Committee and coordinating the quarterly meetings.

(2) In developing the capacity of the farmers organization to undertake their own activities.

(3) In developing regulations for the management of the proposed farmer organizations.

(4) In encouraging the farmers to use joint shipment and sale.



(5) With the aide of farmers and Field Assistants in the establishment of a Young Farmers Section within the farmer organizations with the aim of promoting them as future leaders of the organizations.

(6) The implementation of participatory trials for adaptive research.

## 2. Vegetable Growing

### 2-1. Technical field of JOCV volunteer

Vegetable growing

### 2-2. Counterpart

Field Officer, Horticulture

### 2-3. Activities of Malawian counterpart and JOCV Volunteer

2-3-1 To establish and extend appropriate techniques, such as the use of kneaded nursery beds, pots and trays that are made from local materials, to produce healthy seedlings free from root damage.

2-3-2 To establish and extend shelf nursery technology to avoid high temperature injury to vegetable seedlings and insect damage.

2-3-3 To establish and extend proper vegetable nursery management and cultivation techniques such as the use of charcoal that are made from grasses and crop residues for improving water holding capacity and drainage, as well as establishing a strong root system.

2-3-4 To establish and extend appropriate manuring practices for selected vegetables and communicating them to the farmers. Emphasis will be placed on using organic matter, such as fermented organic fertilizer, green manure, compost, etc., as main materials.

2-3-5 To establish and extend cultural and biological pest and disease control measures in the vegetable growing sub-system and provide training to farmers. It is envisaged that the control will be undertaken with improved local control methods and use of local materials such as *Tephrosia Vogeli* Garlic, Hot pepper, etc.

A A -

- 2-3-6 To introduce an appropriate small scale irrigation system for the efficient use of water.
- 2-3-7 Establish and introduce shelter tomato cultivation. The aim is to ensure tomato production when tomatoes are scarce and ensure year round production.
- 2-3-8 To develop and introduce set onion cultivation to ensure year round production. Thus cultivation should occur so as to realize shipment in May and June.

### 3. Fruit growing

#### 3-1. Technical field of JOCV volunteer

Fruit growing

#### 3-2. Counterpart

Field Officer, Horticulture

#### 3-3. Activities of Malawian counterpart and JOCV Volunteer

- 3-3-1 To increase the percentage of "takes" on grafting of tropical fruits, such as mangoes, with the use of plastic film and cheese cloth, and the production of improved fruit tree seedlings.
- 3-3-2 To establish and extend an effective method of top-working to change local cultivars to improved varieties and communicate them to the farmers.
- 3-3-3 To produce improved sub-tropical fruit tree seedlings such as tangerines and oranges, and develop appropriate extension messages for farmers on the budding technique to be used.
- 3-3-4 To produce improved temperate fruit tree seedlings such as peaches, and develop appropriate extension messages for farmers on the budding technique to be used.
- 3-3-5 To train extension staff/farmers on pruning for healthy fruit tree growth.

*A M*



- 3-3-6 To train extension staff/farmers on fruit thinning to increase yields and quality of the product produced.
- 3-3-7 To establish appropriate organic manuring practices and communicate these to the farmers.
- 3-3-8 To establish a system of pest and disease control which utilizes local materials and develop appropriate extension messages to be disseminated to farmers.
- 3-3-9 To establish and introduce an annual operational calendar for recommended fruit production.
- 3-3-10 To amend the existing trench bed method as a measure to improve water retentivity, and disseminate the technique to farmers.

#### 4. Soil and fertilizer

##### 4-1. Technical field of JOCV volunteer

Soil and Fertilizer

##### 4-2. Counterpart

Land Husbandry field Officer

##### 4-3. Activities of Malawian counterpart and JOCV Volunteer

- 4-3-1 To amend the existing compost making method using local and low cost materials. Establish and disseminate appropriate messages such as green grass compost making to the field staff about the new method.
- 4-3-2 To establish a fermented fertilizer making method that utilizes local materials, such as maize husk available at the village level, and develop an extension message to be disseminated to farmers.
- 4-3-3 To establish an appropriate leguminous biomass utilization method for horticultural crops and disseminate the technique to farmers.



- 4-3-4 To promote the planting of leguminous trees such as hedges, to reduce soil erosion, water runoff, wind damage and livestock injury.
- 4-3-5 To establish and introduce an annual operational calendar for organic matter making and its use.
- 4-3-6 To examine the effects of a zero cultivation system for the experimental dimba garden and orchard.
- 4-3-7 To establish and disseminate technologies through the extension system, for improvement of nursery soil for vegetable seedlings production.
- 4-3-8 To establish and disseminate technologies through the extension system, for improvement of nursery soil for fruit tree seedlings production.
- 4-3-9 To establish an effective method of charcoal making and develop the extension messages to be disseminated. Consideration should be given to the use of grasses and crop residues such as maize stem for charcoal making.

## 5. Pest and Disease

### 5-1. Technical field of JOCV volunteer

Pest and Disease

### 5-2. Counterpart

Field Officer, Horticulture

### 5-3. Activities of Malawian counterpart and JOCV Volunteer

- 5-3-1 To examine the use and effects of local materials such as *Tephrosia Vogelli* tobacco, hot pepper, garlic, chinese-leek, etc., to control pest and disease in horticultural production, and develop extension messages to be disseminated to farmers.
- 5-3-2 To examine the use of natural enemies against pests in horticultural production in the project area.

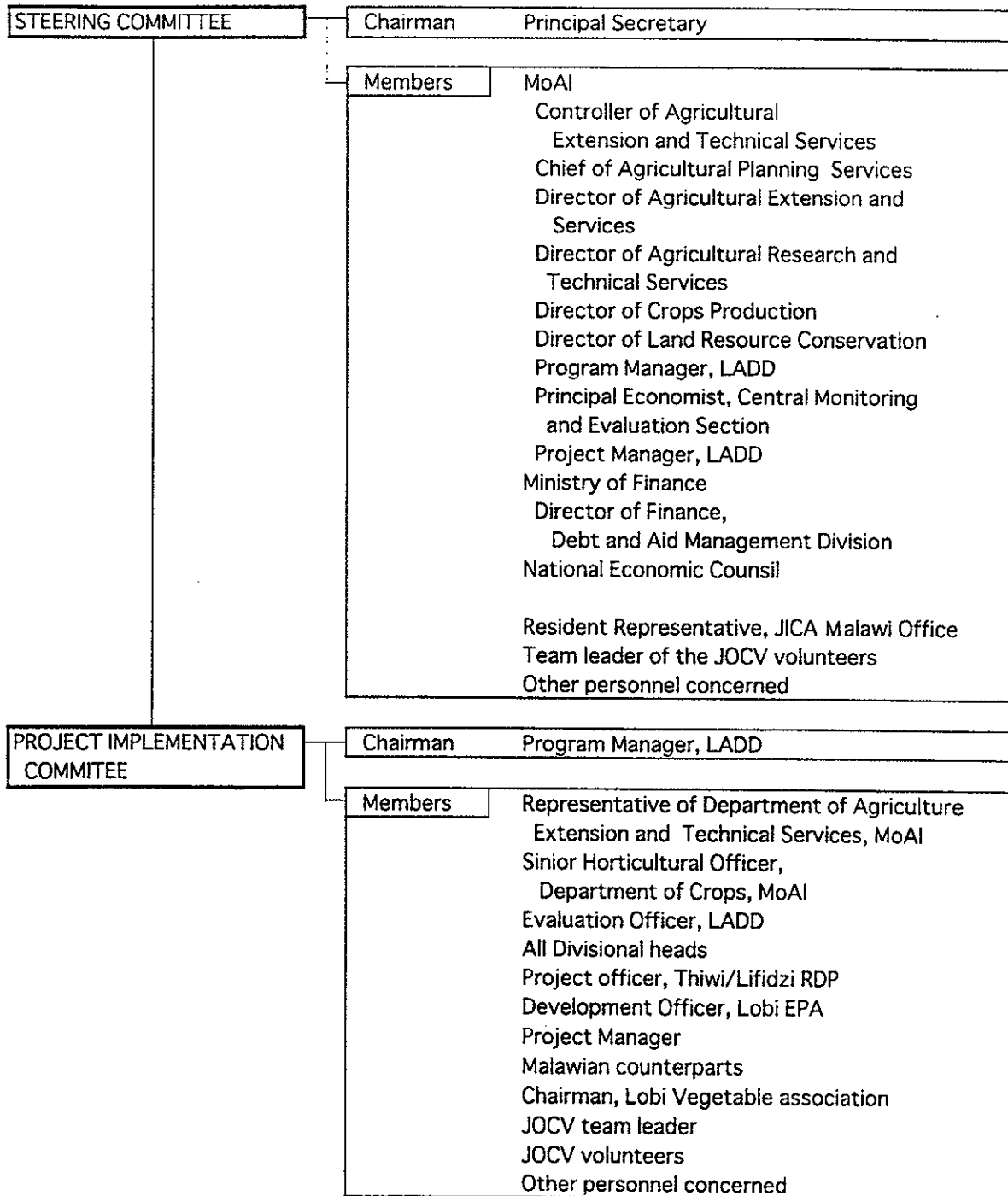


- 5-3-3 To examine the use and effects of local materials, such as ash and maize husk, against fungi diseases, and improve the methods.
- 5-3-4 To improve appropriate field and nursery hygiene techniques and disseminate the developed messages to farmers.
- 5-3-5 To improve and disseminate through the extension system, appropriate field planning methods such as rotation of crops.
- 5-3-6 To establish a mixed cultivation system for the diverse eco-system of the project area and disseminate through the extension system, information to farmers.
- 5-3-7 To advise through the extension system the proper and safe use of agricultural chemicals.

A. M. S.

~~EX~~

CHART FOR THE LOBI HORTICULTURAL TECHNOLOGY PROJECT



*Handwritten signature*

*Handwritten initials*

FUNCTIONS AND THE COMPOSITION OF COMMITTEES

1. The Steering Committee

1-1. The Steering Committee will meet at least once a year and whenever necessity arises and work;

- (1) To review and amend the Annual Work Plan of the Project formulated in line with the Tentative Schedule of Implementation under the Project Design Matrix;
- (2) To monitor the overall progress of the Project as well as achievements of the above-mentioned Annual Work Plan;
- (3) To review and exchange views on major issues arising from or in connection with the Project Implementation.

1-2. Composition

(1) Chairman

Principal Secretary,  
Ministry of Agriculture and Irrigation

(2) Members

(a) Malawian side

(a)-1 Ministry of Agriculture and Irrigation

- Controller of Agricultural Extension and Technical Services
- Chief of Agricultural Planning Services
- Director of Agricultural Extension Services
- Director of Agricultural Research and Technical Services
- Director of Crops Production
- Director of Land resource Conservation
- Principal Economist,  
Central Monitoring and Evaluation Section
- Program Manager,  
Lilongwe Agricultural Development Division.





- Project Manager,  
Lilongwe Agricultural Development Division.
- (a)-2 Ministry of Finance
  - Director of Finance,  
Debt and Aid Management Division
- (a)-3 National Economic Council
- (a)-4 Other personnel concerned with the Project

(b) Japanese side

- Resident Representative,  
JICA Malawi Office.
- Team leader of the JOCV Project Team.
- Other personnel to be dispatched by JICA as needed

1. The Project Implementation Committee

1-1. The Project Implementation Committee will meet at least quarterly and whenever necessity arises and work at the Technical level;

- (1) To establish an quarterly operational plan in line with the Annual Work Plan and review progress of the Project quarterly;
- (2) To formally discuss difficulties/areas of improvement witch need developing in the implementation of the Project;
- (3) To review and exchange views on technical issues arising from or in connection with the Project Implementation.

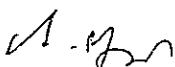
1-2. Composition

(1) Chairman

Program Manager,  
Lilongwe ADD

(2) Members

-Representative of Department of Agricultural Extension and Technical Services, MoAI



- Senior Horticultural Officer, Department of Crops, MoAI
- Evaluation Officer, Lilongwe ADD
- All Divisional Heads
- Project Officer, Thiwi-Lifidzi Rural Development Project
- Development Officer, Lobi Extension Planning Area
- Project Manager, Lilongwe ADD
- Malawian counterparts, Lobi EPA
- Association Chairman, Lobi Vegetable Association
- JOCV team leader
- JOCV volunteers
- Other personnel concerned with the Project

NOTE:

Official (s) of the Embassy of Japan in the Republic of Zambia may attend the Steering Committee as observer.



## TENTATIVE SCHEDULE OF IMPLEMENTATION

	1998	1999	2000	2002	2003
	1999 1st Year	2000 2nd Year	2001 3rd Year	2003 4th Year	2004 5th Year
<u>Activities Progress</u>	(November)				(October)
0. Basic Study	----->				
1. Operation	<-----				----->
2. Monitoring	<====>	<====>	<====>	<====>	<====>
3. Evaluation			<====>		<====>
<u>Provide Malawian Counterparts</u>					
1. Project Manager	<-----				----->
2. Field Officer, Horticulture	<-----				----->
3. Field Officer, Horticulture	<-----				----->
4. Land Husbandry Officer	<-----				----->
5. Field Officer, Horticulture	<-----				----->
<u>Dispatch of Volunteers</u>					
1. Team Leader	<-----				----->
2. Vegetable growing	<-----				----->
3. Fruit growing		<-----			----->
4. Soil and Fertilizer	<-----				----->
5. Pest and Disease		<-----			----->

The number of JOCV volunteers and the period for taking over are subject to be changed due to recruitment conditions.

*A M...*


*✍*

MINUTES OF MEETING  
BETWEEN THE JAPANESE MID-TERM EVALUATION TEAM  
AND  
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC  
OF MALAWI  
ON  
THE PROGRAM OF JAPAN OVERSEAS COOPERATION VOLUNTEERS FOR  
THE LOBI HORTICULTURAL APPROPRIATE TECHNOLOGY  
EXTENTION PROJECT


The Japanese Mid-term Evaluation Team ( hereinafter referred to as “the Team”), organized by the Japan International Cooperation Agency ( hereinafter referred to as” JICA”)and headed by Dr.MATSUMOTO, visited the Republic of Malawi ( hereinafter referred to as “Malawi”) from June 23 to 30, 2001, for the Lobi Horticultural Appropriate Technology Extension Project ( hereinafter referred to as “the Project”) on the basis of the Minutes of Meeting signed on September 11,1998( hereinafter referred to as “M/M”).

During its stay in Malawi ,the Team exchanged views and had a series of discussions about the mid-term evaluation of the Project with the Malawian authorities concerned. As a result of the discussions, both sides agreed upon the matters referred to in the document attached hereto.

Lilongwe , June 29, 2001



Dr. Satoshi Matsumoto  
Leader,  
Japanese Mid-term Evaluation Team  
Japan International Cooperation Agency



Dr.E.S Malindi  
Principal Secretary,  
Ministry of Agriculture and  
Irrigation  
The republic of Malawi

## THE ATTACHED DOCUMENT

### I . INTRODUCTION

#### (1)Preface

The Project was initiated in November 1998 and will be completed in October 2003. This time, with the remaining period of approximately two years ,The team visited Malawi from 23 to 30 June for the purpose of evaluating the Project at the mid-term period. The evaluation has been undertaken by the Malawian authorities concerned in the Project and the Team.

#### (2)Objectives of Evaluation

The objectives of the mid-term evaluation are (1)to review the Project Design which was planned at the beginning of the project(2)to review and evaluate the inputs, activities and achievements of the Project (3)to clarify the problems and issues to be addressed for the successful implementation of the Project for the rest of its term (4)to assess the rationale for the continuation of the project review and evaluation and (5) to make proposals for activities in the remaining period.

#### (3)Methodology of Evaluation

Project Design Matrix(PDM) was used as the basic tool of evaluation. The Team reviewed all the activities and achievements, of the Project based on the following five criteria;

- (1)Effectiveness
- (2)Efficiency
- (3)Impact
- (4)Relevance
- (5)Sustainability

The PDM on tasks for the mid-term evaluation, which is referred to as” PDM the second version ,”was prepared. The parts of Narrative Summary and verifiable indicators were revised for the new PDM to evaluate the Project more clearly and concretely.

In order to evaluate the past performance of the Project, the following materials were used;

*Egm*

*P. Morgan B*

- 1) Minutes of Meeting (M/M), Tentative Schedule of Implementation (TSI), Annual Plan of Operation and other documents agreed or accepted during the discussions
- 2) The Project Design Matrix (Second Version) (Annex 1)
- 3) Data of Inputs and outputs from the project
- 4) Mid-term review document prepared by Ministry of Agriculture and Irrigation Planning Division of Malawi

## II. RESULTS OF EVALUATION

### (1) Achievement of the Plan

Please refer to ANNEX 2

### (2) Results of the Evaluation

#### 5) Effectiveness

Most of the necessary materials are already provided and used by the C/P. Most verification trials are progressing without any outstanding obstacles. In the second phase of the project, looking at the indicators of the project objective, the increase of the data is slight, while the relevancy between outputs and objective is clear and all the activities are progressing without any serious problems. Thus, the project is considered to be moving toward the achievement of the project purpose.

#### 2) Efficiency

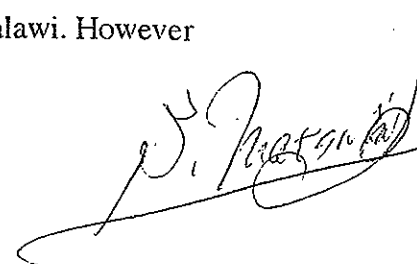
The Project has been implemented effectively in terms of timing and degree of conversion from the inputs to the outputs.

#### 3) Impact

People from other Extension Planning Areas have shown their interests to learn the horticultural technologies extended by the team. Some farmers outside Lobi area have shown their interests in participating the association. This move is expected to make a positive impact after the project.

#### 4) Relevance

The Improvement of agricultural productivity among small holder farmers has been a national priority target since 1980s. The Overall goal, which is described in the PDM, and the Project Purpose are relevant to the national policies in Malawi. However



the restructure of civil service may possibly influence the activities of the project.

#### 5) Sustainability

ADD is organizing the activities of the project well and Ministry of Agriculture regards the project as a model for the Appropriate Horticultural Technology Extension in Malawi. The budget has been secured since the Project started in 1998. The financial and human support by the Government of Malawi is expected to be continued. The Verification trials and extension activities are progressing well in general. Technical transfer has been conducted successfully so far. In this context, Lobi has good chances to have sustainability after the completion of the project in condition of the counterpart personnel continue the extension activities after the project. Although the project will solely focus on extension activities in the following two years, support for the reinforcement of the management abilities of the farmers association is needed in order to manage properly.

### III. RECOMMENDATION ON THE PROJECT

The Team, based on a series of activities for mid-term evaluation on the Project, recommends to both Malawi and Japanese authorities concerned the followings for the activities in the remaining the period of the Project for the successful completion and the utmost use of the outcome of the technical cooperation of Malawi.

#### 1 Planning actions

The activities of the first half of the project especially for the verification trials covered vast areas because of the needs of research. For second half of the project, the mission suggest to narrow the target and concentrate on the focused activities.

Basicly the progress of the plan is advancing well .

#### 2 Support on the Farmers association

By now 51 groups are already formed by the farmers with the assistance of the team. The project in the following phase will continue to facilitate the improvement of the group and association management to concrete the self-reliance However the support is needed even after the achievement of the project especially in the management sector.

*Tom*

*D. Nakamura*

#### IV.THECNICAL RECOMMENDATION

The team will make a brief recommendation on the following subject in the mid-term evaluation report,

- 1 Application of plant ashes to soil for prevention of decline soil acidification
- 2.The control of the utilization of top soils beyond crop cultivation
- 3.Effective and sustainable utilization of the dambo in dry season
- 4 Application of organic matures deriviing from livestock

OTHERS

*Esm*

*Dr. M. M. M. M. M.*



PROJECT DESIGN MATRIX

19/June/01

Project : Lobi Horticultural Appropriate Technology Extension Project

Period of Cooperation : 1/November/1998-31/October/2003

Ministry : Ministry of Agriculture and Irrigation

Executing Agency of Japanese side : JOCV/JICA

Executing Agency of Malawi side : Lilongwe ADD

Project Site : Lobi EPA in Dedza District

Target Group : 1600 smallholder farmers in Lobi EPA

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
I. Overall Goal To increase income of farmers in Lobi EPA.	Annual average income from horticultural production increased from the current K244 to 60%.  Numbers of farmers	• Through surveys undertaken by Field Assistants. • Through interview surveys. • Through marketing survey.	1. High quality horticultural produce constantly supplied. 2. High reputation from the buyers always obtained.
II. Objective/Purpose To increase sustainable production of horticultural crops in Lobi EPA.	• Yield level of sustainable horticultural crops increased. • Area planted to horticultural crops increased. • Number of farmers growing horticultural crops increased.	• Through surveys undertaken by Field Assistants. • Through interview surveys. • Progress reports. • Through small crop estimates	• The prices for horticultural crops remain favorable. • The Weather condition remain favorable
III. Outputs 1. Appropriate horticultural technologies under Lobi EPA conditions verified.	• Results of verification trials on the following appropriate horticultural technologies; - Vegetable - Fruits - Soil Fertility - Pest & Diseases	• Surveys on the appropriate technologies verified and extended. • Progress reports.	1. Smallholder farmers willing to accept the various technologies. 2. Farmers have sufficient access to high yielding and suitable variety seed.
2. Sustainable production technologies for horticultural crops extended to farmers in Lobi EPA.	• Number of farmers practicing appropriate water management methods increased. • Number of farmers practicing appropriate cropping methods increased. • Number of farmers practicing bio-pesticide and cultural control methods increased. • Number of farmers practicing appropriate organic matter application methods increased. • Amount of high yielding and suitable horticultural crops planted by farmers increased. • Area planted to high yielding and suitable horticultural crops increased. • Number of farmers using high yielding and suitable horticultural crops increased. • Number of farmers planting high nutritive value horticultural crops increased.	• Progress reports. • Field visits.	1. Roads do not deteriorate further. 2. Farmers willing to practice appropriate cropping systems. 3. Enough organic materials available to the smallholder farmers. 4. Labour requirements do not exceed small holders resource capacity.
3. Bargaining power of horticultural crops in Lobi EPA reinforced.	Increased horticultural crops selling points from 24 to 80. • Number of farmers selling under uniform grading system increased. Number of marketing outlets of the Lobi Association increased from 3 to 6.	Field visits.	1. Transport is readily available. 2. Willingness of farmers to be organized into groups / association.

ESM

IV. Activities	V. Inputs		
	Japanese side	Malawi side	
1.1. Conduct verification trials and surveys on soil fertility improvement.	1. Dispatch of Volunteers	• Provision of counterpart services	planting materials are available throughout
1.2. Conduct verification trials to select high yielding and suitable varieties.	1.1 Vegetable growing	1.1 Project Manager	
1.3. Review and refine indigenous technologies for horticultural crops production.	1.2 Fruit growing	1.2 Deputy Project Manager	
1.4. Conduct verification trials on vegetables.	1.3 Soil and fertilizer	1.3 Counterparts for JOCV Volunteers	
1.5. Conduct verification trials on potential fruits.	1.4 Pest and Disease	2. Provision of support staff	
1.6. Conduct verification trials on bio-pesticide physical and cultural pest and disease control methods.	1.5 Senior Volunteer	2.1 Two drivers	
1.7. Conduct verification trials on organic matter technologies.	1.6 Other Volunteers when necessary	2.2 Thirteen labours	
1.8. Conduct observation trials on mixed cropping methods.	• Transfer and exchange of knowledge and technologies	2.3 Two security guards	
1.9. Conduct participatory trials with farmers.	• Provision of equipment and local cost necessary according to Malawi side budgetary effort.	3. Provision of funding necessary for the implementation	
1.10. Analyse and collate Research findings.	• Acceptance of counterparts for training in Japan	4. Provision of land, buildings and facilities	
2.1. Conduct technical adaptability meeting.		5. Provision of funding necessary for the equipment as well as for the installation, operation, and maintenance	
2.2. Develop appropriate extension messages on appropriate horticultural technologies.			
2.3. Conduct campaign meetings on horticultural technologies.			
2.4. Conduct DTC demonstrations on appropriate horticultural			
2.5. Conduct demonstration on water management for horticultural crops.			
2.6. Conduct Participatory Rural Appraisal on the Project.			
2.7. Facilitate seed multiplication programme			Preconditions
2.8. Conduct fruit tree seedling production.			The Government of Japan and the Government of Malawi will agree on implementation of the Project
2.9. Form farmers into Farmers Groups			
3.1. Facilitate uniform grading system			
3.2. Train farmers on marketing.			
3.3. Train staff on marketing.			
3.4. Facilitate farmers / retail outlet linkage.			

KEM

*[Handwritten signature]*

June 2001

**LOBI HORTICULTURAL APPROPRIATE TECHNOLOGY  
EXTENSION PROJECT\***

***(1) SUMMARY OF TRIALS CONDUCTED AND VERIFIED***

	NO. OF TRIALS TARGETED*1	VERIFICATION TRIALS CONDUCTED*1	NO. OF TECH	REMARKS
VEGETABLE	7	10	0	
FRUIT	4	2	0	
SOIL FERTILITY	6	14	2	
PEST & DISEASE	1	8	2	
	18	34	4	

\*1 Number of technologies to be established in the Project document

\*2 Number of verification trials conducted

\*3 Number of technologies verified

***(2) VERIFICATION TRIALS CONDUCTED***

No	Component	Title of verification trial	Frequency conducted	Remarks
1	Vegetable	Tomato variety verification in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
2	Vegetable	Tomato variety verification in hot dry season	2	The trial has to be repeated because the results for two seasons were not consistent. However, data on characteristic of various tomato varieties are being collected.
3	Vegetable	Tomato variety verification in rainy season	2	The trial has to be repeated because the results for two seasons were not consistent. However, data on characteristic of various tomato varieties are being

*Em*

*N. J. Partgud*

				collected.
4	Vegetable	Cabbage variety verification	1	The trial will be completed this year if the results for this season and last season will be consistent.
5	Vegetable	Cabbage re-growth verification	2	There were no significant differences between the varieties. The results indicated that the yield level of all cabbage varieties were low.
6	Vegetable	Onion variety verification	1	The trial will be completed this year if the results for this season and last season will be consistent. However, data on characteristic of various onion varieties are being collected.
7	Vegetable	Nursery management verification on Leaf mustard	2	The trial has to be repeated because the results for two seasons were not consistent. However, kneaded bed indicated higher yield level.
8	Vegetable	Nursery management verification on Tomato	2	The trial has to be repeated because the results for two seasons were not consistent.
9	Vegetable	Set/seed onion verification	1	The trial will be completed this year if the results for this season and last season will be consistent.
10	Vegetable	Paprika fertilizer rate observation	1	The trial will be completed this year if the results for this season and last season will be consistent.
11	Fruit	Mandarin variety verification	On going	It is difficult to obtain

*ERM*

*S. Prasad*

				the results within the project period. However, data being collected on plant girth and height for various varieties in 2001 and 2002 will be analyzed.
12	Fruit	Water retention verification on citrus	On going	It is difficult to obtain the results within the project period. The effects of organic matters in the pit are not only water retention but nutrients supplied from the organic matters may also affect the growth of citrus trees. Therefore the trial was proposed to be abandoned.
13	Soil fertility	Organic matter application verification on Tomato in hot dry season	2	There were no significant differences between treatments.
14	Soil fertility	Organic matter application verification on Leaf mustard in hot dry season	2	There were no significant differences between treatments.
15	Soil fertility	Organic matter application verification on Tomato in rainy season	1	The trial will be completed this year if the results for this season and last season will be consistent.
16	Soil fertility	Organic matter application verification on Tomato in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
17	Soil fertility	Organic matter application verification on Leaf mustard in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
18	Soil fertility	Organic matter application verification on Onion in cool dry season	1	The trial will be completed this year if the results for this

Esm



				season and last season will be consistent.
19	Soil fertility	Organic matter application verification on Garlic in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
20	Soil fertility	Nursery media verification on Tomato in hot dry season	2	The results were consistent between two seasons thus the media with the ratio of soil: compost: charcoal 1:1:1 was the best in terms of initial growth of the seedlings.
21	Soil fertility	Nursery media verification on Leaf mustard in hot dry season	2	The results were consistent between two seasons thus the media with the ratio of soil: compost: charcoal 1:1:1 was the best in terms of initial growth of the seedlings.
22	Soil fertility	Nursery media verification on Tomato in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
23	Soil fertility	Nursery media verification on Leaf mustard in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
24	Soil fertility	Nursery media verification on Onion in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
25	Soil fertility	Participatory biomass transfer verification on cabbage	1	Farmers appreciated the importance of biomass application.
26	Soil fertility	Organic matter combination verification on compost	2	Results from research station not yet collected.

EM

*[Handwritten signature]*

27	Pest & disease	Tomato variety verification on nematodes resistance	2	The trial will be completed this year if the results for this season and last season will be consistent.
28	Pest & disease	<i>Tephrosia vogelli</i> control effects verification against insect pests on Leaf mustard in hot dry season	2	It was verified that the bio-pesticide was very effective.
29	Pest & disease	<i>Tephrosia vogelli</i> control effects verification against insect pests on Leaf mustard in cool dry season	1	The trial will be completed this year if the results for this season and last season will be consistent.
30	Pest & disease	Ash repellent effects verification against late blight on Tomato in cool dry season	1	So far, the results indicated that ash could not control late blight on tomato in rainy season. The trial will be completed this year if the results for this season and last season will be consistent.
31	Pest & disease	<i>Alliums</i> crops repellent effects verification against Red spider mites on Tomato in hot dry season	2	There were no significant differences between treatments.
32	Pest & disease	Shelter effects verification against Late blight on Tomato in rainy season	2	It was verified that shelter with chemical spray was the best in terms of yield of tomato as well as damage index.
33	Pest & disease	Marigold repellent effects verification against aphids on Rape	1	So far, there were no significant differences between treatments. Therefore, it was proposed to abandon this trial.
34	Pest & disease	Crotalaria and Marigold control effects against nematodes on tomato	On going	This trial started just this year because of an outbreak of nematodes in farmers field.

**Remarks:**

The number of technologies verified is low due to the following reasons:

Egm

*[Handwritten signature]*

- It took time to open new land for trial activities.
- Soil condition especially moisture in dambo where most of the trials were conducted is variable hence the results were not consistent. Therefore, most of trials have to be repeated.
- Organic material analysis has not been done by the research station.
- Extension activities came in earlier than scheduled on the plan.
- Land shortage on fruit component.
- Late attachment of implementers.
- Laborer shortage during initial stage.

Esm

W. Pratsub



**V. Technical Fields and Activities**

1. Management

1-3 Activities of Project Manager and JOCV Team Leader

1-3-1. To liaise with the JICA and LADD on the problems encountered in the Project and the overall progress of the Project.

1-3-2. To liaise with Programme Manager on technical, financial and managerial issues.

1-3-3. To submit report and conduct a basic study in order to gain a better understanding of the present condition.

1-3-4. To establish an operational plan for the running of the Project.

1-3-5. To undertake duties as follows

- (1) Preparation of the progress reports to the Project Implementation Committee and coordinating the quarterly meetings.
- (2) Develop the capacity of the farmer organization to undertake their own activities.
- (3) Facilitate development of regulations for the management of the proposed farmer organizations.
- (4) Encourage the farmers to do joint shipment and sale.
- (5) Facilitate establishment of a Young Farmers Section within the farmer organizations with the aim of them as future leaders of the organization.

2. Vegetable growing

2-3. Activities of Malawian counterpart and JOCV volunteer

2-3-1 To verify and extend appropriate nursery management techniques, such as the use of kneaded nursery bed, pots and trays that are locally available, to produce healthy seedlings with less root damage.

2-3-2 To extend appropriate water management practices such as mulching, sunken bed making

*EM*

*D. Katsirumbi*

for various vegetables to farmers.

2-3-3 To verify performance of various varieties of tomato, cabbage and onion respectively, and introduce the verified varieties to farmers.

2-3-4 To introduce cultivation practices of various vegetables to farmers through conducting demonstrations at Day Training Center garden.

2-3-5 To facilitate seed multiplication programme of various crops such as Irish potato and garlic by farmers.

2-3-6 To review and examine various potential indigenous technologies for horticultural crops.

2-3-7 To refine an annual operational calendar for vegetable production, and extend it to farmers.

### 3. Fruit growing

3-3 Activities of Malawian counterpart and JOCV volunteer

3-3-1 To increase the percentage of takes on grafting of tropical fruits, such as mangoes with the use of plastic film and cheese cloth, and the production of improved fruit tree seedlings.

3-3-2 To extend an effective method of top-working to change local cultivars to improved varieties to farmers.

3-3-3 To produce improved sub-tropical fruit tree seedlings such as tangerines and oranges, and develop appropriate extension messages for farmers on budding technique to be used.

3-3-4 To produce improved temperate fruit tree seedlings such as peaches and apples, and develop appropriate extension messages for farmers on budding technique to be used.

3-3-5 To train extension staff/farmers on pruning for healthy fruit tree growth.

3-3-6 To train extension staff/farmers on fruit thinning to increase yields and quality of the produce.

3-3-7 To extend appropriate maturing practices to farmers for various fruit trees.

*Edm*

*D. Matzov*

3-3-8 To refine and introduce an operational calendar for recommended fruit production.

3-3-9 To extend the other fruit management practices such as spacing, basin making, mulching and watering.

#### 4. Soil and fertilizer

4-3 Activities of Malawian counterpart and JOCV volunteer

4-3-1 To verify and extend appropriate manuring practices for selected vegetables and communicating them to the farmers.

4-3-2 To verify the existing compost making method using local and low cost materials. Establish and disseminate appropriate messages such as compost making to field staff and farmers

4-3-3 To verify an appropriate leguminous biomass transfer method for vegetables, and disseminate the technique to farmers.

4-3-4 To promote the planting of leguminous trees as live fence, to reduce soil erosion, water run off, wind damage and livestock injury.

4-3-5 To refine and introduce as annual operational calendar for organic fertilizer making and its use.

4-3-6 To verify and disseminate technologies through the extension system, for improvement of nursery soil for vegetable seedlings.

4-3-7 To introduce an effective method of charcoal making that utilizes local materials such as grasses and crop residues.

#### 5. Pest and Disease

5-3 Activities of Malawian counterpart and JOCV volunteer

5-3-1 To collect data on pest and disease occurrence for fruits and vegetables.

5-3-2 To verify and extend cultural, physical and bio-pesticide control measures for vegetables.

The control will be undertaken with local materials such as *Tephrosia vogelii*, garlic, ash,

Em

*J. D. M. M. M.*

etc..

5-3-3 To extend appropriate field and nursery hygiene techniques for horticultural crops to farmers.

5-3-4 To improve and disseminate through the extension system, appropriate field planning methods such as rotation of crops.

5-3-5 To advise through the extension system the proper and safe use of agricultural chemicals.

5-3-6 To develop extension messages on pest and disease control for horticultural crops.

5-3-7 To take counter measures against unexpected out break of pest and disease for horticultural crops.

Em

J. N. M. M. M.

