第７章　結論

7-1　提言事項

（1）　総括

①　プロジェクトを総括すると、おおむね達成されたといえる。

②　道路・交通条件、自然条件が非常に厳しい本プロジェクト地域において、予定された５年間で、各分野においてそれぞれの成果をあげたことは高く評価できる。

③　これは日本側の６名の長期専門家の献身的な貢献と17名のカウンターパートを配置するといったパラグァイ政府の努力によるところが大きい。

④　ニエンブク県知事およびピラール市長をはじめ、関係６郡の関係者から農牧省に対するデルマスール計画継続の熱心な要請があることに加え、隣接郡から計画地域拡大を望む声があがっている。このことは、本プロジェクトへの高い評価の表れである。

⑤　不安定なパラグァイ側の予算執行率はプロジェクトの上位計画であるデルマスール計画の自立発展性に不安を抱かせる。

⑥　本調査では、次の成果が確認された。

1)　湛水被害の緩和方法として、モデル排水路の効果が実証された。

2)　住民参加による排水路の施工や維持管理を行う新たなインフラ整備の手法が開発され、それを推進するための組織体制の整備が準備されつつある。

3)　劣悪な土地条件のもとで、小規模農民の生活を向上させるための作付体系、土壌改良技術が絞り込まれるとともに、酪農、養蜂委員会の設立がなされた。

4)　モデル工事の実施が、小規模農民に社会、経済、文化的効果をもたらした。

⑦　本調査により、次のような組織体制の強化が必要との認識に至った。

1)　デルマスール計画地域における中長期的な排水路の施工および維持管理を行うためには、農牧省主導により、機械維持管理、排水路計画および施工を調整し、地方自治体や農民から資金調達する機能を持った支援組織を設置する必要がある。

2)　農民のニーズに合った適正技術を指導するため、デルマスール計画事務局の栽培・普及部門と普及所の連携や、酪農、養蜂などの市場開発および販売流通のため、協同組合などの関係機関との連携が必要である。

⑧　モデル工事による小規模農民への社会、経済、文化的効果については、農村開発プロジェクトとして重要な成果であり、正確に確認する必要がある。そのため、早急にわが国から農村開発専門家を派遣し、現地コンサルタントなどを使って詳細な調査を行い公表することが望まれる。その調査結果と５年間のプロジェクトの成果

をもとに、関係機関に呼びかけ、1999年６月までにセミナーを開催するよう提案する。

（２） フォローアップ協力の提案

① 本プロジェクト活動は今次調査による評価結果から、プロジェクト目標を達成するためには、次の技術支援を継続する必要性が認められた。

ｉ）カウンターパートの排水路の路線決定技術の習得

ii）受益者による排水路の維持管理体制の整備

iii）カウンターパートの重機械の運用・維持管理技術

iv）営農の多様化栽培技術の改善

ｖ）農業開発組織体制の強化

② フォローアップ期間に期待される具体的な成果および投入については、以下のとおりとすることが妥当であると判断した。

1） 成果

ｉ）カウンターパートが現地踏査による技術的判断と受益農民の意見調査により、排水路の路線を決定できる。

ii）受益者の参加による排水路維持管理の技術と体制が整備される。

iii）カウンターパートが供与された重機械を運用、維持管理する技術を習得する。

iv）より生産性の高い作付体系が提案される。

ｖ）ピラール南部地域において、農村開発を調整するとともに、資金調達できる支援組織が設立され、運営される。

2） 投入

ｉ）長期専門家

・リーダー：水管理・施工

・業務調整：組織体制整備

ii）短期専門家

必要に応じ、機械維持管理および営農

iii）研修員受入

必要に応じ

iv）供与機械

重機械のパーツ

3） 期間

１年９カ月（2001年３月31日まで）

7-2 課題と教訓

（1） 成果が導かれた要因

活動目標がおおむね達成された要因には、次のことが考えられる。

① ６名の専門家のうち、調整員を除いて、５年間交代がなかった。

② １年目10名であったカウンターパートが最終的には17名になり、かつ、交代がなかった。

③ 日本の専門家のリーダーとパラグァイ側のカウンターパートのリーダーが互いに連携しつつ、リーダーシップを発揮した。

④ 専門家とカウンターパートの共同作業がそれぞれの分野で密接で、継続性が高かった。

⑤ 供与機械として、重機械（ブルドーザー、パワーショベル、トラックなど）が投入されたことにより、オペレーターが育ち、請負に出さずに、独力でモデル工事が実施できた。

⑥ モデル工事の効果が具体的で、プロジェクトが進むにつれて、展示効果が発揮され、住民の関心が高まった。

⑦ 1998年４月の洪水時に、専門家とカウンターパートが重機械を利用して洪水対策に協力したことが、住民の共感を呼び、事業への協力の姿勢が高まった。

⑧ モデル事業実施地区で、洪水の後の洪水対策が円滑に進んだことが、事業への期待感を高めた。

⑨ 農牧省本省の日本人専門家の強力な支援があった。

（2） 推進を阻害した要因

以下のような点は、プロジェクトの円滑な推進を阻害したと考えられる。

① パラグァイ側のローカルコストの予算執行率が４年目、５年目になって低下し、重機械の運転経費を日本側の経費で手当てせざるを得なくなった（このことはプロジェクトの上位計画であるデルマスール計画の自立発展性に不安を抱かせる）。

② 重機械の通関に時間を要した（パラグァイ側の通関費用の手当ての遅れが原因）。

③ 予算を執行するための農牧省本省の行政的な手続きに、常に時間を要した。

④ 一部のスペアパーツの入手に時間のかかるものがあり、機械の運用を妨げた。

⑤ すべての専門家ではないが、語学力（スペイン語）の不足があった。

⑥ プロジェクト開始時に、県普及所とプロジェクトの間で、役割分担や連携体制について、十分なコンセンサスが得られていなかった。このことが市場開拓、普及、流通改善のための関係機関の連携に課題を残した。

（3） 教訓

プロジェクトタイプの技術協力にあっては、計画の妥当性が大切である。あらかじめ十分な検討がなされていれば、さらに高い効果があげられたのではないかと考えられる点は次のとおりである。

① 技術移転を進めるにつれ、デルマスール計画を推進するためには組織体制の強化が必要との認識に至った。そのため、組織強化については、取り組みが遅くなったうえに、住民や関係者の意識の向上を図りつつ組織づくりを推進することは容易でないことから、フォローアップ協力で対応せざるを得なくなった。

当初の計画時の調査に十分時間をかけておけば、プロジェクトの目標設定がより具体的で労力配分が明確になり、さらに効率的に実施できた。

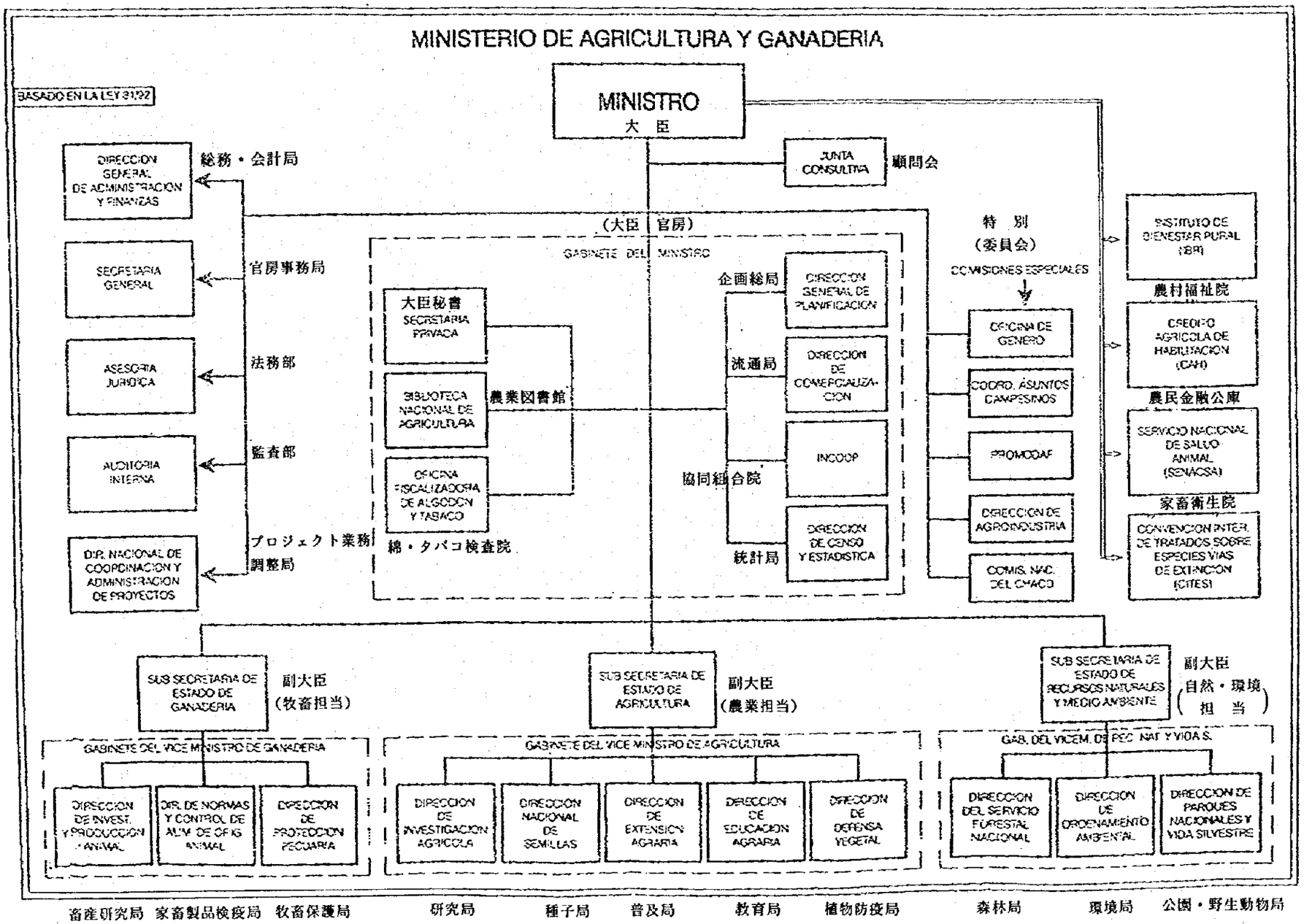
② プロジェクトの目標は小農支援であるが、小規模農家は動員できる資源に乏しく、教育水準も低いため、生産拡大の機会を十分に生かせない。目標を実現する手法として、中規模・大規模農家を巻き込む必要がある。具体的には営農の多様化において、より展示効果を期待するためには、中規模の篤農家を対象にモデル事業を設定するという方法もあった。

③ 技術的には、道路開発が小規模農家に与えるインパクトは大きい。モデル排水路の工事用道路のインパクトも大きいものがあった。当初から、農道整備と排水路計画を一体とした地域開発の目標設定が可能であったなら、より大きな効果が得られた。

④ 相当な成果の割に、その内容が、地域住民・パラグァイ政府、および日本側関係者に理解されていない。適切な広報活動による成果をわかりやすくパラグァイ国民などに伝える努力は、技術協力それ自体と同様に大切である。

資　　料

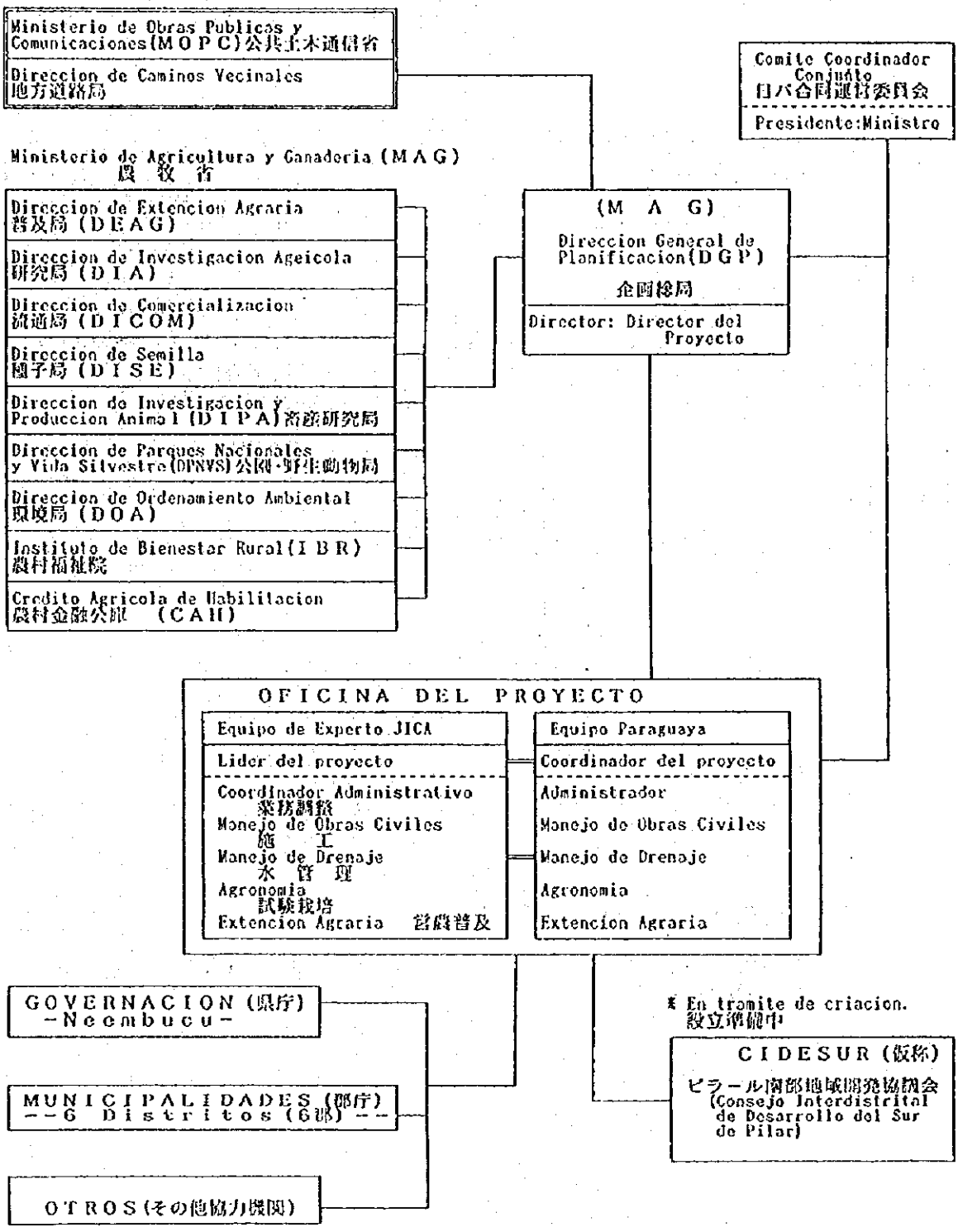
II. ESTRUCTURA Y ORGANIZACION



1　組織図（2）

Estructura Organizacional
El Proyecto de Desarrollo Rural
en la Region Sur de Pilar

ピラール南部地域農村開発計画組織図



2　評価サマリー

パラグアイ共和国ピラール南部地域農村開発計画：評価サマリー

上位目標

ピラール南部地域において小規模農家の生活水準が改善される。

プロジェクト目標

農牧省およびプロジェクト地域の小規模農家が、排水管理の改良、土壌改良、栽培技術の改良、営農形態の多様化により持続的な農業開発を継続するための技術力と組織体制を強化する。

成果1．排水管理計画の策定

ゴール	プロジェクト終了時までの達成の見通し
プロジェクト地域におけるデータ収集・解析と排水改良計画の策定作業を通して、C/P が排水管理計画の策定に関する知識・技術を習得する。	ゴールは達成される。プロジェクト地域の計画策定作業は終了し、C/P への技術移転も完了する見通しである。

サブ・ゴール	達成度	残された課題	技術支援の必要性
1A　プロジェクト全域の排水改良計画が必要な精度と詳細さで策定される。	A		-
1B　データ収集・解析、計画策定のための解析プログラムや技術マニュアルが作成される。	A		-
1C　C/P が技術に習熟し、独自に活動を継続できる。	A		-

(注) サブ・ゴール達成度の判定基準は以下の通りである。

A：ほぼ達成される。　(達成度 8割以上)
B：ある程度達成される。　(達成度 6--8割程度)
C：達成できない。　(達成度 6割以下)

技術支援の必要性の判定基準は以下の通りである。

-：残された課題はない。
X：残された課題があるが、プロジェクト終了後、パラグアイ側の努力で達成可能である。
XX：プロジェクト終了後も継続的な技術支援の必要性が大きい。

成果２．モデル排水管理施設の整備

ゴール	プロジェクト終了時までの達成の見通し
C/P が、排水改良モデル地区において排水管理施設と営農展示用農地を整備することを通して、農民の参加を得て地域レベルで建設・維持管理可能な排水管理施設の計画・設計・施工に関する適正技術とその実用的な活用方法に精通する。	ゴールは大部分達成されたが、条件の異なる地域での路線決定・施工、重機械の維持管理について、C/P は更なる経験と技術指導が必要である。

サブ・ゴール		達成度	残された課題	技術支援の必要性
2A	技術的にプロジェクト地域で受け入れ可能な設計基準・工法が採用される。	A		-
2B	受益住民が積極的に排水路の計画・施工に参加し、役務を提供する。	A		-
2C	建設された排水施設が顕著な排水効果を示す。	A		-
2D	計画・設計・施工に関するマニュアルや指針が作成される。	A		-
2E	重機械のオペレーターが養成される。	A		-
2F	C/P が重機械の維持管理技術に習熟する。	B	重機械の修理技術について、更なる技術指導が必要である。	XX
2G	C/P が排水路の計画・設計・施工管理技術に習熟し、独自に活動を継続および反復できる能力を獲得する。	B	現地踏査による技術的判断と受益農民間の意見調整に基づく路線決定について、更なる技術指導と経験が必要である。	XX
2H	C/P が排水路の計画・設計・施工管理技術の訓練・研修を独自に実施できる能力を獲得する。	A		-

成果３．受益者の参加による排水路の維持管理体制の整備

ゴール	プロジェクト終了時までの達成の見通し
適切な排水路維持管理の手法・手順・組織体制が明らかになり、モデル地域の受益農家により実施されることを通して、C/P が住民参加による排水路維持管理の普及方法と組織開発の方法を習得する。	ゴールはあまり達成できない。C/P への技術移転は順調に行われたが、排水路維持管理の手法・手順・組織体制は開発途上にあり、適切な維持管理作業は行われていない。技術開発と組織強化への指導を継続する必要がある。

サブ・ゴール		達成度	残された課題	技術支援の必要性
3A	適切な維持管理作業の技術と手法が明らかになる。	B	排水路清掃の技術と手法は開発途上で、継続的な検討が必要である。	XX
3B	モデル排水路と工事用道路を維持管理する組織体制が確立する。	B	集落単位の組織はできたが、受益者と地方自治体を中心とした流域単位の共同作業を調整する体制を確立する必要がある。	XX
3C	建設された排水路と工事用道路が住民組織の連携により適切に維持管理される。	C	自分達の施設であるとの認識を高め、適切な維持管理作業が行われるように指導する必要がある。	XX
3D	C/P が排水路・工事用道路の維持管理の必要性を理解し、その方法・手法・組織体制、その普及方法、組織開発方法に習熟する。	B	C/P が習熟した維持管理作業の技術・手法・組織体制は、開発途上である。	XX

成果４．営農多様化・栽培手法・土壌改良手法の技術的な検討

ゴール	プロジェクト終了時までの達成の見通し
適作物・適品種、代替作物の可能性、作付体系の多様化、栽培技術の改良、適切な土壌改良技術を検討することを通して、C/P がプロジェクト地域において生産性を向上できる技術改良の進め方を習得する。	ゴールは部分的に達成される。C/P は基本的な技術を習得し、今後も技術改良を継続できる。地域の小規模農家が採用できる適作物・適品種・代替作物と栽培・土壌改良の適正技術が絞り込まれたが、現状では、生産性を大幅に向上できる見通しは立っていない。

サブ・ゴール		達成度	残された課題	技術支援の必要性
4A	生産性向上と営農の多様化を可能とする適作物・適品種・代替作物が提案され、普及所の指導対象品目となる。	B	適作物・適品種・代替作物がいくつか提案されたが有望な換金作物は見つかっておらず、継続的な検討が必要である。	XX
4B	プロジェクト地域で小規模農家が採用可能な栽培・土壌改良の適正技術が見出される。	A		-
4C	小規模農家の生産性向上に寄与できる適正作付体系が提案される。	B	提案された作付け体系による生産性の向上はあまり大きくない。継続的な検討が必要である。	XX
4D	各種調査・試験のためのマニュアルが作成される。	A		-
4E	C/P が調査・試験・展示圃場運営などの手法と技術に習熟し、独自に技術改良を継続できる能力を獲得する。	A		-

成果５．多様化された営農形態と改良技術を導入するための普及活動の改善と強化

ゴール	プロジェクト終了時までの達成の見通し
普及員・キーファーマーに対する訓練・研修、モデル農家における改良された営農形態の展示、生産者組織の指導・育成、情報キャンペーンなどを通して、C/P と普及員が営農の多様化と改良技術を効率的・効果的に普及できる能力を得る。	ゴールは部分的に達成される。C/P は十分な能力を得たが、普及員への技術移転は十分とは言えず、パラグアイ側による継続的な努力が必要である。

サブ・ゴール		達成度	残された課題	技術支援の必要性
5A	農家調査、農産物市場調査、農業生産組織の実態調査により、小規模農家の現状が明らかになる。	A		-
5B	営農多様化と改良技術の普及活動を強化するための研修プログラムが開発され、C/P が普及員に対する研修プログラムおよび技術的な指導を独自に実施できる。	A		-
5C	普及員が営農の多様化と改良技術の普及活動を実施できる知識と技術を獲得する。	B	普及員の能力開発の余地が残されている。C/P による研修の継続および日常業務での共同作業を通じた普及員への技術指導が必要である。	X
5D	提案された適作物・適品種、栽培技術、土壌改良技術、モデル作付体系が、研修を受講したキーファーマーの経営モデルとして採用される。	A		-
5E	モデル農家が選定され、多様化された営農形体が展示される。	A		-
5F	農業生産組織の数、加入農家数が増加し、活動分野が拡大する。	A		-

成果６．農業開発組織体制の強化

ゴール	プロジェクト終了時までの達成の見通し
ビラール南部地域において、本プロジェクトの成果を活用して排水管理改善と営農改善・生産性向上による持続的な農業開発を推進するための組織体制が強化される。	ゴールは達成できない。地域開発協議会による補完的な財源確保と関係機関の効果的な連携体制の検討が開始されたにとどまる。組織開発への継続的な助言が必要である。

サブ・ゴール	達成度	残された課題	技術支援の必要性
6A DERMASURプロジェクトを継続するための長期的な活動計画、資金計画が策定され、決定される。	B	1999-2003年度の活動計画が農牧大臣に承認され、1999年度予算の準備が進んでいる。	X
6B 地方自治体や地域農民のイニシアチブとコスト負担により、供与された重機を用いて排水施設等の建設を計画・調整・実施する体制が確立する。	B	県と住民がコストを負担して事業を行った実績があり、制度化の準備が進められている。財源確保と計画調整のメカニズムの制度化を進めるための助言が必要である。	XX
6C 市場開拓・普及・流通改善により営農の多角化と生産性向上を推進するための関係機関の連携メカニズムが確立する。	C	カウンターパート・普及所・生産者組合・試験研究機関などの役割分担と業務の流れを整理し、定着させるための助言が必要である。	XX

3　供与機材利用状況表

機材の利用－管理状況表

No. 1－1

（１６０万円以上の機材）　※平成６年度供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー名・形式）	価格 千円	数量	利用（保管）場所	利用状況	管理状況	備考　（特記事項）
平成６年度	(701) ０１	トヨタ　ランド・クルーザー車　　４ＷＤ ２９８２ｃｃ　118 HP　(1994 年型)	3.222	１台	(プロジェクト車庫) 総務担当管理活用	B	A	
同上	(700) ０２	トヨタ ハイラックス、ダブル・キャビン、小型トラック　４ＷＤ ２７７９ｃｃ　８７HP　(1994 年型)	2.516	１台	(同上) 排水施工管理活用	A	A	
同上	(699) ０３	トヨタ ハイラックス、ダブル・キャビン、小型トラック　４ＷＤ ２７７９ｃｃ　８７HP　(1994 年型)	2.516	１台	(同上) 栽培分野管理活用	A	A	
同上	(698) ０４	トヨタ ハイラックス、ダブル・キャビン、小型トラック　４ＷＤ ２７７９ｃｃ　８７HP　(1994 年型)	2.516	１台	(同上) 普及分野管理活用	A	A	
同上	０５	中型湿地用ブルドーザー（１５ｔ級） CAT. modelo　D5H　LGP	15.649	１台	(モデル地区) 排水施工管理活用	A	A	(目下故障修理中) オペレータ訓練を兼ねて稼働
同上	０６	大型湿地用バックホー（０．９ｍ³級） CAT. modelo　320L	13.685	１台	(同上) 排水施工管理活用	A	A	同上
同上	０７	小型湿地用バックホー（０．２３ｍ³級） KAMO　60N	9.150	１台	(同上) 排水施工管理活用	A	A	同上
同上	０８	小型湿地用バックホー（０．２３ｍ³級） KAMO　60N	9.150	１台	(同上) 排水施工管理活用	A	A	同上
同上	０９	Massey Ferguson MF290 大型 トラクター ８５HP	3.237	１台	(農学校内機械庫) 栽培分野管理活用	A	A	
同上	１０	試験区用精密播種機 WINTERSTEIGER SEEDMECH	4.702	１台	(同上) 栽培分野管理活用	B	A	播種期に集中使用
同上	１１	綿用播種機 SLC　Modelo 708 AB　(Plantio Directo)	2.284	１台	(同上) 栽培分野管理活用	B	A	同上
同上	１２	Rolba Nettuno M 5000 水草処理用舟	1.652	１隻	(モデル 地区内) 排水施工管理活用	C	A	水路清掃時に集中使用
同上	１３	マルチ オートカウンター "EVER WELL" Model: KC-10	2.000	1	(農学校内倉庫) 栽培分野管理活用	C	A	収穫期等に集中使用

（１６０万円以上の機材）　※平成７年度供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー名・形式）	価格 千円	数量	利用（保管）場所	利用状況	管理状況	備考　（特記事項）
平成7年度	01	緊急連絡用無線装置 Motorola GR－300	3.077	1式	プロジェクト事務所 総務担当管理	A	A	各コンポネント、普及員内で交信できるよう発信器を配備
同上	(571) 02	トヨタ ハイラックス、ダブル・キャビン、小型トラック　4WD 2779cc　87HP　(1995 年型)	2.496	1台	(プロジェクト車庫) 排水施工管理活用	A	A	(現在エンジン修理中)
同上	03	小型湿地用ブルドーザー（7 t 級） CAT. modelo D4C LGP	8.404	1台	(モデル地区) 排水施工管理活用	A	A	オペレータ訓練を兼ねて稼働
同上	04	小型湿地用バックホー（0．24m³ 級） CAT. modelo 307	5.882	1台	(同上) 排水施工管理活用	A	A	同上
同上	05	小型湿地用バックホー（0．23m³ 級） KAMO　60N	8.177	1台	(同上) 排水施工管理活用	A	A	同上
同上	06	小型湿地用バックホー（0．23m³ 級） KAMO　60N	8.177	1台	(同上) 排水施工管理活用	A	A	同上
同上	07	Massey Ferguson MF275 中型トラクター　75HP	2.513	1台	(農学校内機械庫) 栽培部門管理活用	A	A	
同上	08	試験区用小型コンバイン Walter Wintersteiger	8.526	1台	(同上) 栽培部門管理活用	B	A	収穫時に集中使用
同上	09	実態顕微鏡 Wild Letz Leica (Suiza)	1.603	1台	(農学校内検査室) 栽培部門管理活用	B	A	検査時に集中使用
同上	10	トヨタ　ランド・クルーザー車（12人乗り）　4WD 4164 cc　(1995 年型)	3.742	1台	(プロジェクト車庫) 普及部門管理活用	C	A	農民研修、集会時集中使用
同上	11	視聴覚教材制作機材 Juego de equipos audio visuales	1.758	1式	(プロジェクト事務所) 普及部門管理活用	B	A	
同上	12	ダンプトラック　4WD ISUZU FTS12F 4WD 6494cc 170PS 6ton Dump Truck	6.080	1台	(モデル地区) 排水施工管理活用	A	A	
同上	13	クレーン付きトラック HINO Model FT3HGSA	6.500	1台	(同上) 排水施工管理活用	A	A	

（１６０万円以上の機材）　※平成７年度供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー名・形式）	価格 千円	数量	利用（保管）場所	利用 状況	管理 状況	備考　（特記事項）
平成 ７年度	１４	自走式　ｸﾛｰﾗ ﾀﾞﾝﾌﾟ CRAWLER CARRIER: Model - SE2301	3.260	１台	（モデル地区） 排水施工管理活用	A	A	
同上	１５	自走式　ｸﾛｰﾗ ﾀﾞﾝﾌﾟ CRAWLER CARRIER: Model - SE2301	3.260	１台	（同上） 排水施工管理活用	A	A	
同上	１６	中型トラック　４ＷＤ MITSUBISHI Canter 3300cc 94HP	3.873	１台	（農学校内車庫） 普及部門管理活用	B	A	
同上	１７	大型湿地用バックホー　（０．９ ㎥ 級） ＣＡＴ．Modelo 320 L	15.503	１台	（モデル地区） 排水施工管理活用	A	A	

（１６０万円以上の機材）　※平成８年度供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー名・形式）	価格 千円	数量	利用（保管）場所	利用状況	管理状況	備考　（特記事項）
平成８年度	００１	モーターグレーダー Motoniveladora CAT 120H	14.475	1　台	（モデル地区内） 排水施工管理活用	A	A	
同上	００２	小型湿地バックホー（０．２４m³ 級） ＣＡＴ　modelo　３０７	8.128	1　台		A	A	
同上	００３	旋盤 Torno marca NARDINI ND250	2.993	1　台		A	A	
同上	００４	ダンプトラック HINO 4x4 FT3HGSA 7412cc 190HP	8.638	1　台		A	A	
平成９年度	117号 ００１	小型トラック（ダブルキャビン） TAYOTA-1997年型、HILUX-LN106L、4WDﾃﾞｰｾﾞﾙ280	2.967	1　台	（プロジェクト指定車） 排水・施工分野活用	A	A	
	118号 ００２	小型トラック（ダブルキャビン） TAYOTA-1997年型、HILUX-LN106L、4WDﾃﾞｰｾﾞﾙ280	2.967	1　台	（プロジェクト指定車） 栽培・普及分野活用	A	A	
	００３	ホイールローダー（屋根付き） キャタピラー社製924F、CATﾃﾞｰｾﾞﾙ3200cc、ﾊﾞｹｯﾄ1.72㎥	10.208	1　台	（プロジェクト指定車） 排水・施工管理活用	A	A	
	００４	トレーラー（被牽いん式） KUBITZ社製、TIPTOP型、ダブル車輪、20T積み、傾斜板付き	3.379	1　台	（プロジェクト指定車） 排水・施工管理活用	A	A	重機移動時に常時稼働

（１０万円以上１６０万未満の機材）　※　供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・規格・能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成６年度	０１	ボートグラス ファイバ制、船外機 (千円833) Nautica Eberth Plas,Yamaha 85A ETL	１隻		１隻	C	A	現地調査時に集中使用
同上	０２	熱風送風式乾燥機 (千円741) Ｈｅｒａｅｕｓ	１台		１台	B	A	
同上	０３	電子上天びん (千円134) BOSCH modelo EP-2020	１台		１台	A	A	
同上	０４	精選機（大粒・小粒用） (千円1.501) SEEDBURO modelo LA-K/B	１台		１台	C	A	収穫期に集中使用
同上	０５	自記水位計 (千円438) OTT HYDRIMETRIE GMBH.R20	１台		１台	A	A	オンド川（自然水路地区）
同上	０６	自記水位計 (千円438) OTT HYDRIMETRIE GMBH.R20	１台		１台	A	A	オンド川（パイロット 水路）
同上	０７	自記水位計 (千円438) OTT HYDRIMETRIE GMBH.R20	１台		１台	A	A	パイロット 水路の進捗に伴い設置する
同上	０８	自記水位計 (千円438) OTT HYDRIMETRIE GMBH.R20	１台		１台	A	A	同上
同上	０９	自記雨量計 (千円300) LAMBRECHT No.1509-10H	１台		１台	A	A	
同上	１０	自記雨量計 (千円300) LAMBRECHT No.1509-10H	１台		１台	A	A	
同上	１１	自記蒸発計 (千円216) LAMBRECHT No.1521	１台		１台	A	A	
同上	１２	自記蒸発計 (千円216) LAMBRECHT No.1521	１台		１台	A	A	
同上	１３	自記蒸発計 (千円216) LAMBRECHT No.1521	１台		１台	A	A	

（１０万円以上１６０万円未満の機材）

平成10年度第３四半期現在

供与年度	番　号	機材名　（メーカー・規格・能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成６年度	１４	自記蒸発計 (千円216) LAMBRECHT No.1521	１台		１台	A	A	
同上	１５	自記温・湿度計 (千円147) LAMBRECHT No.252C	１台		１台	A	A	
同上	１６	自記風向風速計 (千円458) LAMBRECHT No.1482	１台		１台	A	A	
同上	１７	百葉箱 (千円256) LAMBRECHT No.10960	１基		１基	A	A	
同上	１８	台秤（中） (千円257) Mettler Toledo SB 16001 DR	１台		１台	B	A	収穫調整期に集中使用
同上	１９	オートバイ (千円251) Yamaha DT 125	１台		１台	A	A	
同上	２０	オートバイ (千円251) Yamaha DT 125	１台		１台	A	A	
同上	２１	オートバイ (千円251) Yamaha DT 125	１台		１台	B	A	
同上	２２	オートバイ (千円251) Yamaha DT 125	１台		１台	C	C	故障修理中
同上	２３	トラクター牽引緑肥処理カッター (千円622) MAINERO modelo 6015	１台		１台	B	A	処理時期に集中使用
同上	２４	畝立機（リンジャー） (千円107) ＴＡＴＵ　ＳＵＬ　21	１台		１台	B	A	
同上	２５	牽引式トレーラ　３、５トン (千円174) MASCHITO	１台		１台	B	A	
同上	２６	不耕機用播種機（大・小粒兼用） (千円1.459) SEMEATO modelo TDA 300	１台		１台	B	A	播種期に集中使用

（１０万円以上１６０万円未満の機材）

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・規格・能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成6年度	２７	カメラ (千円123) CANON modelo EOS 1000 FN	1台		1台	A	A	
同上	２８	トランシット (千円452) ＳＯＫＫＩＡ　ＤＴ　５	1台		1台	C	A	測定作業時集中使用
同上	２９	測距儀 (千円706) ＳＯＫＫＩＡ　ＲＥＤ　ＭＩＮＩ２	1台		1台	C	A	同上
同上	３０	台秤（大） (千円277) ＬＯＭＧＩＮＯ　ＢＥ　６００	1台		1台	B	A	
同上	３１	複写機 (千円661) SHARP M.SF 8570	1台		1台	B	A	
同上	３２	複写機 (千円661) SHARP M.SF 8570	1台		1台	A	A	
同上	３３	コンピューター (千円131) AJV modelo AT DLC 486/40	1式		1式	A	A	
同上	３４	発電機 (千円397) YANMAR BANBOZZI NS-9 KVA	1基		1基	A	A	
同上	３５	発電機 (千円397) YANMAR BANBOZZI NS-9 KVA	1基		1基	A	A	
同上	３６	水中ポンプ (千円122) ELECTROBOMBA ABS modelo UNI-600-T	1台		1台	B	A	
同上	３７	水中ポンプ (千円122) ELECTROBOMBA ABS modelo UNI-600-T	1台		1台	B	A	
同上	３８	水中ポンプ (千円122) ELECTROBOMBA ABS modelo UNI-600-T	1台		1台	B	A	
同上	３９	水中ポンプ (千円122) ELECTROBOMBA ABS modelo UNI-600-T	1台		1台	C	A	

（１０万円以上１６０万円未満の機材）

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・規格・能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成6年度	４０	ディスクプラウ (千円169) BALDAN modelo AF 4 x 26"	1台		1台	A	A	耕転時に集中使用
同上	４１	ディスクハロー (千円176) BALDAN modelo SPR 28D	1台		1台	A	A	
同上	４２	耕耘機 ロータリ トレーラ付き (千円667) YANMAR TC-11	1式		1式	A	A	
同上	４３	コンクリート バイブレーター (千円419) WACKER IRSE 48	1台		1台	B	A	
同上	４４	コンクリート バイブレーター (千円419) WACKER IRSE 48	1台		1台	B	A	
同上	４５	ランマー (千円594) WACKER DS 72Y	1台		1台	B	A	
同上	４６	ランマー (千円594) WACKER DS 72Y	1台		1台	B	A	
同上	４７	振動コンパクター (千円307) WACKER VPY 1750	1台		1台	B	A	
同上	４８	製図台 (千円120) "SEVEN" Stand:MS-1050 Table:EZ-1050-B	1 セット		1 セット	B	A	
同上	４９	青焼機 (千円125) "RICOH" Model: SD 100	1台		1台	C	A	
同上	５０	コンベトロメーター (千円165) "MACROSS" Model: TS-138	1 セット		1 セット	C	A	工事実施時に集中使用
同上	５１	シュミットハンマー (千円160) "MACROSS" Model: TC-215 Type: N	1台		1台	C	A	同上
同上	５２	米、麦脱穀機 (千円640) "EWER WELL" Model: OMM	1台		1台	C	A	収穫調整時に集中使用

（１０万円以上１６０万円未満の機材）

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・規格・能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成６年度	５３	穀粒脱穀機 (千円700) "EWER WELL" Model: TS	１台		１台	C	A	収穫調整時に集中使用
同上	５４	トウミ (千円600) "EWER WELL" Model: PS	１台		１台	A	A	同上
同上	５５	穀粒水分計 (千円210) "KET KAGAKU" Model: PB1D2	１台		１台	C	A	同上
同上	５６	大粒用穀粒水分計 (千円520) "KET KAGAKU" Grain Moisture Meter, HR 400	1		1	C	A	同上
同上	５７	土壌三相測定器 (千円560) "TAIKI RIKA" Model:DIK-1121	1		1	C	A	調査時に集中使用
同上	５８	土壌三相測定器 (千円560) "TAIKI RIKA" Model:DIK-1121	1		1	C	A	同上
同上	５９	土壌貫入計 (千円130) "EVER WELL" Model: H-60	1		1	C	A	同上
同上	６０	土壌貫入計 (千円130) "EVER WELL" Model: H-60	1		1	C	A	同上
同上	６１	土壌抵抗度測定器 (千円414) "TAIKI RIKA" Model: DIK-5500	1		1	C	A	同上
同上	６２	土壌団粒測定器 (千円880) "TAIKI RIKA" Model: DIK-2000	1		1	C	A	同上
同上	６３	恒温発芽試験機 (千円1,340) Constant Temperature Germinator, Model:TGL-10	1		1	B	A	試験時集中使用
同上	６４	ﾌﾟﾛｼﾞｪｸｼｮﾝ ﾊﾟﾈﾙ (千円810) Projection Panel, Model: colorview 75	1		1	B	A	研修実施時集中使用
同上	６５	ｺﾋﾟｰ ｽﾀﾝﾄﾞ (千円139) Polacopy 35	1		1	C	A	同上

（１０万円以上１６０万円未満の機材）

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・規格・能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成6年度	６６	製本器 (千円105) Book Making Machine, model ITO-2000	1		1	C	A	テキスト等作成時集中使用

（１０万円以上１６０万未満の機材）　※　平成７年度供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・　企画　・　能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成7年度	０１	大型冷蔵庫 (千円1,577) Camara Fria BT-170	1　基		1　基	C	A	電圧変動による故障で目下修理中、電圧安定装置の設置の要あり。申請中。
同上	０２	親子無線電話 (千円585) Radio telefono Telemobile	1　式		1　式	A	A	
同上	０３	ビデオ　カメラ (千円118) Panasonic NV M 3000 VHS	1　基		1　基	C	A	
同上	０４	ﾄﾗｸﾀｰﾓ牽引雑草用ｶｯﾀｰ (千円181) Desbrosadora Baldan	1　台		1　台	A	A	
同上	０５	サブソイラー (千円106) HAS　T/1　5lineas	1　台		1　台	B	A	整地時期に集中使用
同上	０６	ﾄﾗｸﾀｰ 牽引用中型ｽﾌﾟﾚﾔｰ (千円247) Pulverizadora de 600 lts.	1　式		1　式	B	A	同上
同上	０７	土壌均平機 (千円160) Grade Nivelador TATU	1　台		1　台	A	A	同上
同上	０８	ｺﾝｸﾘｰﾄ ﾊﾞｲﾌﾞﾚｰｸｰ (千円374) WACKER IRSE 48	1　台		1　台	B	A	
同上	０９	ランマー (千円531) WACKER BS 62Y	1　台		1　台	B	A	
同上	１０	振動コンパクタ (千円301) WACKER VPY 1750	1　台		1　台	B	A	
同上	１１	重機標準工具 (千円122) Herramientas Tipo Standard	1　式		1　式	C	A	整備実施時に集中使用
同上	１２	現場移動宿泊車 (千円318) Casa movil	1　台		1　台	A	A	
同上	１３	現場移動宿泊車 (千円318) Casa movil	1　台		1　台	A	A	

（１０万円以上１６０万未満の機材）　※　平成７年度供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・　企画　・　能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成7年度	１４	現場移動宿泊車 (千円318) Casa movil	1　台		1　台	A	A	
同上	１５	現場移動宿泊車 (千円318) Casa movil	1　台		1　台	A	A	
同上	１６	牽引式プラウ (千円1.044) Arado John Deere　2810	1　台		1　台	C	A	整地等耕作時集中使用
同上	１７	電動式水中ポンプ (千円109) Bomba de Agua ABS	1　台		1　台	C	A	工事実施時に集中使用
同上	１８	電動式水中ポンプ (千円109) Bomba de Agua ABS	1　台		1　台	C	A	同上
同上	１９	発電機 (千円356) Generador Bambozzi･Yanmar NS 18 KVA	1　台		1　台	C	A	同上
同上	２０	発電機 (千円356) Generador Bambozzi･Yanmar NS 18 KVA	1　台		1　台	C	A	同上　（故障中）
同上	２１	電気溶接機 (千円1.178) Soldadura Electrica Bambozzi INB56	1　台		1　台	B	A	修理実施時に集中使用
同上	２２	電気溶接機 (千円1.178) Soldadura Electrica Bambozzi INB56	1　台		1　台	C	A	同上
同上	２３	顕微鏡 (千円210) Wild Leitz Biomet M3C	1　台		1　台	C	A	
同上	２４	ノート型パソコン (千円154) Note Book 486SLC	1　台		1　台	A	A	
同上	２５							

（１０万円以上１６０万未満の機材）　※　平成８年度供与機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・　企画　・　能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成８年度	００１	ガス溶接セット (¥.171 千円) Equipo de Soldadura Autogena	1 セット		1 セット	C	A	
同上	００２	ｺﾝﾌﾟﾚｯｻ他重機械整備・修理用工具一式 (¥.648 千円) Compresora y juego de herramientas	1 セット		1 セット	B	A	
同上	００３	低温発芽試験器 (¥.700 千円) Thermostatic Germinators	1　台		1　台	B	A	
同上	００４	葉緑素計　ﾌｼﾞﾜﾗ SPAD-502 型 (¥.113 千円) Chlorophyll Meter	1		1	B	A	
同上	００５	葉緑素計　ﾌｼﾞﾜﾗ SPAD-502 型 (¥.113 千円) Chlorophyll Meter	1		1	B	A	
同上	００６	土壌腐植定量装置 (¥.112 千円) Soil Humus Analysys set	1 セット		1 セット	B	A	
同上	００７	土ふるい兼用採土機 (¥.187 千円) Soil Crushing-Sieving Machine	1		1	B	A	
平成９年度	００１	アルミ製ボート（浅底型）　(¥. 327千円)	1艘		1艘	A	A	

（１０万円以上１６０万未満の機材）　※　専門家携行機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・　企画　・　能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成６年度	０１	レベル　Ｌ－ＡＥ－７Ｃ　No.170058　(千円174) 同三脚　ＤＭＦ　ﾒｰｶｰ NIKON	1 ｾｯﾄ		1 ｾｯﾄ	B	A	
同上	０２	ナビゲーター　ＧＰＳ　(千円139) ﾒｰｶｰ TRIMBLE Navigation	1		1	B	A	
同上	０３	ナビゲーター　ＧＰＳ　(千円140) ﾒｰｶｰ TRIMBLE Navigation	1		1	B	A	
同上	０４	ﾊﾟｿｺﾝ ﾓｰﾄ型 A/33C、MS-DOS6、OJ/V、3S WINDOUS 同 ﾌﾟﾘﾝﾀｰBJ-330J、ﾒｰｶｰ CANON　(千円457)	1 ｾｯﾄ		1 ｾｯﾄ	A	A	
平成７年度	０５	流速計　CAT No.5210　(千円261) PRICE ELECTRIC TYPE	1 ｾｯﾄ		1 ｾｯﾄ	B	A	
同上	０６	ナビゲーター　ＧＰＳ　(千円199) ﾒｰｶｰ TRIMBLE Navigation	1		1	C	A	
平成８年度	０７	凍結精液保管輸送器　(千円126) TERMO I.A. 34XT forrado	1　個		1　個	B	A	
同上	０８	凍結精液保管輸送器　(千円126) TERMO I.A. 34XT forrado	1　個		1　個	B	A	
同上	０９	小型船外機　15 HP　(千円212) YAMAHA 15 FMS-R	1　台		1　台	C	A	
同上	１０	小型船外機　15 HP　(千円212) YAMAHA 15 FMS-R	1　台		1　台	C	A	
同上	１１	パソコン、ノート型　Satellite Pro430　(429千円) Printer-BJC3511, Interface cable-IFC-DOS V/15	1ｾｯﾄ		1ｾｯﾄ	A	A	

（１０万円以上１６０万未満の機材）　※　専門家携行機材

平成１０年度第３四半期現在

供与年度	番　号	機材名　（メーカー・　企画　・　能力）	供与数	処分数	現有数	利用状況	管理状況	処　分　理　由　等
平成9年度	００１	ワープロ (245千円) Ｃａｎｏｎ－Ｊｌｖｃ，変圧器（日章MF-100-E)他	１台		１台	Ａ	Ａ	
〃	００２	土壌検査用器具 (327千円) Soil Staff No300c, Soil Testing Tube No333.	１台		１台	Ｃ	Ａ	
〃	００３	パソコン（デスク型） (382千円) ＡＰＴＩＶＡ 2161-T85 with Monitor	１台		１台	Ａ	Ａ	

図1

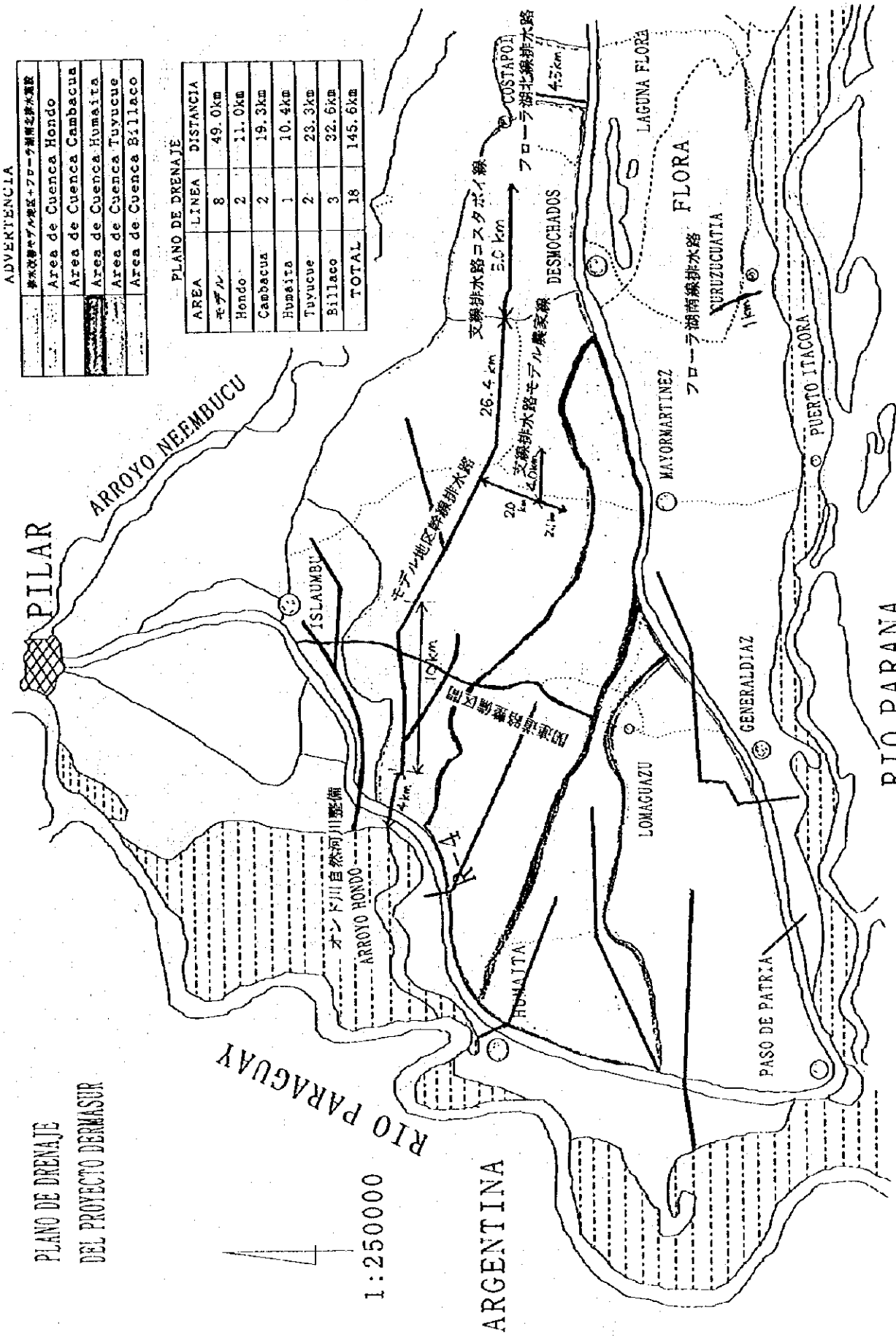
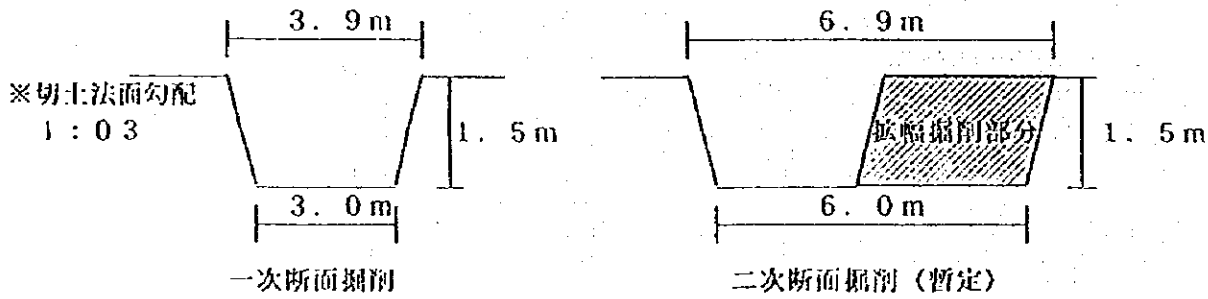

ADVERTENCIA
Area de Cuenca Hondo
Area de Cuenca Cambacua
Area de Cuenca Humaita
Area de Cuenca Tuyucue
Area de Cuenca Billaco
PLANO DE DRENAJE
AREA | LINEA | DISTANCIA
モデル | 8 | 49.0km
Hondo | 2 | 11.0km
Cambacua | 2 | 19.3km
Humaita | 1 | 10.4km
Tuyucue | 2 | 23.3km
Billaco | 3 | 32.6km
TOTAL | 18 | 145.6km
PILAR
ARROYO NEEMBUCU
ISLAUMBU
RIO PARAGUAY
ARROYO HONDO
HUMAITA
ARGENTINA
LOMAGUAZU
GENERALDIAZ
PASO DE PATRIA
MAYORMARTINEZ
PUERTO ITACORA
RIO PARANA
LAGUNA FLORA
FLORA
YURUZUCUATIA
COSTAPOL
DESMOCHADOS
支線排水路ニスタポル線
5.0 km
フローラ湖北線排水路
4.5km
フローラ湖南線排水路
1km
支線排水路モデル農家線
26.4 km
4.0km
2.0
2.1
モデル地区幹線排水路
10km
4km
国道制御排水路
オンドリ川自然河川整備
1:250000
PLANO DE DRENAJE
DEL PROYECTO DERMASUR

表1

降雨量データ収集：2地点（Ｐｉｌａｒ，Ｉｔａｃｏｒａ）
降雨量観測：3地点（Ｈｏｎｄｏ、Ｓａｎｔａｃａｔａｌｉｎａ、Ｄｅｓｍｏｃｈａｄｏ）
河川水位データ収集：1地点（Ｐｉｌａｒ））
排水路水位測定：3地点（Ｈｏｎｄｏ、Ｐ.Ｓｅｌｅ、Ｓａｎｔａｃａｔａｌｉｎａ）
蒸発量観測：2地点（Ｈｏｎｄｏ、Ｄｅｓｍｏｃｈａｄｏ）
量水標（湛水位）観測：（Ｈｏｎｄｏ他）：22ヵ所
流速測定：3地点（Ｈｏｎｄｏ、Ｐ.Ｓｅｌｅ、Ｓａｎｔａｃａｔａｌｉｎａ）、他随所
パラグァイ河上流地点水位データ収集：6地点（Ｂ.Ｎｅｇｌａ他）
パンタナール地方降雨量データ収集
排水改善モデル地区内農家実態調査：４７戸

図2　幹線排水路標準掘削断面図



幹線排水路完成掘削断面図

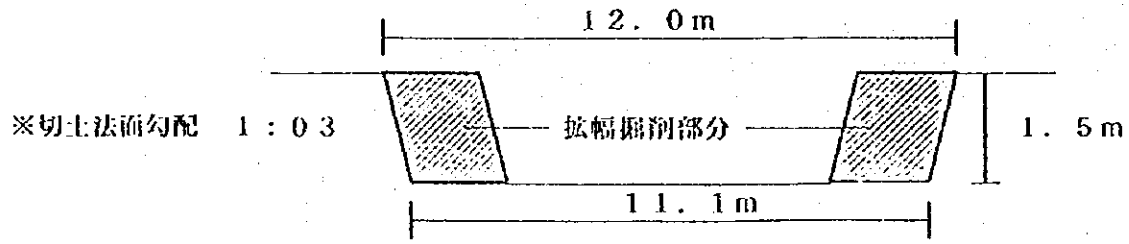


図３　モデル道路標準断面図

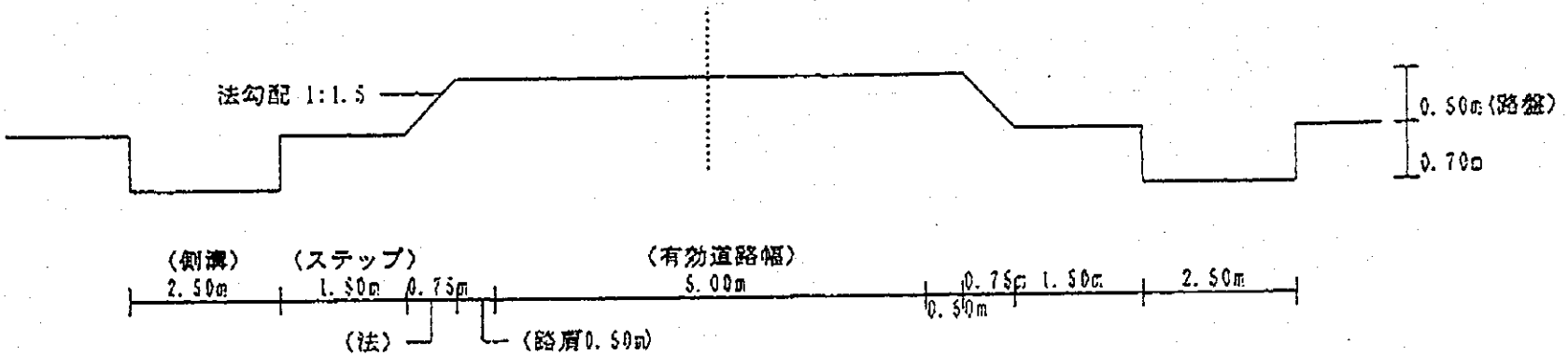


表２　主要機材供与調書

ビラール南部地域農村開発計画

建設機械等

機材名	規　　格	数　量	メーカー名	導入年度
ブルドーザ（D５Ⅱ）D５Ⅱ	１２０HP　１５ｔ	１	CATERPILLAR	平成７年度
ブルドーザ（D４C）	８１HP　８ｔ	１	〃	〃
バックホー（３２０L）	１２８HP 0.9㎥	２	〃	〃
バックホー（３０７）	５４HP 0.24㎥	２	〃	平成８年度
バックホー（KAMO　N－６０）	６７HP 0.20㎥	４	KAMO	平成７年度
ショベルローダー（９２４F）	１０５HP 1.5㎥	１	CATERPILLAR	平成９年度
モーターグレーダー（１２Ⅱ）	１２５HP	１	〃	平成８年度
クレーントラック	３．５ｔ	１	HINO	〃
ダンプトラック	６ｔ	１	ISUZU	〃
クローラダンプ（SE２３０１）	２ｔ	２	築水キャニコム	〃
水草処理船		１		平成７年度

作業機械等

機材名	規　　格	数　量	メーカー名	導入年度
発電機		４	YANMAER	平成７年度
チエンソー		５		〃
コンクリートミキサー		２		〃
水中ポンプ		６		〃
ボート	木造	１６		〃
バイブレター	FU２／２００	３	WACKER	〃
ランマー	DS　２７y	３	〃	〃
コンパクター		２	〃	〃
草刈機	肩掛け式	１０		〃
ボート	グラスファイバー	１		〃
ボート	アルミニューム	１		平成９年度
船外機	１５HP	２	YAMAHA	平成８年度
〃	８５HP	１	YAMAHA	平成７年度

5　栽培・普及部門資料

過去5カ年の栽培試験作物一覧

1994／95年度

夏作試験

1．陸稲の品種適応性　2．マンジョカの品種適応性　3．砂糖キビの品種（系統）適応性
4．夏季緑肥作物の生育特性　5．綿作に対する有機質肥料の施用効果　6．化学肥料の綿作に対する効果
7．綿の栽植密度と生育収量　8．綿の品種適応性比較
4．綿作に対する化学肥料の施用並びに緑肥との輪作による複合効果

1995／96年度

夏作試験

1　マンジョカの品種適応性　・2　陸稲の品種適応性　3　緑肥作物ハクナの播種期と生育
4　夏期緑肥作物の生育特性　・5　砂糖キビの品種適応性　・6　トウモロコシの播種期と生育
7　ポロト（サリダ）の播種期と生育　8　綿の適応性品種選定　9　綿の栽植密度と生育・収量
10　綿作に対する冬作緑肥と化学肥料の複合効果　11　綿作に対する化学肥料（3要素）の効果
12　綿作に対する有機質肥料の効果　13　大豆の適応性検討と品種選定

・・・

冬作試験

1　玉葱の栽培方法比較　2　エンドウの主要品種特性・・3　エンドウの簡易誘引による収量効果
4　ヒマワリの早期播種　5　冬季緑肥作物の収集とその生育特性　6　ニンニクの試作

1996／97年度

夏作試験

1　サリダの系統予備選抜　2　夏作緑肥作物における主要特性の検討　3　ソルガムの系統予備選抜
4　サリダの播種期と生育　5　主剤素に対する除草剤による雑草防除の効果　6　主剤素の播種期と生育
7　緑肥作物ハクナの播種期と生育　8　綿作に対する木灰の施用効果　9　綿作に対する木灰の施用方法
10　綿の品種比較　11　綿の栽植密度（株間）と生育・収量　12　大豆の適応性検討と品種の選定

冬作試験

1　玉葱の栽培方法比較　2　グリンピースの主要品種特性　3　グリンピースの簡易誘因効果
4　ヒマワリの早期播種　5　冬作緑肥作物の収集とその生育特性

1997／’98年度

夏作試験

1　木灰の2年目における持続効果（綿作）　2　綿作に対する木灰の施用効果（3年度）
3　綿の新品種における播種適期　4　綿作に対するリン酸の施用水準　5　綿作の栽植密度とその反応
6　大豆の適応性検討と品種選定　7　緑肥作物における主要特性の検討
8　冬作緑肥（前作）の綿作に対する効果

冬作試験

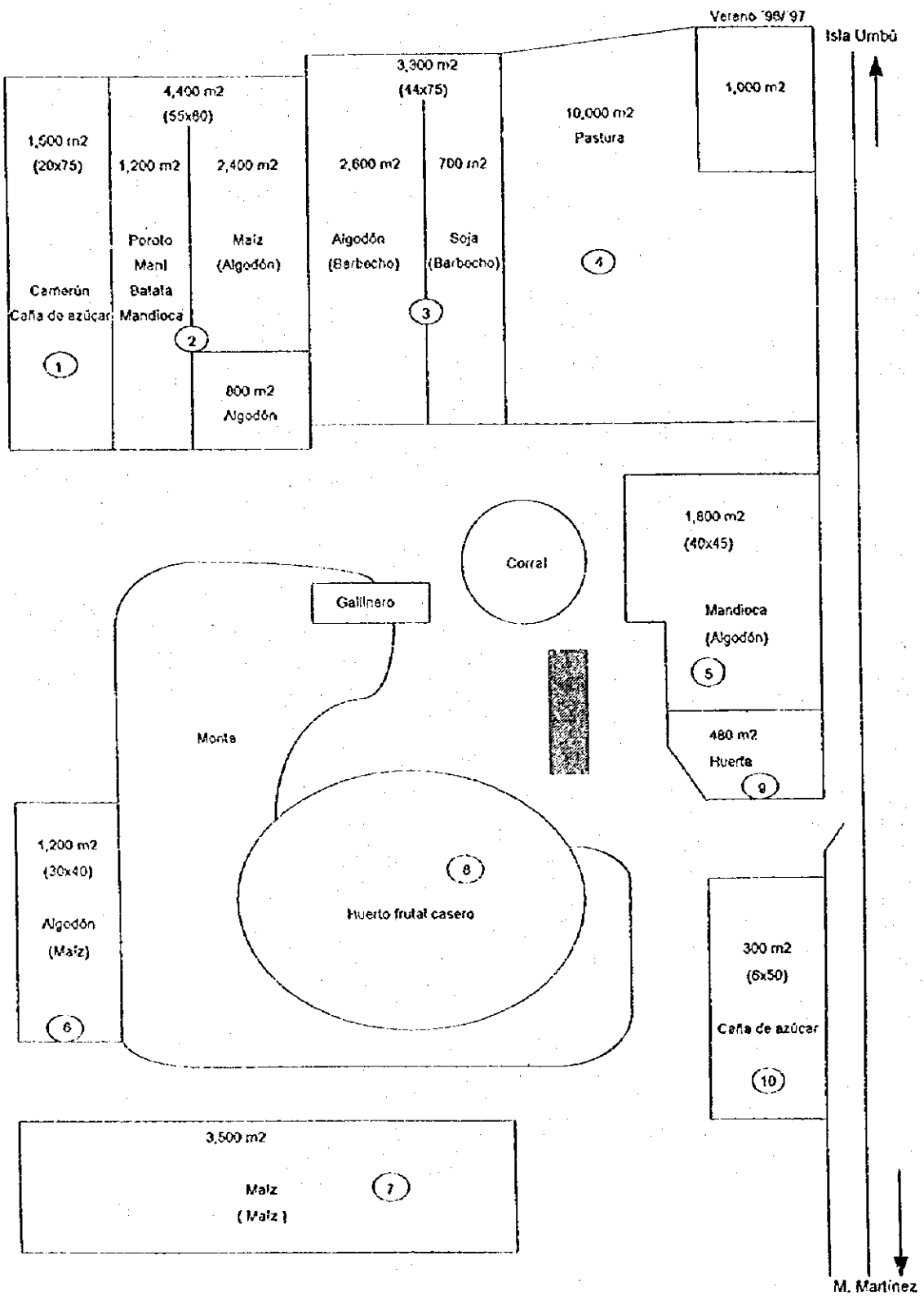
1　玉葱の播種期と生育・収量　2　グリンピースの支柱誘因効果　3　主要冬作緑肥作物の生育特性

1998／’99年度

夏作試験及び展示

1　綿の有望系統適応試験　3カ所　2　綿作に対する除草剤効果　3　綿作に対するリン酸の水準
4　綿作の栽植密度（畝間）　5　綿作の播種期と生育・収量　6　主剤素に対するチッソ水準
7　綿作に対する冬作緑肥のすき込み効果　8　主剤素に対する牛糞と化学肥料の効果展示
9　主剤素に対する木灰と尿素の効果効果展示　10　耕耘方法の相違と主剤素の生育・収量展示
11　綿作の最高収量展示　12　耕耘方法の相違と綿の生育・収量展示
13　施肥の時期別主剤素の生育に及ぼす影響展示

モデル農家の略図


Verano '96/'97
Isla Umbú
1,500 m2
(20x75)
Camerún
Caña de azúcar
1
4,400 m2
(55x80)
1,200 m2
Poroto
Maní
Batata
Mandioca
2,400 m2
Maíz
(Algodón)
2
800 m2
Algodón
3,300 m2
(44x75)
2,600 m2
Algodón
(Barbecho)
700 m2
Soja
(Barbecho)
3
10,000 m2
Pastura
4
1,000 m2
1,800 m2
(40x45)
Mandioca
(Algodón)
5
480 m2
Huerta
9
Corral
Gallinero
Monte
1,200 m2
(30x40)
Algodón
(Maíz)
6
8
Huerto frutal casero
300 m2
(6x50)
Caña de azúcar
10
3,500 m2
Maíz
(Maíz)
7
M. Martínez

生産組織育成に関する資料

1　養蜂コミテ育成経過　(組織数と蜂蜜生産の推移)

PRODUCTION OF HONEY BYSEASON OF PRODUCTION

DERMASUR OROJECT AREA

AUG.'98

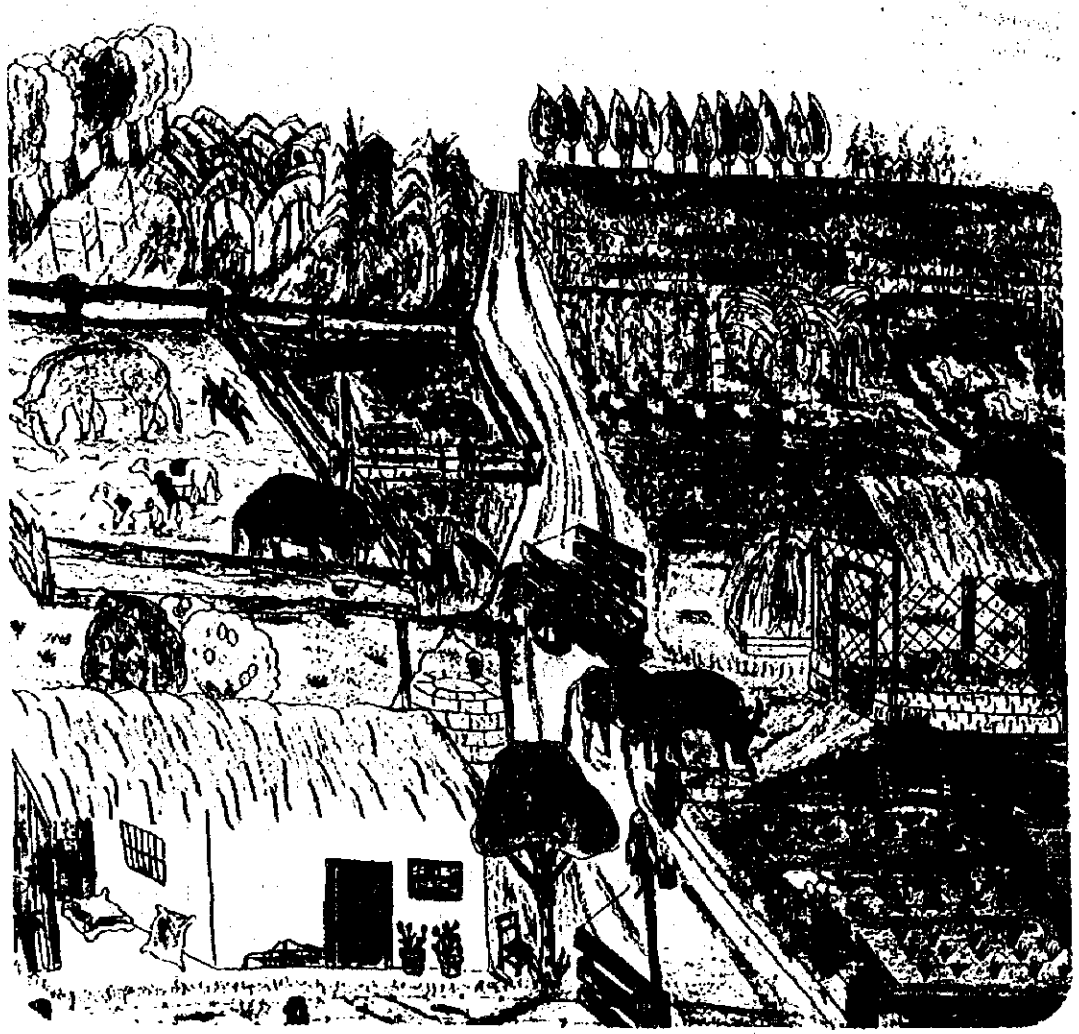
period /year	No.of Comite	No.of Member	No.of Beehives With Production	No.of Beehive Harvested	No.ofLts.ofHoney for Hom Consumption	for Sales	Total	Production Average
94/95	10	104	612	425	934	7,140	8,074	19.0
95/96	14	154	836	486	679	9,696	10,372	21.3
96/97	19	190	1,090	775	1,845	13,818	15,663	20.2
97/98	21	203	1,120	510	1,075	5,146	6,221	12.2

2　酪農コミテ育成年次経過 (エリア内の組織数と飼養頭数等の推移)

DERMASUR OROJECT AREA TOTAL

	1995	1996	1997	1998
COMITE	4	4	11	11
MEMBERS	54	40	94	103
Native Cows	501	413	810	763
Native Female Calves	110	125	373	426
Cross F.Calves	17	47	118	115
Cross M.Calves	16	8	55	40
Other Improved Cows	0	10	115	149
Other Improved F.Calves	0	0	64	74
Other Improved M.Calves	0	4	29	34
TOTAL	644	607	1564	1601

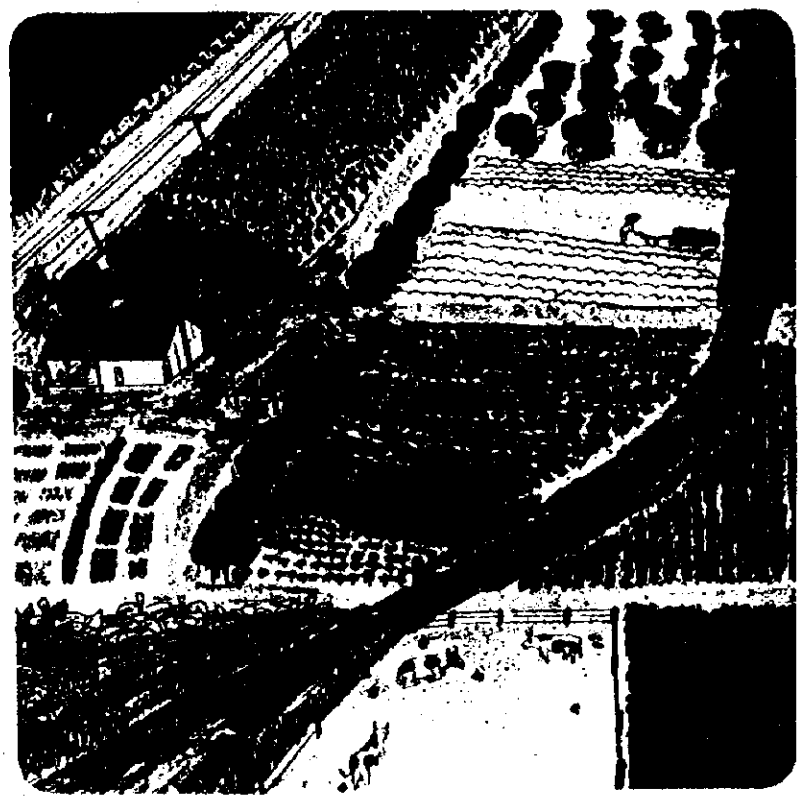
HACIA LA DIVERSIFICACION AGROPECUARIA



Extensión Agraria, DERMASUR

Pilar, Paraguay

1997

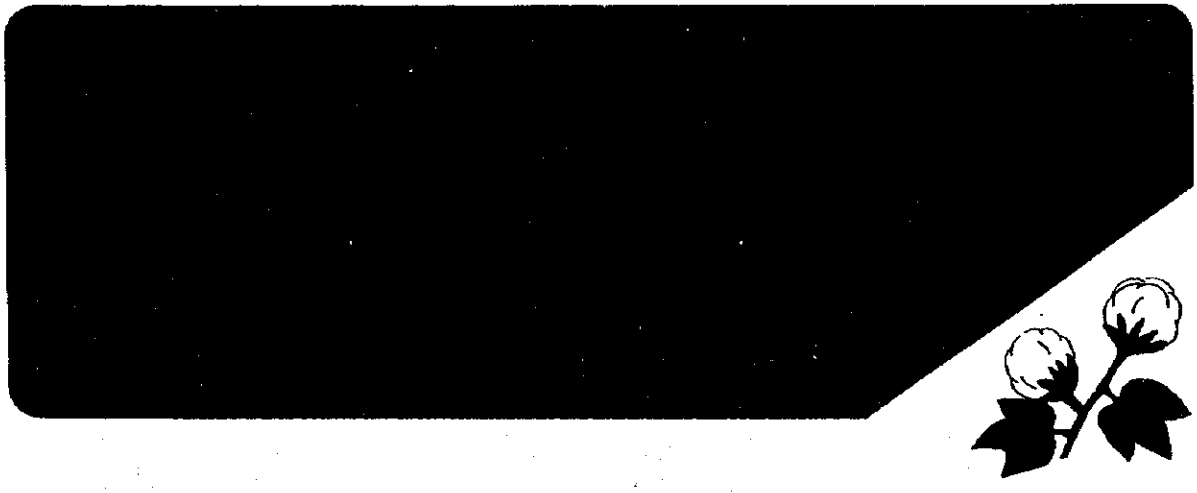


1. Para diversificar las fuentes de ingreso agrícola.
2. Para reducir los riesgos en el manejo de la finca, de depender solamente de uno o dos patrones agrícolas
3. Para mejorar el manejo de la finca.

ALGODON

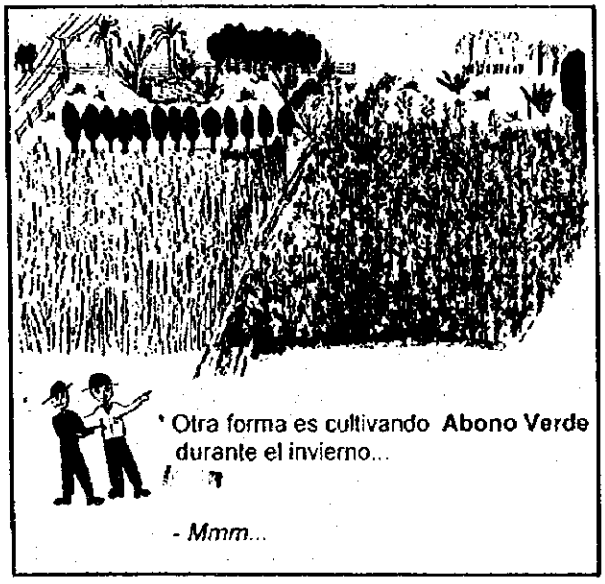
El cultivo más importante en el manejo agrícola

Mejoramiento de la productividad del algodón:

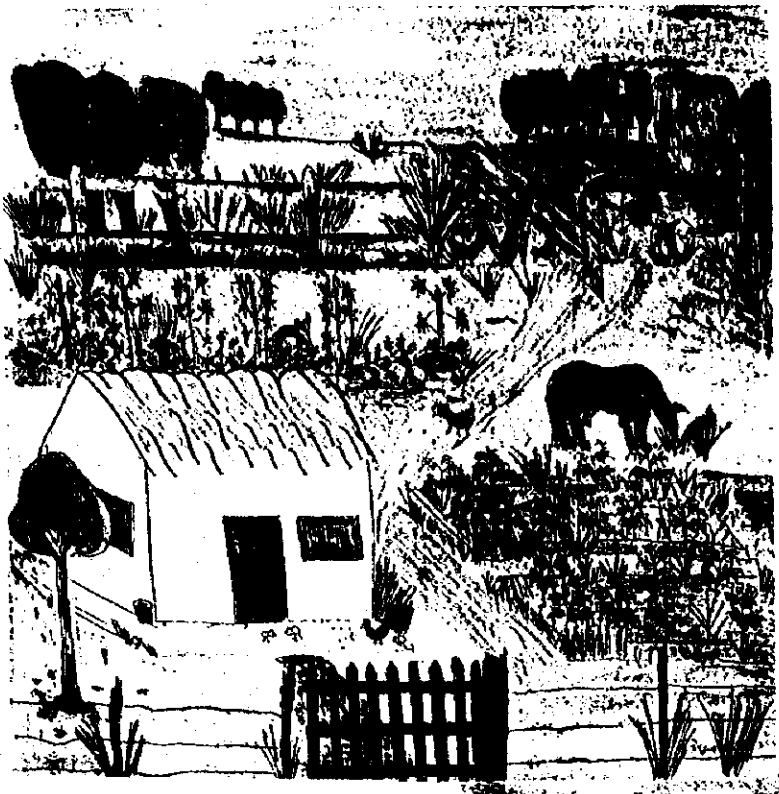


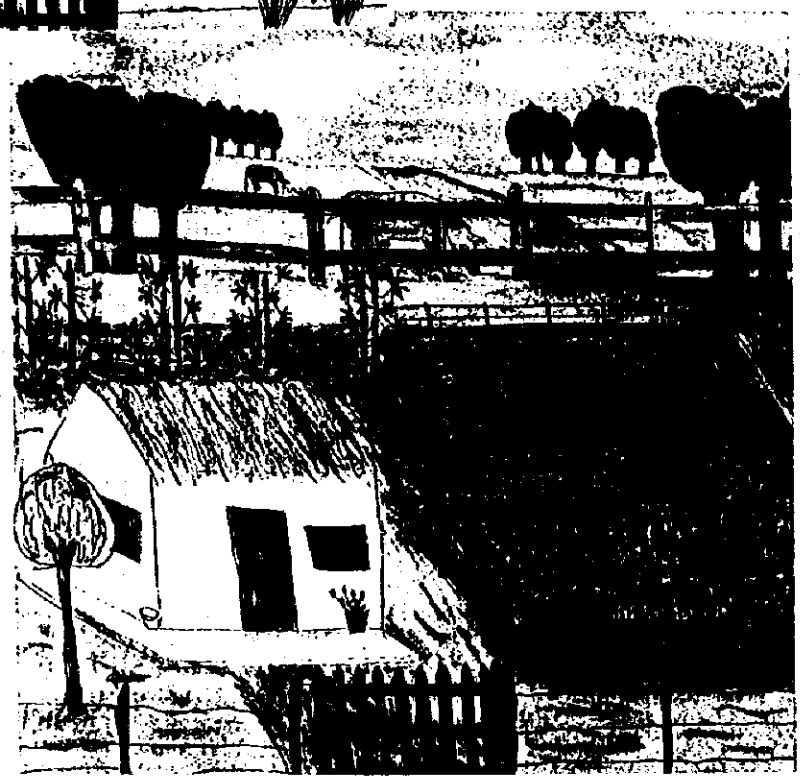
MEJORAMIENTO DE SUELO

La base de toda producción agropecuaria

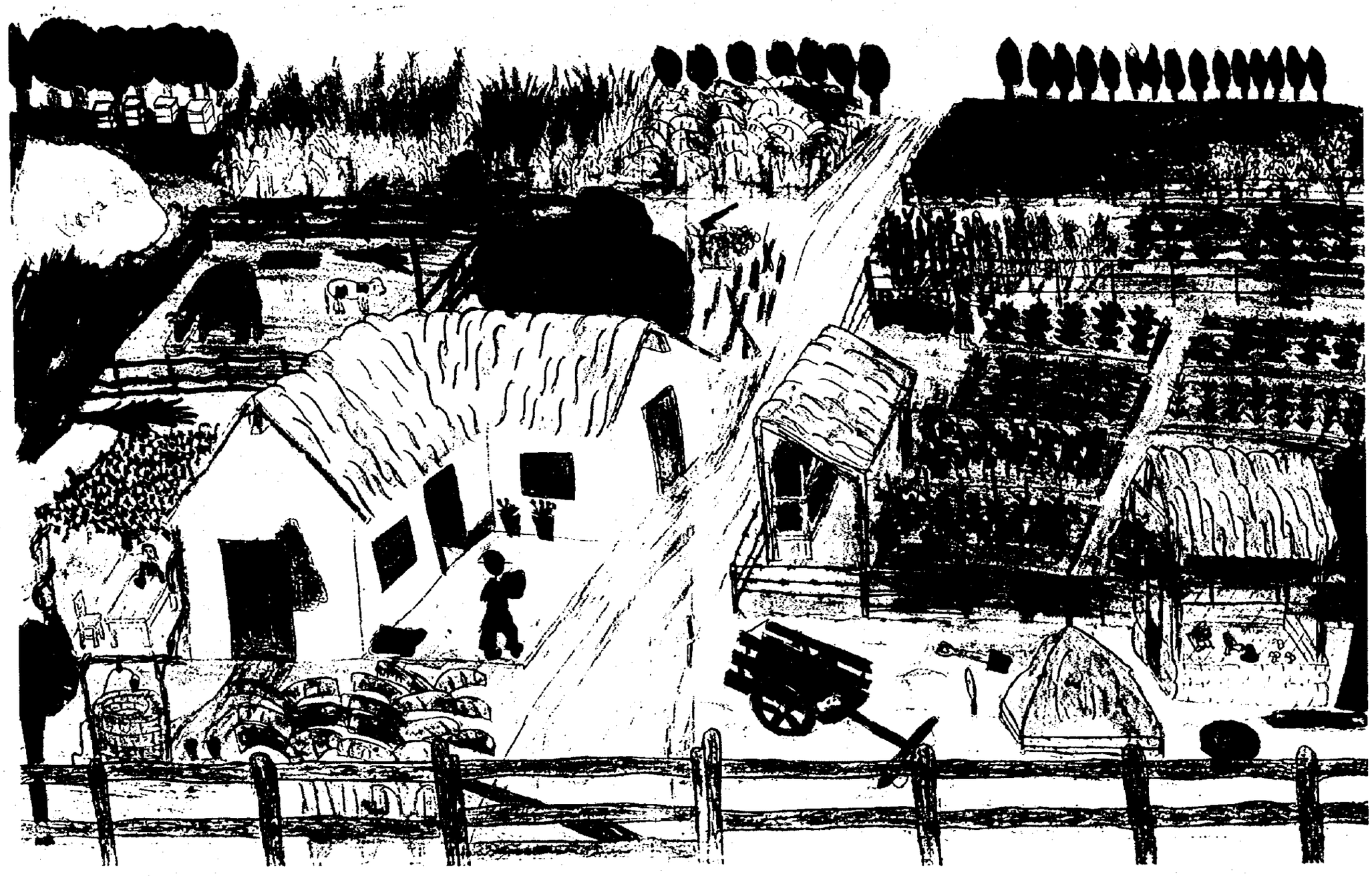


HORTICULTURA





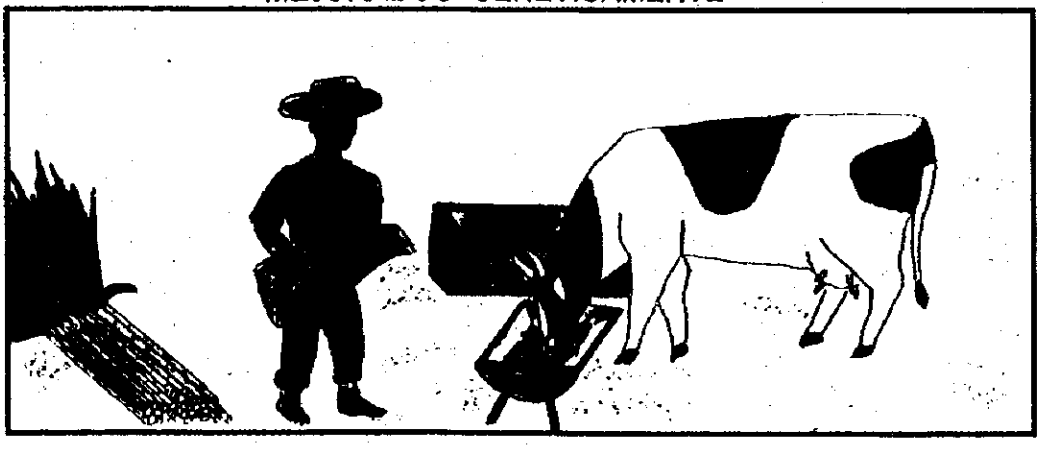
VAYAMOS HACIA ADELANTE !!!



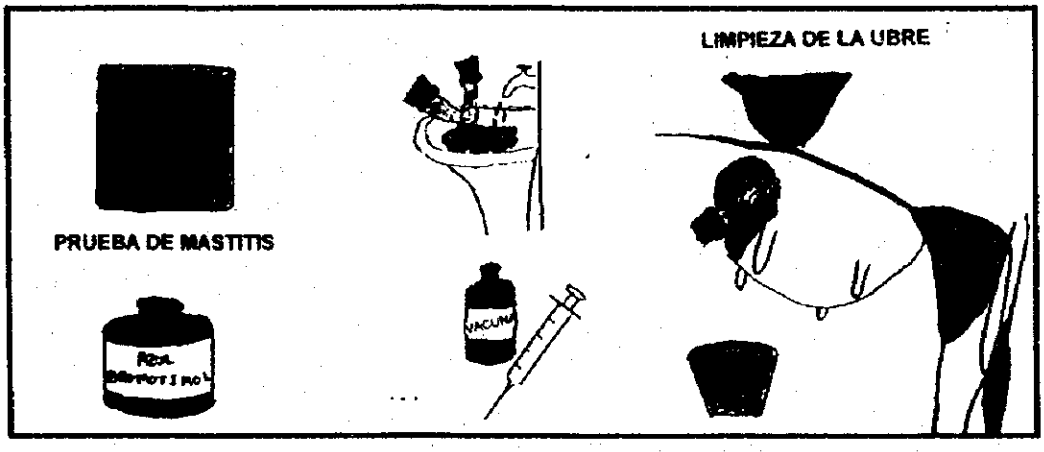
La producción agropecuaria diversificada contribuye al desarrollo progresivo del pequeño productor.

T A M B O

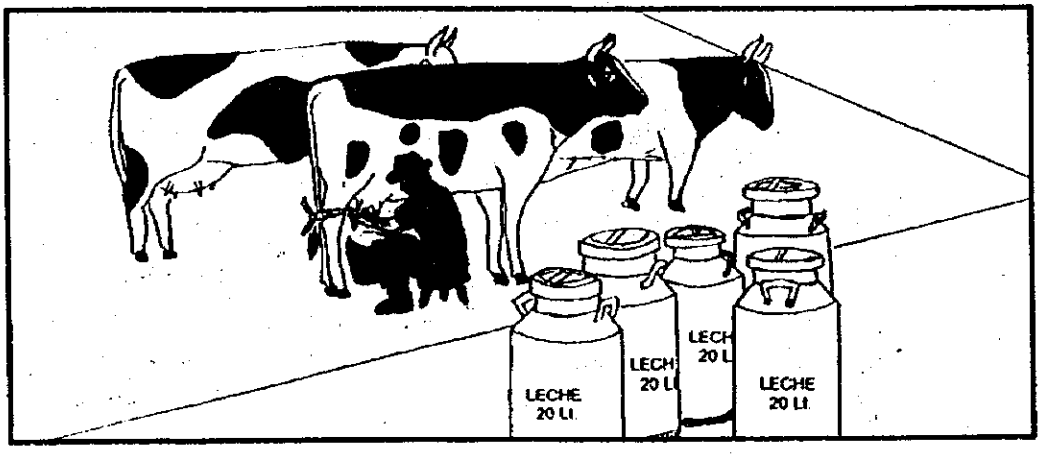
BUENA ALIMENTACION PARA ANIMALES
MEJORADOS GENETICAMENTE



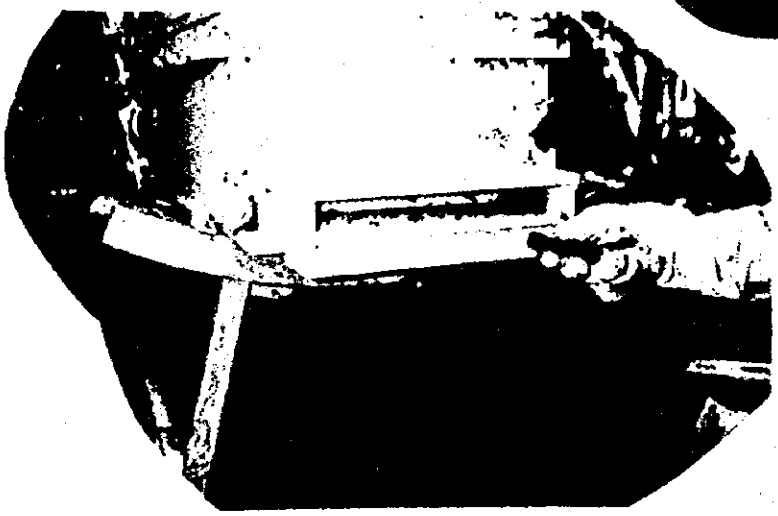
HIGIENE EN EL ORDEÑE,
PREVENCIÓN Y CONTROL DE ENFERMEDADES



BUEN MANEJO DEL HATO LECHERO,
AUMENTO DE LA PRODUCCION !!!

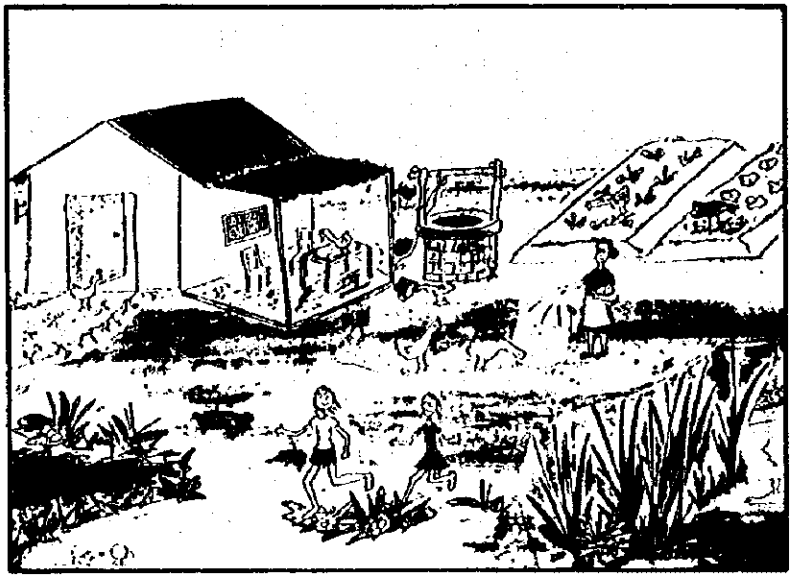


APICULTURA

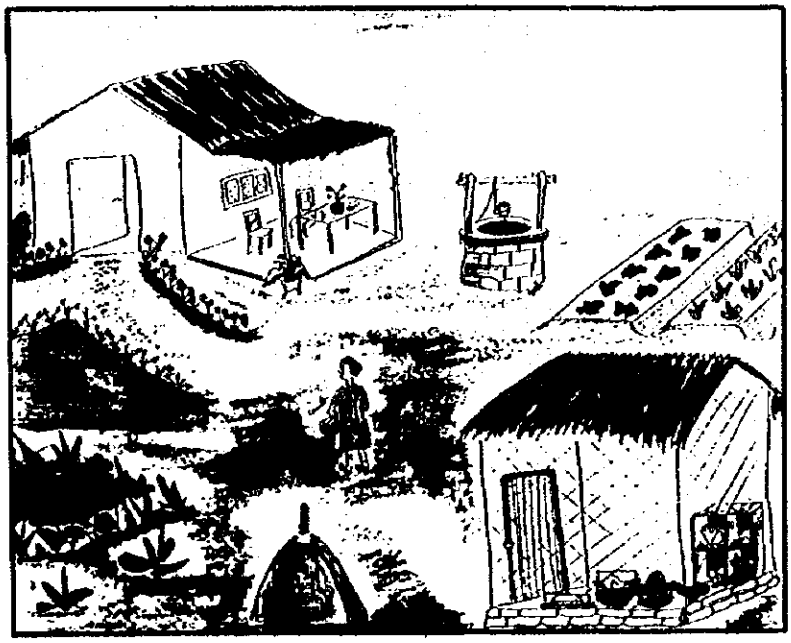


CRIA DE AVES

LAS GALLINAS NO SON ATENDIDAS !

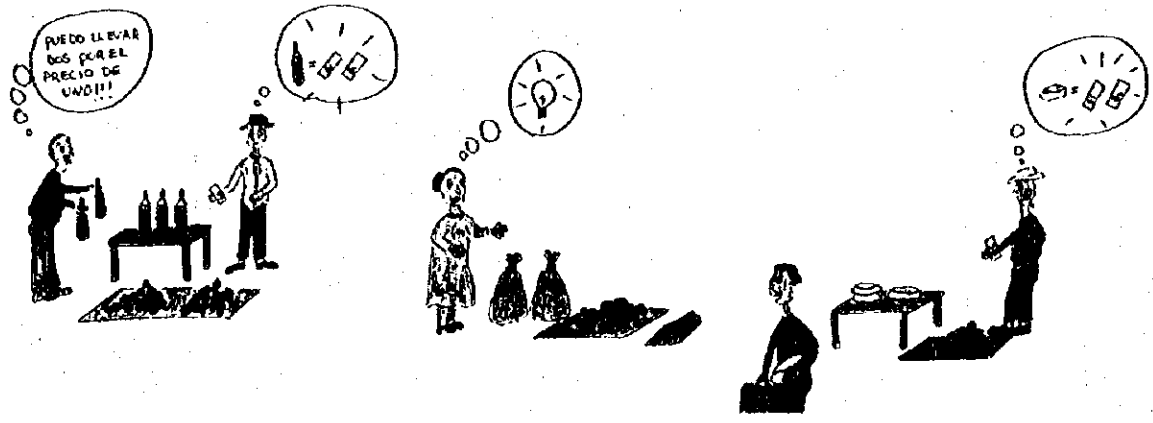


CRIA DE AVES EN GALLINERO:
MAS PRODUCTIVIDAD, MENOS PROBLEMAS



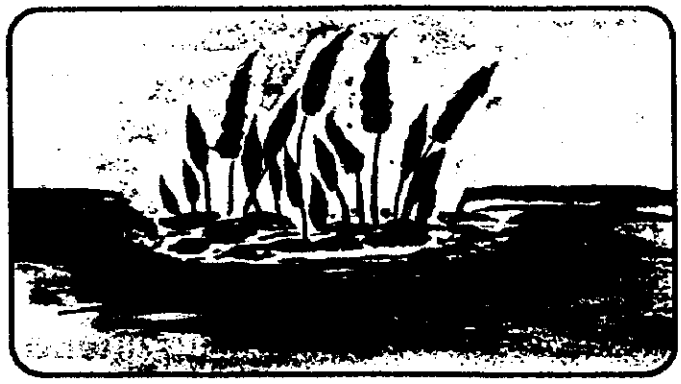
LA COMERCIALIZACIÓN DE PRODUCTOS AGROPECUARIOS

CÓMO HACERLA, ES OPCION DE CADA PRODUCTOR...



EN FORMA INDIVIDUAL

EN FORMA ORGANIZADA



PRODUCIDO POR

Proyecto de Desarrollo Rural en la Región Sur de Pilar

MAG-JICA

7 ミニッツ

MINUTES OF UNDERSTANDING OF JOINT EVALUATION ON THE JAPANAESE TECHICAL COOPERATION FOR THE RURAL DEVELOPMENT PROJECT IN THE REGION SOUTH OF PILAR

With about seven months left to the termination of cooperation period of "The Rural Development Project in The Region South of Pilar (hereinafter referred to as the Project) in Paraguay on June 30 1999, which started on July 1, 1994, as stated in the Record of Discussion (hereinafter referred to as the R/D), the Japanese Evaluation Team organized by Japan International Cooperation Agency (hereinafter referred to as "JICA"), headed by Mr. Hitoshi MIYAMOTO, Director, Technical Research Department, Japan Environment Technical Support Center for Agriculture and Rural Communities, and the Paraguayan Evaluation Team, headed by Ing. Agr. Conrado PAPPALARDO M., Director General, General Bureau of Planning, Ministry of Agriculture and Livestock, composed the Joint Evaluation Team (hereinafter referred to as "the Joint Team") in order to conduct and overall evaluation of the Project.

The Joint Team conducted interviews with the Japanese experts and the Paraguayan counterpart personnel assigned to the Project, had a series of discussions with the Paraguayan Authorities concerned, made field surveys and exchanged views.

As the result, the Japanese Evaluation Team and the Paraguayan Evaluation Team agreed upon forwarding to their respective Governments the Joint Evaluation Report which is referred to in the document attached hereto.

The original text of the Report of the Joint Evaluation was drawn up in duplicate using the English and Spanish languages, both being equally authentic. However, in case of difference in interpretation of the text, English version of the text shall prevail.

November 25, 1998
Asuncion, Republic of Paraguay

Hitoshi MIYAMOTO
Leader,
Japanese Evaluation Team,
Japan International Cooperation Agency
Japan

Conrado PAPPALARDO
Leader,
Paraguayan Evaluation Team,
Ministry of Agriculture and Livestock
Republic of Paraguay

Hipolito PEREIRA
Minister of Agriculture and Livestock
Republic of Paraguay

THE JOINT EVALUATION REPORT
ON
JAPANESE TECHNICAL COOPERATION
FOR THE RURAL DEVELOPMENT PROJECT
IN THE REGION SOUTH OF PILAR
IN THE REPUBLIC OF PARAGUAY

1. Introduction
2. Members of the Evaluation Team
3. Objectives
4. Method of Evaluation
   4-1 Review of Project Purpose and Intended Goals
   4-2 Examination of Accomplishments by the Project
5. Results
   5-1 Accomplishments in terms of Input
   5-2 Outline of Major Achievments of the Project
6. Analysis based on the Evaluation Criteria
   6-1 Effectiveness
   6-2 Efficiency
   6-3 Impact
   6-4 Relevance
   6-5 Sustainability
7. Conclusion
   7-1 General
   7-2 Recommendations
   7-3 Proposed Follow-up Project

Annex 1. List of Japanese Experts
Annex 2. List of Counterpart Personnel Accepted in Japan
Annex 3. Provision of Equipment and Expenses for Local Cost Bearing
Annex 4. List of Counterpart Personnel
Annex 5. List of Annual Budget and Disbursement for the Project by the Ministry of Agriculture and Livestock
Annex 6. Evaluation Summary

1. INTRODUCTION

Based on the Record of Discussion (hereinafter referred to as "the R/D") signed on March 8, 1994, the Rural Development Project in the Region South of Pilar (hereinafter referred to as "the Project") started on July 1, 1994 in order to promote *Proyecto de Desarrollo Rural y Mejoramiento Ambiental del Sur de Pilar-para Pequeno Productor* (hereinafter referred to as "DERMASUR Project") which is implemented by Paraguay Government. The Project is initially scheduled to be implemented for five (5) years by June 30,1999.

According to the R/D, in order to attain the envisaged objectives by the Project, Japanese technical assistance has been provided to support the following main activities.

a. Enhancement of Planning Capability
b. Improvement of the Technology for Mitigating Inundation Effects
c. Development of Drainage Control Methods
d. Improvement of Cultivation Methods and Soil Improvement Measures
e. Introducing Diversified Farming Patterns

2. MEMBERS OF THE EVALUATION TEAM

(1) Japanese Evaluation Team

Mr. Hitoshi MIYAMOTO: Leader
First Director, Technical Research Division, Japan Environment Technical Support Center for Agricultural and Rural Communities

Mr. Sumihiko MASAKI: Drainage Water Management and Construction Management
Deputy Managing Director, Project Management Department, Japan Agricultural Land Development Agency

Mr. Sigenori KUSABA: Agronomy and Agricultural Extenuation
Chief of Flower Production, Flower Office, Fruit and Flower Division, Agricultural Production Bureau, M.A.F.F.

Mr. Hajime SONODA: Evaluation and Analysis
Development Planning and Project Management Specialist, IC Net Limited

Mr. Motoharu Wakabayashi: Technical Cooperation
Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department, JICA

(2) Paraguayan Evaluation Team

Ing. Conrado PAPPALARDO: Leader
Director General, General Bureau of Planning
Ministry of Agriculture and Livestock

Ing. Edgar Luis FUNES: Central Coordinator
General Bureau of Planning
Ministry of Agriculture and Livestock

Ing. Jorge OGASAWARA: Technical Assistance
General Bureau of Planning
Ministry of Agriculture and Livestock

Ing. Takehiko MAEDA: Special Assistant to Minister
JICA Expert
General Bureau of Planning
Ministry of Agriculture and Livestock

3. OBJECTIVES

Objectives of the evaluation are to;

(1) evaluate the achievements of the Project according to the R/D and the TSI,

(2) make recommendations and suggestions to the authorities of the two Governments concerning the issues to be taken by after the termination of the cooperation period, and

(2) obtain the lessons learned from the evaluation of the Project for future cooperation.

4. STUDY METHOD

4-1 Review of Project Purpose and Intended Goals

In order to evaluate the project accomplishments more precisely in contrast with the Project's original intention, purpose and goals of the Project were reviewed based on the Master Plan attached to the R/D, the Tentative Implementation Schedule, various documents produced by the Project, and on the discussions with parties concerned. The result is summarized in the Evaluation Summary (Annex 6).

Taking the importance of the institutional aspects that was strongly recognized in the second half of the project period, description of the project purpose was redefined as;

The Ministry of Agriculture and Livestock and the small-scale farmers in the Region South of Pilar enhance their technical and institutional capacity to carry out continuous and sustainable agricultural development by promoting drainage water management, soil improvement, improvement of cultivation methods, and diversified farming patterns.

For the same reason, the sixth output related to the Project's efforts for institutional strengthening was added, that is;

Output 6. Strengthening of Institutional Setup for Agricultural Development

Institutional setup is strengthened to promote sustainable development of agriculture through improvement of drainage management, farming management and increase in productivity in the Region South of Pilar based on the achievement of the technical cooperation.

4-2 Examination on the Accomplishments by the Project

Through a series of interviews, field visits, and review of documents, the evaluation team examined the accomplishments of the Project for the following items.

(1) Input

(a) Japanese side
- Dispatch of experts
- Training in Japan
- Provision of machinery and equipment
- Support for local expenditures
- Other input

(b)Paraguayan side
- Assignment of counterpart personnel and administrative personnel
- Provision of land, buildings and facilities
- Allocation of recurrent expenses
- Supply and replacement of equipment
- Implementation of security measures
- Others

(2) Outline of Major Achievements

a. Formulation of a Drainage Management Plan

b. Construction of Model Drainage Control Facilities

c. Development of Methods for Maintenance of Drainage Control Facilities with Beneficiaries' Participation

d. Technical Examination on Diversification of Farming Patterns, Cultivation Techniques, and Soil Improvement Measures

e. Strengthening and Improvement of Extension Activities to Introduce Diversified Farming Patterns and Improved Agricultural Techniques

f. Strengthening of Institutional Setup for Agricultural Development

4-3 Analysis Based on the Evaluation Criteria

The team analyzed the performance of the Project with the following five criteria.

(1) Effectiveness

Effectiveness of the Project will be assessed by analyzing the achievement of project outputs and purpose at the end of the project.

(2) Efficiency

Efficiency of the Project implementation will be analyzed focusing on quality, quantity, timing, and utilization of input, overall management of project activities, and other external factors which affected implementation.

(3) Impact

Impact of the Project will be identified focusing mainly on positive and negative indirect impact of the project which is related to the overall goal of the project realized at the time of evaluation.

(4) Relevance

Relevance of the Project will be reviewed and the validity of project purpose and goal will be assessed in connection with the development policy of the Government of Paraguay, needs of the beneficiaries, and the aid policy of Japan.

(5) Sustainability

Sustainability of the Project will be forecasted by examining such factors as utilization of project inputs and trained counterparts, management capacity and resources available for the implementation agency, etc.

5. RESULTS OF EVALUATION

5-1 Accomplishments in terms of Input

5-1-1 Inputs from Japanese Side

(1) Dispatch of experts

Seven long-term experts have been assigned with following specialty; (1) a team leader, (2) Coordinator, (3) Drainage Water Management, (4) Construction Management, (5) Agronomy, and (6) Agricultural Extenuation. A total number of eight short-term experts and two third country experts have been dispatched to the Project. Annex 1 shows overall records of dispatch of Japan experts.

(2) Training in Japan

Training program were organized for fifteen Paraguayan counterpart personnel. All the programs have been efficiently and effectively implemented

according to the schedule (Annex 2).

(3) Provision of machinery and equipment

Machinery and equipment were provided in order to carry out the Project activities effectively. All the equipment and machinery have contributed to the effective implementation of the Project as shown in Annex 3.

(4) Assistance for local cost expenditures

The Japanese side partially supported local cost expenditures in order to implement the Project successfully as shown in Annex 3.

(5) Dispatch of study teams

a. Consultation Study Team

The Consultation Study Team visited Paraguay from March 1 to March 16, 1995 in order to formulate the detailed activity plan for the Project. The team and the authorities concerned of the Government of Paraguay reached an agreement on the contents of the TSI.

b. Advisory Team (Mid-term evaluation)

The Advisory Team visited Paraguay from August 31 to September 14, 1996 in order to evaluate the activities of the Project over the previous two and a half years. This evaluation concluded that most of the activities of the Project have been implemented almost on schedule, so there was no need to amend the R/D and the TSI.

5-1-2 Input from Paraguayan Side

(1) Provision of land, buildings and facilities

The Government of Paraguay provided necessary facilities such as office space, examination farm, etc.

(2) Allocation of budget

During 1994 – 1997, the Government of Paraguay allocated budget amounting annually between 500 - 700 million Guaranies (GRs.) for local expenditures except for salary for the counterpart personnel. (Annex 4) In 1995 and 1996, some 80% of the allocated amount was disbursed and utilized for smooth implementation of the Project. However, in 1997 and 1998, actual disbursement has been decreased substantially, bringing serious restrictions to the implementation.

(3) Assignment of counterparts and other personnel

Totally 17 counterpart personnel have been assigned and engaged in the Project activities. Repairmen and operators were also recruited and worked for the

Project.

5-2 Outline of Major Achievements of the Project

Major achievements of the Projects are summarized as following. Details are shown in the Evaluation Summary (Annex 6).

5-2-1 Formulation of a Drainage Management Plan

On-the-job training for technical transfer was made to the counterpart personnel through the following activities;

- study on inundation and drainage conditions in the Project area,
- topographic survey,
- collection and analysis of meteorological and hydrological data,
- selection of appropriate methodology of drainage analysis based on the results of survey and data analysis,
- formulation of drainage master plan , and
- selection and planning of canal and related drainage facilities.

The drainage master plan for the Project area was formulated with necessary accuracy and details. Technical transfer will be completed.

5-2-2 Construction of Model Drainage Control Facilities

The counterpart personnel trained the operators on operation, inspection, maintenance and repair of construction machinery through on-the-job training. Drainage canals of 49 km length and 20 km of approach road for construction was constructed with beneficiaries' participation. Drained land was prepared for a demonstration farm. Technical manuals for planning, design, and construction have been elaborated.

Although technical transfer to the counterpart personnel will have been successful for the most part, it will not be completed as for canal route selection in the areas of different conditions and repairs of heavy duty machinery.

5-2-3 Development of Methods for Maintenance of Drainage Control Facilities with Beneficiaries' Participation

Beneficiaries' committees for drainage management were formulated, and technical manuals on methods and procedures for drainage management were elaborated. The counterpart personnel conducted training and campaign on drainage management, and maintenance works for drainage facilities were carried out.

Techniques, procedures and institutional setup for maintenance of drainage facilities are still in the course of development, and adequate maintenance works are not always carried out.

5-2-4 Technical Examination on Diversification of Farming Patterns, Cultivation Techniques, and Soil Improvement Measures

The counterpart personnel learned the techniques for design, analysis, evaluation of research and examinations, and the techniques for management and

administration of examination farms through the following activities;

- research of present conditions of soil fertility and the major crops in the Project area, i.g. cotton growing,
- selection of suitable crops and variations,
- systematization of farming patterns combining newly introduced crops,
- development of appropriate techniques for soil improvement and soil fertility improvement, and
- trials for improvement of cultivation techniques.

As the result, the counterpart personnel gained fairly enough ability to continue technical development.

The scope of alternative crops, variations, and cultivation techniques, soil improvement measures which can be adopted by the small-scale farmers are narrowed down. However, no promising crops / varieties which can substantially increase productivity under the present circumstances of the small-scale farmers have been identified.

5-2-5 Strengthening and Improvement of Extension Activities to Introduce Diversified Farming Patterns and Improved Agricultural Techniques

The counterpart personnel learned the techniques and methods for design, implementation, analysis and evaluation of various type of research, planning and management of training courses, elaboration of related material, and extension activities.

While the counterpart personnel acquired sufficient capability, the extension workers will not gain enough knowledge and techniques leaving a plenty of rooms for capacity development.

5-2-6 Strengthening of Institutional Setup for Agricultural Development

Mid-term plan for the second phase of the DERMASUR Project was elaborated by the counterpart personnel in the seminar which was conducted by the Project in December 1997. The plan was approved by the Ministry of Agriculture and Livestock at the occasion of the Joint Coordination Committee in August 1998.

Construction of canals has shown a good progress, and stimulated the wishes and expectations of local autonomies and residents for drainage improvement. With this background, financial contribution by the province, one municipality and local residents was realized in one canal construction project. Institutional arrangement to support planning and coordination of financial contribution is currently under examination.

Collaboration among the counterpart personnel, the extension office, farmers' cooperatives, and research institutes has been grouped about so far. But there is no firm structure yet.

6. ANALYSIS BASED ON FIVE EVALUATION CRITERIA

6-1 Effectiveness

The Project was carried out aiming at technical and institutional strengthening as an important step for the continuance of the sustainable agricultural development through the improvement of drainage management, soils improvement measures, cultivation techniques and diversification of farming patterns, targeting the improvement of living standard of the small scale farmers of the southern area of Pilar as an overall goal. As it will be later mentioned, the Project showed a considerable success regarding the technology transfer, however, it is estimated to be difficult to achieve satisfactory results for the institutional strengthening by the end of the Project.

(a) Transfer of technology

As a result of a smooth execution, as planned, of the joint works between experts and counterpart personnel, most of the projected goals for the technology transfer to the counterpart personnel were achieved. Techniques and knowledge which were transferred will be accrued in written, either as an report or as manuals. Also, an important number of operators for heavy duty machinery received training courses.

However, in regard to the repairing of heavy duty machines, route selection of drainage canals, techniques and methods of maintenance of drainage canal, it is feared that the counterpart personnel will not be able to obtain enough techniques by the end of the Project. In case a continuous technical orientation is given after the Project is over, it is expected they will learn enough techniques through the accumulation of experiences.

On the other hand, the training of the extension workers is one of the important goals, and despite the execution of a series of training courses, it is considered that they will have a plenty rooms for improvement of techniques and knowledge even at the end of the Project. If the counterpart personnel and the field extension workers would have had a closer daily joint work, results would have been much better.

(b) Institutional strengthening

Since the beginning of the Project, a very special consideration has been given to the need of participation of the beneficiaries. However, it is not easy to form an institutional setup while searching for the raise of the consciousness of the beneficiaries and related organizations. Only once half the Project was executed, a vast consciousness was obtained among the related people regarding the importance of the institution building, at local level, among local autonomous badies, farmers' cooperatives, and private sector organizations.

Therefore, results were not good enough as for the institutional strengthening, producing great fear in regard to the continuance of the Project. Some important issues will remain pending, such as; a) organizational arrangement for maintenance of drainage canal, b) supporting system for utilization, operation and maintenance of heavy duty machines, c) system for collaboration and coordination among related entities for the marketing, extension, and commercialization.

In regard to items a) and b), the formation of institutional setup is being analyzed, with an initiative of the counterpart personnel availing the guidance from

experts. It is hard to think that said organization will begin with definite activities by the end of the Project. Regarding the item c), it is thought that the first obstacle was the lack of consensus between the Project and the local extension office regarding the demarcation of their roles and mechanism of collaboration.

In spite of it, once the result of the Project has been demonstrated, the expectations of the local autonomous bodies and local inhabitants were started to increase the will towards the institutional strengthening. In order to reach the mentioned goal in a short period, it will be important to count with the experts' advise who have a rich experience regarding the institutional strengthening.

6-2 Efficiency

6-2-1 Quality, Quantity, and Timing of Input

(a) Experts and counterpart personnel

The fact that certain results were obtained, dedicating in hard issues with unfavorable conditions, is mainly due to the efforts and will of the experts and the counterpart personnel. The long-term experts, with sufficient specialized knowledge, continued giving intensive technical guidance, living at the project site during the 5 years period of the Project. While the quality and capacity of the counterpart personnel were of mixed levels, sufficient human resources were nominated to receive the technical transfer in a continuous way. Therefore, and in spite of certain obstacles regarding the communication, the joint work of both parties was very close with a high degree of continuity.

(b) Facilities, equipment and lands

From the Japanese side, there has been a great amount of input in equipment. Most of them were heavy duty machines for civil works. The types of heavy duty machines were adequate, but there were some for which were hard to obtain spare parts easily. The heavy duty machines were efficiently used. On the other hand, the great amount of time used for the customs clearance affected the execution of the Project.

From the Paraguayan side, facilities such as offices, machines warehouse, and experimental farm were supplied and advantage was efficiently taken. The lands for the construction of the drainage canals were supplied on time, after talking with the inhabitants.

(c) Local cost support

Financial input from the Paraguayan part at the very beginning of the Project was fairly high, but later, it decreased drastically. Since this fact turned into a serious obstacle for the Project's implementation, the need to strengthen the local cost support came out on the Japanese side. Without the support for the local cost made by the Japanese side, it would have been impossible to manage the Project.

(d) Training of the counterpart personnel in Japan

In general, the contents of the training in Japan was adequate, however, a great number of counterpart personnel consider the training period as insufficient. All of the counterpart personnel who received training courses in Japan continue with their activities related to the Project, and therefore, the result of the training courses is sufficiently utilized for the Project.

6-2-2 Management of the Project

Some slight weak points can be observed in regular meeting, monitoring and in the documentation of planning modification. However, the unifying force of the leaders of the Paraguayan side and the Japanese side, continuous close and daily communication of the experts and the counterpart personnel, in general, an adequate and flexible management of the Project was carried out.

However, the steps for the disbursement of the budget from the Paraguayan side took too much time, since it was necessary to count with the approval of the MAG's main office, and this situation causes great fear to the management of the Project. If the Project ends up in these conditions, it is feared that the continuance of the activities will be hard for the Paraguayan side in an independent way.

6-2-3 Other effects

The promotion of an active participation of the local autonomous bodies and of the inhabitants, through the increase of the expectations of the local inhabitants towards the project with the demonstration of the Project's achievements, resulted in the Project's success.

The Project area is large, and the factors such as the poor road network, traffic interruption due to the flooded roads, caused the field activities not always be fulfilled at a high level, producing sometimes important delays. Besides, the climate conditions, such as the droughts and floods affected the Project's implementation.

6-3 Impact

The Project is considered as a model Project for the improvement of the living standard of the small-scale farmers in the southern area of Pilar. Therefore, if the impact of the model project is analyzed, a projection could be made on the various impacts to be brought about in case continuous agricultural developments are carried out with the same methodology in the future. Observed and reported impacts at the time of the study are the followings.

6-3-1 Impact of drainage facilities to the life of small-scale farmers

As a result of the construction of the drainage canal, the improvement of the approach road and related works, drainage was improved and the water level decreased, which caused the recovery of part of the flooded lands, together with the increase of the mobility within the model area. The increase of mobility was the result of the decreased water level as well as the rehabilitated roads.

At the time of the study, the flooded lands which were recovered were used as

pastures for the livestock. However cropping began late partly due to the cotton's low price.

On the other hand, it has been reported that the roads improvement caused following positive impacts, however, the quantification of said impacts is still a issue for the future.

- Decrease in the products delivery cost
- Increase of the accessibility to market
- Decrease in the price of daily goods and agricultural input
- Emergence of new types of productive activities
- Increase of middlemen's visit
- Increase of house-to-house vendors
- Upgrading of transportation means (ex. increase in the use of bicycles).
- Increase of farmers' participation to meetings
- Increase of school attendance
- Increase of out-reach medical services
- Increase of religious services

It can be observed that the impact caused by the road's improvement appears faster than the impact produced by the recovery of lands for farming purposes, causing great changes in the life of the small-scale producers.

6-3-2 Impact caused by the technical guidance to the small-scale farmers and farmers' cooperatives

It is expected that the management of model farms, training courses for extension workers and key farmers, training and orientation for farmers' cooperatives, will gradually increase the technology level of the farmers and their will for production, and that it will cause an increase of productivity and incomes. Although there is no integral evaluation study, it is estimated that the livestock activity causes favorable impacts in regard to the agricultural activities of the small-scale producers. Besides, there are positive expansion effects, such as the formation of the association of beekeepers.

In regard to the positive impacts mentioned in the two preceding sections (6-3-1; 6-3-2), it is estimated that it will occur to a greater extent with the improvement of the higher level accesses, such as the all weather paving for the road Number 4.

6-3-3 Environmental impact

A sufficient consideration has been done to the environment, such as the determination of selection of the canal routes considering the preservation of the ecosystem at the time of the execution of civil works. According to the environmental impact assessment study carried out by the Paraguayan side, it is thought there will be no important impacts against the ecosystem with the execution of the civil works in the Project. However, there is the need to pay continuous attention to keep the line of sustainable development considering the preservation of the environment, with repeated monitoring of drainage effects.

6-3-4 Impact in technical aspect

It is of great significance to have transferred for the first time to Paraguay the technology of drainage handling in a large swamps area. Technical impacts of a certain level can be observed, such as the improvement of the drainage performance of rural roads which are being constructed by the local autonomous bodies and the Ministry of Public Works and Communication (MOPC). It is not necessary to mention that it is very important to spread the technique throughout the whole province, where swamp areas of the same type exist. However, it will be important to keep a technical relation with the main road constructor, the MOPC, in regard to the improvement of underdrain techniques, considering that the reason of flooding in the southern area of Pilar was the construction of roads with an insufficient drainage capacity.

6-3-5 Increase of expectations and interest of the regional society

The recovery of lands for farming purposes, the improvement of the roads, the diversified farming patters, being demonstrated as the results of the Project, assembled the interest of such parties in the region as the private institutions, farmers' groups, inhabitants, and increased the expectation for the continuance and expansion of the Project. In addition, gratitude was expressed by the mayor of Pilar city for the fact that the heavy duty machines were utilized to fight for the flood in April 1998. Even though the active participation of various institutions is still low, there are cases in which the level of participation is high, where an local autonomous body together with the cooperation of beneficiaries supplied funds.

6-4 Relevance

6-4-1 Relevance of the overall goal

The overall goal matches with the major policy of the Paraguayan Government i.e. assistant to the small-scale farmers, and as such, it is relevant. But, on the other hand, there are limitations for the small-scale farmers, such as the lack of available resources, low educational level, which causes the small-scale farmers not to be able to take enough advantage to increase their production. Therefore, it would be more effective to increase the involvement of medium- and large-scale farmers who have more economic power as well as a great influence over the regional development, and not to limit to the small-scale producers.

6-4-2 Relevance of the project purpose

The Project is a tool to develop a serious development project in a larger area through the development of model activities, therefore, it can be said that the determination of the project purpose, especially regarding the transfer of technology and institutional strengthening, was relevant.

The project purpose, regarding the technical aspect, was mostly achieved. On the other hand, in order to increase the effectiveness and sustainability of the Project, it is important to institutionalize the mechanism to easily reflect the will and needs of the beneficiaries in planning, and to obtain various sources of funds. In this regard, in the future, the strengthening of institutional setup should be given more importance.

As mentioned in the "impact" section, the impact caused by the road rehabilitation to the small-scale farmer is great. Therefore, in case project purpose is determined as a combination of drainage and transportation aspects, the chance to obtain higher results is bigger.

6-4-3 Relevance of the project design

It would have been more effective to start research and extension components after the increase of the farmers' will for increased production with the recovery of farming lands through the construction of drainage facilities. In the same manner, it would have been more effective to start the extension component by taking advantage of the suitable varieties and species, agricultural techniques and soil improvement measures determined by the research component.

However, the activities of these 3 components started at the same time, and it was expected to obtain certain results after 5 years. Also, parallel to it, a dynamic institutional development was required, which involved various organizations of the region, improving the farmers' consciousness.

Considering these contents of the Project, if the same investment should be done, better results could be obtained, if executed with enough time and in an adequate manner, instead of executing all at the same time in 5 years.

6-5 Sustainability

6-5-1 Basic conditions for the sustainability of the Project

The Project is a model project. Therefore, it is very important that the actual phase can be continued in an independent manner by the Government of Paraguay after the end of the model project. Therefore, there are 3 basic conditions for sustainability: strong leadership by the central government with long-term policies, active participation of local autonomous bodies, and participation of beneficiaries.

6-5-2 Sustainability in political and financial aspects

The Ministry of Agriculture and Livestock (MAG) shows the intention to continue the implementation of the DERMASUR Project, approving the medium term plan and starting the next year's budget preparation. The MAG stated that in the future, the reduction of the budgetary disbursement will not come up like it did in the last years of the Project. Therefore, it is expected that the political support of the Paraguayan government will be stronger than in the past.

However, there is the need that the MAG must carry out the greatest effort in order to avoid the extensive reduction of budgetary disbursement, considering the forecast that the general financial crisis of the Paraguayan government will continue and the antecedent decreases in the disbursement level of the last years.

In case there is no chance to obtain sufficient financial resources by the central government, there is a need to cover the costs through the active financial contributions by the local autonomous bodies and by the medium-scale and large-scale farmers who have more economical power. As one of the steps to prepare the institutional arrangement to realize it, there is a movement in order to create an organization (Inter-district Commission for the Development of the South Region of

Pilar: CIDESUR) and to coordinate the related institutions and diversify fund sources. It is considered that the creation of this type of local organization will improve the sustainability of the financial aspect of the present Project, and due to it, its creation is strongly expected.

On the other hand, the local autonomous bodies in the project area have a very positive attitude for cooperation with the Project. Similarly, local inhabitants are have great expectations for implementation and continuation of the Project. These are the examples of the bright prospects of the sustainability of the Project.

6-5-3 Sustainability in technical aspect

In order to ensure the technical sustainability, it is the first requirement that the counterpart personnel who received the technical transfer through the Project stay at the present positions, and therefore it is necessary to continue the DERMASUR project.

If the DERMASUR project continues and if the required budget is ensured in a continuous manner, it is estimated that the transferred techniques will stay up at high levels for the time being, considering the sufficient level of the technological transfer.

7. Conclusion

The Japanese and Paraguayan Evaluation Teams have reached to the following conclusions as a result of discussions. However, as for the input for the proposed follow-up project, the Paraguayan Evaluation Team expressed a strong concern for a long-term expert in the field of integrated research and extension activities.

7-1 General

- In general it can be said that the goals were achieved for the most part, though some is still to be attained.
- It is highly rated that the considerable results are obtained in each field in the five years period at the project area, where communication and environmental conditions are very difficult.
- This is due to the efforts of the experts from the Japanese side and the position of the Paraguayan government in regard to this Project, providing the adequate number of counterpart personnel.
- When the Joint Evaluation Team visited the Neembucu Province, it received a strong request for the continuance of the Project from the Governor, from the Mayor of Pilar and from the person concerned in the six districts in the project area. Also, the Governor mentioned that he receives the request from the surrounding districts to expand the project area. This can be taken as the signal that the Project is highly appreciated.
- The following items have been confirmed in the evaluation study:

1) A new methodology for the infrastructure development in rural area has been created, with full consideration to the natural environment and participation of the beneficiaries for planning and construction of the drainage facilities and subsequent operation and maintenance.

2) Adequate farming patters, cultivation techniques and extension activities for small-scale producers under unfavorable soil conditions were examined.

3) It was recognized that the implementation of the Project realized various favorable social, economical and cultural impact to the small-scale farmers, in addition to the reduction of damages from inundation. In this regard, there is a need to publish it through a detailed study. So that the importance of the Project can be reconfirmed.

- However, in order to promote the DERMASUR Project in a continuous manner in the future, and to take advantage of the achievement by the Project, it is essential to establish an institutional setup which enables adequate operation and maintenance of the heavy duty machines and sufficient investment of financial resources. The government of Paraguay shall be aware that the DERMASUR Project is a national program for the development of Paraguay.

7-2 Recommendations

(1) Budgetary measures

- In order to keep promoting the DERMASUR Project, the five-year program prepared in August of 1998 as the second phase of the DERMASUR Project shall be implemented, the MAG being the leading agency.

- For the successful continuation of the DERMASUR Project, it is necessary and indefectible to take adequate budgetary measures, similar to those in the Project period. Besides, in considering the unsatisfactory level of disbursement in 1997 and 1998, there is a need to increase its level at least to the one of 1996.

(2) Institutional setup

- The Project has to develop an institutional setup which controls and coordinates the utilization and maintenance of the heavy duty machines and the construction of canals, based on a long and medium term planning within the Project's area, with the orientation of the MAG by the end of the Project. It shall be created and managed as an institutionalized mechanism of such aspects as financial contribution by the local autonomous bodies and inhabitants, among others.

- In order to give adequate guidance on appropriate techniques in accordance

with the needs of the farmers, the research component and the extension component of the Project as well as the extension office shall have a good collaboration and coordination. In addition, for the market promotion and commercialization of dairy farming and apiculture, collaboration with the farmers' cooperatives and the related entities has to be also searched.

7-3 Proposed Follow-up Project

Based on the results of the evaluation study, a need for continuous technical assistance was confirmed in order to achieve the Project's goals in the following area;

a) Technical transfer to the counterpart personnel operation and maintenance of heavy duty machines, design and route selection of canals,
b) Development of organizational arrangement for maintenance of drainage facilities by the beneficiaries,
c) Strengthening of institutional setup for agricultural development, and
d) Technical improvement for diversification of farming patterns, cultivation techniques and soil improvement measures.

The expected results and the input within the subsequent cooperation period are as follows. A detailed plan of activities shall be prepared during the remaining period of the Project.

(1) Expected results

1) The counterpart personnel master how to make route selection of drainage canals based on technical judgement from field observation and coordination among beneficiaries.
2) Institutional arrangement, techniques and procedures are developed for maintenance of drainage facilities with beneficiaries' participation.
3) The counterpart personnel master the techniques for maintenance of heavy duty machines.
4) An institutional setup is created and become operational to support rural development in the Region South of Pilar by means of coordination and fund raising.
5) Clear demarcation of roles, work-flow, and a mechanism for collaboration and coordination is established among the counterpart personnel, the extension office, farmers' cooperatives, and research institutes, etc.
6) Farming patterns of higher productivity is proposed.

(2) Input from Japanese side

1) Long term experts

a) Leader / drainage water management and construction management
b) Coordinator / institutional development

2) Short term experts

To be dispatched according to the necessity; operation and maintenance of machines, agronomy, etc.

3) Training of Paraguayan personnel in Japan

To be conducted according to the necessity.

4) Provision of equipment

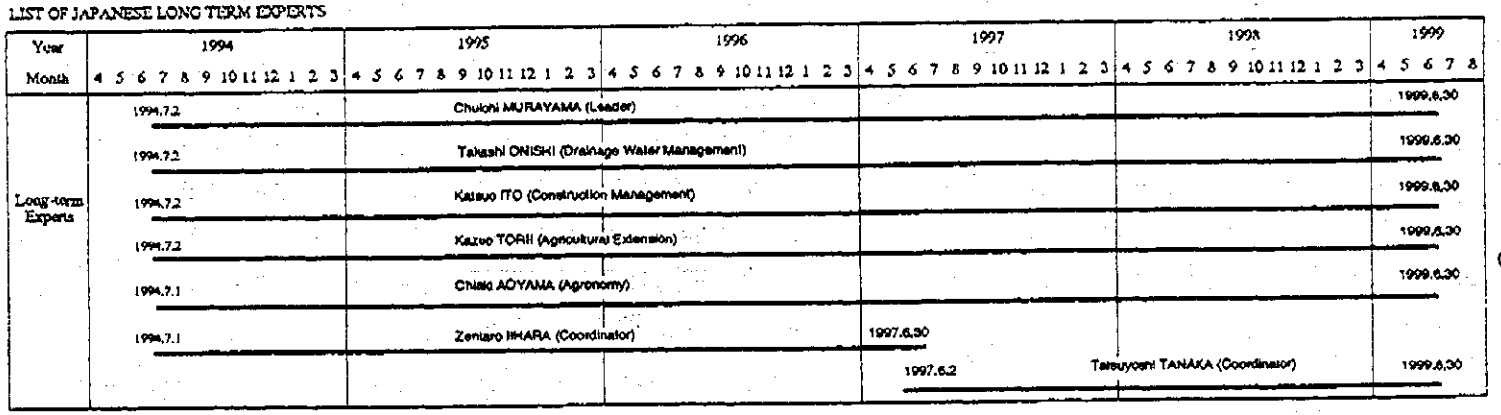
To be provided according to the necessity; mainly spare parts for heavy duty machines.

(4) Period

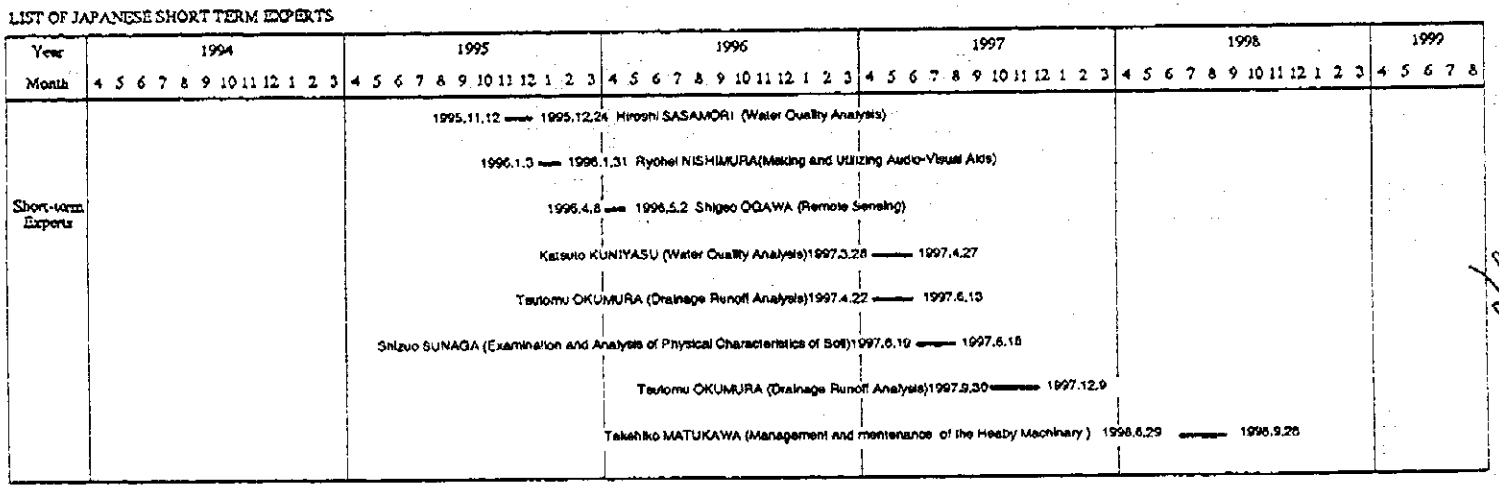
1 year and 9 months (until 31 March 2001)

Annex. 1 LIST OF JAPANESE EXPERTS

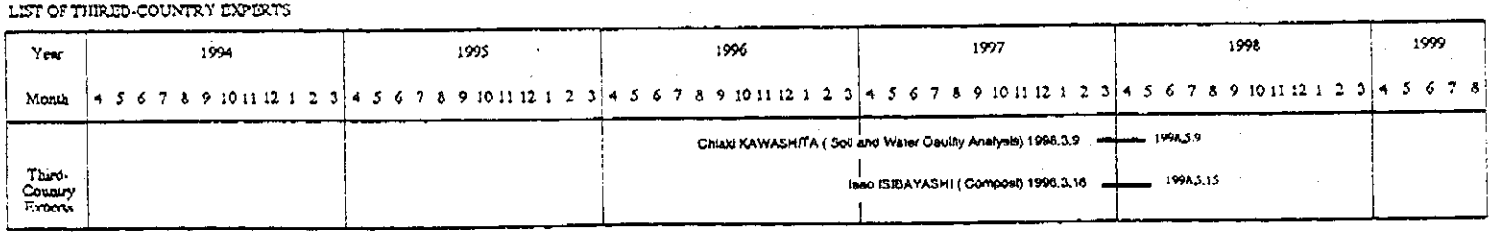
LIST OF JAPANESE LONG TERM EXPERTS



LIST OF JAPANESE SHORT TERM EXPERTS



LIST OF THIRED-COUNTRY EXPERTS



Annex 2. LIST OF COUNTERPART PERSONNEL ACCEPTED IN JAPAN

No.	NAME	SPECIALITY	PERIOD
1	Ms. Angela Galeano	Project Management	1995. 1.20 ~1995. 2.16
2	Mr. Faustino Salcedo	Project Management	1995. 1.20 ~1995. 2.16
3	Mr. Edgar Funes	Project Management	1995. 1.20 ~1995. 2.16
4	Mr. Pablo Nunez	Construction Management	1996. 1.27 ~1996. 3.11
5	Mr. Alicides Mega	Water Drainage Management	1996. 1.27 ~1996. 3.11
6	Mr. Daniel Bordon	Soil Improvment	1996. 2.16 ~1996. 3.18
7	Mr. Atilio Benitez	Vegitable Production	1996. 5.27 ~1996. 7.27
8	Mr. Hugo Zarza	Productive Organization Management	1996. 5.20 ~1996. 8.11
9	Mr. Aurelio Arevalos	Protection Method for weeds	1997. 3.10 ~1997. 9.12
10	Mr. Domingo Amarillia	Construction Management	1997.10.13~1997. 12.3
11	Mr. Hugo Aguero	Construction Management	1997.10.13~1997. 12.3
12	Mr. Porfirio Arevalos	Soil Improvment	1998. 3.29 ~1998. 4.19
13	Mr. Eladio Benitez	Holiculture and Soil Imprpvement	1998. 9. 6 ~ 1998. 12. 2
14	Mr. Benigno Sosa	Soil Improvement by compost	1998. 9. 6 ~ 1998. 12. 2
15	Mr. Jose Galeano	Agricultural Extension Management	1998. 9.20 ~1997. 10.21

Annex 3

1.PROVISION OF EQUIPMENT

Major Equipment

PERIOD : from 1st July 1994 to November 1998

PERIOD	1994 (thousand Gs)	1995 (thousand Gs)	1996 (thousand Gs)	1997 (thousand Gs)	1998 (thousand yen)
AMOUNT (Gs)	1,876,909	526,635	303,560	360,524	(17,000)

Equipment Carried by Experts

PERIOD : from 1st July 1994 to November 1998

PERIOD	1994 (thousand Gs)	1995 (thousand Gs)	1996 (thousand Gs)	1997 (thousand Gs)	1998 (thousand yen)
AMOUNT (Gs)	—	9,212	18,512	5,232	(1,149)

2.Expenses for Local Cost Bearing

PERIOD : from 1st July 1994 to November 1998

Expenses / Year	1994 (thousand Gs)	1995 (thousand Gs)	1996 (thousand Gs)	1997 (thousand Gs)	1998 (thousand yen)
Local operational expanses	120,911	394,418	429,635	587,699	(17,041)
1. General local operational expenses	120,911	139,202	115,925	109,547	(4,590)
2. Expenses for emergency measures	—	—	—	—	(2,500)
3. Expenses for technical extension and publicity	—	—	38,500	—	—
4. Expenses for technical exchange	—	—	—	59,718	—
5. Expenses for project infrastructure construction (Model infrastructer)	—	227,500	248,200	345,794	(9,355)
6. Expenses for training for leading technicians	—	27,716	20,000	14,948	(596)
7. Expenses for holding local seminars	—	—	—	57,692	—
8. Expenses for security measures	—	—	7,010	—	—

The Japanese fiscal year begins in April and ends in March of the following year.

( ) : these expenditures are planed to be used in 1998 Japanese fiscal year.

Annex.4 LIST OF COUNTERPART PERSONEL

98.11.26

Field	Year / Month	1994 4 7 10 1	1995 4 7 10 1	1996 4 7 10 1	1997 4 7 10 1	1998 4 7 10 1	1999 4 7 10
Management	Ms. Angela Galeano						
	Mr. Faustino Salcedo						
Drainage Management	Mr. Pablo Nunez						
	Mr. Alcides Meza						
Construction Management	Mr. Domingo Amarilla						
	Mr. Hugo Aguero						
	Mr. Felix V. Munoz						
Agricultrural Extension	Mr. Atilio Benitez						
	Mr. Hugo Zarza						
	Mr. Vincenzo Lombardi						
	Mr. Eladio Benitez						
	Mr. Cesar Benitez						
Agronomy	Mr. Daniel Bordon						
	Mr. Aurelio Arevalos						
	Mr. Porfirio Arevalos						
	Mr. Benigno Sosa						
	Mr. Jose Salinas						

Period of Counterpart Location　　Period of Training in Japan

ANNEX. 5

Annual Budget and Distbersement for the Project Management By the Ministry of Agriculure and Livestock

Paraguayan fiscal year	1994	1995	1996	1997	1998	1999	
Budget (a) Dibursement (b)	— 379,428	492,700 406,400	671,084 521,000	622,179 257,600	618,820 on going	709,425 (planing)	Paraguayan fiscal year: from January to December
ratio(%, a/b)	—	82	78	41	—	—	

*The Project started in July 1994, so there was no budget for the Project in the first year. From 1995, budget has been allocated as the budget for the DERMASUR Project.

Output 3. Development of Methods for Maintenance of Drainage Control Facilities with Beneficiaries' Participation

Goal	Expected Achievement by the End of the Project
The counterpart personnel master how to promote extension activities and institutional development for drainage management with farmers' participation, through determination of appropriate method, procedures, and organizational arrangement for drainage water management and their implementation by local authorities and farmers' organizations in the model area.	The goal will not be achieved satisfactory. Although technical transfer to the counterpart personnel was carried out smoothly, techniques, procedures and institutional setup are under development, and no adequate maintenance works are being conducted. Continuous technical development and guidance for institution strengthening are required.

	Sub-Goals	Achieve-ment	Remaining Tasks	Necessity for Technical Assistance
3A	Adequate techniques and methodologies for maintenance works are determined.	B	Techniques and methodologies for canal cleaning is in the course of development. Continuous analysis is required.	XX
3B	Institutional setup is established for maintenance of the model drainage facilities and the approach road.	B	Settlement-wise committees were established. There is a need for a mechanism centered on local autonomies to coordinate maintenance works for whole drainage area.	XX
3C	The model drainage facilities and the approach road are maintained appropriately by collective efforts of the committees.	C	There is a need for guidance to raise beneficiaries' sense of ownership so that maintenance works are carried out adequately.	XX
3D	The counterpart personnel understand the necessity of maintenance of the canals and approach road, and master the appropriate techniques, procedures and institutional setup and how to undertake extension and institution building.	B	The techniques, procedures, and institutional setup which the counterpart personnel mastered are still in the course of development.	XX

Output 4. Technical Examination on Diversification of Farming Patterns, Cultivation Techniques, and Soil Improvement Measures

Goal	Expected Achievement by the End of the Project
The counterpart personnel master how to promote technical development to increase agricultural productivity in the project area, through examining suitable crops and variations, possible alternative products / crops, possible diversified farming patterns, improved cultivation techniques, and appropriate soil improvement measures.	The goal was achieved for the most part. The counterpart personnel mastered basic know-how and are able to continue technical improvement. Scope of suitable crops and variations, alternative products / crops, possible diversified farming patterns were narrowed down. But the prospects for substantial increase in agricultural productivity under existing circumstances are not clear enough.

Sub-Goals	Achieve-ment	Remaining Tasks	Necessity for Technical Assistance
4A Crops, varieties and alternative products / crops suitable for increasing productivity and diversifying cropping patters are recommended, and adopted by the extension office for promotion.	B	While some suitable crops / variations and alternative crops were proposed, but no promising alternative cash crops are found. Continuous examination is required.	XX
4B Appropriate measures to improve soil fertility in the project area are determined.	A		-
4C Merit of the proposed farming patters for small-scale farmers is demonstrated.	B	Increase in productivity gained by the proposed farming patterns will not be very big. Continuous examination is required.	XX
4D Technical manuals for various kinds of surveys and trials are developed.	A		-
4E The counterpart personnel master the methods and techniques for surveys, trials, demonstration farms, and are able to continue technical improvement by themselves.	A		-

Output 5. Strengthening and Improvement of Extension Activities to Introduce Diversified Farming Patterns and Improved Agricultural Techniques

Goal	Expected Achievement by the End of the Project
Through seminar and training to the extension workers and key farmers, demonstration of diversified farming patterns at selected model farms, technical guidance to farmers organizations, information campaign, etc., the counterpart personnel and the extension workers master how to introduce diversified farming patterns and improved agricultural techniques to small-scale farmers in an efficient and effective manner.	The goal will be partially achieved. Though the counterpart personnel acquired enough capacity, technical transfer to the extension workers will not be sufficient. Continuous efforts by the Paraguay side will be necessary.

Sub-Goals	Achieve-ment	Remaining Tasks	Necessity for Technical Assistance
5A Present situations of small-scale farmers are clarified by household survey, agricultural market survey, and study on actual situations of farmers' organizations.	A		-
5B Training program for extension workers are developed, and the counterpart personnel are able to undertake training for extension workers to strengthen extension activities on diversified farming patterns and improved cultivation techniques.	A		-
5C The extension workers gain knowledge and techniques to carry out extension activities on diversified farming patterns and improved cultivation techniques.	B	There is a room for capacity building of the extension workers. It is necessary to continue training by the counterpart personnel and technical guidance to the counterpart personnel through daily joint works.	X
5D Proposed crops / varieties, cultivation techniques, and farming patterns are adopted as a model by the key-farmers.	A		-
5E Model farmers are selected, and diversified farming patterns are demonstrated.	A		-
5F Number of farmers' cooperatives and number of member farmers are increased, and the scope of cooperatives' activities is expanded.	A		-

Output 6. Strengthening of Institutional Setup for Agricultural Development

Goal	Expected Achievement by the End of the Project
Institutional setup is strengthened to promote sustainable development of agriculture through improvement of drainage management, farming management and increase in productivity in the Region South of Pilar based on the achievement of the technical cooperation.	The goal will not be achieved. Possibility of additional financial sources and effective coordination among related organizations by the Inter-Municipality Commission for Development of the South Pilar Region (CIDESUR) is under examination. Continuous guidance on institutional development is required.

Sub-Goals	Achieve-ment	Remaining Tasks	Necessity for Technical Assistance
6A Long-term action plan and financial plan to continue DERMASUR Project is formulated and determined.	B	The action plan for 1999 – 2003 was approved by the Minister of Agriculture and Livestock, and budget for 1999 is under preparation.	X
6B Institutional setup is established to plan, coordinate, and implement constructions of drainage facilities by the heavy duty machines provided by the Project with financial contribution from local autonomies and residents.	B	There is a example of canal construction funded by one local autonomy and residents, and institutionalization of this type of project is under examination. Guidance is necessary to institutionalize a mechanism to raise fund and planning coordination.	XX
6C A mechanism is established to promote effective collaboration among related organizations to promote diversification of farming and increase in productivity by means of marketing, extension, and commercialization.	C	Guidance is necessary to clarify demarcation and establish work-flow among the counterpart personnel, the extension office, farmers' cooperatives, and research institutes, etc.	XX

The Evaluation Summary for the Japanese Technical Cooperation for the Rural Development Project in the Region South of Pilar

Overall Goal

Living standard of small-scale farmers in the South Pilar is improved.

Project Purpose

Ministry of Agriculture and Livestock Farming and the small-scale farmers in the Region South of Pilar enhance their technical and institutional capacity to carry out continuous and sustainable agricultural development by promoting drainage water management, soil improvement, improvement of cultivation methods, and diversified farming patterns.

Output 1. Formulation of a Drainage Management Plan

Goal	Expected Achievement by the End of the Project
The counterpart personnel acquire knowledge and techniques to formulate a drainage management plan through data collection / analysis and preparation of a drainage management plan for the project area.	The goal will be achieved. The planning for the project area and technical transfer will be completed.

	Sub-Goals	Achievement	Remaining Tasks	Necessity for Technical Assistance
1A	A drainage improvement master plan of sufficient accuracy and details covering the whole project are is formulated	A		-
1B	Computer programs on data collection, data analysis, planning are developed, and technical manuals are elaborated.	A		-
1C	The counterpart personnel master the methodology and techniques and can continue the activities by themselves.	A		-

Note : Criteria for achievement are as followings.

A : Sub-goal will be achieved for the most part. (ratio : 80 – 100 %)
B : Sub-goal will be achieved to a certain extent. (ratio : 60 – 80 %)
C : Sub-goal will not be achieved. (ratio : lower than 60 %)

Criteria for the necessity for technical assistance is as followings.

- No remaining tasks.
X Remaining tasks will be completed and the sub-goal will be achieved with the efforts of Paraguayan side after the Project.
XX Continuous technical assistance will be required after the Project to achieve the sub-goal.

Output 2. Construction of Model Drainage Control Facilities

Goal	Expected Achievement by the End of the Project
Through construction of drainage control facilities and demonstration farms in the model area, the counterpart personnel become acquainted with appropriate techniques and their practical application for planning, design, and construction of drainage facilities which can be constructed and maintained at local level with farmers' participation.	The goal will be achieved for the most part. The counterpart personnel need additional experience and technical guidance on canal route selection and construction supervision in areas of different conditions, maintenance of heavy duty machines.

Sub-Goals	Achieve-ment	Remaining Tasks	Necessity for Technical Assistance
2A Design standards and construction methods technically acceptable in the project area are adopted.	A		-
2B Beneficiaries actively participate in the planning and construction process and provide voluntary works.	A		-
2C The model drainage facilities show evidences on drainage effect.	A		-
2D Technical manuals and guidelines for planning, design and construction of drainage facilities are elaborated.	A		-
2E Operators for heavy duty machines are trained.	A		-
2F The counterpart personnel master techniques for maintenance of heavy duty machines.	B	The counterpart personnel needs additional technical guidance on repairs of heavy duty machines.	XX
2G The counterpart personnel master techniques for planning, design and construction of drainage facilities, and are able to continue and repeat the activities by themselves.	B	The counterpart personnel needs additional technical guidance and experience on canal route selection based on technical judgement from field observation and coordination among beneficiaries.	XX
2H The counterpart personnel are able to conduct seminars and training by themselves to diffuse techniques for planning, design, construction of drainage facilities.	A		-