

プロジェクト方式技術協力 終了時評価調査表

作成日：平成6年10月 5日
 担当：農開部農技協課
 武下 (Ex:5263)

案件名	(和) イラン・カスピ海沿岸地域農業開発計画 (英) Haraz River Basin Agricultural Development Project in Iran		
実施国名	イラン国		
協力期間(R/D)	1990年4月1日～1995年3月31日(5年0カ月)		
事業分野	センター／保健医療／人口家族／農林水産業／産業開発		
技術協力分野	研究開発／技術普及／人材育成		
相手国実施機関	農業省・カスピ海沿岸地域農業開発プロジェクト・パイロット実施センター (CAPIC)		
評価調査団	(担当)	(氏名)	(所属)
	1. 団長／総括	鈴木重之	外務省経協局技協課企画官
	2. 灌漑排水	新保義剛	農水省構改局建設部設計課長補佐
	3. 圃場整備	猫塚昭雄	北海道庁農政部土地改良指導課長
	4. 水稲栽培	廣幡公宏	農水省中国四国農政局流通部農産普及課長補佐
	5. 計画効果	伊藤 毅	元JICA・JR専門員
	6. 業務調整	古賀重成	JICA農開部農技協課長代理
評価調査実施日	1994年9月24日～1994年10月8日(15日間)		

評価結果総括	
(1) 目標達成度	CAPIC試験圃場及び3カ所のパイロットファームが建設され、それを通じ圃場整備に係る計画、設計、施工技術がC/Pに移転された。 また、圃場整備後の稲栽培、機械化稲作に関する基礎技術が確立され、プロジェクト開始時の目標はほぼ達成できる見通である。但し、ステ地区におけるパイロットファームの圃場整備、稲栽培、機械化稲作のパイロットファームへの展開が残されている。
(2) 案件の効果	政府農業技術者及び農民の圃場整備に対する認識、機械化農業によえう生産意欲が高まり、プロジェクトによる圃場整備技術を基にマザンダラン州でも独自に約1200haの圃場整備事業を実施し、また農民に対する機械化稲作（機械移植）普及を行っている。
(3) 自立発展性の見通し	国内において最も重要な作物である米の増産、国内自給の達成は今後ともイランの重点課題であり、プロジェクトは発展拡充することが予想される。 圃場整備後の機械化農業の導入及び裏作振興については、本件プロジェクトの対象ではなく今後の課題であるが、イラン側の取り組み姿勢、農民の意欲等から推察しても、自立発展の可能性が高い。
(4) フォローアップの必要性	5年間の目標はほぼ達成の見通しであるが、ステ地区におけるパイロットファームの圃場整備、稲栽培、機械化稲作のパイロットファームへの展開で、1年間のF/Uが必要と考えられる。

I. 協力実施プロセス

<p>1. 要請の内容と背景</p>	<p>イランは1972年2月のイスラム革命及び1980年9月からの対イラク戦争の影響により国土は荒廃し、経済の混乱から農業を中心とした生産活動全般が著しく後退した。</p> <p>イラン政府は、農業生産物のうち、特に米については生産量の減少と価格の高騰、更に輸入量の増加により財政の圧迫とともに国民不安を募らせる結果となったことを憂慮し、経済運営に関する新5カ年計画及び経済開発5カ年計画において、農地の拡大を中心とした農業開発を重点課題とし、特に同国最大の農業生産地帯であるカスピ海沿岸地域の開発を重視している。</p> <p>1983年8月、当時の安倍外相が訪伊したさい、カスピ海沿岸地域における稲作のための灌漑を中心とする農業開発協力の要請を行い、これを受けて我が国は1984年から87年まで開発調査を実施しマザンダラン州の10万haを対象としたマスタープランを策定した。また、この調査結果を受け、イラン政府は同地域での圃場整備と稲作機械化を中心とするプロジェクト方式技術協力を要請した。</p> <p>我が国は、1987年のコンタクト調査団、88年の事前調査団に続き、1990年に実施協議調査団を現地に派遣し、CAPICを拠点として、圃場整備、灌漑排水の計画、設計、施工技術及び栽培、機械化営農技術等の確立を図り、イラン側技術者、農業普及員の要請・訓練を行うことを目的に、1990年4月1日から5カ年間のプロジェクト方式技術協力が開始された。</p>
<p>2. 協力実施プロセス</p> <p>(1) 要請発出</p> <p>(2) コンタクト調査 (担当/氏名/所属)</p> <p>(3) 事前調査 (担当/氏名/所属)</p> <p>(4) 長期調査員 (担当/氏名/所属)</p> <p>(5) 実施協議調査 (担当/氏名/所属)</p>	<p>1986年6月</p> <p>1987年8月2日～1987年8月17日(16日間)</p> <p>1) 総括/土屋晴男/農水省熱研センター研究技術情報官 2) 協力政策/三好功一/外務省中東アフリカ局中近東第二課 3) 協力企画/中原松美/農水省経済局国協課 4) 基礎整備/農用地整備公団技術管理室長 5) 稲作/難波輝久/東京農業大学客員研究員 6) 業務調整/大川義清/JICA農林水産計画調査部農林水産計画課長</p> <p>1988年10月5日～1988年10月25日(21日間)</p> <p>1) 総括・協力企画/土屋晴男/農水省熱研センター研究技術情報官 2) 協力政策/松本芳樹/外務省経協局技協課 3) 技術協力・業務調整/稲葉誠/JICA農開部農技協課</p> <p>1989年10月12日～1990年1月29日(109日間)</p> <p>1) 総括・灌漑排水/杉浦淳三/農用地整備公団公務部次長 2) 圃場整備・施工計画/松中達夫/農用地整備公団海外事業室調査役 3) 農業制度/加島秀朗/農用地整備公団海外事業室情報整備係長 4) 営農計画/難波輝久/JICA特別囑託(東京農業大学客員研究員)</p> <p>1990年3月1日～1990年3月14日(14日間)</p> <p>1) 総括/長島俊一/JICA農開部農技協課長 2) 協力企画・灌漑排水/戸坂隆/農水省構改局国協課海外技術協力官 3) 圃場整備/斉藤晴美/農水省構改局建設部設計課長補佐 4) 協力政策/松本芳樹/外務省経協局技協課長補佐 5) 稲作栽培/下方芳美/農水省大臣官房調査係長 6) 業務調整/美馬巨人/JICA農開部農技協課</p>

I. 協力実施プロセス (続き)

<p>(6) 専門家派遣開始</p> <p>(7) 計画打合せ (担当/氏名/所属)</p> <p>(8) 巡回指導 (中間評価) (担当/氏名/所属)</p>	<p>1990年9月2日</p> <p>1991年7月11日～1991年7月24日 (14日間)</p> <p>1) 総括/清水武男/JICA農開部農技協課長 2) 圃場整備/瀬田文治/農水省近畿農政局建設部設計課農業土木専門官 3) 営農・栽培/竹林孝/農水省農蚕園芸局農蚕課振興係長 4) 業務調整/美馬巨人/JICA農開部農技協課</p> <p>1993年4月2日～1993年4月15日 (14日間)</p> <p>1) 総括/安江二夫/農水省関東農政局建設部次長 2) 協力政策/岩井文男/外務省中東アフリカ局中近東第二課長補佐 3) 圃場整備・灌漑排水/中島久宜/農水省東海農政局建設部設計課農業土木専門官 4) 稲作栽培・農業普及/富高元徳/JICA国際協力専門員 5) 業務調整/武下悌治/JICA農開部農技協課</p>
<p>3. 協力実施過程における特記事項</p>	<ul style="list-style-type: none"> ・ 専門家派遣当初より長期滞在に必要なビザ類の取得が滞り、また専門家機材についての免税措置が受けられないことが多い。 ・ 農業機械の供与がプロジェクト中盤となり、その間、課題の一つである機械化農業技術の検討ができなかった。また、各種試験を行うための圃場整備が遅れ、実質的な技術確立にかかる検討もできなかった。 ・ イラン側による事務所、機械修理棟、研修棟等の建設及び付帯施設の整備が遅れ、それぞれの分野における活動の円滑なる推進に支障を来した。 ・ 供与機材 (重機類) の引き取りが滞っており、圃場整備事業に影響した。 ・ 農業機械分野のC/Pの配置が遅れ、また圃場整備、栽培分野のC/Pの数が業務量に比して少ない。 <p>また、プロジェクトスタッフは、農業省職員は6名しかおらず、その他は契約によるもので、定着性に問題がある。</p> <ul style="list-style-type: none"> ・ マザンダラン州の農業局により、プロジェクトでの技術を参考に、独自に事業を展開し、またJICA集団コースに参加して帰国したスタッフにより稲機械会移植にかかる普及事業を展開している。
<p>4. 他の協力事業との関連性</p>	<p>本件プロジェクトはJICAの実施したM/P調査の提言6項目の内3項目を実証する意味を含んで始められたもので、また同様にF/S調査も並行的に実施された。</p> <p>最終的な農業開発対象地域が10万ha以上に及ぶこともあり、M/P、F/S及びプロジェクトの成果を踏まえて、イラン側は日本に対する資金協力要請を非公式に行っている。</p>

1.1. 目標達成度

(実施協議時) (中間評価時) (終了時評価時) (目標達成／未達成の理由)

<p>1. 上位計画との整合性</p>	<p>当初目標 経済運営に関する新5カ年計画(83'88)及び経済開発5カ年計画(89'94)、新経済開発5カ年計画(94'99)において、農業開発を重点分野とし、特にカスピ海沿岸地域の農業開発を重視している。</p>	<p>変更後目標 変更なし</p>	<p>中間評価時以降での上位計画における位置付けの変化 特になし 開発目標にかかる前提条件の変化の有無 特になし</p>	
<p>2. 案件目標の達成状況 CAPICを拠点として、灌漑排水、圃場整備にかかる計画、設計、施工技術及び機械化農業技術の確立を図り、イラン側技術者、普及員の訓練を行う。</p>	<p>当初目標 圃場整備、機械化農業にかかる技術確立と技術者養成。 目標達成基準 C/Pの技術習熟度 目標達成への前提条件 適切なC/Pが配置され、C/Pの移動がない。</p>	<p>変更後目標 変更なし 目標達成基準(変更後) 目標達成への前提条件(変更後)</p>	<p>目標達成状況 CAPIC試験圃場及び3カ所のパイロットファームが計画通り建設されるとともに圃場整備にかかる計画、設計、施工についての基本的知識、技術が移転され、技術者が養成された。また、4期における試験圃場における稲栽培を通じ圃場整備後の稲栽培、機械化農業に関する基礎技術が概ね確立された。</p>	
<p>3. アウトプット目標の達成状況 ①CAPIC及びパイロットファームにおける試験圃場及び関連インフラの整備 ②圃場整備にかかる計画、設計、施工における適正技術の確立 ③適正稲作技術の改善 ④適正農業機械化、機材保守管理技術の促進 ⑤圃場整備、稲栽培、農業機械化における技術研修 ⑥CAPIC、パイロットファーム等における農民研修研</p>	<p>当初目標 同左 目標達成基準 ①整備状態 ②確立技術の内容 ③収量 ④技術の内容 ⑤研修回数、内容 ⑥研修回数、内容 目標達成への前提条件 ・十分な運営費 ・機材、人の充足 ・農民の意欲</p>	<p>変更後目標 変更なし 目標達成基準(変更後) なし 目標達成への前提条件(変更後) 変更なし</p>	<p>目標達成状況 ①ステ・パイロットファームを除いてほぼ完成 ②確立 ③ほぼ確立 ④ステ・パイロットファームへの展開が残されている。 ⑤達成 ⑥達成 前提条件の変化の有無 変更なし</p>	

II. 目標達成度 (続き)

<p>4. インプット目標達成の状況</p>	<p>当初目標</p> <p>1) 日本側インプット</p> <p>① 専門家派遣 長期：7分野 短期：必要に応じ</p> <p>② 研修員受入</p> <p>③ 機材供与</p> <p>2) 相手側インプット</p> <p>① C/P配置 10分野</p> <p>② 事務職員配置 総務、経理</p> <p>③ 運転手、技術職員の配置</p> <p>④ 土地、建物 C A P I C及びパイロットファーム用地、事務所及び必要な設備、機材設置場所及び倉庫、その他</p> <p>⑤ プロジェクト運営費</p> <p>目標達成基準</p> <p>1) 日本側</p> <p>2) イラン側</p> <p>目標達成への前提条件</p>	<p>変更後目標</p> <p>1) 日本側インプット 変更なし</p> <p>2) 相手側インプット 変更なし</p> <p>目標達成基準 変更なし</p> <p>目標達成への前提条件 (変更後) 変更なし</p>	<p>目標達成状況</p> <p>1) 日本側インプット</p> <p>① 長期：7分野計12名を派遣 短期：7分野計10名を派遣</p> <p>② 9分野計21名を受入 (内農民2名)</p> <p>③ 計479百万円 (6年度分6千万含む)</p> <p>2) 相手側インプット</p> <p>① 一部配置が遅れたが、現在は各分野1名以上が配置 (分野により不十分な数)</p> <p>② 配置</p> <p>③ 配置</p> <p>④ 提供</p> <p>⑤ 事務所建設、C A P I Cインフラ整備に要する経費が適時に割り当てられなかった。その他活動費については問題なし。</p>
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III. 案件の効果

案件名 : イラン・カスピ海沿岸地域農業開発計画

効果の広がり と受益者	効果の内容	技術的イン パクト	制度的イン パクト	経済的イン パクト	社会文化的 インパクト	環境的イン パクト	その他の インパクト
プロジェクトレベルのイ ンパクトと受益者		C/Pは、 各分野の改 善技術とと もに圃場整 備事業の進 め方、取り 組み方につ いて、体系 的な手法を 学んだ。	農業省スタ ッフは圃場 整備事業を 推進するに 当たって法 整備の必要 性を認識し た。	プロジェク トが技術の 改善を目的 としたもの であり、農 民への普及 までを含ん でいないた め、農民へ の経済的効 果はない。	農業生産の 拡大、農作 業の効率化、 多様化の可 能性が認め られ、事業 に対する理 解と期待が 州農業関係 者及び農民 の中で高揚。	既農地の圃 場整備及び 農業技術確 立を目的と したもので あり、環境 に対するイ ンパクトは ない。	
セクターレベルのインパ クトと受益者		プロクトの 実施により、 圃場整備に よる稲作機 械化及び作 物多様化の 可能性が認 識され、農 業省でも事 業拡大への 期待が高ま った。	政府レベル での圃場整 備にかかる 法整備の必 要性が認識 され、検討 中である。				
地域へのインパクト		プロジェク トでの各技 術を参考に、 州レベルで 圃場整備及 び機械化移 植栽培が実 施されている。		圃場整備の 結果、米の 収量が減収 とならなか ったことは 確認されて いる。 経済的効果 の発現は今 後の課題。	圃場整備の 有効性が広 く認識され、 それに対す る要求が農 民レベルで 広がっている。		
効果発生及びその広がり の要因（予期した効果が 発生しない場合の理由を 含む）		・ 専門家の 取り組み姿 勢が評価さ れ、C/P 及び農民が 技術を学ぶ 姿勢が発現 した。 ・ 普及部門 の精力的活 動により、 プロジェクト が広く浸透 してきた。					

IV. 自立発展の見通し

<p>1. 組織的自立発展の見通し</p> <p>(1) 実施機関存立への政策的支援の有無</p> <p>(2) 管理運営体制</p> <p>(3) 組織の改廃</p>	<p>1994年度から施行の経済開発計画においても、農業を重点開発分野としており、また、特に米の増産による自給率向上を大きな目標としているので、プロジェクトの存続、発展は十分期待される。</p> <p>農業省直属の施設であり、プロジェクトマネージャーはテヘランにおり、サイトに常駐していないにも関わらず、プロジェクトの運営管理における絶対的権限を有している。</p> <p>事業の効率的運営には、プロジェクトに権限を委譲するとともに、スタッフ増を図り運営体制を強化し、マザンダラン州10万haを対象とする事業では州農業局との連携を十分にとって効率的に事業拡大を図るのが望ましい。</p> <p>現組織スタッフはほとんどが農業省との契約に基づく者で、身分が不安定である。また、シニアスタッフ（技術者）の数が限られているため、増加する業務量に十分な対応できない。</p> <p>各分野毎のスタッフ数を充足させ、かつ定着させるための改善が必要である。</p>
<p>2. 財政的自立発展の見通し</p> <p>(1) 必要経費調達の見通し</p> <p>(2) 自主財源による費用回収状況</p> <p>(3) その他経費の調達</p> <p>(4) リカレント・コスト負担の必要性及び妥当性</p>	<p>農業省の中でもプライオリティーの高い、重要なプロジェクトであるため、予算獲得の見通しは明るい。</p> <p>ただし、10万haの圃場整備を独自に実施する事となれば、建設機械の購入、工事の実施、スタッフ増に対応するための経費が膨大となり、その経費調達の見込みは低い。</p> <p>本件プロジェクトで行った圃場整備事業は、試行的に行われたものであるため、農民負担を伴わなかったが、今後の新規事業には、応分の農民負担を強いる必要が生じる。そのとき、農民が負担するかどうかは、圃場整備による効果（生産量増、収入増）が明確に発現するかどうかにかかっている。</p> <p>イラン側は、対象地域の開発に必要な経費について、世銀またはOECFからの援助を期待している。（非公式に、打診有り。）</p> <p>CAPICが、カスピ海沿岸地域農業開発技術を確立するためのセンターであるとの位置づけに変動がなければ、イラン側独自で経費を調達できるとの見通しがあり、負担の必要はない。</p>

I V. 自立発展性の見通し (続き)

<p>3. 物的・技術的自立発展性 の見通し</p> <p>(1) 移転技術の内容及び技 術レベルの適性度</p> <p>(2) 要員配置状況</p> <p>(3) 技術の定着状況</p> <p>(4) 後継者の育成計画</p>	<p>(1) ①圃場整備事業にかかる基本設計、詳細設計、施工技術、②機材保守管理技術、③稲作栽培技術改善のための各種実験手法、④機械化農業技術、⑤農業普及教材開発技術、⑥普及、訓練手法、⑦デモンストレーション手法</p> <p>(2) ①圃場整備分野：技術者1名(大卒)、助手3名、②栽培：技術者1名、助手3名、③農業機械：技術者1名、助手4名(2名はオペレーター兼務)</p> <p>(3) プロジェクト開始以来、配置が遅れたり、配置替えがあったりしたため、十分な時間が当たったとはいいがたいが、それぞれの分野で必要とされる基礎技術は移転し、プロジェクト終了後も彼ら自身で維持、管理することは可能と判断する。</p> <p>技術移転を受けたイラン側C/P技師及び技術者等のスタッフから、他のスタッフへ技術を効果的に伝達して行けるか否かはCAPICの将来構想いかにかかっている。</p>
<p>4. その他管理運営上の制約 要因</p>	<p>(1) CAPICスタッフのほとんどは、イラン農業省の規程により、プロジェクト専任の契約スタッフであるため、技術者の定着性が懸念される。</p> <p>(2) CAPIC試験場そのものの維持と発展的技術開発または事業拡大を図っていくためには技術者が不足しているが、予算の制約もあり十分なスタッフが確保できない。</p> <p>(3) 建設機械、農業機械等の供与機材が今後十分活用されると、メインテナンス、修理等の問題が生じるが、部品の調達に時間がかかり、また経費の不足も予想される。</p>

V. フォローアップの必要性

<p>1. 協力期間延長の要否</p>	<p>要/不要 (理由)</p> <p>プロジェクト当初設定した技術移転にかかる目標は、プロジェクト立上り当初は種々の問題から遅れたが、中盤以降になって、イラン側の日本人専門家に対する信頼も深まるにつれ、順調に推移し、概ね達成したと思われる。しかしながら、ステ地区のパイロットファームにおける圃場整備等、一部分野ではプロジェクト終了時のぎりぎりになっての達成予測であり、確立した技術また圃場整備効果の確認、機械化稲作の技術の確認は期間終了後に行う必要がある。</p> <p>従って、当初予定した目標を確実にするためには、少なくとも1年間のフォローアップが必要と判断する</p>
<p>2. フォローアップの内容と方法</p> <p>(1) フォローアップの必要な分野</p> <p>(2) フォローアップの内容</p> <p>(3) フォローアップの所要期間</p> <p>(4) 期待される効果</p>	<p>(1) ①圃場整備、②稲作栽培、③稲機械化栽培 (加えて農業機械は短期で対応) また、専門家分野としては上記に業務調整を加える。</p> <p>(2) 圃場整備 : ①既設パイロットファームの評価 ②残パイロットファーム整備にかかるアドバイス ③適正水管理技術の実証。 稲栽培 : ①箱育苗技術の改善 ②機械化稲作栽培の実証 稲機械化栽培: ①パイロットファームにおける農業機械の適応性試験 ②農業機械の保守管理 ③適正精米加工システムにおける米の品質分析</p> <p>(3) あくまでも、当初計画の目標を確実に達成し、フォローアップの実施によって、より以上の成果達成が見込まれる活動に限定し、そのためには1年間で適当と判断する。</p> <p>(4) ①5年間のプロジェクトで確立した技術が実証される。 ②より現状に適した技術改善がなされる。 ③機械移植技術が実証される。 ④農民の圃場整備、稲機械化栽培に対する理解が深まる。 ⑤農業普及員が育成される。 ⑥イラン側の技術的自立発展性が向上する。</p>

目標達成度

案件名 : イラン・カスピ海沿岸地域農業開発計画

平成6年10月5日

プロジェクト概要	実績	達成見込み	残された課題等
<p><案件目的> C A P I C及び3カ所のハイロットファームにおいて、カウンターパートを通じた技術の普及を図る。また、稲作機に関する設計・施工、作物栽培、農業機械化、灌漑システムに関する技術の普及を図る。</p>	<p>C A P I C試験圃場及び2カ所のハイロットファーム整備を通じ、カウンターパートによる技術の普及を図る。また、稲作機に関する設計・施工、作物栽培、農業機械化、灌漑システムに関する技術の普及を図る。</p>	<p>ステラ地区のハイロットファーム整備が完了しているが、9月からの工事、約100haの整備が完了している見込み。 カウンターパートは既に自ら自身で圃場整備を実施するレベルに達しているため、技術移転は予定通り進められたと判断される。 また、機械化農業における改善技術は確立される見込み。</p>	<p>・確立された技術について、とりまとめたマニュアル等の作成が求められる。 ・農業機械化技術の普及には田植機の農民への普及率との兼ね合いがあるが、機械化栽培技術については日本でも確立された技術の応用でもあり、終了時までにはマニュアル等が作成されると期待する。</p>
<p><プロジェクト活動> ① C A P I C及びハイロットファームにおける試験圃場や関連インフラの整備 ② 圃場整備に係る運正技術の確立(計画、設計、施工) ③ 運正作技術の改善 ④ 適正な農業機械化、保守管理技術の促進 ⑤ 圃場整備、稲作、農業機械化における研究 ⑥ C A P I C、ハイロットファーム、既存圃場における活動を通じての農民に対する技術助言</p>	<p>① 90年度35haの試験圃場が整備され、C A P I C事務所棟はイラン側により94年度はじめて完成。倉庫等日本側の負担による施設はインフラ整備事業により91年度完成。 ② 確立し、P/F等の整備を実施。 ③ 試験レポートが作成されており、技術改善に寄与。また、機械化稲作技術指針作成中。 ④ 機械の到着及びP/Fの取付けが遅れたが、機械化及び保守管理マニュアル等を作成中。 ⑤ P/F整備の奨励を通じて行っており、また、整備した試験圃場やP/Fにおいて機械化展示、訓練を実施。 ⑥ 普及の一環として、進捗の都度実施。</p>	<p>① 日本側協力による施設等の建設は終了している。ただし、C A P I C圃場の均平等の補修整備作業が一部来期で完成予定。 ② 終了予定。 ③ 最終的に手引き書が作成予定。 ④ 完成予定。 ⑤ 実施済み。 ⑥ 実施済み。</p>	<p>・ステラP/Fの整備が完了しており、9月から3月までの約5カ月で完工する必要があるが、天候、機材準備状況によっても左右されることが懸念される。</p>
<p><協力活動内容> 圃場整備技術の確立 ① C A P I Cにおける活動を通じて、適切な方法の明確化 ・圃場整備(計画、設計、施工) ・水管理 ・稲栽培 ・稲作機械化 ② イラン標準の技術マニュアル編集 ③ 栽培分野 ④ 圃場整備技術確立のための試験 ⑤ 機械化分野 ⑥ 適切な稲機械化システム確立のための試験 ⑦ 適切な米処理システムのための試験 ⑧ 普及分野 ⑨ 普及用教材の開発 ⑩ 訓練システムの開発 ⑪ 展示手法の開発 ⑫ 農家実態調査の実施 ⑬ カウンターパート(及びキーファーマー)の訓練</p>	<p>① 圃場整備及び水管理技術は確立し、それぞれをもってP/F等の整備を行っている。 ② 各P/F圃場整備に関するマニュアル、実施設計報告書等を作成。 ③ 各種試験を実施、その結果を報告書としてとりまとめる。 ④ ①) 各種試験を実施、圃場整備を報告書としてとりまとめる。 ②) 米処理システムは6年8月にサイトに到着したため、具体的にはその後の実施となる。 ⑤ ①) ビデオ、カレンダー等を作成。 ②) 訓練システムを基に普及員、農民の研究を実施。 ③) 開発し、それを取りまとめ中。 ④) 実施し、とりまとめ中。 ⑤) C/P及びキーファーマーは必要に応じて研修を実施。</p>	<p>① P/Fの評価を除き達成見込み。 ② 稲育苗技術、機械化稲作機等の実証を除き達成見込み。 ③ P/Fにおける農業機械の適応性試験、機械の保守管理技術の一部を除き達成見込み。 ④ 達成見込み。 ⑤ 達成見込み。</p>	<p>・技術指針、マニュアル等の作成が必要 ・既設P/Fの評価が必要 ・稲育苗技術、機械化稲作機等の実証が必要 ・P/Fにおける農業機械の適応性試験、機械の保守管理技術の一部を除き達成見込み ・米処理システムが8月23日サイトに到着し、その後短期専門家派遣して実地の活動に着手したが、短期間の活動となり、操作技術は移転したが、それを用いた品質分析まで至っていない。</p>

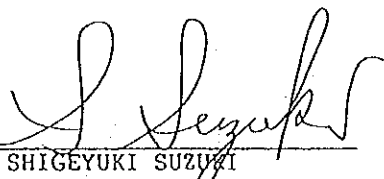
MINUTES
OF
JOINT EVALUATION
ON
THE JAPANESE TECHNICAL COOPERATION
FOR
THE HARAZ RIVER BASIN AGRICULTURAL DEVELOPMENT PROJECT
IN
ISLAMIC REPUBLIC OF IRAN

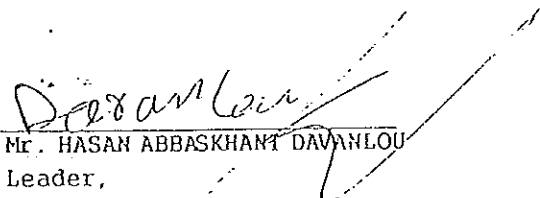
With about six months left until the termination of cooperation period of "the Haraz River Basin Agricultural Development Project" (hereinafter referred to as "the Project") on March 31, 1995, which started on April 1, 1990, as stated in the Record of Discussions, the Japanese Evaluation Team organized by Japan International Cooperation Agency (hereinafter referred to as "JICA"), headed by Mr. SHIGEYUKI SUZUKI and the Iranian Evaluation Team headed by Mr. HASAN ABBASKHANI DAVANLOU, composed the Joint Evaluation Team (hereinafter referred to as "the Joint Team") in order to conduct an overall evaluation of the Project.

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

As a result, the Japanese Evaluation Team and the Iranian Evaluation Team agreed upon forwarding to their respective Governments the summary of the evaluation which is referred to in the document attached hereto.

Tehran, October 5, 1994


Mr. SHIGEYUKI SUZUKI
Leader,
Japanese Evaluation Team
Japan International Cooperation Agency


Mr. HASAN ABBASKHANI DAVANLOU
Leader,
Iranian Evaluation Team
Islamic Republic of Iran

JOINT EVALUATION REPORT ON THE JAPANESE TECHNICAL COOPERATION
FOR
HARAZ RIVER BASIN AGRICULTURAL DEVELOPMENT PROJECT
IN
ISLAMIC REPUBLIC OF IRAN

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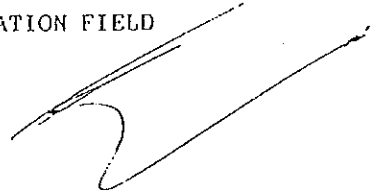
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1. INTRODUCTION

Based upon the Record of Discussions (hereinafter referred to as "the R/D") signed by the Leader of Japanese Implementation Survey Team and Deputy Minister of the Ministry of Agriculture of The Islamic Republic of Iran on March 10, 1990, the Government of Japan and the Government of Islamic Republic of Iran have been implementing the Haraz River Basin Agricultural Development Project (hereinafter referred to as "the Project") since April 1, 1990. The Project is schedule to be implemented for five (5) year and is to be completed on March 31, 1995.

The main objective of the Project is to establish adequate technologies of the irrigation and drainage, the design and construction execution of land consolidation, the crop cultivation and the agricultural mechanization and farming system, and to conduct the training for Iranian specialists and extension workers, in order to contribute the agricultural development and promotion in the Haraz river basin through the various activities of the Caspian Sea Coastal Area Agricultural Development Project: Pilot Implementation Center (hereinafter referred to as "CAPIC") and the Pilot Farms.

Main project activities are followings. Japanese technical assistance has been given to support these activities.

- (1) Establishment of experimental fields and other infrastructure in the CAPIC and the Pilot Farms.
- (2) Establishment of the adequate technology of land consolidation (including planning, designing, and construction).
- (3) Acceleration of the adequate technology of rice cultivation.
- (4) Improvement of the adequate technologies of agricultural mechanization, operation and maintenance.
- (5) Training on land consolidation, rice cultivation, and agricultural mechanization.
- (6) Technical advice to local farmers through the activities in CAPIC, the Pilot Farms, and existing facilities.


Based on the main objectives stated in the R/D, concrete items and a tentative schedule of the project activities were identified and agreed upon between the Government of Japan and the Government of Islamic Republic of Iran, and recorded as the Tentative Schedule for Implementation (hereinafter referred to as "TSI"). The latest TSI was signed on July 18, 1991.

2. MEMBERS OF THE JOINT EVALUATION TEAM

(1) JAPANESE MEMBERS

Mr. Shigeyuki Suzuki: Leader

Senior Assistant for Technical Cooperation, Technical Cooperation Division, Economic Cooperation Bureau, Ministry of Foreign Affairs



Mr. Yoshitake Shinbo: Irrigation and Drainage
Deputy Director, Design Division, Construction Department,
Agricultural Structure Improvement Bureau, Ministry of Agriculture,
Forestry and Fisheries

Mr. Norio Nekozyuka: Land Consolidation
Deputy Director, Land Improvement Division, Policy Planning
Department, Hokkaido Prefecture

Mr. Kimihiro Hirohata: Agronomy, Mechanized Agriculture, Extension
Deputy Director, Agricultural Production and Extension Division,
Production and Marketing Department, Chugoku-Shikoku Regional
Agricultural Administration Office, Ministry of Agriculture, Forestry
and Fisheries

Mr. Tsuyoshi Ito: Project Evaluation
Ex-Associate Specialist, Japan International Cooperation Agency

Mr. Shigenari Koga: Coordinator
Deputy Director, Agricultural Technical Cooperation Division,
Agricultural Development Cooperation Department, Japan International
Cooperation Agency

(2) IRANIAN MEMBERS

Mr. Hasan Abbaskhani Davanlou: Leader
Director, Department of International Scientific and Research
Affairs, Agricultural Research, Education, and Extension
Organization, Ministry of Agriculture

Mr. Hasan Askarzadeh: Land Consolidation, Irrigation & Drainage,
Training
Deputy Director of Boarding Members, Development and Reclamation
Company, Ministry of Agriculture

Mr. Habiballah Hashemi: Mechanized Agriculture, Post-Harvest
Deputy Director, Technical and Executive Agricultural organization of
Mazandaran Province

Mr. Ali Fatehi Abdolmaleki: Extension, Agronomy
Deputy Director, Research, Education, and Extension Agricultural
Organization of Mazandaran Province

Mr. Jafar Babapour: Agronomy
Expert of Rice Cultivation, Rice Cultivation Research Institute of
Amol City

3. OBJECTIVES OF THE EVALUATION

(1) To make a comprehensive and objective evaluation on the achievement of the Project with regard to the contents of the R/D, TSI, and other concerned official agreements. The period of the Project subject to the evaluation is five (5) years from April 1, 1990 to March 31, 1995 (including scheduled activities and outputs).

(2) To feedback the results and lessons obtained from the evaluation of the Project to cooperation planning and project implementations of similar cases in future.

4. EVALUATION OF THE PROJECT

4-1. ITEMS OF THE EVALUATION

The Joint Team conducted an evaluation survey with regard to the following items:

(1) Project inputs

a) Inputs from Japan:

Dispatch of experts;
Acceptance of counterpart (hereinafter referred to as C/P) trainees;
Provision of machinery and equipment;
Supplement of local cost expenditure;
Dispatch of survey teams; and
Others.

b) Inputs from Iran:

Provision of land, buildings and facilities;
Appointment of Iranian counterpart personnel;
Allocation of budget; and
Others.

(2) Project activities and accomplishments

(3) Impacts of the Project

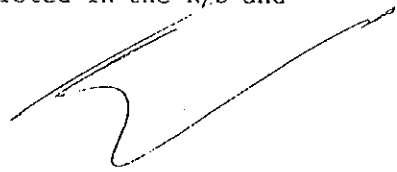
(4) Products of the Project

(5) Management of the Project

(6) Future plan after the termination of the cooperation period

4-2. METHOD OF THE EVALUATION

(1) The evaluation was conducted in terms of the investigation of the accomplishment of the Project with regard to the items listed in the R/D and TSI.



(2) The evaluation was carried out mainly by means of interviews and discussions with personnel concerned, and investigation of the project facilities (including three (3) Pilot Farms).

5. RESULTS OF THE EVALUATION

5-1. ACCOMPLISHMENTS IN TERMS OF THE INPUTS

5-1-1. CONTRIBUTION OF JAPAN

(1) DISPATCH OF EXPERTS

A total of thirteen (13) long-term experts have been dispatched. Their expertise include team leader, coordinator, land consolidation, irrigation and drainage, agricultural machinery, agronomy, and agricultural extension, which are as stated in the R/D. Twelve (12) short-term experts, which was also stated in the R/D, have been dispatched corresponding to the additional needs of the Project. Their expertise include land consolidation, irrigation and drainage, agronomy, facility planning, land replotting, construction supervision, construction machinery maintenance, and post-harvest processing. List of the experts is shown in Appendix 1.

There was a request from the Government of the Islamic Republic of Iran for short-term experts in the fields of animal husbandry and farmers' organization. However, these experts have not been dispatched yet. Main reasons for no animal husbandry experts were: the Project institution was not ready for the implementation of activities in the field of animal husbandry (no experts and other staff members were appointed); and the development level of the Project was not matured to start the advanced fields. On the other hand, experts of farmers' organization have not been dispatched either, because of the difficulties in personnel recruitment in Japan.

(2) ACCEPTANCE OF COUNTERPART TRAINEES

Training of C/P started in fiscal year of (Japanese fiscal year starts on April 1st and ends on March 31st, and hereinafter referred to as "FY") 1990. A total of eighteen (18) C/P visited Japan to participate in technical training. They participated in training courses such as land consolidation and mechanized rice cultivation, and the period of training was about one (1) month, respectively. Three (3) additional C/P are scheduled to visit Japan as trainee by the end of the project period. They will participate in intensive training courses to improve their expertise. Period of the training will be anywhere between three (3) months to ten (10) months. List of the trainee visited Japan is shown in Appendix 2.

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(3) PROVISION OF MACHINERY AND EQUIPMENT

In order to facilitate the project activities in CAPIC and the Pilot Farms, such as land consolidation and studies on the adequate technology of mechanized rice cultivation, Japan has provided machinery and equipment including construction machinery, surveying equipment, agricultural machines, and others. However, one (1) bulldozer has not been received by the Project. Following list shows the main machinery and equipment provided by Japan. Detailed list is shown in Appendix 3 and 4.

FY	MAIN MACHINERY AND EQUIPMENT
1990	Bulldozer, Dozer shovel, Motor grader, Theodolite, Transplanter, Sample thresher machine, Grain dryer, Rice husking and polishing machine, Vehicle, Personal computer.
1991	Bulldozer, Trencher, Plane table set, Earth thermometer, Thermo-hygrometer, Transplanter, Quadrate sampling machine, Machinery maintenance tools, Subsoiler, Video editing system.
1992	Bulldozer, Back hoe, Truck, Fork lift, Automatic level, Anemometer, Substance microscope, Water distilling apparatus, Combine, Transplanter, Washing machine.
1993	Back hoe, Transplanter, 16mm projector, Rice mill plant.
1994 (Scheduled)	Bulldozer, Back hoe.

(4) LOCAL COST EXPENDITURE SUPPLEMENT PROGRAM

Japan granted portions of facility construction cost and project management cost, which should have been responsible to Iran, in order to implement the Project effectively and on schedule. The supplemental grant includes following items, and list of Japanese expenditure is shown in Appendix 2 and 3:

a) Model Infrastructure Construction Program

As a part of establishment of CAPIC infrastructure, Japan constructed a post-harvest processing building (360 m²), a machine hanger (360 m²), a garage for agricultural machinery (252 m²), a green house (140 m²). Construction of these facilities was completed in March 1993.

b) Extension Effect Survey

Japan implemented a survey on the general situations of local cultivation of rice and other crops in three (3) Pilot Farm construction sites in FY 1991. The survey was carried out as a component of the Bench Mark Survey.

c) Publications for Extension

Obtaining appropriate understanding and support from the institutions concerned and the local farmers is an inevitable step for effective implementation of land consolidation and land replotting. For this purpose, two thousands (2,000) posters and two thousands (2,000) leaflets which introduce the activities of the Project were produced and distributed in 1992.

d) Technology Exchange Program

Two (2) Japanese experts and two (2) Iranian C/P visited the Mwea Irrigation Agricultural Development Project in Republic of Kenya, which is a similar type of project and one of JICA's successfully implemented technical cooperation projects, in June, 1993. They had discussions with the staff members of the Mwea Project on issues such as land replotting, water management, and rice cultivation in irrigated fields. Experience and ideas obtained through this visit have well contributed to the management and the development of the Project thereafter.

Team Members: Mr. Junji Inoue (Leader)

Mr. Fumito Daimaru (Agricultural extension)

Mr. A. H. Yousefian (Project site manager)

Mr. A. A. Askian (Agricultural extension)

e) Emergency Countermeasure Program

Since the number of machinery provided by Japan has become more than the capacity of existing garages, additional garages are needed to keep proper maintenance of the machinery. Construction of the additional garages is scheduled to start in FY 1994.

f) Local Recurrent Cost Expenditure Support

The local recurrent cost expenditure have been granted to support technical cooperation activities of the Japanese experts since 1990. Items of the expenditure include cost of report printing and procurement of parts of machinery and others.

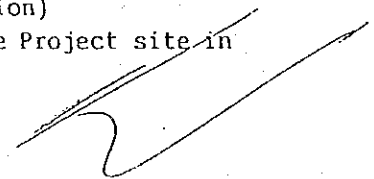
(5) DISPATCH OF SURVEY TEAMS

a) Consultation Survey Team

The Consultation Survey Team visited Iran in July, 1993 in order to create TSI of the Project. The team and the authorities concerned the Government of the Islamic Republic of Iran reached an agreement on the content of TSI, and signed.

b) Technical Guidance Survey Team (Mid-term Evaluation)

The Technical Guidance Survey Team visited the Project site in



April, 1993 in order to evaluate the activities of the Project in previous three (3) years. A joint committee was held during the visit of the team, and staff members of the Project presented their activities and achievements. The team found the Project was proceeded as scheduled, and there was no amendment made on the original R/D and TSI. As a result of the investigation, the team recommended appointment of additional Iranian experts and technicians, especially in the field of agronomy, to improve efficiency of the project activities in this field.

c) Other survey teams

An Implementation Design Survey Team visited the Project in September and December of 1990 in order to create a draft plan of construction of the Experimental Field and infrastructure establishment in CAPIC. The team also discussed with the authorities concerned of the Government of Islamic Republic of Iran on the implementation plan from FY 1991. A report containing the results and conclusions of the survey was created and submitted to the authorities concerned of the Iranian Government.

5-1-2. CONTRIBUTION OF IRAN

(1) PROVISION OF LAND, BUILDINGS, AND FACILITIES

Iran provided required land, buildings, and facilities required for the Project as follows:

a) Land for CAPIC and the Pilot Farms

These lands were provided as scheduled by Iran without any problems.

b) Project office and other facilities

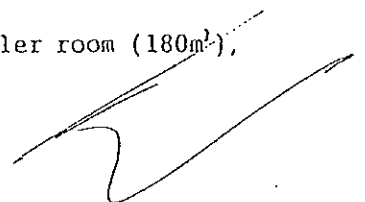
Construction of CAPIC office building was delayed due to the problems of budget allocation of Iran. The construction was completed in March 1994, and Iran provided a leased office in Amol City until then. Construction of the Training/Experiment building (800 m²) is under way, and to be completed by March, 1995.

c) Rooms and space required for machinery setting and maintenance

Computers, surveying equipment and other small equipment have been set and stored in CAPIC office. Grain dryers, transplanters and other non-heavy machinery have been set and stored in garages constructed using Japanese expense. However, capacity of these garages is too small to store the construction machines, therefore, they have been left outside.

d) Other facilities to be established

Three (3) green houses, a reminding room, a boiler room (180m²),



and other basic facilities were constructed by Iranian budget.

(2) ALLOCATION OF BUDGET

Iran contributed to the Project through the special budget allocation for construction of buildings and facilities such as a project office building and training facilities which required large costs. Iran also allocated appropriate amount of budget for recurrent cost and other costs required to implement the land consolidation of the Pilot Farms. Detail list of expenditures spent by Iran is shown in Appendix 5.

(3) ASSIGNMENT OF COUNTERPART AND OTHER PERSONNEL

Number of the Iranian C/P and other personnel concerned the Project is as follows:

Title	1990	1991	1992	1993	1994
C/P	7	8	9	8	9
Other technical staff members	25	29	37	36	34
Administration	9	11	12	13	18
Others (Drivers, etc.)	7	7	6	6	6
Total	48	55	64	63	67

(4) SUPPLY AND REPLACEMENT OF EQUIPMENT AND MACHINERY

Iran has supplied and replaced necessary parts and equipment for the Project without any problems. The construction machinery and the agricultural machinery have maintained and stored well, and are in good condition at present.

5-2. PROJECT ACTIVITIES AND ACCOMPLISHMENT

5-2-1. ESTABLISHMENT OF EXPERIMENTAL FIELDS AND OTHER INFRASTRUCTURE IN CAPIC AND THE PILOT FARMS

(1) ACTIVITIES

The Ministry of Agriculture of Iran provided one hundred forty (140) hectare of land for CAPIC in 1988. Based on the Implementation Design, created by a Japanese survey team, and the Detailed Design, prepared by the Japanese experts and the Iranian C/P, a thirty five point zero nine (35.09) hectare experimental field was completed in CAPIC land in 1991 using Iranian budget.

However, due to problems such as improper land leveling, incomplete drainage, and others, additional work including underdrainage setting was needed. The Experimental Field is scheduled to be completed in March, 1995. Rice cultivation started in the Experimental Fields in 1992.

A two (2) kilometer access road connecting the autobahn and CAPIC site, a water-intake through-gate, and a three hundred seventy (370) meter main canal from the gate to CAPIC site were constructed by the Ministry of Agriculture of Iran.

Japan provided, entitled as "Model Infrastructure Construction Program", financial support for construction of an agricultural workshop, a machine hanger, a grain storage, and a green house.

Provision of CAPIC office building and other required facilities and infrastructures, responsible to Iran and scheduled to be completed by March, 1994, was delayed due to delay of proper budget allocation by Iran. CAPIC office building was completed in March, 1994, and construction of the Training building and preparation of other infrastructure are still under way at present.

Electricity and telephone lines have been ready since the time of the completion of CAPIC office building, while establishment of air conditioning system is incomplete.

The Traditional Demonstration Field and the Training Field, which original designs were in the Basic Design of CAPIC infrastructure, have assigned new purposes based on the results of discussions between Japan and Iran, and their design have been changed as shown in Appendix 8.

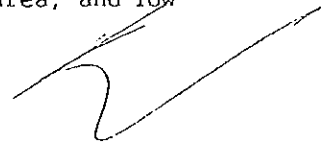
(2) ACCOMPLISHMENTS

Construction of infrastructures of CAPIC and other facilities, which is responsible to Iran, has been proceeded with support from Japan throughout the cooperation project period. The infrastructure establishment is to be completed by the end of the cooperation project period.

5-2-2. ESTABLISHMENT OF THE ADEQUATE TECHNOLOGY OF LAND CONSOLIDATION INCLUDING PLANNING, DESIGNING, AND CONSTRUCTION

(1) ACTIVITIES

In order to make a contribution to the Haraz River Basin Agricultural Development Project in Mazandaran Province, the Project has made its endeavor to establish the adequate land consolidation technology including planning, designing, and construction. This aim was to be attempted through the implementation of actual land consolidation work at three (3) Pilot Farm sites: one each from high-elevation area, middle-elevation area, and low-



elevation area.

The land consolidation at the Pilot Farms started at Eslam-Abad, representing middle-elevation area. Among the total of sixty three (63) hectare of the farm, eight point three (8.3) hectare portion of the farm was constructed during the period of January, 1992 to April, 1992, and the remaining (fifty four point seven (54.7) hectare) was constructed during the period of September, 1992 to May, 1993. In case of extreme dry season, there is some water shortage in ten (10) to fifteen (15) hectare area.

At Ejbar-Kola, representing high-elevation area, the first construction started in October, 1992 and ended in May, 1993, completed forty six point eight (46.8) hectare, while the second construction was carried out during the period of September, 1993 to September, 1994, completed forty six point three (46.3) hectare, summing up to a total of ninety three point one (93.1) hectare.

Land consolidation at Suteh, representing low-elevation area and which condition for drainage is the worst among the three (3) farms, started in 1993, delayed by one (1) year, and only twenty five (25) hectare has been completed as of April, 1994. Detail designing and land replotting planning is under way on the remaining one hundred point four (100.4) hectare, and this portion is to be completed by the end of the project period, March 31, 1995.

Rice cultivation started in the Eslam-Abad Pilot Farm and the Ejbar-Kola Pilot Farm as soon as they were ready, and they have succeeded to show the positive effects of land consolidation.

(2) ACCOMPLISHMENTS

The adequate technologies of land consolidation at three (3) different conditions were tested and established through actual implementation of land consolidation at three (3) Pilot Farms. Necessary knowledge and technologies have been transferred from the Japanese experts to the Iranian C/P. Technical Reports, containing discussions of the project staff members concerned land consolidations at the Pilot Farms, have been prepared by the Japanese experts and the Iranian C/P, and these reports are expected to be used as technical manuals in future. Therefore, the project objective has been almost achieved, and technical level of the Iranian C/P have been reached where they will be able to implement land consolidation projects. A few activities have been remained to be completed: evaluation of construction works in Suteh Pilot Farm; identification of appropriate method of water management in CAPIC and the Pilot Farms. More trained Iranian C/P is needed for more efficient implementation of land consolidation.



5-2-3. ACCELERATION OF THE ADEQUATE TECHNOLOGY OF RICE CULTIVATION

(1) ACTIVITIES

Rice production in the project area is relatively high due to the efforts made by the Ministry of Agriculture of Iran, and the Department of Agriculture of Mazandaran Province in study and extension of rice cultivation technology. Because of these underlying situations, the Project has been focusing on a study subject of "improvement and acceleration of technology of mechanized rice cultivation in consolidated paddy fields".

Implementation of the study activities concerned this field was delayed due to the delay of preparation of the Experimental Field of CAPIC. It also was influenced by priority setting of machinery provision by Japan. Since provision of construction machinery had the priority at the beginning of the Project, arrival of most of the experimental equipment and materials had to wait until the third year of the Project. However, once every condition was set, the Japanese experts and the Iranian C/P have worked cooperatively and enthusiastically to achieve their objectives. They have written a report which contains the results of their study.

The Japanese experts and the Iranian C/P discussed on the subjects of the study, and following subjects were selected.

- a) Establishment of the adequate box nursery technology
- b) Study on the optimum cultivation schedule
- c) Study on the best planting density
- d) Study on fertilizing technology
- e) Study on the appropriate pest/disease/weed control technology
- f) Study on water management technology
- g) Study on direct sowing technology

The study activities mentioned above, started in FY 1991, contributed to the transfer of the research technology from the Japanese experts to the Iranian C/P.

(2) ACCOMPLISHMENTS

Since the study subjects were selected so as to avoid overlapping study subjects of other similar institutions, creation of a general technical guideline of rice cultivation should be done with a coordination and cooperation with the other concerned institutions.

As a whole, the project objective in this field will have been almost achieved by the time of the termination of the cooperation project, and the Iranian C/P who have received the technology transfer from the Japanese experts will be able to lead other Iranian experts and technicians in study planning, study implementation, and report writing which are essential

elements of establishment of cultivation technology. However, some difficulties may be seen in establishment of appropriate box nursery technology, and verification of appropriate mechanized rice cultivation in the land consolidated fields of the Pilot Farms.

5-2-4. IMPROVEMENT OF THE ADEQUATE TECHNOLOGY OF AGRICULTURAL MECHANIZATION, OPERATION AND MAINTENANCE

(1) ACTIVITIES FOR ESTABLISHMENT OF THE ADEQUATE TECHNOLOGY OF AGRICULTURAL MECHANIZATION

Based on proper understanding of the present situations of agriculture in the project area, mechanized work of each step of rice cultivation including plowing, puddling, transplanting, and harvesting was tested its functioning in the Experimental Field of CAPIC. Demonstration of mechanized cultivation process was also implemented at the Experimental Field. Mechanized post-harvest processing will be tested by the end of the project period.

Main activities of the Project were focusing on the two (2) mechanized technologies: a mechanized transplanting system using transplanters, and a mechanized post-harvest processing system. Mechanized plowing and puddling using hand tractors have been already commonly seen at farmers level in the area.

Mechanization of transplanting requires improvement in box nursery technique, which has been one of the main focuses of the Agronomy Section of the Project. As a result of coordinated efforts of the Agricultural Machinery Section and the Agronomy Section, the seedling raising-mechanized transplanting system has been tested, and Iranian C/P and local farmers have participated in the training on the Japanese common transplanting style.

With regard to rice processing technology, an integrated processing system consisting of grain drying, husking, and polishing has been considered as the most efficient and quality minded method. In order to establish the adequate technology of the integrated process, fundamental experiments have been carried out with machinery arrived in 1993, including grain dryers, rice husking machines, and rice polishing machines. The results of the experiments have been reported. A rice mill machine has been operated since September, 1993 to test the most efficient post-harvest processing technique.

(2) ACTIVITIES FOR IMPROVEMENT OF MACHINERY MAINTENANCE TECHNOLOGY

List of the machinery provided by Japan is shown in Appendix 4. The Japanese experts have transferred knowledge and technique of diagnostic problem investigation of machinery to the Iranian C/P in the Agricultural Machinery Section of CAPIC: one (1) technician and two (2) assistants. They have shown

substantial improvement in their knowledge and skill.

(3) ACCOMPLISHMENTS

As a result of the activities mentioned above, the adequate mechanized agricultural technology for rice cultivation has been almost established under the conditions of the Experimental Field in CAPIC, although a study on adaptability of machinery in the Pilot Farms has not been carried out. Since Iran possesses substantial know-how on agricultural extension, CAPIC will be able to implement the extension of mechanized rice cultivation, based on the fundamental technology transferred by the Japanese experts, to local farmers with coordinated efforts of all the sections of the Project and the Department of Agriculture of the Province.

Despite the fact that service manuals of some of machinery have been still under preparation, the Iranian C/P and technicians have obtained basic know-how of the diagnostic problem investigation and trouble shooting technology and repairing technology, referring to manuals, which is necessary for proper maintenance of the machinery.

The study for the adequate post-harvest processing technology is to be continued through the operation of the plant provided by Japan.

5-2-5. TRAINING ON LAND CONSOLIDATION, RICE CULTIVATION, AND AGRICULTURAL MECHANIZATION

(1) ACTIVITIES

JICA's "Project-Type Technical Cooperation" provides, in general, technical assistance to a project or an policy implementation of a receiving country through technology transfer from Japanese experts to C/P of the recipient country. Primary objective of this type of cooperation is to help the recipient country for establishing capability of developing the project in sustainable manner. With regard to the Project, the technology transfer has been done mainly through on-the-job-training that is cooperative work of the Japanese experts and the Iranian C/P from the planning of project activities. Technical training of C/P in Japan, using Japanese expense, have been carried out to supplement the on-the-job-training in Iran. List of the C/P participated in the technical training in Japan is shown in Appendix 2.

(2) ACCOMPLISHMENTS

The on-the-job-training and the C/P training in Japan have been successfully implemented having achieved effective technology transfer in all fields of the Project as a whole.

Recognized that the one (1) month training was relatively short to obtain expected technology and knowledge, Japan started accepting longer-term trainees in the later half of the Project.

5-2-6. TECHNICAL ADVICE TO THE LOCAL FARMERS THROUGH THE ACTIVITIES IN CAPIC, THE PILOT FARMS, AND OTHER EXISTING FACILITIES

(1) ACTIVITIES FOR DEVELOPMENT OF EXTENSION MATERIALS

Following materials have been created since 1991 using audio-visual equipment such as video system and slide projectors in order to facilitate the extension of technologies developed in CAPIC which will support effective implementation of land consolidation activities.

- a) "SHALIKAR" has been published and distributed as a measure of information dissemination to local farmers.
- b) Rice cultivation process and growing process of rice were recorded in slide films and printed pictures.
- c) Process and results of the Land consolidation in CAPIC and the Pilot Farms were recorded in 8-mm films.
- d) Mechanized rice cultivation process and demonstration of secondary crop cultivation in paddy fields were recorded in 8-mm films.
- e) Series of pictures and slid films were created to introduce variety of issues on mechanized rice cultivation such as pest/disease damages, seedling raising technology, deep transplanting, weeding technology, harvesting technology, and fertilization technology.
- f) Competition of land consolidation educational poster and publishing of promotion calendar were carried out.
- g) Leaflets and video tapes were created for the purpose of project introduction.
- h) Others: dubbed version (in Farsi) of the 16-mm films on land consolidation and rice cultivation were produced.

(2) ACTIVITIES FOR DEVELOPMENT OF AN EXTENSION-TRAINING SYSTEM

The Extension and Education Section (hereinafter referred to as the Extension Section) of the Project has been playing an important role in the extension of the adequate technologies of rice cultivation and mechanized agriculture established by CAPIC, and contributed to the efficient implementation of land consolidation of the Project. It has also been the key section of CAPIC for better coordination among the sections.

The extension-training system consists of five (5) components: a) formation of extension/training activity plan based on results of investigations of problems and needs of farmers; b) preparation of extension/training materials

such as video and slide films, based on the extension/training activity plan, with proper coordination with the other sections of the Project; c) organization of farmers' representatives which is the subject of the extension/training activities; d) execution of extension and training, including farm visits, observation trips to advanced areas, workshops, and seminars, e) evaluation of the extension/training activities and feedback of the lessons obtained.

(3) ACTIVITIES FOR DEVELOPMENT OF A DEMONSTRATION METHOD

The demonstration method has been developed for mechanized rice cultivation extension.

Following demonstrations were carried out in the Experimental Field of CAPIC and the Pilot Farms: in-row transplanting, Zinc sulfate application, semi-dry in vinyl tunnel. Demonstration of mechanized transplanting was also executed with coordination with the Agronomy Section.

(4) BENCH MARK SURVEY

A bench mark survey was carried out, before the construction of the Pilot Farms, in order to investigate the general situations of the local cultivation of rice and other crops including investigation of market situations of those products in the Pilot Farm areas. Another survey was carried out, after the construction of the Pilot Farms, to investigate total production of the farms and changes in local agricultural scheme due to the construction of the Pilot Farms. The later subject was investigated by means of a interview survey to local farmers.

(5) TRAINING OF C/P, EXTENSIONERS, AND TECHNICAL ADVICE TO THE LOCAL KEY FARMERS

All the activities mentioned in previous sections (from 1 to 4) have implemented with another objective of technology transfer from the Japanese experts to the Iranian C/P. Series of the activities, including formation of plans, investigations, development of materials, and execution of the extension and training, have had substantial effect as C/P training.

Technical advice to local farmers was implemented thorough the activities mentioned in section 3.

(6) ACCOMPLISHMENTS

As the accomplishments of the Extension Section, activity manuals and a technical guideline (still under way) have been produced. A fact that the Iranian C/P took the initiatives of the project activities in the later half

of the project period shows the Iranian C/P's capability of developing and executing all the activities for the extension and training without any assistance from the Japanese experts.

5-3. IMPACTS OF THE PROJECT

5-3-1. IMPACT OF EACH PROJECT ACTIVITY

(1) IMPACT OF THE ESTABLISHMENT OF THE EXPERIMENTAL FIELDS AND OTHER INFRASTRUCTURE IN CAPIC AND THE PILOT FARMS

CAPIC has been established to serve as a key station of the Ministry of Agriculture of Iran for agricultural development in Haraz river basin. Completion of CAPIC have enabled to implement studies and development of variety of technologies of agricultural development which will be applied to future agricultural development projects in the region.

(2) IMPACT OF ESTABLISHMENT OF THE ADEQUATE TECHNOLOGY OF LAND CONSOLIDATION INCLUDING PLANNING, DESIGNING, AND CONSTRUCTION

Acquisition of the established land consolidation technology by the Iranian C/P means Iran is ready to execute successful expansion of land consolidation works to rest of the basin area. The Government of Mazandaran Province has applied the land consolidation technology developed by the Project since 1991 to a part of their project having completed one thousand one hundred (1,100) hectare.

(3) IMPACT OF THE ACCELERATION OF THE ADEQUATE TECHNOLOGY OF RICE CULTIVATION

Methodologies, knowledge, and technique required for the technology development in this field have been successfully obtained by the Iranian C/P through the actual implementations of the series of the experiments done by the Project such as the study on the optimum cultivation schedule and the study on the planting density. This technology transfer has enabled the Iranian C/P to implement necessary study for the improvement of the rice cultivation technology. The adequate technology of rice cultivation technology is expected to be further developed by them, combined with the efforts made by the Agricultural Machinery Section and the Extension Section of the Project, and it will contribute substantially toward increase in production, improvement of efficiency, and increase in income at farmers level. Efficiency improvement will promote multiple crop production, therefore, the improvement of the rice cultivation technology will eventually contribute toward development of the local agricultural scheme and the local agricultural economy.

(4) IMPACT OF THE IMPROVEMENT OF THE ADEQUATE TECHNOLOGY OF AGRICULTURAL MECHANIZATION, OPERATION AND MAINTENANCE

The studies on systematic mechanization of the series of rice cultivation including plowing, puddling, transplanting, and harvesting have been implemented. Methodologies, knowledge, and technique necessary for these studies have been successfully obtained by the Iranian C/P. The continued implementation of the studies by the Iranian C/P will result in establishment of more efficient and less labor intensive rice cultivation technology. The introduced rice mill plant is expected to achieve higher rice production with better quality.

(5) IMPACT OF THE TRAINING ON LAND CONSOLIDATION, RICE CULTIVATION, AND AGRICULTURAL MECHANIZATION

Iranian experts and technicians have been successfully trained through technology transfer activities of the Japanese experts in the Project. As a result, CAPIC is able to lead further development of relevant technologies and extension of them, and implement proper land consolidation and agricultural mechanization projects in the region.

(6) IMPACT OF THE TECHNICAL ADVICE TO LOCAL FARMERS

The Project has accomplished creation of extension materials, establishment of an extension method and a training system. This integrated system has been applied to the actual technical advice to "key farmers". These extension/training systems are able to be applied in larger scale corresponding to expansion and advancing of the regional integrated agricultural development. Both the ripple effect of the key farmer training and the large scale application of the established system will promote the achievement of the higher objective of the Haraz River Basin Agricultural Development Project.

5-3-2. IMPACT OF THE PROVISION OF MACHINERY AND EQUIPMENT BY JAPAN

Most of the machinery and equipment necessary for the project activities have been adequately provided by Japan based on the requests from Iran. These machinery and equipment have been indispensable especially for the establishment of the adequate technologies of land consolidation and the agricultural mechanization, which have been the key issues of the Project. These machinery and equipment have also functioned as tools of the technology transfer from the Japanese experts to the Iranian C/P. As a whole, this provision of machinery and equipment has prepared the foundations for further technological development in CAPIC.

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5-3-3. IMPACT OF THE IRANIAN COUNTERPART PERSONNEL TRAINING IN JAPAN

Japan has recognized the "Acceptance of C/P trainees" as an important program which supplement the technology transfer by the Japanese experts to be more effective. Japan invited eighteen (18) Iranian C/P to the technical training in Japan since 1990. Three (3) additional Iranian C/P are scheduled to be invited by the time of the termination of the Japanese cooperation.

The C/P trainees visited examples of successful land consolidation projects and participated in training on the latest technology of land consolidation, and obtained substantial information on the effect of land consolidation. As a result, this training had a positive impact on the technology transfer by the Japanese experts in the Project and execution of the successful pilot farm construction. These trained C/P are able to make contributions to the implementation of agricultural development projects.

5-4. PRODUCTS OF THE PROJECT

The Project has produced reports and technical manuals as apart of its accomplishments. Following list shows major products of the Project.

(1) PRODUCTS OF THE INFRASTRUCTURE FIELD

- a) Report on Detail Design and Land Replotting of Land Consolidation in Eslam-Abad Pilot Farm
- b) Report on Detail Design and Land Replotting of Land Consolidation in Ejbar-Kola Pilot Farm
- c) Detail Design Report on Land Replotting and Land Consolidation in Suteh Pilot Farm
- d) Implementation Plan for Three Pilot Farms
- e) Manual on Underdrainage (Translated)

(2) PRODUCTS OF THE AGRONOMY FIELD

- a) Report on the Activities for 1991-1992
- b) The Report on the Trials in 1993
- c) The Text of the Raising Seedling in Box Nursery
- d) The Possible Cause of Lodging in 1993 Growing Season and the Tentative Countermeasures for 1994 Growing Season
- f) Diagnosis of Rice Yield

(3) PRODUCTS OF THE AGRICULTURAL MACHINERY FIELD

- a) Technical Report of Harvesting Works in 1993
- b) Experimental Mechanization Planning for Rice Production of CAPIC
- c) The Performance Test for 2-row Rice Transplanter Using Seedling Mats
- d) The Performance Test for 4-row Rice Transplanter Using Seedling Mats
- e) The Performance Test for 6-row Rice Transplanter Using Seedling Mats

- f) Tractor with Rotary Tilling Performance Test in the Paddy Field
- g) Tractor with Puddler Puddling Performance Test in the Paddy Field
- h) Statistic Analysis for Tilling Operation in the Field of the CAPIC
- i) Statistic Analysis for Transplanting Operation in the CAPIC
- j) Experimental Planning for Mechanization System in the CAPIC
- k) Results of Performance Test
- l) Operation Manual on 2-row Rice Transplanter (in Farsi)
- m) Operation Manual on 6-row Rice Transplanter (in Farsi)
- n) Operation Manual on 3-row Combine Harvester (in Farsi)
- o) Operation Manual on Friction Type Rice Whitening Machine

(4) PRODUCTS OF THE EXTENSION FIELD

- a) Agricultural Extension Guidance Program
- b) Rice Cultivation Survey at the Pilot Farms in the Caspian-Sea Coastal Area Agricultural Development Project
- c) Study on Secondary Crop Cultivation at Ejbar-Kola Pilot Farm in 1991/1992
- d) Guideline for Rice Cultivation to Farmers at Newly Land Consolidated Area in Eslam-Abad Pilot Farm in 1992
- e) Study on the Rice Cultivation at Newly Land Consolidated Area in Eslam-Abad Pilot Farm in 1992
- f) Secondary Crops' on Farm Trial at the Eslam-Abad Pilot Farm in 1992/1993
- g) Study on the Rice Yield in the Pilot Farm in 1993
- h) Implementation Program of Rice Mechanization Training in 1993
- i) Regulation of Agricultural Modernization Association at the Pilot Farms
- h) Implementation Program of Mechanized Rice Transplanting Program at Eslam-Abad and Ejbar-Kola Pilot Farms in 1994
- i) Bench Mark Survey
- j) Rice Cultivation Report at Three Pilot Farms
- k) Teaching Materials

5-5. PROJECT MANAGEMENT AND INSTITUTION

5-5-1. ORGANIZATION OF CAPIC

CAPIC has been established by the Ministry of Agriculture of Iran to be a promotion center of agricultural development, especially focusing on land consolidation, in Haraz river basin. Original organization of the Project was agreed upon between Japan and Iran, and is stated in the R/D. The organization has been modified by the Iranian decision aiming at future development of the Project after the termination of the cooperation period.

CAPIC is headed by the Deputy of Planning and Programming of Ministry of Agriculture of Iran as the executive supervisor. The Executive Project

Manager is located in the Ministry of Agriculture of Iran in Tehran, and the Site Manager is in charge of all activities of CAPIC. Under the Site Manager, there are eight (8) sections: Agronomy Section, Agricultural Machinery Section, Infrastructure Section, Extension and Education Section, Post Harvest Section, Animal Husbandry Section (no personnel appointed and no activities assigned), Construction Section, and Administration Section. The organization of CAPIC was reorganized for efficient implementation of the project activities.

However, recognizing the functions of CAPIC to the regional development, its importance, scale of the project, and diversity of the activities, additional experts and technicians will support it better.

5-5-2. PROJECT MANAGEMENT

Although the organization of CAPIC is well established, management authority was centralized to the Project Manager, who was normally located in Tehran, and CAPIC office had tightly limited authority to make management decisions. As a whole, the decision mechanism of the Project was less flexible to changes and urgent situations, and inefficient for quick and appropriate decision making. This mechanism of the management was improved within last six (6) months.

5-5-3. THE JOINT COMMITTEE

The R/D mentions the Joint committee should be held at least once in one (1) year in order to secure efficient and successful implementation of the Project. However, the Joint committee was held only once when a Japanese Technical Guidance Survey Team visited in April, 1993.

5-5-4. OTHER RELEVANT ISSUES

Tax exemption privilege for Japanese experts, which is stated in the R/D to be given, was executed for long time. Issuance of visas was frequently delayed, and forced Japanese experts to be illegal residents. However, new Japanese experts will be able to obtain multi-entry visas from now on.

5-6. FUTURE PLAN AFTER THE TERMINATION OF THE COOPERATION PROJECT PERIOD

The main objective of the Project is to establish adequate technologies of the irrigation and drainage, the design and construction execution of land consolidation, the crop cultivation and the agricultural mechanization and

farming system, and to conduct the training for Iranian specialists and extension workers, in order to contribute the agricultural development and promotion in the Haraz river basin through the various activities of CAPIC. Finalization of the Second Five Year Development Plan of Iran is under way, and a promise of increasing support to CAPIC and future plan for CAPIC and the Haraz River Basin Agricultural Development Project are expected to be appeared in the plan.

5-7. PROSPECTS OF PROJECT SUSTAINABILITY

5-7-1. FINANCIAL SUSTAINABILITY

One of the main issues of the First Five Year Development Plan about the agricultural development of Iran has been improvement of the self-sufficiency rate of rice, and agricultural development in Haraz river basin has been given the priority. Because of this preferable background, under the next five year plan, economical sustainability of the Project is prospected with continuing financial and human resource support to CAPIC from variety of sources in Iran.

5-7-2. TECHNOLOGICAL SUSTAINABILITY

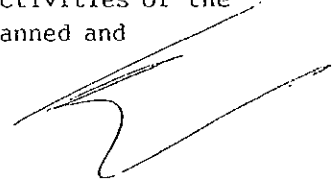
As the results of technology transfer from the Japanese experts to the Iranian C/P through variety of project activities, the Iranian C/P have become capable of implementing project activities. Following project activities has been implemented with initiatives of the Iranian C/P.

a) Land consolidation field

- * Replotting of about ninety three (93) hectare in Ejbar-Kola.
- * Planning for construction soil management and designing of consolidated farm layout for a part of Suteh Pilot Farm (total of one hundred twenty five (125) hectare).
- * Construction management of a part of the first stage construction (total of twenty five (25) hectare) in Suteh.
- * Drawing of longitudinal and cross sectional views of the access roads, the irrigation and drainage canals for the second stage of the construction (total of one hundred (100) hectare) in Suteh.
- * Supervision of the construction of drainage improvement works for the Experimental Field in CAPIC, including excavation of the main drainage channel and drop structures.

b) Agronomy field

The Iranian C/P supervised and managed all the activities of the section in FY 1994. The Iranian C/P designed, planned and



implemented following activities.

- * Investigation of impact of Mancozeb on seedling growth.
- * Investigation effect of sulfur powder application on soil pH.
- * Investigation of nitrogen treatment and sowing density on seedling growth.
- * Maintenance and management of mechanized rice cultivation fields.

c) Machinery and mechanization field

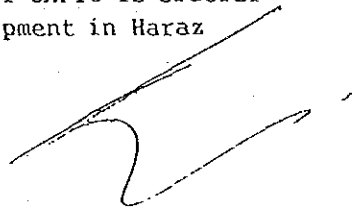
- * Planning, implementation, and supervision of mechanization of rice cultivation.
- * Public relation and promotional activities targeting concerned institutions for mechanized rice cultivation.
- * Maintenance of machinery.
- * Repair of machinery except heavy machinery.
- * Management of the machinery workshop.
- * Implementation of field tests of Iranian binder.

d) Extension field

- * Exhibition to the Mazandaran Province Agricultural Festival.
- * Exhibition to the National Agricultural Exposition
- * Lectures at secondary schools targeting young generation.
- * Production of films for activity recording and project introduction:
- * Promotional activities for better understanding of land consolidation.
- * Regular publication of "SHALIKAR".
- * Negotiations with local farmers on land replotting.
- * Demonstration of secondary crop cultivation in FY 1994.

5-7-3. STABILITY OF TRAINED HUMAN RESOURCES

Iranian human resources have been successfully developed to be capable of further promotion of development and dissemination of the technologies established in the five (5) years of the Project. Most of the experts and technicians are contracted as temporal staff members, however, all the personnel trained in the Project (including C/P trained in the Project and C/P participated in training in Japan) have to guarantee at least five (5) years of commitment to the Project. Maintaining enough amount of human resources who have expertise required for the activities of CAPIC is crucial to achieve the higher objective of the agricultural development in Haraz river basin.



6. SUMMARY OF THE EVALUATION AND RECOMMENDATIONS

6-1. SUMMARY OF THE EVALUATION

As a result of the collaborative and enthusiastic efforts by Japan and Iran, the Project has bearing many fruits, and accomplishing the given objectives.

In order to contribute to establishment of adequate technology and human resource development necessary for the agricultural development in Haraz river basin, the Project selected three (3) Pilot Farm sites representing low-elevation area, middle-elevation area, and high-elevation area. Although some activities to be accomplished are remained, the Project has almost achieved a objective of establishing the adequate technology of land consolidation, including planning, designing, and construction, for the different situations. The established technology has been transferred to the Iranian C/P through actual project implementation. The land consolidation in the Suteh Pilot Farm, with the worst conditions among the three, completed twenty five (25) hectare so far, and the remaining of one hundred (100) hectare is to be completed by the end of the final construction stage, which will be from September, 1994 till March, 1995. The established land consolidation technology has been already transferred to the Iranian C/P through actual execution of land consolidation in two (2) Pilot Farms, the twenty five (25) hectare field in Suteh, and the Experimental Field (about one hundred ninety (190) hectare) in CAPIC. As a result of the technology transfer done by the Japanese experts, Iranian C/P have obtained appropriate knowledge and technologies necessary for the implementation of the remaining land consolidation works in Suteh.

With regard to the establishment of the adequate technology of agricultural mechanization, the Project activities were behind the schedule at the beginning due to delay of arrival of research equipment. However, as a result of enthusiastic efforts of the Japanese experts and the Iranian C/P, the activity items of TSI have been almost accomplished. Among the series of the mechanized rice cultivation technology, mechanized transplanting technology has been disseminated, as a result of the coordinated training activities of the sections of the Project, to the staff members of the Project, Iranian agricultural extensioners, and local farmers. This primary dissemination of the technology will be foundations for the further extension of the technology in the area. Establishment of an adequate mechanized rice cultivation technology which alters the existing cultivation technique is more important for efficient promotion of mechanized rice cultivation in a broad area than studies on social and economical feasibility of mechanization. From this point of view, the Agronomy Section's selection of development of an adequate seedling raising technology as the primary issue should be regarded as appropriate.

The technical training in Japan, as a part of the technology transfer to Iranian C/P, have enabled the trainees to observe and learn effects and

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merits of land consolidation and mechanized rice cultivation, and their experience have had positive impact on the project implementation. The training also has had encouraging effect to the Iranian C/P.

6-2. RECOMMENDATIONS

(1) ORGANIZATIONAL AND MANAGEMENTAL DEVELOPMENT OF CAPIC

In order to secure the technological sustainability of CAPIC, best efforts should be made to properly guarantee the positions of trained experts and technicians who will be the key persons for future development of CAPIC.

(2) NECESSITY OF ADDITIONAL EXPERTS

The number of experts in all the sections of the Project should be increased and trained.

(3) APPROPRIATE ALLOCATION OF BUDGET

Japanese financial support for local cost expenditure, such as construction of facilities, procurement of equipment, materials and spare parts, and other project management costs, will be terminated at the end of cooperation period. CAPIC should take any measures to obtain appropriate support from the Government of Iran to secure appropriate allocation of budget for the future activities of CAPIC.

(4) COORDINATION WITH THE CONCERNED INSTITUTIONS

CAPIC and the Agricultural Organization of Mazandaran Province (including agricultural research institutes, agricultural extension centers, and other concerned agencies) should work with a cooperative and coordinated manner. Creation of an executing mechanism for Haraz river basin agricultural development to facilitate information sharing among the institutions and development of well planned projects is necessary.

(5) NECESSITY OF FOLLOW UP COOPERATION

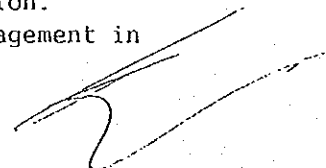
Following activities regarding to five categories of TSI will not have been accomplished by the time of the termination of the cooperation project.

1. Evaluation of Pilot Farms (I-2-a) of TSI)

- a) Evaluation of construction works of the Pilot Farms, especially Suteh Pilot Farm.

2. Identification of appropriate method of land consolidation through the activities in CAPIC (II-1-b) of TSI)

- a) Remaining technical advice on the land consolidation.
- b) Identification of appropriate method of water management in CAPIC and the Pilot Farms.

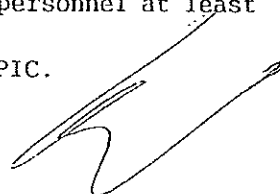


3. Experiment for establishment of appropriate rice cultivation techniques (III-A)-2 of TSI
 - a) Improvement of appropriate box nursery techniques.
 - b) Verification of appropriate mechanized rice cultivation in the land consolidated Pilot Farms.
4. Experiment for establishment of appropriate rice mechanization system (III-B)-2 of TSI
 - a) Study on adaptability of agricultural machinery in the Pilot Farms.
 - b) Maintenance of the agricultural machinery, especially tractors and harvesters.
5. Experiment for appropriate rice processing system (III-B)-3
 - a) Analysis of rice quality in the appropriate rice processing system.

Although there is possibility that certain situations which require more than one year to accomplish some of the activities mentioned above will occur, an one year follow up program is appropriate.

On the other hand, following actions have to be taken by the authority concerned the Government of the Islamic Republic of Iran to realize an effective implementation of the follow up program.

1. To proceed the acceptance of machinery and equipment smoothly.
2. To increase the number of Iranian counterpart personnel at least two (2) engineers in each section.
3. To clearly identify the future prospects of CAPIC.



APPENDIX 1. LIST OF JAPANESE EXPERTS

TYPE	FY	1990	1991	1992	1993	1994
L o n g t e r m e x p e r t s		Yoshihiro Suzuki (Team Leader) (01/10/90-30/09/92)		Junji Inoue (Team Leader) (21/10/92-31/03/95)		
		Morio Chida (Coordinator) (13/12/90-30/09/92)		Yasuhiro Kimura (Coordinator) (21/10/92-31/03/95)		
		Fujio Matshmoto (Land consolidation) (13/12/90-12/12/92)		Atsuhiko Yamamoto (Land Consolidatoin) (02/04/93-01/04/95)		
		Masaichi Omaru (Irrigation & Drainage) (04/07/91-03/07/93)		Noriaki Ito (Irrigation & Drainage) (14/10/93-31/03/95)		
		Tadashi Watabiki (Agricultural Machinery) (19/05/91-01/05/93)		Tateo Ito (Agricultural Machinery) (29/05/93-31/03/95)		
		Naoki Iguchi (Agronomy) (22/11/90-21/11/92)		Katsuyuki Ohara (Agronomy) (15/11/92-31/03/95)		
				Fumito Daimaru (Agricultural Extension) (22/11/90-31/03/95)		

APPENDIX 1. LIST OF JAPANESE EXPERTS (CONTINUED)

II. SHORT-TERM EXPERT

TYPE / FY	1990	1991	1992	1993	1994
S h o r t t e r m e x p e r t s	<p>Maoki Iguchi Agronomy (28/05/90-28/07/90)</p> <p>Satoshi Okamoto Facility design (02/09/90-15/11/90)</p>	<p>Fujiyoshi Hatanaka Land consolidation (02/08/91-30/07/91)</p> <p>Hiroaki Takahashi Land replotting (18/10/91-13/12/91)</p> <p>Shoji Nagayama Supervision of construction (25/10/91-13/12/91)</p>	<p>Shuichi Tokuchi Land consolidation (01/07/92-30/09/92)</p> <p>Shinji Takiya Land consolidation (14/01/91-30/09/93)</p> <p>Kazuyasu Nara Construction Machinery (02/12/92-24/12/92)</p>	<p>Hiroshi Nakada Land consolidation (20/07/93-19/10/93)</p> <p>Hiroshi Fukazawa Post-harvest (12/07/93-11/10/93)</p>	<p>Norio Yamamoto Rice polishing system setting (08/09/94-06/10/94)</p> <p>Hiroshi Fukazawa Rice polishing system operation (22/09/94-20/10/94)</p>

APPENDIX 2. SUMMARY TABLE OF JAPANESE INPUTS (Costs are in 1000 yen)

TYPE	FY	1990	1991	1992	1993	1994	TOTAL
Acceptance of Trainee		Mr. R. Musavi 30/09/90-30/10/90 Mr. G.H.E. Nia 30/09/90-30/10/90 Mr. M.B. Yusefian 12/11/90-21/12/90 Mr. M. Pooladi 12/11/90-21/12/90 Mr. A.A. Askian 12/11/90-21/12/90 (5 persons)	Mr. M. Abazari 09/10/91-11/12/91 Mr. B. Abadian 09/10/91-28/12/91 Mr. A. Eshtaragi 01/04/92-26/05/92 Mr. M.A. Joker 01/04/92-21/04/92 (4 persons)	Mr. Moezzi 22/05/92-30/08/92 Mr. M.R. Sharifzadeh 01/09/92-01/10/92 Mr. N.H. Dollati 01/09/92-01/10/92 Mr. M. Khorasani 01/09/92-01/10/92 (4 persons)	Mr. M. Sadeghi 19/09/93-21/10/93 Mr. B. Gholami 05/03/94-18/11/94 Mr. H. Tonkabon 01/08/93-01/09/93 Mr. R.A. Omrani 01/08/93-01/09/93 (4 persons)	Mr. B. Abadian 09/05/94-10/07/94 [Planned] Mr. B. Hashemi 20/02/95-24/11/95 Mr. G.H. Najafi 13/02/95-24/11/95 Mr. M. Esmaili 13/02/95-03/11/95 (4 persons)	21 PERSONS
	Provision of Machinery	101,030	145,293	116,740	55,886	60,000 (estimated)	478,949
Accompanied Equipment by Experts	2,906	4,172	2,386	2,542	2,000 (estimated)	14,006	
Model Infrastructure Construction Program	0	25,000	0	0	0 (estimated)	25,000	
Extension Effect Survey	0	502	0	0	0 (estimated)	502	
Publications for Extension	0	0	437	0	0 (estimated)	437	

APPENDIX 2. SUMMARY TABLE OF JAPANESE INPUTS (Continued)

TYPE	FY	1990	1991	1992	1993	1994	TOTAL
Technology Exchange Program		0	0	0	3,045	0 (estimated)	3,045
Emergency Countermeasure Program		0	0	0	0	2,500 (estimated)	2,500
Local Recurrent Cost Expenditure Support		2,753	5,928	4,700	3,626	5,298 (estimated)	22,305
Dispatch of Survey Teams		Implementation Design Survey 02/09/90-15/11/90	Consultation Survey 11/07/91-24/07/92		Technical Guidance Survey 02/04/93-15/04/93	24/09/94-08/10/94	

NOTE: Expenditures for Provision of Machinery, Equipment, and Accompanied Equipment by Experts do not include transportation cost.

APPENDIX 3. JAPANESE INPUTS: PROVISION OF MACHINERY
AND LOCAL COST EXPENDITURE

I. PROVISION OF MACHINERY AND EQUIPMENT (1000 YEN)

TYPE	FY	1980	1991	1992	1993	1994 (estimated)	TOTAL
Provision of Machinery and Equipment		101,030	145,293	116,740	55,886	60,000	478,949
Accompanied Equipment by Experts		2,906	4,172	2,386	2,542	2,000	14,006
TOTAL		103,936	149,465	119,126	58,428	62,000	493,455

NOTE: Expenditures for Provision of Machinery, Equipment, and Accompanied Equipment by Experts do not include transportation cost.

APPENDIX 3. JAPANESE INPUTS: PROVISION OF MACHINERY
AND LOCAL COST EXPENDITURE
(continued)

II. LOCAL COST EXPENDITURE (1000 YEN)

TYPE	FY	1990	1991	1992	1993	1994 (estimated)	TOTAL
Local Recurrent Cost Expenditure Support		2,753	5,928	4,700	3,626	5,298	22,305
Model Infrastructure Construction Program		0	25,000	0	0	0	25,000
Technology Exchange Program		0	0	0	3,045	0	3,045
Emergency Countermeasure Program		0	0	0	0	2,500	2,500
Extension Effect Survey		0	502	0	0	0	502
Publications for Extension		0	0	437	0	0	437
TOTAL		2,753	31,430	5,137	6,671	7,798	53,789

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APPENDIX 4
LIST OF MACHINERY AND EQUIPMENT PROVIDED
BY JAPAN

ITEM	Quant.	Pledge	Arriv.	Utili.	Maint.
I. Instruments for Observation					
1. Recording thermometer and hygrometer	1	92	93/6	A	good
2. Mold type soil tamping tester	1s	90	91/9	A	good
3. Current meter	1	91	92/8	A	good
4. Paddy field receded depth meter	2	91	92/8	A	good
5. Stop watch	5	91	92/8	A	good
6. Digital tachometer	2	91	92/8	A	good
7. Insect collector solar system	1	91	92/9	A	good
8. Anemometer	1	92	93/6	A	good
9. Max-min thermometer	2	92	93/6	A	good
10. Hygrometer	2	92	93/6	A	good
11. Instrument shelter	1	92	93/6	A	good
II. Surveying Equipment					
1. Theodolite	1	90	91/9	B	good
"	3	92	93/6	B	good
2. Automatic level	2	90	91/9	B	good
"	2	92	93/6	B	good
3. Staff (5m)	4	90	91/9	B	good
4. Pole (2m)	5	90	91/9	B	good
"	20	91	92/9	B	good
"	5	92	93/6	B	good
5. Plane table set	1s	90	91/9	B	good
"	3s	92	93/6	B	good
6. Pcket compass	1	90	91/9	B	good
"	3	92	93/6	B	good
7. Hand level	1	90	91/9	B	good
"	3	92	93/6	B	good
8. Steel tape (100m)	2	90	91/9	B	good
"	1	91	92/9	B	good
9. Steel tape (50m)	1	90	91/9	B	good
"	1	91	92/9	B	good

APPENDIX 4
 LIST OF MACHINERY AND EQUIPMENT PROVIDED
 BY JAPAN (CONTINUED 1)

10. Digital planimeter	2	90	91/9	A	good
11. Transit	1	90	91/9	A	good
12. Auto level (30x)	2	90	91/9	A	good
13. Drafter	1s	90	91/9	A	good
14. Drafting equipment	3s	90	91/9	B	good
15. Other equipment for surveying	15s	91	92/8	B	good
16. Alumi-staff	4	92	93/6	B	good
17. Auger boring	2	92	93/6	B	good
III. Construction Machinery					
1. Swamp bulldozer (165ps)	1s	90	91/5	A	good
"	1s	91	91/12	A	good
"	1s	91	93/4	*	good
"	1	92	94/7	-	#
2. Bulldozer (155ps)	2s	91	91/12	A	good
3. Back hoe	1s	92	93/4	*	good
4. "	1s	90	91/5	A	good
5. "	1s	93	94/6	A	good
6. Motor grader	1s	90	91/5	A	good
7. Electric generator	1	91	92/9	B	good
"	2	91	92/9	B	good
8. Trencher	2s	91	92/8	B	good
9. Gauge wheel	10	92	93/4	B	good
10. Truck (2t)	1	92	93/4	A	good
"	1	92	93/4	A	good
11. Fork lift	1	92	93/4	A	good
IV. Other Equipment					
1. Disc Grinder	1	91	92/9	B	good
2. Equipment and material for maintenance and repair	10s	91	92/9	B	good
3. Disk grinder	1	92	93/6	B	good
4. Hand drill	1	92	93/6	B	good
5. Ark welding machine	1s	92	93/6	B	good

APPENDIX 4
 LIST OF MACHINERY AND EQUIPMENT PROVIDED
 BY JAPAN (CONTINUED 2)

6. Equipment and materials for maintenance and repair	15s	92	93/6	B	good
7. Engine welder	1	93	93/6	B	good
V. Laboratory Equipment for Rice Cultivation					
1. Automatic grain counter	1	90	91/9	A	good
2. Ripening ratio observation machine	1	90	91/9	A	good
3. Sample grain huller machine	1	90	91/9	A	good
4. Sample polishing machine	1	90	91/9	A	good
5. Sample drying machine	1	90	91/9	A	good
6. Sample thresher machine	1	90	91/9	A	good
7. Sample grain winnower	1	90	91/9	A	good
8. PH meter	1	90	91/9	A	good
9. Soil testing kit	1s	90	91/9	A	good
10. Chemical for soil testing kit	3s	90	91/9	A	good
11. Chlorophyll meter	1	90	91/9	A	good
12. Rice sample harvesting kit	1	90	91/9	A	good
"	1	91	92/8	A	good
13. Sample drying incubater	1	90	91/9	A	good
14. Amount of sola-radiation observation set (3 no.)	1s	90	91/9	A	good
15. Thermometer	10	90	91/9	A	good
16. Automatic thermometer (1 wk.)	3	90	91/9	A	good
17. Substance microscope	1	92	93/6	A	good
18. Normal microscope	1	92	93/6	A	good
19. Sample bottle (10)	3s	90	91/9	A	good
20. Seed tray (300)	1s	90	91/12	A	good
21. Electronic balance (Digital)	2	90	91/9	A	good
22. Electronic balance	2	90	91/9	A	good
23. Balance	2	91	92/9	A	good
24. Sampling dryer oven	1	90	91/9	A	good
25. Hydrometer	3	90	91/9	A	good
26. Earth thermometer	3	91	92/8	A	good

APPENDIX 4
 LIST OF MACHINERY AND EQUIPMENT PROVIDED
 BY JAPAN (CONTINUED 3)

27. Thermo-hygrometer	3	91	92/8	A	good
28. Digital Thermo-hygrometer	1	91	92/8	A	good
29. Soil resistance tester	1	91	92/8	A	good
30. Plastic angle level	2	91	92/9	A	good
31. Ruler	15	91	92/9	A	good
32. Tape measure	2	91	92/9	A	good
"	3	91	92/6	A	good
33. Lysimeter	1	92	93/6	A	good
34. Water distilling apparatus	1s	92	93/6	A	good
35. EC meter	1	92	93/6	A	good
36. Post hole auger	3	92	93/6	A	good
37. Grain moisture tester	3	90	91/9	A	good
"	5	91	92/8	A	good
VI. Machine and Materials for Verification Trial Field					
1. 8-row transplanter (riding)	1	93	94/6	*	good
2. 6-row transplanter (riding)	1	90	91/12	A	good
"	2	93	94/7	A	good
3. 4-row transplanter (walking)	1	91	92/9	A	good
"	2	92	93/6	A	good
"	2	92	93/6	A	good
4. 2-row transplanter (walking)	3	90	91/12	A	good
"	1	91	92/9	A	good
"	1	92	93/6	A	good
5. Seedling tray (4000)	2s	90	91/9	A	good
"	1s	92	93/5	A	good
"	2s	93	94/6	A	good
"	1s	93	94/6	A	good
6. Seedling machine (hand op.)	3	91	92/5	A	good
"	3	93	94/6	A	good
7. Vinyl ground sheet (10mx12m)	40	91	92/9	A	good
8. Tractor (27hp)	1s	90	91/12	A	good
9. Tractor (66hp)	1s	90	91/12	A	good
"	1s	91	92/9	A	good

APPENDIX 4
 LIST OF MACHINERY AND EQUIPMENT PROVIDED
 BY JAPAN (CONTINUED 4)

10. Self-running threshing machine	1s	90	91/12	A	good
11. Seed bag for combine (500)	1s	90	91/12	A	good
"	4s	92	93/5	A	good
"	3s	92	93/6	A	good
12. Balance (100kg)	2	91	92/9	A	good
13. " (250kg)	1	93	94/7	A	good
14. Soil crush and seaving machine	1	90	91/12	A	good
"	2	92	93/5	A	good
15. Grain dryer	1s	90	91/12	A	good
"	3	92	93/6	A	good
"	1	92	93/5	A	good
16. Rice husking and polishing machine	1s	90	91/12	A	good
17. Rice husking and polishing machine	1s	93	94/7	*	good
18. Cleaning and pre-cleaning machine	1	92	93/6	A	good
19. Rice seeds pre-germination set	1	90	91/12	A	good
"	1	91	92/9	A	good
"	2	92	93/9	A	good
"	3	92	93/7	A	good
20. Irrigation kit for seedling box	2	91	92/9	A	good
21. Agriculatural chemical (1394pc)		91	92/8	A	good
22. Head-feeding combine (2 row)	1s	90	91/12	A	good
23. Head-feeding combine (3 row)	1s	92	93/6	A	good
24. Combine	1s	92	93/5	A	good
25. Power paddy field weeder	2	93	94/6	*	good
26. Hand paddy field weeder	10	93	94/6	*	good
27. Power dust	1s	90	91/12	A	good
28. Power sprayer (Sholder type)	3	91	92/9	A	good
29. Power sprayer	1s	90	91/12	A	good
"	1s	91	92/9	A	good
30. Sprinkler	3	91	92/9	A	good
31. Speed nozzle	2	92	94/7	A	good

APPENDIX 4
 LIST OF MACHINERY AND EQUIPMENT PROVIDED
 BY JAPAN (CONTINUED 5)

32. Water tank	2	91	92/9	A	good
"	1	91	92/9	A	good
33. Power tiller	1	91	92/9	A	good
"	1	91	92/5	A	good
34. Seeder plant for nursery	1	91	92/9	A	good
35. Seeder for nursery	1	91	92/9	A	good
"	1	91	92/9	A	good
36. Container	2	91	92/9	A	good
"	5	91	92/5	A	good
37. Snap type weeding machine	3	91	92/9	A	good
"	5	92	93/9	A	good
38. Soil crushing-siering machine	1	91	92/9	A	good
"	2	92	93/5	A	good
39. Polyethylene pipe (600 m)	1s	92	93/6	A	good
40. Vinyl plastic hothouse	4s	92	93/6	A	good
41. Nursery pot	2	92	93/6	A	good
42. Paper pot	1s	93	94/7	A	good
43. Nursery tray washer	5	92	93/5	A	good
44. Heater	2	92	93/6	A	good
45. Power sprayer	3	92	93/6	A	good
46. Plant container	6	92	93/6	A	good
47. Glassfiber rod (2000 pc)	1s	91	92/5	A	good
48. Leaper	1	91	92/5	A	good
49. Subsoiler	1	91	92/5	A	good
50. Multi-purpose hand tractor	1	91	93/5	A	good
51. Soil mixing machine	1	92	93/5	A	good
52. Fertilizer mixing machine	1	93	94/6	A	good
53. Grain dehydrater	1	91	92/5	A	good
54. Irrigation pump	1	91	92/5	A	good
55. Bridge	2	92	93/6	A	good
"	1	93	94/6	A	good
VI. Equipment for Extension					
1. Extension car	1	90	91/5	A	good
"	1	91	92/8	A	good

APPENDIX 4
 LIST OF MACHINERY AND EQUIPMENT PROVIDED
 BY JAPAN (CONTINUED 6)

2. Motor-cycle (125 cc)	2	90	91/9	A	good
3. VTR set	1s	90	91/9	A	good
4. 16-mm projector/screen	1s	93	94/6	A	good
5. Slide projector/screen	1s	90	91/9	A	good
6. Auto stencil cutting machine	1	91	92/8	A	good
7. Auto stencil printing machine	1	90	91/9	A	good
8. Book binding machine	1	90	91/9	A	good
9. Auto stencil machine	1	90	91/9	A	good
10. Copy machine	1s	90	91/9	A	good
11. Personal computer	1s	90	91/9	A	good
12. Over head projector	1	91	92/9	A	good
13. Wireless amplifier	1	91	92/9	A	good
14. Video editing system	1s	93	94/5	A	good
15. OPAC (Projector)	1	90	91/9	A	good
16. Camera (35mm)	1s	92	93/5	A	good

Note: 1) "Quant." = Quantity, figures accompanied by "s" means number of sets.

1) "Pledge" means a Japanese fiscal year in which the Japanese Government allocated budget for the provision of machinery.

2) "Arriv." means year/month of arrival of the items at Port of Bandal-Abas.

3) "Utili." = Utilization: A=fully utilized, B=moderately utilized

C=temporary intensive use, D=not utilized

4) "Maint." = Maintenance condition: good, fair, or poor.

5) # : Under procedure.

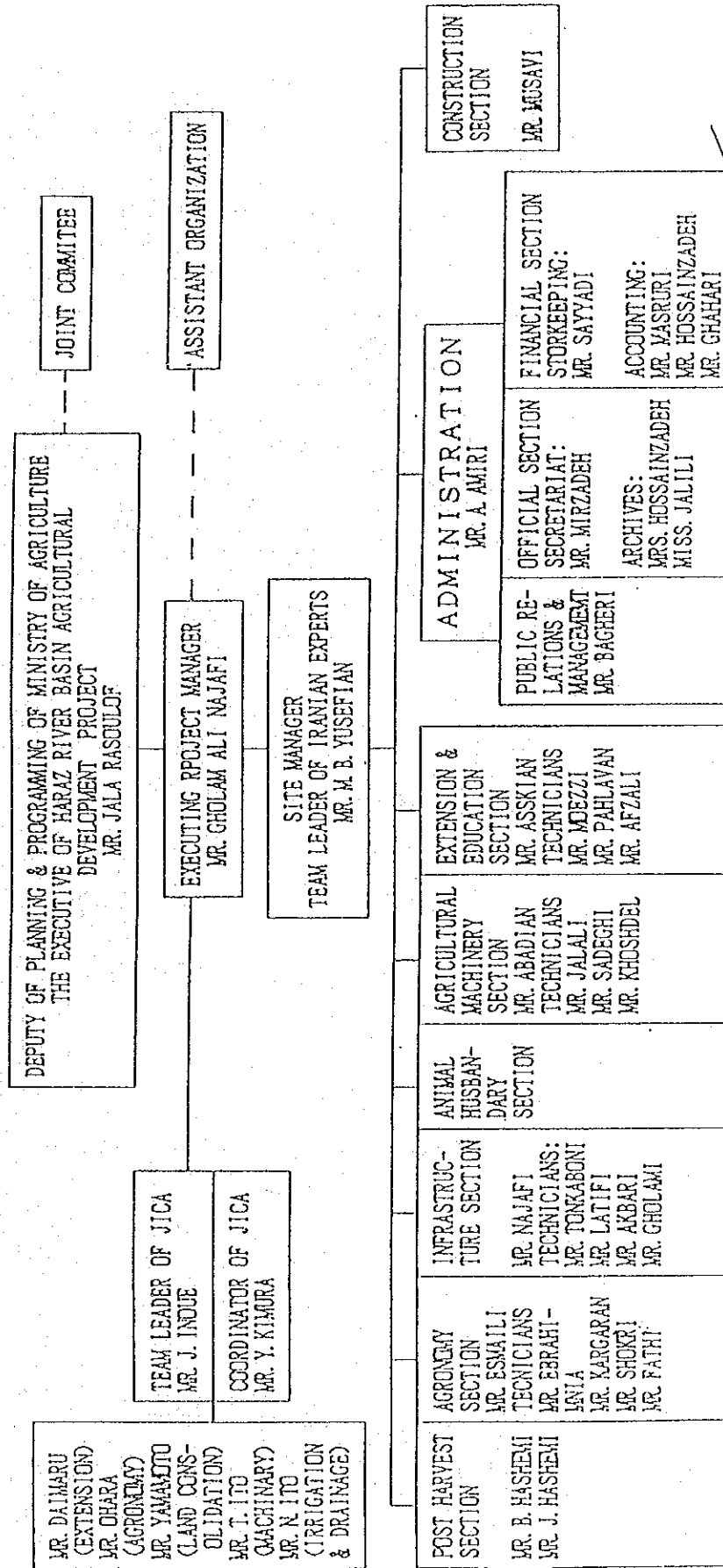
* : Just arrived

APPENDIX 5. IRANIAN INPUTS: C/P APPOINTMENT AND BUDGET ALLOCATION

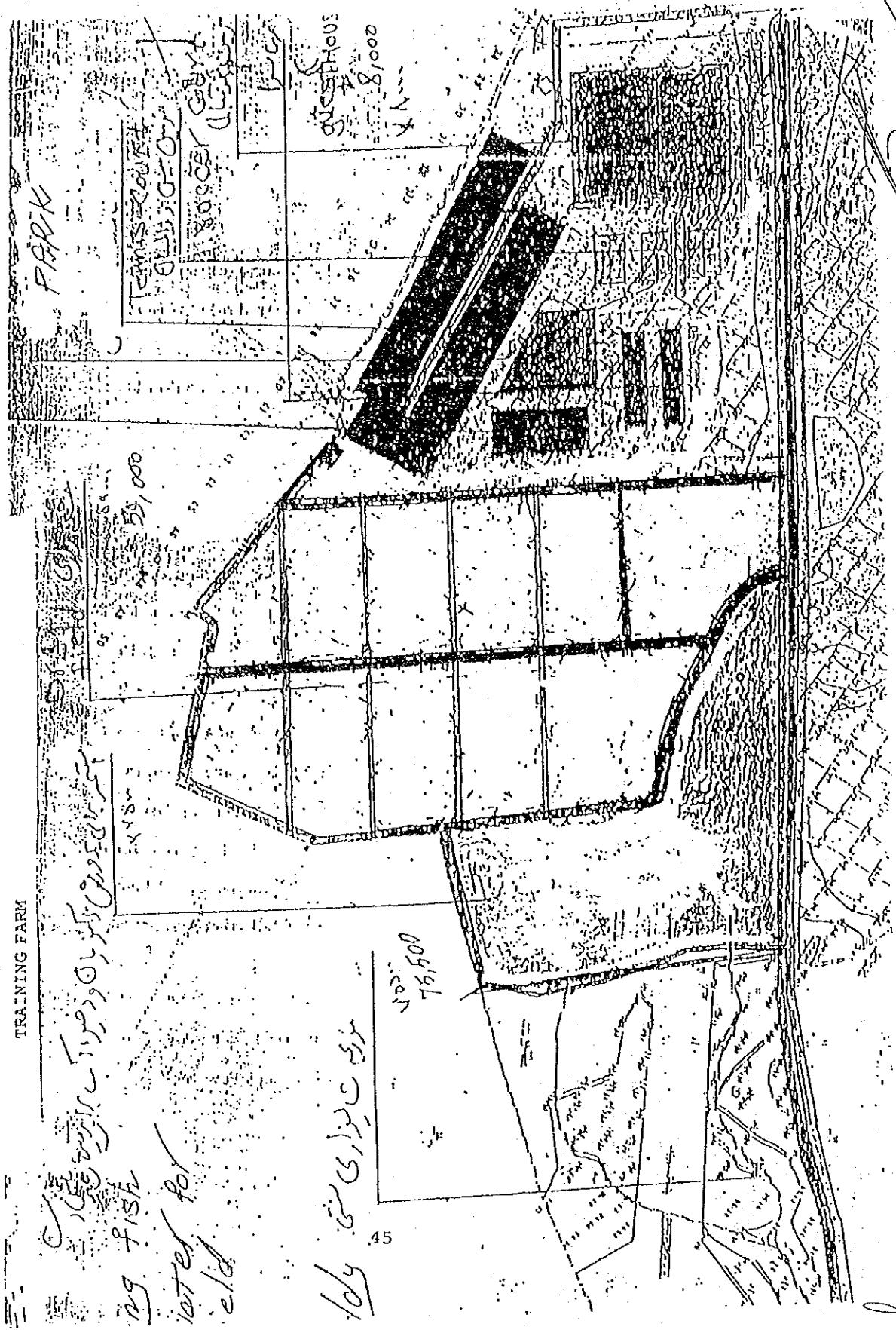
TYPE \ FY	1990	1991	1992	1993	1994
C/P	P/M : 1 S/M : 1 ENGINEER : 5 TECHNICIAN : 15 OPERATOR : 10 ACCOUNTANT : 9 OTHERS : 7	P/M : 1 S/M : 1 ENGINEER : 6 TECHNICIAN : 14 OPERATOR : 15 ACCOUNTANT : 11 OTHERS : 7	P/M : 1 S/M : 1 ENGINEER : 7 TECHNICIAN : 18 OPERATOR : 19 ACCOUNTANT : 12 OTHERS : 6	P/M : 1 S/M : 1 ENGINEER : 6 TECHNICIAN : 17 OPERATOR : 19 ACCOUNTANT : 13 OTHERS : 6	P/M : 1 S/M : 1 ENGINEER : 6 TECHNICIAN : 14 OPERATOR : 20 ACCOUNTANT : 18 OTHERS : 6
APPOINTMENT (persons)					
FINANCIAL CONTRIBUTION (Rial)	CONSTRUCTION: 88,873,594 ADMINISTRATION AND PROJECT MANAGEMENT: 39,201,363 WAGE/SALARY: 38,000,000 OTHERS: 21,298,366	CONSTRUCTION: 96,882,586 ADMINISTRATION AND PROJECT MANAGEMENT: 79,185,760 WAGE/SALARY: 68,684,861 OTHERS: 0	CONSTRUCTION: 265,204,222 ADMINISTRATION AND PROJECT MANAGEMENT: 120,929,775 WAGE/SALARY: 115,000,000 OTHERS: 44,150,000	CONSTRUCTION: 246,332,716 ADMINISTRATION AND PROJECT MANAGEMENT: 127,888,475 WAGE/SALARY: 176,974,835 OTHERS: 8,400,000	CONSTRUCTION: 25,000,000 ADMINISTRATION AND PROJECT MANAGEMENT: 82,267,243 WAGE/SALARY: 260,000,000 OTHERS: 1,650,000

APPENDIX 7

ORGANIZATION CHART ON THE PROJECT



APPENDIX 8. FIGURE OF TRADITIONAL DEMONSTRATION FARM AND



H/2127/1 شماره
5 October, 94 تاریخ
پوست

بسمه تعالی



This is to certify that the
Nissan Patrol No. 56722 - Teh.41
is used for the project.

Najafi
Manager of Project

JICA

