
Cotton Project

PN: 79.2190.1

GTZ project leader: E. Pfuhl
Counterpart organization: Philippine Cotton Corporation (PCC)
Project location: Alacan, San Fabian
Pangasinan Province

1. The context

Each year the Philippines imports cotton with a value of around US \$ 40 million which is then processed in the country. In order to reduce foreign exchange expenditure and safeguard the farmers' incomes, the Philippine Cotton Corporation promotes and regulates cotton-growing activities, which have been started in the Philippines only comparatively recently. For this purpose the PCC maintains a dense network of field extension officers and the necessary recording and processing stations.

As the farmers possess little experience in cotton growing, serious errors and financial losses are likely, particularly where pest control is concerned.

2. Aim of the project

The aim is to develop an integrated plant protection concept for cotton which can be passed on to the farmers via the Philippine Cotton Corporation's field extension officers.

3. Project design/Scheduled results

The project activities are focused on applied research and advisory services. The following results are envisaged by the end of the project's operational phase:

- An integrated plant protection concept will have been developed and applied in two ecologically different areas.
- An efficient plant protection service, based on a surveillance system, will have been established.
- Field extension officers and farmers will have been trained in the new methods and will be using them.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

2 long-term experts for up to 105 man-months, short-term experts for up to 12 man-months, 1 scientific assistant for up to 24 man-months, personnel under local project contract for up to 96 man-months; vehicles, motorcycles, spraying equipment, agrometeorological stations, projectors, cameras, laboratory equipment, literature etc.; meeting of costs relating to the training of Philippine specialists in the project country and abroad.

Inputs by project country:

Provision of the necessary specialists, meeting of running and maintenance costs, provision of buildings, amendment of existing regulations in order to permit operation of an efficient extension service.

5. Implementation status

The project is currently in the third year of the operational phase.

The development of an integrated plant protection concept for cotton growers in the Philippines has practically been completed.

A surveillance system, based on field extension officers, has been introduced. All measures realized so far are continuing to be assessed and expanded. Increased efforts are being devoted to methodology and didactics in developing extension aids for the farmers.

The project is scheduled for handover to the counterpart organization on 31 March 1987.

Biological Plant Protection

PN: 86.2099.9

GTZ project leader: To be designated

Counterpart organization: Bureau of Plant Industry

Project location: Manila

1. The context

Agriculture in the Philippines has been severely hit by the general deterioration of the country's economic situation. The farmers' already low income level has dropped still further on account of falling prices for agricultural produce and the simultaneous rise in the cost of production inputs. Chemical agents are used on a relatively large scale in the Philippines for some crops (rice/maize), with even small and medium-sized farms employing pesticides.

The sharp rise in the cost of pesticides has placed an excessive burden on the farmers. From the point of view of both the national economy and the economic situation of the individual farms, it would be desirable to lower pesticide inputs and, in addition, ecological risks could also be reduced.

The two plant protection projects implemented to date in the Philippines (PN 74.2028.4 and PN 79.2190.1) using the damage threshold concept, for example, have endeavoured to gear the use of chemical agents to actual requirements and thus to reduce both costs and ecological problems.

This new project goes one step further and endeavours to accelerate the replacement of chemical pesticides by alternative measures.

2. Aim of the project

The standard of living of smallholder families is to be safeguarded and improved in the long term; this is to be accompanied by the simultaneous cutting of foreign-exchange expenditure and reduction of the ecological damage caused by pesticides.

3. Project design/Scheduled results

The project is based on the integrated plant protection concept. Although not restricted to individual crops, activities will initially focus on crop rotations based on rice and maize.

The project also contains an applied research component to solve specific problems relating to integrated plant protection.

It is envisaged that the following results will have been achieved by the end of phase I (three years):

- Local parasites and predators which can be used to control the major pests in the most important climatic zones in the Philippines will have been established and utilized.
- Applied research will have been carried out in specific areas of biological pest control.
- The farmers will have been advised on integrated pest control methods.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

4 long-term experts for up to 144 man-months, short-term experts (27 man-months) and scientific assistants; vehicles, literature, miscellaneous.

Inputs by project country:

Provision of personnel, buildings and infrastructure; meeting of day-to-day running costs for project facilities and transport.

Inputs by third parties:

The European Community is contributing to the project through the financing of Philippine specialists and the supply of materials and equipment.

5. Implementation status

The project is scheduled to start mid-1987.

Weed Research and Weed Control

PN: 79.2261.0

GTZ project leader: Dr. H. G. Jansen

Counterpart organization: Institute for Agricultural Research and Rural Extension Services (INIAER) at the Ministry of Agriculture

Project location: Oeiras

1. The context

Crop production in Portugal is characterized by an extremely low yield level. Even wheat and maize, the crops grown over the largest areas in the country, have to be imported on an appreciable scale. The yields, which are relatively low even by comparison with countries having similar cultivation conditions, could be increased by improved production techniques. One measure which could make a contribution here is improved plant protection, with weed problems playing a particularly important role. Chemical weed control is widespread in rice, winter grain, maize and vines, while traditional mechanical and manual methods predominate for other crops, particularly vegetables. A number of problem weeds (including *Cyperus* species) could not be satisfactorily controlled to date, despite considerable use of herbicides in places or on account of the inadequate effect of herbicides. At the same time, however, the frequent use of persistent herbicides in the first crop has often caused damage to other crops grown subsequently.

2. Aim of the project

The aim of the project is to integrate effective methods for controlling important weeds into the agricultural extension activities.

3. Project design/Scheduled results

Strategies for controlling important weeds are to be developed which are based on species-specific biological and ecological data and geared to the technical and economic conditions inherent in the production systems involved. The degradation behaviour of herbicides and the phytotoxicity of herbicide residues are to be simultaneously investigated. A training and upgrading programme will give Portuguese technicians and extension officers more indepth knowledge of weeds and their control. Cooperation is at the level of the national weed control centre, whose tasks include both applied research and in particular legislative measures.

There is no direct contact with the farmers; the results obtained are passed on solely via the agricultural extension service. The following results are envisaged by the end of the project:

- Control strategies, particularly for important weeds, will have been developed and set out in the form of extension-aid documents.
- The findings of tests to establish the long-term effect of herbicides will be taken into account in the extension work.
- Technicians and extension officers will have been trained in appropriate herbicide application and will be able to pass their knowledge on to the farmers.
- Portuguese experts will have undergone special training in herbology and will be able to apply their knowledge in the plant protection service.
- Crop-growing extension officers and the extension services will also have been trained in weed control and will be able to apply their knowledge in this field in the course of their extension work.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

1 weed control expert for up to 36 man-months, short-term experts and appraisers for up to 12 man-months, scientific assistants, personnel under local project contract; supply of materials and equipment for field tests (including application equipment, plant protection equipment), laboratory apparatus (including gas chromatograph for residue analyses, climatic cabinets), 2 passenger cars, expendable materials, spare parts, working supplies, supplementary technical literature, training and extension aids; upgrading of up to 3 counterpart specialists for a total of up to 24 months; up to 2 trips by counterparts to seminars, congresses or similar.

Inputs by project country:

Provision of qualified counterparts and support personnel for the project activities; meeting of day-to-day running costs and provision of necessary buildings and land; release of extension officers and technicians for upgrading measures and financing of related travelling expenses; support for the project programme through establishment of contacts with other agencies and semi-governmental organizations.

5. Implementation status

The project is currently in the second year of implementation. A field trials programme of long-term tests has been started. The field trial crops of the first cultivation period are shortly to be harvested; this is expected to yield initial findings with regard to control strategies for Cyperus spp. and on the residue situation in the case of triazine herbicides. A series of pot experiments is being carried out to obtain supplementary knowledge on the biology and competitive behaviour of Cyperus spp. The phytotoxicity of herbicide residues is being determined by bio-tests.

Prevention of Bird Damage in Cereal Production

PN: 84.2114.1

GTZ project leader: J.-U. Heckel

Counterpart organization: Ministry of Agriculture,
Department of Plant Protection and
Locust Control

Project location: Mogadishu

1. The context

Somalia's economic situation depends to a very large extent on agriculture. The agricultural sector employs around 80 % of the population and accounts for 60 % of the Gross National Product. Crop production has fallen in recent years and has dropped to an extremely low self-sufficiency level. The prevention of damage by birds can help to increase the food supply. Grain-eating birds, particularly of the species *Quelea quelea* (red-billed quelea), are widespread in Somalia. They occur on a seasonal and local basis, sometimes in immense flocks, and cause substantial damage to cereals, particularly rice, sorghum and millet.

With the aid of the UNDP/FAO and with financial support from the World Bank, a Bird Control Unit was set up in 1971 at the Ministry of Agriculture. The unit's activities have been confined to reconnaissance and control measures using helicopters and fixed-wing aircraft. A shortage of personnel and equipment has meant that work results were unsatisfactory. A strategy for efficiently preventing bird damage in Somalia in the long term has not been developed.

2. Aim of the project

The intention is to reduce losses in Somalia's cereal production by means of preventive measures and appropriate control of bird pests.

3. Project design/Scheduled results

Familiar and already tested control methods are to be improved to achieve maximum economic efficiency while at the same time devoting equal attention to the environment. In addition, appropriate alternative control methods are being tried out. The farming population is to be involved in the damage prevention measures to a very large extent.

Extension officers and farmers are to be motivated and trained to use these methods. The following results are scheduled for the end of the project:

- The institutional and organizational basis of the Bird Control Unit will have been improved.
- The project will have sufficient equipment and expendable materials.
- Data on the biology and ecology of the red-billed quelea in Somalia will have been collected.
- Training and extension measures will be in progress.
- Strategies for appropriate prevention and control methods will have been developed.
- Continuous surveillance of the areas potentially at risk will have been started.
- Efficient bird damage prevention measures will be carried out in demonstration areas.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

Assignment of 2 long-term experts for up to 51 man-months, assignment of short-term experts and appraisers for up to 8 man-months, assignment of 2 scientific assistants for up to 60 man-months; supply of cross-country vehicles, observation equipment, traps, damage prevention and control equipment, laboratory apparatus and office equipment; financing of operating costs in problem situations, contributions to salaries of a limited number of staff under local project contract and support personnel; counterpart upgrading costs.

Inputs by project country:

Provision of qualified counterparts and support personnel; operating and administrative costs, provision of working premises including basic equipment.

5. Implementation status

The project is currently in the pilot phase, designed to last from October 1985 to December 1987. This is to be followed by an operational phase lasting until December 1990 and subsequently by a follow-up assistance phase up to the end of 1992. The project work commenced on 1 October 1985 with the arrival of the first long-term expert.

Plant Protection Advisory Services in Fruit and Vegetable Growing

PN: 85.2536.2

GTZ project leader: Dr. G. Walter-Echols
Counterpart organization: Ministry of Agriculture and Irrigation, Plant Protection Department

Project location: Khartoum

1. The context

Fruit and vegetable growing is the principal source of income for the land-owning small farmers and tenant farmers living along the Nile. The urban markets cannot be adequately supplied with fruit and vegetables throughout the year. Given the prevailing conditions, the small farmers operate fairly successfully in maximizing their income while simultaneously minimizing risks. The fact that the available potential has so far been insufficiently utilized can be primarily ascribed to the farmers' lack of access to production inputs and to the inadequate extension service, which carries out almost no activities in the field. The incomes of the small and medium-sized farmers along the arms of the Nile can be raised and the quality and quantity of produce for the market also raised.

2. Aim of the project

The project aims to introduce improved fruit and vegetable growing methods.

3. Project design/Scheduled results

The project's activities are focused on the provision of advice to small and medium-sized farms growing fruit and vegetables. Top priority is allocated to the supply of materials and equipment as well as training and upgrading measures to upgrade the agricultural extension services. Activities aimed at assisting private traders are also planned in order to improve the supply of production inputs, and research is to be carried out into specific problems relating to production techniques. The following results are envisaged for the end of the project:

- The farmers will have better access to agricultural production inputs.
- Agricultural extension officers will have been trained.

- Reliable extension recommendations will have been formulated.
- Field stations for advising the fruit and vegetable growers will have been established and will be in operation.
- Biological control of the date scale will have been introduced in the Northern Province.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

4 long-term experts (plant production, economic aspects, plant protection extension services) for up to 94 man-months, 1 project assistant for up to 12 man-months, short-term experts for up to 15 man-months, scientific assistants for up to 72 man-months; supply of equipment for the field stations, pesticides, fertilizers and seed; extension and training materials; passenger cars and motorcycles; counterpart training and upgrading; contributions to financing back-up measures; wage costs for project-contracted and support personnel, travelling expenses.

Inputs by project country:

Provision of qualified counterparts, agricultural extension officers and support personnel for the field stations; meeting of recurring costs in connection with field stations, project vehicles and equipment; creation of an institutional framework for cooperation between the individual agricultural services in the field.

5. Implementation status

The predecessor project (78.2065.7) ended on 31 January 1986 after six years. There has been a smooth transition to the new project. The project leader and the economist have commenced their work with the on-site compilation of the plan of operation. The new project is scheduled to start in February 1986 and is to last for up to 36 months.

Plant Protection Programme

PN: 75.2046.3

GTZ project leader: Dr. J. Schäfer
 Counterpart organization: Ministry of Agriculture and Cooperatives
 - Dept. of Agricultural Extension and
 - Dept. of Agriculture
 Project location: Bangkok

1. The context

At present, the use of pesticides in rice growing in Thailand is based on past experiences of extremely high pest infestations. This leads to high doses of pesticides being used as a preventive measure, placing an unnecessary cost burden on both the individual farms and the national economy, having detrimental effects on the environment and constituting a risk for both consumers and pesticide users.

Extension officers and farmers have to date lacked adequate knowledge to be able to assess the precise need for plant protection measures. It is therefore essential to collect data on pest and disease occurrence, to establish economic damage thresholds and to develop practice-oriented crop surveillance methods and simple decision-making aids for the farmers so that they can implement pinpointed and appropriate plant protection measures. These tasks are the responsibility of Thailand's plant protection service which, however, experiences bottlenecks in technical, organizational and personnel terms. Plant protection technicians must be qualified for this work in selected rice-growing areas of the country.

2. Aim of the project

The project aims to introduce and improve an infestation-dependent control system, in line with the principles of integrated plant protection, for rice-based crop rotations. The general agricultural extension service is to pass this system on to the project's target group, the rice farmers.

3. Project design/Scheduled results

The plant protection programme is integrated into the structure of the Thai plant protection service and performs an advisory function. The recommendations formulated are to be passed on to the farmers via the general extension service.

If the aim of the project is to be achieved, the following results should be realized by the time the project ends:

- Simple surveillance methods, damage thresholds and decision-making aids for the farmers will have been developed by means of applied research.
- Data collection and evaluation will have become an established feature of the existing plant protection organization (use of EDP).
- Training and extension material will have been compiled and the technicians from the plant protection service and the general extension service will have been trained.
- The farmers will have been trained and advised and the adoption rate monitored.
- Project coordination and management will have been carried out.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

4 long-term experts (team leader and management; agricultural economics; integrated plant protection; extension services) for up to 216 man-months, short-term experts for up to 15 man-months; supply of materials and equipment for research and extension work; vehicles, motorcycles; training of counterpart specialists.

Inputs by project country:

Provision of qualified counterparts; provision of the necessary buildings, facilities etc.; meeting of running costs.

5. Implementation status

The project has been in existence since 1975. From 1975 to 1979, attention was initially focused on field-rat control. The project was subsequently expanded into a general plant protection programme and since 1984 has been concentrating on the introduction of an infestation-dependent control system for rice and subsequent crops. It is scheduled to continue until 1988.

To date, the system has been introduced at 24 out of a total of 30 plant protection stations. Applied research has already yielded a number of results with regard to survey methods and loss estimates. The use of EDP for data evaluation has proved successful and the same technique is to be applied to other areas, e.g. project management. Training programmes for plant protection technicians and general extension officers have been started. The heads of the regional stations have

received management training. Back-up programmes in areas relevant to plant protection, such as biological pest control, post-harvest protection, residue and formulation control and rodent-pest control in the villages, have been carried out and are being continued. The passing-on of the control system to the target group - the rice growers - is to be planned, controlled and monitored in detail, in cooperation with the agricultural extension service.

Cacaveli Plant Protection Service

PN: 71.3538.7

GTZ project leader: H. Lausmann

Counterpart organization: Service de la Protection des Végétaux

Project location: Lomé-Cacaveli

1. The context

Around 80 % of Togo's three million inhabitants are directly dependent on agriculture for their livelihood, the majority of them farming smallholdings with an area of two to three hectares. The expansion and intensification of agricultural production, particularly of export crops such as cotton, coffee and cocoa, is confronting Togo with a number of phytosanitary problems. Plant protection problems are also reducing yields in fruit growing, coconut plantations, rice, maize and beans. In the vicinity of urban agglomerations in particular, vegetable growing can only be intensified if the resultant phytosanitary problems are overcome. As far as post-harvest protection is concerned, the substantial losses occurring with traditional maize, millet and bean storage make improved storage facilities essential. For successful exporting, importing and interim storage of agricultural produce, phytosanitary quarantine problems must be solved.

2. Aim of the project

The aim of the project is to increase plant production and reduce post-harvest losses through the creation of an efficient plant protection service with legislative powers.

3. Project design/Scheduled results

The project started in 1971 with the supply of materials and equipment and support in construction measures for the plant protection service. This was followed by scientific and practical programmes designed to test pesticides, application techniques and crop varieties. Since 1981, activities have been focused on extension services. Integration of plant protection extension programmes into the general work of the agricultural extension service is being promoted through the translation of research and test results into practical recommendations, through training and upgrading measures and by means of demonstration programmes. The following results are envisaged by the time the project is handed over:

- Important technical documentation specific to Togo will have been compiled and made available.

- Plant protection personnel and agricultural extension officers will have been trained for the implementation and dissemination of improved plant and storage protection measures by means of internal and external training and upgrading schemes.
- Plant and storage protection technologies will have become known to the farmers as a result of continuous demonstrations.
- The extension work carried out by the Sokodé, Kara and Dapaong regional plant protection services will have become more effective.
- The success of the project will have been guaranteed.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

Most of the inputs have already been furnished, as the project is on the point of handover.

13 long-term experts (556 man-months), short-term experts (32 man-months); construction of two stores, a workshop, a garage, an administrative building with conference room and a building complex for a regional service; equipping of workshop, laboratories and administrative buildings; supply of pesticides and related equipment; vehicles, extension aids; setting-up of a counterpart fund, long-term counterpart training for 33 members of the service's personnel.

Inputs by project country:

Provision of qualified counterparts (from 4 in 1971 to 49 in 1985), personnel for field trials and campaign teams; sites for plant protection headquarters, land for trials and a regional service, renting of buildings for two regional services; meeting of running and maintenance costs for counterpart-organization facilities as well as related buildings and land; meeting of costs for fuel, maintenance and servicing for vehicles used by counterpart organization; handling of counterpart fund; support for the project programme by motivating and mobilizing the local agricultural extension services and increasing their awareness of plant protection problems.

5. Implementation status

The project is in the last year of its follow-up assistance phase (1984 to March 1986). In order to provide the counterpart organization with further support, the implementation of a number of additional measures following project handover (infrastructural improvement of experimental field, establishment of a regional plant protection service in the Plateaux Region) is recommended, together with the purchase of a number of replacement items for the vehicle pool and office, laboratory and treatment equipment.

Promotion of Plant Protection Measures

PN: 84.2111.7

GTZ project leader: A. van Elsen
 Counterpart organization: Service de la Protection des Végétaux
 Project location: Lomé-Cacaveli

1. The context

The major staple foodstuffs in Southern Togo are maize and manioc; their importance extends well into the 'Centrale' Region. In the early eighties new pests constituting a danger to these crops were brought into Africa from Latin America. These pests - the larger grain borer in the case of maize and the mealy-bug and the green spider mite in the case of manioc - cause losses of between 30 and 60 % in both of these crops. There are no traditional plant-protection measures or natural enemies in Togo which could be used to combat the newly introduced pests.

2. Aim of the project

The project's aims are control of the larger grain borer and biological control of manioc pests.

3. Project design/Scheduled results

The implementation of a national biological control programme aimed at the principal manioc pests and the introduction of appropriate storage and control methods among smallholders are to reduce losses, stabilize manioc production and ensure a supply of staple foodstuffs for Togo's population. The following results are envisaged by the end of the project:

- All important natural enemies supplied by the IITA in Ibadan will have been released in Togo's principal manioc-growing areas.
- Staff from Togo's plant protection service will be adequately qualified for their tasks in the field of biological pest control.
- The spread, settlement and efficiency of the imported pest predators will have been monitored.
- The population development and the further regional spreading of the larger grain borer will have been restricted.

- The storage of shelled maize in sacks, which is a considerably better method from the point of view of combatting the larger grain borer, will have been introduced as an alternative form of storage.

- The fumigation-proof collective store (Cacaveli type) will have been introduced and disseminated at village level as an alternative form of storage.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

2 long-term experts (entomologist, storage protection) for up to 48 man-months, short-term experts and appraisers for up to 8 man-months, 2 staff under local project contract; 3 passenger cars, 4 motorcycles; cooperation agreements; production of training and extension aids; fumigation equipment; literature.

Inputs by project country:

Provision of qualified counterparts, setting-up of a "Biological Pest Control" section and a "Storage Protection" section; laboratories and offices; meeting of running and maintenance costs for project facilities; personnel for mobile pest-control unit; amendment of existing laws and regulations.

Inputs by third parties:

Natural enemies of the manioc pests for the purpose of control measures are to be bought from the IITA in Ibadan.

5. Implementation status

The project started with the arrival of the team leader in December 1985. The second long-term expert started work in January 1986.

Integrated Plant and Post Harvest Protection

PN: 77.2070.9

GTZ project leader: Dr. D. Stechmann
 Counterpart organization: Ministry of Agriculture, Fisheries and Forests
 Project location: Nuku'olofa

1. The context

Subsistence farming and fishing constitute Tonga's only natural resources. Plant products (coconuts, yams, bananas, watermelons, vegetables) account for over 90 % of the country's export earnings. Population pressure (137 inhabitants/km²) with an almost fixed feudalistic system of land distribution, migration from the isolated outer islands and foreign trade and payments problems are necessitating the diversification and intensification of economic activities. The fragile ecosystems (coral islands with no surface waters, exposure to the wind, hurricanes, almost total deforestation) mean that the traditional "intercropping system under coconut palms" must be retained. Non-indigenous insect species, plant diseases, weeds, etc. brought into the country from outside have repeatedly threatened individual crops in the ecosystem and are necessitating ever greater expenditure on plant protection.

2. Aim of the project

The project aims to set up a countrywide government plant protection service and, by means of research, training and extension services, to develop plant-pest control methods which are acceptable in both ecological and economic terms.

3. Project design/Scheduled results

The facilities and personnel of the Ministry of Agriculture's research department and extension service are to be promoted and services provided for the farmers. The project is designed on an integrated basis: an agricultural economist has been assigned to the Ministry's planning department, scientists are working on the research farm and a counterpart specialist is coordinating cooperation with the extension service.

During the project's start-up phase the pests and diseases occurring in Tonga were identified and investigated, market and input analyses carried out, field tests and surveys of damage and control strategies started and a research and extension centre set up. It is planned that the following results will have been achieved by the end of the operational phase:

 Plant Quarantine

PN: 82.2067.5

GTZ project leader: Dr. G. Baumann
 Counterpart organization: Ministry of Agriculture,
 Direction de la Production Végétale
 Project location: Tunis

1. The context

The major role played by agriculture in Tunisia in ensuring the food supply and as a source of foreign exchange means that crop production must be safeguarded by means of effective plant protection measures. This includes in particular an efficient plant quarantine service to prevent dangerous pathogens, pests and weeds from being brought into the country and becoming established. The Tunisian plant quarantine service is faced with bottlenecks in terms of both organization and efficiency.

The major shortcomings can be summed up as follows:

- Outmoded quarantine legislation
- Unsatisfactory organization
- Staff inadequately qualified
- The service is inadequately equipped; no preparations have been made for action in the event of economically significant pests or diseases being brought into the country. One danger at present is the high risk that a dangerous date-palm disease may be brought into the country and may spread. The livelihood of Tunisian farmers, seed producers, florists and importers and exporters of plant products is being substantially impaired by new pests and diseases brought into the country.

2. Aim of the project

The project aims to establish an efficient quarantine service. This is to be achieved by equipping the quarantine organization within the Tunisian plant protection service and ensuring that its staff are qualified for their work.

3. Project design/Scheduled results

The basic principle is to minimize the risk of pests and diseases being brought into the country with imported plants, accompanied by minimum interference with trade through regulations and controls.

- Safety precautions, including those relating to quarantine, will have been improved.
- All work areas will be staffed with counterparts.
- The majority of the extension officers, as well as around 50 % of the farmers, will be correctly implementing recommendations.
- Biological control programmes will have become known and will have been started.

4. Scheduled inputs (1 November 1984 to 31 October 1988)

Inputs by the Federal Republic of Germany:

Assignment of 2 long-term experts for up to 84 man-months, assignment of scientific assistants for up to 30 man-months; supply of laboratory apparatus, equipment, extension aids, vehicles; meeting of costs for the training of up to 6 counterpart specialists.

Inputs by project country:

Meeting of running and maintenance costs, provision of the necessary specialist personnel, provision of scholarship recipients (and ensuring that their dependents are adequately provided for).

5. Implementation status

The project started in 1978 and is scheduled for handover at the end of 1988. Particular attention is being focused at present on expanding the scholarship programme and making the research and extension activities more specific. All sections are now staffed by counterparts and a second group of potential candidates is still undergoing training. The range of extension aids has been considerably expanded and numerous training courses (including two international courses) have already been held. Biological pest control is a focal point of the project but requires activities designed on a longer-term basis.

The project activities are focused on the establishment of an efficient plant quarantine service capable of taking effective action. In addition, cooperation between the Tunisian plant quarantine service and relevant international organizations and plant protection services in the products' countries of origin and destination is to be stepped up. Awareness of plant quarantine problems on the part of Tunisian importers and exporters as well as travellers is to be increased by information campaigns. The following results are envisaged by the end of the project:

- An organizational concept for plant quarantine will have been formulated.
- A proposal for an updated quarantine legislation will have been drawn up.
- A technical manual (quarantine handbook) for the service's technical staff will have been produced.
- Contingency plans for the event of dangerous pests or diseases being brought in will have been drawn up.
- The buildings for the service's headquarters in Tunis and the frontier control points will have been constructed and equipped.
- Agencies, companies and travellers affected by quarantine measures will have been informed.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

2 long-term experts for up to 96 man-months, short-term experts for up to 15 man-months; 2 long-term training measures (36 months each), short-term training measures, financial contribution to construction of the new quarantine service headquarters in Tunis.

Inputs by project country:

Provision of qualified specialists and personnel to man the entry points; construction of a new quarantine service headquarters building (until its completion: provision of premises for laboratories and offices); meeting of running and maintenance costs for project facilities and equipment; creation of administrative prerequisites for project implementation, particularly with regard to updating of quarantine legislation and cooperation with agencies outside the Ministry of Agriculture.

5. Implementation status

The project is in the second year of implementation (total duration 4 years, project started in August 1984). A situation analysis and the plan of operation have been drawn up.

Preparations for the long-term and short-term counterpart training and for the assignment of short-term experts have started. The organizational concept for the Tunisian plant quarantine service and the contingency plan for occurrence of the date-palm 'bayoud' disease will shortly be completed.

Integrated Crop and Post Harvest Protection

PN: 77.2043.6

GTZ project leader: Dr. H. Hammans
Counterpart organization: Ministry of Agriculture with
Department of Agriculture
Project location: Apia

1. The context

Western Samoa is dependent on agriculture to a very large extent: Around 70 % of the labour force is involved in agriculture and this sector accounts for 45 to 50 % of the Gross National Product. The average annual per-capita income of US \$ 800 underscores the importance of subsistence farming in safeguarding the food supply. Exceptionally high imports and a decline in the traditional export products - bananas and cocoa - are having an increasingly detrimental effect on the country's trade and foreign-exchange balances. As the country's principal resource, agriculture is called upon to play an important role in combatting this negative trend. Optimized cultivation methods to raise harvest yields and measures to prevent losses resulting from crop pests are particularly essential to safeguard the population's basic food supply and exports in the future.

2. Aim of the project

The plant protection service in Western Samoa is to be placed in a position to develop and disseminate appropriate - i.e. ecologically and economically acceptable - plant protection programmes.

3. Project design/Scheduled results

The promotion of plant protection is to help to improve crop production in Western Samoa in both quantitative and qualitative terms with a view to ensuring the country's own food supply and increasing exports.

To this end, institution-building activities, training and extension work are being implemented. Following a two-year operational phase, the following additional results are envisaged by the end of the handover phase (May 1984 to April 1987):

- The Samoan plant protection service will operate along international standards.

- Basic control strategies will have been formulated for the most important pests.
- Studies on the economic significance of plant protection measures will have been carried out.
- The adoption of plant protection recommendations by the agricultural extension service will have been guaranteed.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

4 experts for up to 36 man-months each, short-term experts for up to 6 man-months; supply of materials and equipment, vehicles, wage costs for personnel under local project contract; travelling expenses.

Inputs by project country:

Provision of qualified counterparts and personnel for work on the project tests; provision of sites for the construction of project buildings and houses for project personnel, provision of land for experimental purposes; meeting of electricity costs and vehicle fuel costs.

5. Implementation status

One of the major tasks in the last phase of the project is the reintegration of the project personnel who have been studying at various universities. Particular attention is also being paid to passing-on of the project results via the extension service.

The present level of training of the Samoan personnel suggests that the project will continue to operate effectively, with informal follow-up assistance, following its handover in May 1987.

Support to the National Plant Protection Service

PN: 85.2296.3

GTZ project leader: Dr. R. Link
 Counterpart organization: Ministry of Agriculture
 General Plant Protect. Dept.
 Project location: Sana'a

1. The context

The Yemen Arab Republic is still among the countries with high population growth and declining agricultural production. Technical Cooperation in the plant protection sector between the Yemen Arab Republic and the Federal Republic of Germany has been in progress since 1973 when a GTZ project (PN 73.2109.4) helped to establish the national plant protection service. The project ended in September 1985.

2. Aim of the project

The aim of the new project (starting in April 1986) is the introduction of appropriate integrated plant protection methods among farmers in North Yemen via the plant protection extension service. By broadening extension work to cover the most important crops, pre-harvest losses are to be further reduced and the small farmers encouraged to carry out "intelligent" plant protection measures. The national plant protection service is also to be promoted in the future.

3. Project design/Scheduled results

This is an advisory project with additional emphasis on strengthening the counterpart organization (institution-building). The following results are envisaged by the time the project ends:

- The early-warning and extension service will be using integrated plant protection methods.
- Plant quarantine will be operating in line with international standards.
- The counterpart organization will possess the capability to competently select and approve appropriate new pesticides.
- Integrated plant protection methods will have been geared to local conditions and adopted by the extension service.

- Specialists from the counterpart organization will have undergone training.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

5 experts (project leader, early-warning service, advice on integrated plant protection, testing of agents) for up to 156 man-months, short-term experts for up to 12 man-months; upgrading of Yemenite specialists for up to 138 man-months; official travel by German experts; supply of 6 vehicles, materials for laboratory and field tests, training and extension aids; financing of working supplies.

Inputs by project country:

Provision of personnel and buildings, meeting of running, maintenance and administration costs; making available of materials and equipment supplied; releasing of personnel for upgrading.

5. Implementation status

The predecessor project (73.2109.4) ended as scheduled on 30 September 1985. There has been a smooth transition to the new project on the basis of verbal notes. The project leader is already on site and has commenced the planning work.

The project is scheduled to start in April 1986 and is to last for up to 36 months.

Pesticide-Residue Project

PN: 73.2028.6

GTZ project leader: Dr. R. Thiel

Counterpart organization: Participating ministries and institutions in the project countries

Project locations: Darmstadt and Schopfheim

1. The context

The intensification of agriculture has brought a worldwide increase in the use of pesticides. Numerous studies have demonstrated that this intensive and - particularly in developing countries - often inappropriate use of pesticides results in considerable residues in and on foodstuffs and export products derived from plants. Awareness of this problem and the growing worldwide efforts to protect the environment make it necessary to assist the project countries in the handling of pesticide residue problems, in pesticide quality control and in all related areas.

2. Aim of the project

The project aims to improve the independent execution of pesticide residue analyses and quality control tests by counterpart institutions and Technical Cooperation projects and to ensure that pesticides are put to appropriate and environmentally-sound use.

3. Project design/Scheduled results

With its two laboratories in Darmstadt (residue control) and Schopfheim (formulation control), the project is designed to provide central support to agricultural Technical Cooperation projects and their counterpart institutions in solving problems in connection with the use of chemical pesticides. The following results are envisaged by the end of the project:

- Counterparts and GTZ personnel will have received relevant training or will have participated in upgrading measures.
- The specialist advice provided by the project will be taken into account in the planning and implementation of projects.
- Counterpart institutions will be advised by the project on a case-to-case basis.

- Technical Cooperation projects and counterpart institutions will make use of the specialized and technical assistance provided by the project.
- The analysis capacity of 1200 analyses per year for residue and formulation control will be guaranteed.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

5 long-term experts for up to 180 man-months, various short-term experts for up to 15 man-months, laboratory and test equipment, literature, glassware, spare parts, financing of short-term training programmes for counterparts, with particular emphasis on promoting the development of local capacity for analyses and investigations in project countries. In selected countries, surveys of samples are carried out.

Inputs by project countries:

Provision of specialists, administrative staff and support personnel for the project activities in the project country, meeting of running and maintenance costs for project facilities, establishment of contacts with organizations implementing plant protection measures.

5. Implementation status

The project performs service functions for Technical Cooperation projects on a considerable scale. Following a start-up phase (1973-1977) and the first operational phase (up to 1983), the project is now in its second operational phase, which is scheduled to last until 31 December 1986. The project's principal task will continue to be the training and upgrading of counterparts. In addition, continuous work is being done on adapting analysis methods to the specific conditions in project countries.

The project is helping to supervise counterpart laboratories in:

Morocco, Sudan, Syria, Sri Lanka, Thailand, Philippines, Dominican Republic, Costa Rica, Panama.

Promotion of local laboratories is scheduled in:

El Salvador, Ecuador.

Ongoing contact is maintained with GTZ plant protection projects in matters concerning pesticide formulation and residue control and assistance provided when necessary:

Malaysia, Cyprus, Jordan.

Sampling surveys are regularly carried out in individual countries upon request. To date, one or more surveys have been conducted in Togo, the Yemen Arab Republic, Niger, Morocco, Cyprus, Syria and Jordan.

In addition, the capacity of the two laboratories in Darmstadt and Schopfheim is used for special investigation programmes and six to eight-week short-term training and upgrading programmes held twice a year. Extension aids are being produced and a new information brochure compiled. The project is to be extended by an additional operational phase scheduled to last several years.

Post-Harvest Crop Protection

PN: 77.2074.1

GTZ project leader:

R. Harnisch

Counterpart
organization:The project works together with the
respective ministries and agencies
in the project countries

Project location:

Hamburg
Field station in Togo until
31 December 1986
Field station in Malawi from
1 January 1987**1. The context**

Throughout the world, immense post-harvest losses occur in stored produce. It is more economical to preserve what has been harvested than to continually try to raise production in order - among other things - to compensate for the post-harvest losses. As a rule, the links between the "input" - i.e. appropriate, loss-minimizing storage methods - and the "output" - i.e. an indirect increase in production - are not fully recognized. The inadequate food supply in most developing countries can to a large extent be ascribed to disregard of this problem and to a lack of know-how for developing potential solutions.

2. Aim of the project

This supraregional project aims to reduce post-harvest losses in developing countries.

3. Project design/Scheduled results

On account of the know-how deficit in this field, priority is given to training agricultural extension workers and plant protection technicians in all aspects of loss-minimizing storage. The same applies to the provision of advisory services to governmental and semi-governmental agencies. On the basis of this service function and the multiplier effect it triggers off, the target group of all the project's activities is the smallholder population and the consumer. By implementing appropriate investigation programmes, the project can offer innovations of a pilot nature which are starting points for potential solutions to the post-harvest protection problems of the project countries. These innovations form the basis, among other things, for practical know-how transfer. The results envisaged for the end of the project can be outlined as follows:

 Natural Insecticides from Tropical Plants

PN: 77.2233.3

GTZ project leader: Prof. Dr. H. Schmutterer

Counterpart organization: Relevant institutions in the project countries

Project location: Gießen
Institute for Phytopathology and Applied Zoology at the Justus Liebig University

- Institutions and other Technical Cooperation projects in developing countries will have been assisted and advised on issues of storage and post-harvest protection.
- Extension officers, plant protection technicians and store personnel will have been trained.
- Information materials will have been made available.
- Study programmes on specific post-harvest problems will have been completed.
- Fumigatable small stores for village communities will be ready for use.
- Project field stations 1 and 2 will have been established.

4. Scheduled inputs (mid-1977 to 31 December 1986)

Inputs by the Federal Republic of Germany:Project headquarters:

Experts (storage protection, advisory services) for up to 198 man-months, specialist (secretary/laboratory assistant) for up to 84 man-months, short-term experts for up to 36 man-months, scientific assistants for up to 144 man-months; provision of instructional and training materials, funds for upgrading seminars, meeting of costs of premises and maintaining operational capacity of project headquarters, cooperation agreements with research institutes; including: 3 scientific assistants, 2 laboratory assistants, funds for materials and equipment, publications.

Project field stations:

Experts on storage protection for up to 84 man-months, assistants for up to 60 man-months; supply of materials and equipment for the field station; extension and training materials; 3 passenger cars; cost of support personnel, travelling expenses.

Inputs by project country:

Provision of specialists; meeting of running and upkeep costs for project facilities, as well as servicing, fuel and maintenance costs; mobilization of governmental organizations for the project measures.

5. Implementation status

The project is currently in the seventh year of implementation. Working on the basis of "trainer training", relevant know-how has been imparted at a total of 37 bilateral workshops and international seminars attended by some 800 participants. As a back-up measure, the project supplies information materials and extension aids. The project is to be extended for a further four years.

1. The context

Chemical pesticide use is being intensified in the developing countries too in an effort to safeguard and increase agricultural production. Continually rising prices and infrastructural problems, however, impose considerable restrictions on their use. Moreover, chemical pesticides involve risks for human health and for the environment, particularly when improperly used.

The use of suitable pesticides from natural sources can represent an alternative to synthetic preparations on account of the low production costs, the ease of application and the lower toxicity to both man and animals.

The leaves and fruit of the neem tree (*Azadirachta indica*) contain active ingredients with insecticidal, hormonal and repellent properties. It is likely that these active ingredients will, following simple local treatment, be suitable for use as pesticides.

2. Aim of the project

The aim of the project is to ensure that in selected areas the pesticides derived from neem can be manufactured and used by the small farmers themselves.

3. Project design/Scheduled results

The project's start-up phase and first operational phase concentrated on research work.

The initial phase, which lasted from 1978 to 1980, was followed by a first operational phase which continued until August 1984 and devoted attention for the most part to laboratory tests and the investigation of active ingredients. The following results are envisaged by the time the second operational phase ends in August 1987:

- The problems involved in collecting, processing (good quality) and storing the neem seeds, as well as in preserving their germination capacity, will have been solved.
- Effective extracts will be obtained from various parts of the neem tree.
- Questions relating to toxicity will have been adequately clarified.
- The effective spectrum of the neem preparations with regard to pests, their most important natural antagonists and the non-target organisms will have been largely established.
- The investigation results will have been adapted to practical requirements and prepared for passing-on to selected target groups.
- A pilot installation for extracting neem products will have been constructed and will be operational.

Application of the findings in agriculture in developing countries is currently being started in Togo, Burma and the Philippines. There is close cooperation with the plant protection project in Nicaragua. A project field station in the Dominican Republic is to commence operations in 1986.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

3 experts on entomology and plant protection for up to 36 man-months each (locations: Gießen, Philippines and Dominican Republic), specialized scientists for up to 174 man-months, short-term experts for up to 7 man-months, technical assistants and project-contract personnel; oil mills, vehicles, laboratory apparatus, spraying equipment; training of counterparts.

5. Implementation status

The project is in its second operational phase (1984 to 1987).

Methods of obtaining neem kernel extracts have been developed. Extracts have been obtained from neem kernels gathered in Togo and other countries and their properties investigated.

The insecticidal, hormonal and repellent effects of the natural substances have been tested on various insect pests in laboratory and field trials. Specialists from various countries, particularly those in West Africa, have been familiarized with the technique for applying neem preparations and are using it.

World-wide work findings in this field were discussed with other working groups and set out in specialized publications at two international conferences (1980 and 1983). The third international conference is to be held in 1986 in Nairobi. The project's next operational phase will devote increased attention to implementing pilot measures at village level.

Integrated Biological Control of the Larger Grain Borer

PN: 84.2007.7

GTZ project leader: Dr. A. Laborius

Counterpart organization: Ministries of Agriculture in the project countries in Central America and Africa

Project location: Hamburg

1. The context

The larger grain borer (*Prostephanus truncatus* Horn), a store pest, was brought into Tanzania in the late seventies and in 1984 was also found in Togo. In both of these newly infested regions it causes damage on a hitherto unknown scale, above all to maize cobs stored in the traditional manner in the husks, whereas in its area of origin - Central America - the damage remains within reasonable limits. It is suspected that effective antagonists of this pest are to be found there.

Chemical control of this pest is economically viable only if there is a simultaneous transition from traditional cob storage to loose storage. This causes considerable problems for small farmers.

It is assumed that natural antagonists of the larger grain borer exist in its region of origin and that these have not been found to date in Africa.

2. Aim of the project

The aim of the project is to identify antagonists and other factors which inhibit reproduction of *P. truncatus* in Central America and to investigate the possibility of transferring these inhibitive factors by comparing the ecosystems in Central America and Africa.

3. Project design/Scheduled results

The project's activities are focused on scientific investigations to clarify the ecology of the larger grain borer in Costa Rica and Tanzania. The results are compared, the various environmental factors identified and their practical applicability for the biological/integrated control programme examined. If this yields positive results, efforts are to be made in subsequent phases of the project to reduce losses in traditionally stored maize to an acceptable level by introducing the antagonists.

The identification of microbial pathogens in Central America and the related laboratory investigations are being financed out of European Community funds. These activities have been coordinated with those of the project. The following results are envisaged by the time the project ends:

- The ecological environment of the pest in Central America will have been clarified.
- The ecological environment of the pest in Tanzania will have been clarified.
- Reproduction-inhibiting effects of the antagonists from both areas under investigation will have been studied under laboratory conditions.
- A decision will have been taken as regards the expediency of transferring antagonists and/or microorganisms to Africa.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

Project leader (storage protection) for up to 39 man-months, 3 scientific assistants for Central America, East Africa and the Federal Biological Institute for Agriculture and Forestry (BBA) in Berlin for up to 108 man-months, short-term experts for up to 6 man-months; supply of materials and equipment for laboratory and field tests, office supplies, 3 passenger cars and related running and maintenance costs, procurement of test materials for office, laboratory and field use; wage costs for technical assistants; services for the Universities of Hamburg and Kiel and the BBA in Berlin.

Inputs by project countries:

Provision of workplaces for scientific assistants, making available of internal installations and facilities.

Inputs by third parties:

Provision of premises and facilities by BBA Berlin and Universities of Hamburg and Kiel; provision of support in implementation by Technical Cooperation projects in Costa Rica and Tanzania. Financing of a scientific assistant out of European Community funds, allocated to the Chair of Storage Protection at the University of Kiel. This assistant is integrated into the project's investigation programme.

5. Implementation status

The project is initially designed to last for around three years and started at the end of 1984. The scientific assistant for East Africa, based in Tanzania, started work in September 1985. The practical investigations in Costa Rica and at the BBA in Berlin have been in progress since the beginning of 1985. Parasites and predators as well as bacterial and fungal pathogenic agents hostile to *Prostephanus truncatus* have been identified.

However, the investigations into their mode of action and degree of efficacy do not yet permit any assessment of their subsequent suitability for biological/integrated control measures in Africa. It has not yet been possible to carry out comparisons with the conditions in the infested African regions.

Biological Control of Manioc Pests in Africa

PN: 84.2142.2

GTZ project leader: --

Counterpart organization: International Institute
for Tropical Agriculture,
IITA

Project location: Ibadan, Nigeria

1. The context

Manioc is traditionally an important crop in Africa's humid tropics, as it has no special site requirements and is easy to grow. Manioc has ensured the survival of families farming on a self-sufficiency basis even when other crops have failed. Manioc yields in Africa are being substantially reduced by two pests brought in from South America in the early seventies, the green spider mite (Mononychellus tanajoa) and the mealy-bug (Phenacoccus manihoti).

These pests are continuing to spread, so that the extent of the damage and its economic significance for over thirty African countries in the manioc-growing belt are necessitating control measures. Alongside the breeding of resistant manioc varieties, biological control of the pests using antagonists brought in from South America promises to be successful in the long term.

2. Aim of the project

Biological control methods are to be developed in order to reduce manioc losses.

3. Project design/Scheduled results

The central research institution, the IITA, has already carried out important preliminary work on controlling manioc pests. The programme has the political backing of twenty African countries. Together with other donors, the Federal Republic of Germany is making a number of financial contributions towards the cost of the research and control programmes carried out under the responsibility of the IITA. The following results are envisaged by the time the programme ends:

- Research into the mealy-bug and the green spider mite will have been carried out.
- Installations for large-scale breeding of natural predators will have been expanded.

 Prevention of Post-Harvest Losses in Food Crops

PN: 85.7853.6

GTZ project leader: Mr. A. Richter

Counterpart organization: United Nations Economic Commission for Africa (ECA)

Project location: Addis Ababa

1. The context

Between 1970 and 1980 cereal imports by African countries increased from 4.2 million tonnes to 15.2 million tonnes per year. At the same time, around 7 million tonnes of cereals already produced or stored were lost each year, a quantity which would cover the annual requirements of 45 million people. Post-harvest losses in cereals can be ascribed in particular to insects and rodents and to a lesser extent to fungi and their metabolism products. Technical shortcomings in storage as well as errors in the transport and marketing chains are promoting the occurrence of pests on a threatening scale.

The ECA has for some years been endeavouring to compile situation analyses and programme proposals for Africa, taking account of the different conditions in the individual regions.

2. Aim of the project

Implementation proposals for the use of effective post-harvest protection methods are to be formulated for selected countries in the region.

3. Project design/Scheduled results

The project is not intended to carry out direct development work in a specific case, but rather to formulate the bases and planning for future campaigns and projects. The project is integrated into the ECA in organizational and operational terms.

A six-month orientation phase (December 1985 to July 1986) is to be followed by an eighteen-month operational phase. The subsequent phases of the project will be designed following project evaluation in mid-1987. The following results are envisaged by the end of the project:

- The post-harvest protection situation with regard to cereals, legumes and root crops will have been recorded and analysed in selected countries or sub-regions.

- Pilot measures involving the practical use of pest predators in various infested African countries will have been started.
- The technical personnel in the participating countries will have been trained in biological control of the manioc pests.
- Advisory and information materials, together with technical manuals, will be available.

4. Scheduled inputsInputs by the Federal Republic of Germany:

Provision of a number of annual financial contributions for the IITA towards the cost of scientific specialists and support personnel, short-term experts, vehicles, laboratory equipment, upgrading and pilot measures in various countries infested by the pests.

Inputs by counterpart organization:

The IITA has technical and organizational responsibility for scheduled implementation of the agreed programme.

Inputs by third parties:

The programme receives financial support from Switzerland, Austria and a number of other countries, as well as from various national and international organizations.

5. Implementation status

Biological control measures using imported pest predators have already yielded initial successes (establishment of a pest predator over a large area). The large-scale breeding of various pest predators is in progress and release techniques are being developed. IITA release programmes are running in a number of countries, but require continuous logistical support.

- Post-harvest protection programmes will have been formulated.
- The action and project proposals will have been submitted to the governments concerned.
- Training measures will have been carried out or initiated.
- International intergovernmental and regional activities will have been coordinated.

4. Scheduled inputs

Inputs by the Federal Republic of Germany:

1 expert on post-harvest protection/project management for up to 24 man-months, short-term experts for up to 8 man-months; office supplies, working equipment, instructional materials and visual aids; financing of services by the ECA.

Inputs by counterpart organization:

The ECA (a UN organization) is to make available offices, working materials, infrastructures including telex, telephones, support personnel, specialist personnel, typists, travelling expenses etc., against payment.

5. Implementation status

The orientation phase started on 1 December 1985 with the arrival of the expert in Addis Ababa. The plan of operation for the first phase has been drawn up.

Relevant publications

Special publications which cannot be obtained from booksellers are required for project work. Therefore they can only be supplied by Section 152 in exceptional cases, and against payment of the cost.

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