



13. Applied Scientific Research to Serve Investment

The research programs implemented by AAAID were characterized by an unprecedented approach which was unique in shortening the gap between the researcher and the investor and tying applied agricultural research results and their applications to the investment site through the introduction of research stations on the sites of investment projects and implementing large-scale field experiments of applicable research results. This approach provided an chance for interaction between the interests of the investor and the ambitions of the researcher. The main activities of scientific research during 2007 included the following:

13.1. Research Station for Crop Production in Rain-fed Agriculture/ Agadi / Sudan:

This is a research station which implements large-scale field experiments in the site of the Arab Sudanese Blue Nile Agricultural Company with the objective of adapting and enhancing the technology package applied for the Zero-tillage farming system, as well as solving the problems facing the application of this new farming system which was introduced into Sudan in the year 2000 as an alternative to the traditional farming system adopted by the rain-fed sector.

During the year 2007, 17 field trials were implemented. They included variety trials for cotton, sorghum, maize, sunflower, and sesame, as well as observations on legume crops and millet. They also included trials for weed control, buda (*striga hermonthica*) control, and fertilization trials. All the trials were implemented by continuous coordination between AAAID Agricultural Research Department and the management of the company.

13.2. Research Station for Crop Production in Rain-fed Agriculture / Gadarif / Sudan:

The objective of the station was to provide applied scientific support for the program of Zero-tillage farming system dissemination to small farmers in Gadarif State. During the year 2007, field trials were implemented in coordination with the Agricultural Research Center in the State, and they included the following:

- * Implementation of trials for yield comparison between various varieties including branching and non-branching varieties of sesame, variety trials for cotton, fertilization trials for promising varieties of sorghum, sesame, cotton, and sunflower.
- * Implementation of a trial for control of buda (*striga hermonthica*) on sorghum by growing trap crops.



13.3. Research Station for Vegetables Production / Um Dom/ Sudan:

The station aimed at developing the production of traditional and non-traditional vegetable crops in the irrigated sector in Sudan. It is located in the site of Almutamayiza for the Production of vegetables and Field Crops.

- * Variety yield trials were conducted for sweet pepper, cantaloupe, marrow, beans, eggplant, and pepper under different irrigation systems in the 2007 summer season.
- * Crop yield trials were implemented for tomato, potato, celery, sweet corn, broccoli, carrot, and Japanese radishes, under different irrigation systems in the 2007/2008 winter season.
- * A large-scale trial was implemented on an area of 20 feddans for testing the growing of 9 tomato varieties using flood irrigation and drip irrigation.

13.4. The Agricultural Research Station in Mauritania:

13.4.1 Achievements:

- * The station operates with the objective of developing the agricultural sector in Mauritania, by carrying out research and wide experiments with extension, development and investment dimensions, as well as providing agricultural machinery and equipment rental services and inputs at cooperative fees to traditional farmers in the basin of the Senegal River in the southern part of Mauritania. The station adopts the principle of self-finance to partially cover its expenses.
- * The station's annual program for the year 2007 included the implementation of variety trials for rice, maize, and wheat crops, as well as a trial for testing the zero-tillage farming system in irrigated areas.
- * The station implemented a program for developing vegetable and fruit cultivation in Mauritania. In the framework of the program field extension trials were implemented for the benefit of traditional farmers, as a preparatory stage for applying their results in investment projects. The station was furnished with necessary equipment, including plastic domes, a potato planter and harvester, as well as a drip irrigation system. Following the emphasis placed on national agricultural capacity building for this program, a number of Mauritanian agricultural engineers were delegated to Morocco to receive training on vegetable crop cultivation. Efforts were continued for implementing the program.



13.4.2 Umboria Agricultural Project:

- * The objective of the project was the adaptation and dissemination of modern farming technologies to traditional farmers in the basin of the Senegal River to increase crop yields, improve the financial and social status of this group, and alleviate poverty. This was in addition to applying the principles of sustainable agriculture by growing a legume crop (or any other crop) in rotation for the purpose of the farming rotation, diversification, and preservation of natural resources, in order for the project to stand as a model to be followed by others.
- * Targeted area: 624 hectares to be cultivated by AAAID as a wide experimental and extension project, 800 hectares to be cultivated by farmers, and AAAID provides irrigation and extension services to farmers, and 2600 hectares for future expansion.
- * Targeted crops: Rice (as a main crop), wheat, potato, maize, peanut, onion, and other crops.
- * There is an administrative and financial steering committee under the supervision of AAAID in coordination with the Ministry of Agriculture, in addition to a specialized technical and financial follow-up committee from AAAID.
- * The project contributed to providing irrigation services and implementation of farming operations (land leveling, ploughing, sowing, spraying, and harvesting) using the most modern agricultural machinery and equipment. This is in addition to the provision of post-harvest services and marketing.
- * The project implemented the plan for the first season (2006) and achieved promising results, in addition to solving many technical, management and organizational difficulties. Efforts were continued for implementing the plan for season 2007/2008 for growing rice and maize crops.

13.4.3 Agricultural Machinery and Equipment Rental Unit:

- * AAAID has a plan for renting agricultural equipment, including tractors, planters, zero-tillage planters, sprayers, harvesters, specialized farming equipment, loaders, graders, and trucks, amounting to more than \$2 million.
- * The rental unit operates independently and provides its services to the research station, Umboria agricultural project, or to farmers in the area.
- * The unit would form a nucleus for an agricultural services company which is under study for establishment.



13.4.4 The Most Important Results Achieved:

- * Provision of a number of modern agricultural equipment and machinery to serve AAAID activities, in addition to providing services to farmers at cooperative encouragement prices.
- * National capacity building on equipment and machinery operation and maintenance.
- * Promotion for mechanization of all farming operations and expansion in utilizing it by farmers.
- * Achievement of returns and profits which contributed in managing the research and production activity of the coordinating unit.
- * Provision of services in the areas of R'kiz, Antican, Keur Macene, and Umboria. Efforts were continued for extending services to other locations in Mauritania.

13.5. Comoros Research Station:

The activity of the station was continued during the year 2007 covering the implementation of a group of research and service activities, summarized as follows:

- * Implementation of a research program for growing rain-fed vegetable crops (cassava, taro, carrot, and sweet potato), irrigated crops (tomato, onion, potato, pepper and beans), irrigated poultry fodder crops (yellow corn, maize, Soya beans), in addition to vegetable variety trials in green houses for off-season growing of tomato, pepper, beans, and cucumber crops. The results are used for the purpose of extension to farmers.
This was in addition to the implementation of a program for testing drip irrigation systems in open fields in preparation for transfer to farmers.
- * Documentation of the activities of the rain-fed irrigation systems, simple drip irrigation systems, and protected dome irrigation systems in video cassettes and color photos for dissemination via local media.
- * Preparation and implementation of a program for combating persistent plant diseases in the Union of the Comoros.
- * Implementation of a program for the production of banana seedlings using tissue culture technology. AAAID has completed the establishment of an integrated laboratory for tissue culture production of seedlings for banana and other crops under direct technical management from AAAID.
- * Provision of urgent aid to farmers and poor families in collaboration with the developmental programs department of AAAID



13.6. New Research Stations to Serve Promising Investment Projects:

13.6.1 The initiative of establishing research stations in the sites of agricultural projects, based on running large-scale field experiments, would have a substantial impact on the adoption of an integrated technology package for growing promising crops which suit the environmental conditions in the area. That is performed by carrying out trials for varieties, plant density, sowing dates, fertilization, pest/ weed control, and the introduction of appropriate agricultural mechanization for the different crops. The research results are then used in the feasibility study for the project before implementing it. Research and development trials are also carried out after the project implementation. (Figure 7).

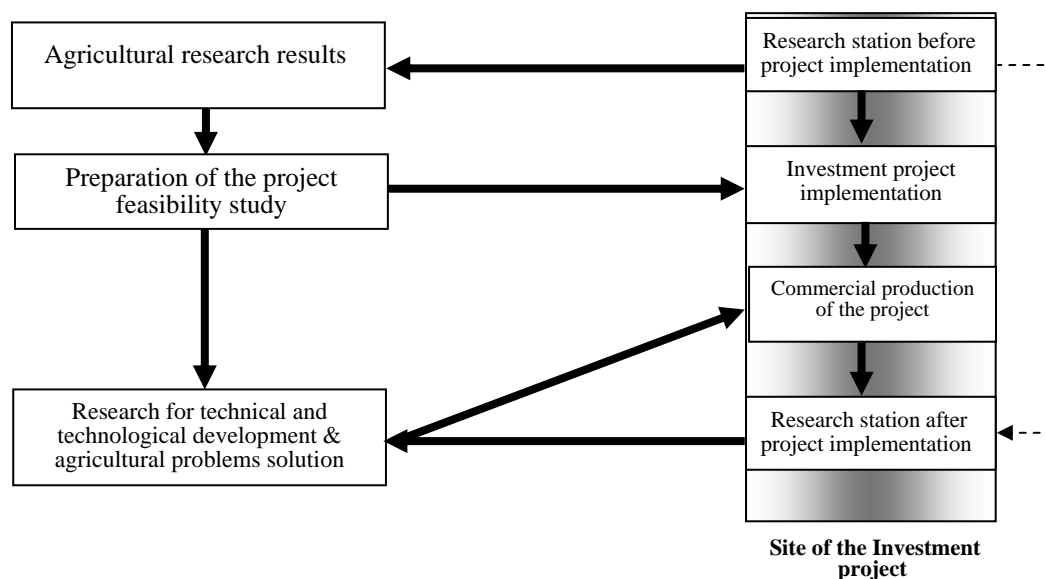


Fig. (7): Utilizing Applied Agricultural Research to Serve Agricultural Investments

13.6.2 AAAID prepared the necessary studies for establishing new research stations in the sites of a number of promising investment projects in Sudan, namely:

- * Abu Hamad Agricultural Project in the Nile State on an area of 70,000 feddans in coordination with Abu Dhabi Development Fund, with the objective of growing forages and cereal crops to meet the needs of the United Arab Emirates and the rest of the Gulf Cooperative Council states.
- * Basmati, Anber, and Commercial Rice Production Project in the White Nile State/ Sudan, on an area of 50,000 feddans, in coordination with Abu Dhabi Development Fund, to meet the needs of Sudan and United Arab Emirates of this crop.
- * A Project for Growing Forage Crops in Khartoum State/ Sudan, on an area of 20,000 feddans, which is related to the Project for the Production, Processing and Marketing of Red Meat in Sudan.



**Mechanical Harvesting of Rice Crop
The Agricultural Research Station /Mauritania/ 2007**



**Rice Crop in the Post-packing Stage
The Agricultural Research Station /Mauritania/ 2007**