

## CROP MANAGEMENT

The Crop management program consists of 5 sub-programs: Fertilization, Integrated Pest Management, Red rice and other weeds, Soil Tillage, and Water management.

Several projects within the fertilization program have been completed (e.g. diagnoses farmers' practice, soil sampling survey of farmers' fields, response to phosphate, and timing, rate, and portions in split applied top dressing of urea) and the accent now moves towards fine tuning fertilization with urea (e.g. precision fertilization using the SPAD-meter). Also the nutrient balance on conventionally tilled versus minimum tilled fields or the interaction of urea fertilization and water management are of interest.

As new lines are produced continuously, their urea response is a permanent object of research.

Measurements of the seasonal pest population sizes and disease frequencies have been completed. Farmer attitude to pesticide use has been diagnosed earlier and ample possibilities appear exist for an Integrated Pest Management (IPM) strategy through which pesticide use can be reduced. The IPM strategy to be developed will make use of the concept of the Farmer Field School (FFS), which are headed by so called facilitators..

Major weeds, their effects on the yield and farmers' control practices have been identified, several alternative herbicides have been tested and the effect of red (weedy) rice on the yield of short duration lines has been determined. Research on red rice (by far the most important weed) needs to be fine-tuned. Research on other weeds has to be intensified.

The Soil Tillage Program consists out of two projects: 1) improved mechanization and 2) minimum tillage. Inventory surveys on tractors & machineries and on soil tillage practices have been completed, data from local dealers/factories have been collected, theoretical time

and local dealers/factories have been collected, theoretical time- and cost analyses of soil tillage have been made and the technical efficiency of soil tillage has been analysed.

The Water Management Program operates at two levels: at infrastructure level and at field level. At infrastructure level ADRON contributed to the development of alternative methods for weed control in canals. So far the most economical method is weed control by glyphosate.

At field level the topics of interest are the interactions of water management and fertilization with urea (is it necessary to drain the field for each top dress application?), of water management and fertilization with phosphate (how long has the soil to be inundated before sowing to avoid relative phosphate deficiencies?), of water management and weed control, soil tillage, IPM and variety.

## POST-HARVEST TECHNOLOGY

The Post-harvest program aims at a better understanding and application of post-harvest technologies by the processors. Research focuses on the reduction of discoloration in rice products, the benefits of pre-cleaning of paddy, the relationship between moisture content and milling yields, the effect of resting after drying on the milling yields.

## SEED PRODUCTION

Once improved varieties have been developed, a seed production system, which is capable to transfer sufficient and high quality seed to the paddy farmers, has to be in place. For producing basic seeds from pre-basic seed, 6-8 ha are available at ADRON. Furthermore ADRON cooperates with some 70 seed farmers who produce registered and certified seed on 800 ha of land. ADRON also has drying and processing facilities for seed.

# ADRON FACTS



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## SNRI/ADRON

Suriname has some 50,000 ha rice land. Its rice has a reputation in Europe for extra-long grains and good cooking quality. Most rice is grown in Nickerie.

Research carried out on mechanized rice production at SML during 1950-70 built up an efficient and productive rice sector, but various problems since that time caused a decline in research activities. The high level of rice production technology could not be maintained.

### ORGANIZATION AND FUNDING SNRI

In order to redress the declines in rice production and exports, the Government of Suriname established a national rice research effort to assist farmers.

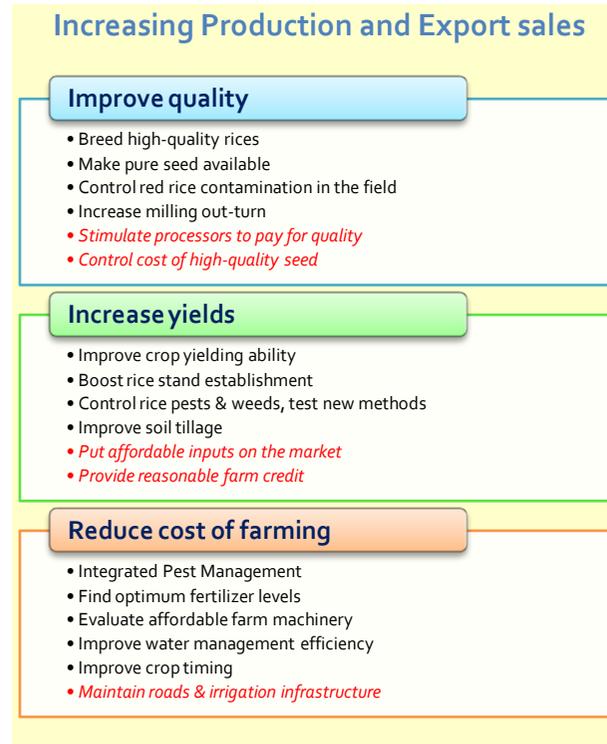
SNRI (Stichting Nationaal Rijstonderzoeks Instituut), is a foundation, mandated to reinvigorate rice research in Suriname through the establishment of a new research centre in Nickerie. This semi-autonomous para-statal reports to the Minister of Agriculture, Animal Husbandry and Fisheries (LVV) but manages its own finances. Recurrent funds are coming from a rice-export levy, through the Ministry of LVV. In 1995 the European Development Fund (EDF) supported SNRI with funds to build a new research centre and laboratory, and the equipment to make it work.

ADRON (Anne van Dijk Rijst Onderzoekscentrum Nickerie), is part of SNRI. The Centre is a vehicle for improving the rice sector. For the time being the Centre must emphasize adaptive research activities in various problems, such as (i) the yield gap between current rice varieties and varieties abroad, (ii) fertilizer management, (iii) land preparation, and (iv) quality management. Needed are calibration tests or demonstration trials on current rice varieties, available fertilizer, and known methods, which are no longer, practiced in Suriname.

### THE RESEARCH AGENDA

Problems and challenges in the rice sector, to the extent they can be addressed through research, drive research planning. Other concerns, like poor infrastructure, an insufficiently stimulating price regime, high levels of farm credit, etc., are matters of political will, and are outside the central mandate of the Centre.

The primary development objective has been formulated in response to these problems, as: Increased rice production in terms of quality, quantity, and profitability.



Applied research aims to help Suriname's rice growers boost productivity through improvements in both rice varieties and cultural practices, as well as through reduced production costs. It should help increase the exportable surplus of high quality rice from Suriname.

The diagram signals the response to the overall problem of the rice sector: *Increasing Production & Export Sales*.

The figure lists interventions directed at those problems that can be

solved through applied research, and refers (*in red italics*) to those whose solution depends on Government action.

At present, Suriname manages to export rice into the CARICOM market and EU with little or no import duties or levies paid.

### RESEARCH POTENTIAL OF THE CENTRE

Staff strength falls short of the level and diversity needed for doing all the desired work. This situation is a given, and in order to do the needed work, the Centre necessarily relies on temporary inputs from short-term experts, who address specific issues within a limited time. At this point the Centre has a core staff, and it maintains regular contacts with such organizations as the University of Suriname, the Caribbean Rice Association, IRRI and CIAT/FLAR, the Guyana Rice Development Board, WAU in the Netherlands, and universities abroad.

The research projects themselves however are problem oriented: arranged primarily as a reaction to problems in the field, therefore not necessarily by discipline.

### TECHNOLOGY TRANSFER

Effective communication and cooperation are among other things the main conditions in achieving ADRON's mission. Through surveys and research activities on farmers' fields these conditions are partly actualized. New varieties and promising production and processing techniques are increasingly developed, applied and or evaluated through participation by farmers and millers. Other communication strategies are website, TV and radio programs, basic training, Farmers Field Schools (FFS), flyers and brochures.

### BREEDING

The breeding program's objectives are to make available pure seed of the varieties now grown by farmers, and to improve on the present-day rice varieties in the areas of yield and (early) maturity, while maintaining and improving the level of quality corresponding with the reputation of Suriname's rice. Up till now approximately 1600 crosses have been made that produced 36 promising lines. At present approximately 90% of the total rice production area is being cultivated with varieties that ADRON developed.