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*Joint symposium on maize and peanut. Held in Suriname
on behalf of the 75th Anniversary of
The Agricultural Experiment Station of Paramaribo.*

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SOIL MANAGEMENT

Chairman; N. Ahmad.

QUESTIONS:

- a. What soil is preferable for the growth of maize and/or peanuts: Coebiti or Tijgerkreek West?
- b. What are the limitations and economic measures which have to be taken to promote production?

The time allowed did not permit exhaustive consideration of all aspects of these two important questions; we did give more attention to maize than to peanuts for example.

Maize/peanuts on Young coastal plain:

The group felt that in the case of the sand ridge soils, the areas were too small, irregular in occurrence, variable in soil properties for mechanized maize cultivation. It did not rule out the suitability of these soils for peanut. The clays are considered to have very serious soil drainage problems for maize to be cultivated without very elaborate land layout. The use of the cambered bed as for sugar cane was decided to be too limiting for use of machines, it did not adequately solve the drainage problem for maize. Essentially flat beds up to 30 meters wide with box drains and moles across the bed at close intervals as presently being tried in Guyana were considered a layout well worth studying both for drainage and irrigation. The use of the very acid, toxic peaty and acid sulphate, clay soils of the Young coastal plain was considered unsuitable in view of the very costly amelioration that would be required.

The brown sandy loams as at Coebiti were considered as having several advantages over the Young coastal plain soils for commercial maize and/or peanut production. Land clearing and reclamation were not as much of a problem, and tillage was easier and maximum use is made of the total land surface for the growing of the crop. The fertility problem was, however, severe. Attention was given to ways of solving this soil infertility and measures such as kind of fertilizer, method and time of application, crop rotation system were thought very important. The question of tillage was also discussed. No definite recommendations could be given on these matters at this stage, due to inadequate research.

With respect to method of application, it was concluded that band placement would result in better fertilizer utilization, would restrict root development which could have adverse effects in water stress situations. What amounted to optimum tillage was a wide open question. Too much tillage could lead to rapid soil deterioration, on the other hand some tillage was necessary to incorporate fertilizer and lime into the subsoil to allow root development. Initial fertilizer application at the time of seed drilling was considered adequate and side-dressing could eventually be done aurally. This technique would combine the benefits of box band placement and broadcast applications.

Some form of crop rotation probably involving long or short term legume crops and/or grass fallow was considered as essential in fertility maintenance. Some reservations were expressed to rearing of cattle as part of the cultivation system.

Kinds of fertilizers used would leave to consider handling properties as well as cost. Conceivably, if sufficiently large scale operations were to be developed, application of N as anhydrous

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ammonia may be feasible initial. Broadcast applications of fairly large dressings of ground rock phosphate may be a sound and even economic proposition in supplying P and combating Al toxicity.

At all stages of operation economic considerations should be given. For example, in the application of lime, it has to be decided whether one large application every 3 or 4 years is better than smaller annual applications. In the case of the farmer, the succeeding crop in the rotation could be selected with respect to their requirements of calcium status in the soil.

CROP PROTECTION

Chairman: T.L. Hammerton

I. The first question was:

**"What is recommended for *Spodoptera* control?
Chemical or Biological control?"**

After a lengthy discussion, we agreed upon an integrated approach — but one embracing the entire area of crop production.

In new area opened up to corn, it was stressed that chemical control was essential initially until parasites and predators could be established. These needed an opportunity to build up their numbers to an effective level.

For corn in established areas we felt that an integrated approach, using chemical and biological control was needed, but further research was necessary to establish certain procedures and economic threshold levels.

The components can be learned as follows:

1. Adequate fertilizer and water to ensure rapid growth and to enable the crop to recover from *Spodoptera* damage and to grow away from such damage.
2. Seed dressing with a systemic insecticide to confer early resistance and control of *Spodoptera*. Furadan was mentioned but research is needed on this and alternative materials.
3. A simple monitoring procedure, based on a study of economic threshold levels, to enable the farmer to ascertain when chemical control was necessary.
Such a study would need to be within a time frame, since young corn plants are less able to tolerate a given level of caterpillar infestation than older plants.
4. An insecticide spray, using an insecticide that would cause minimum fatalities to natural enemies of *Spodoptera*. Dipterex approved to be satisfactory. It was stressed that we should avoid and discourage insurance spraying — the routine application of insecticide regardless of infestation level.
5. Further monitoring to determine if one (or more) additional spray(s) were necessary. The need for research on this topic has already been emphasized. In addition continuing work on parasites and predators, and on the economics of spraying, would be necessary.

II. The second question was:

“Is chemical control of weeds in peanuts to be preferred to mechanical control?”

The simple answer was YES, but with certain reservations. It was agreed that weed control must start before planting in the course of land preparation. This should include burial of weed seeds and weed propagules by ploughing, or the use of herbicides such as paraquat and glyphosate to reduce weed infestations.

Minimal disturbance of the soil was considered important to avoid damage to plants and to the elongating pegs particular on certain soils however – perhaps on the Tijgerkreek soil – cultivation might be useful to break surface crusting. Timing of the cultivation is critical since peanuts may start flowering relatively early.

In general chemicals were to be preferred, but the diversion of weed control by herbicides was not always adequate. Close spacing to enhance by competition, suppression of weeds was emphasized, as well as fertilizer usage to encourage rapid early growth and care of the ground. Research on varieties and spacing was considered necessary to find those combinations of variety and spacing that best suppressed weeds.

We felt that satisfactory post-emergence herbicides for peanuts were urgently needed. No candidate chemicals could be named, but the use of a circulating sprayer was mentioned as a possible means of controlling weeds growing well above the crop canopy. Glyphosate was a suitable material for use in circulating sprayers.

MISCELLANEOUS

Chairman: G.A.M. van Marrewijk

Let me start saying Mr. Chairman that we had a vivid discussion in our group about many subjects. But the fact that we were really a miscellaneous group, including crop husbandries, breeders, biometrists, engineers, economists and even a social welfare worker made that each single problem was discussed by a small number of persons only.

With respect to the three final questions for which we were labeled to find an answer it must be stated that there was no consensus about question 1, whether Surinam should start an own breeding program or rely on breeding stock from abroad.

The one opinion was that we should not start an own breeding work before maize growing has become more established in the country. Others on the contrary advanced the idea that apart from testing of varieties, developed elsewhere, we should start at least a smallscale programme ourselves to get types adapted to specific Surinam conditions and problems. This might fairly well be based on “prebred” material from CIMMYT or elsewhere. It was stressed that cooperation with other institutes in our region is necessary. We did not discuss question 2, because of the reasons mentioned by you.

With respect to question 3 asking whether other peanut varieties than Matjan should be tried out, Dr. Wienk, in a one-man show came to a positive answer as-alongside with some attractive features – Matjan is susceptible to *Cercospora* leaf spot and has a growing type not allowing high density plantings.

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But all cultivars tried out so far suffered from specking of the seed coat, of which the causal agent still has to be detected. We finally started discussing question 1 of the soil group. It was stated that the answer to this question also depends on the goals aimed at (apart from the technical aspects mentioned by Prof. Ahmad). Though on the long run it is possible and might probably be advisable to expand activities to the interior, within the agricultural development plan 1978 – 1992 aiming primarily at import substitution and not at export, for the moment groundnut growing should be stimulated in the coastal area.