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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.*

November 13 – 18, 1978



Proceedings of the Caribbean Food Crops
Society. Vol. XV, 1978

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May the new findings and attainments in the field of maize and peanut cultivation, soil management, disease control and marketing, as written down in this book, broaden the way to fruitful exchanges of know how amongst the caribbean countries.

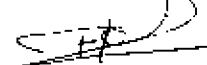
The more so, since most of our scientists are working along the same lines to solve the same or similar problems.

Thanks to all participants of the joint symposium for their presented papers and contributions to the discussions

Thanks are due also to Mr. I. E. Soe Agnie for his soil scientific remarks.

The editor,

Ferdinand E. Klas

A handwritten signature in black ink, appearing to be 'F. E. Klas', written over a horizontal line.

September 24, 1979

PREFACE

On the 4th of December 1978 the Suriname Agricultural Experiment Station in Paramaribo commemorated its 75th anniversary. Related to this memorable date several activities were planned and carried out. Besides activities with a local and social bias, the need was felt to organize an event with an international, scientific character.

During the same year the Caribbean Food Crops Society held its 15th meeting. Therefore it was worthwhile to combine our efforts in a joint meeting.

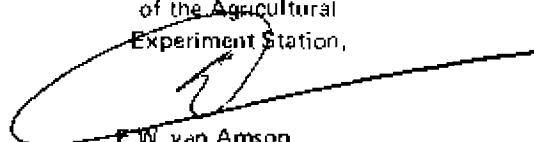
Eventually there was chosen for a Symposium with maize and peanuts as main topics. Maize is a commodity of international importance and in particular for Suriname with a developing animal husbandry. The same is true for peanut, while in the near future export possibilities also must be taken into consideration. Besides these two crops other items were covered in the miscellaneous group.

The Symposium was held from 13 till 18 November. Besides the different papers that were presented, two field trips were organized, while the technical part of the Symposium ended with a workshop.

The preparation and the organization of this Symposium attended by 80 participants of which 45 from foreign countries took quite some time. However, due to the enthusiasm and efficient approach of the members of the different organizing committees the Symposium went off very well.

Besides to the above mentioned members I want to express my sincere thanks to all the other groups, firms or institutes which contributed in one way or another to help to make this Symposium possible.

The Director,
of the Agricultural
Experiment Station,

A handwritten signature in black ink, appearing to be 'P.W. van Amson', written over a horizontal line. The signature is stylized and somewhat cursive.

P.W. van Amson

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**MINUTES OF THE BUSINESS SESSION
NOVEMBER 15, 1978**

The Business meeting was called to order by the President, Mr. Frank A. del Prado at 2:00 p.m. at the Torarica Hotel, Paramaribo, Suriname.

The minutes of the previous meeting in Guadeloupe-Martinique in 1977 was read and approved.

Old Business

The Secretary delivered a report covering his participation as CFCS representative at the DARNDR/IICA Meeting on Research Systems in Agriculture, held November 28 through December 2, 1977 at Port-au-Prince, Haiti. This report titled "Contributions of the Caribbean Food Crops Society to Agricultural Research in the Antilles Zone" was approved.

New Business

1. Mr. Francisco Miguel Gonzalez presented a letter from His Excellency, the Secretary of the Agriculture of the Dominican Republic, the Honourable R. Hipolito Mejia D. presenting the Dominican Republic as the proposed site of the 16th Meeting of the CFCS in 1979.
2. The Nominating Committee presented their recommendations for the officers for 1979-80. They were as follows:

President of the Board	Mr. F.A. del Prado	Suriname
Board Member	Mr. L.M. Degras	Guadeloupe
Board Member	Mr. C. Grand-Pierre	Haiti
Board Member	Mr. J.P.C. Jeffers	Barbados
Board Member	Dr. A.M. Pinchinat	Dominican Republic
Board Member	Dr. A.H. Wahab	Jamaica
Board Member	Dr. M. Yaseen	Trinidad
President	Mr. R. Hipolito Mejia D.	Dominican Republic
Vice-President	Dr. F.M. Gonzalez	Dominican Republic
Secretary	Mr. G.C. Jackson	Puerto Rico
Treasurer	Dr. M.A. Lugo-López	Puerto Rico

The report was received and all proposed officers were elected unanimously.

3. Mr. Jackson pointed out that the 1971 Proceedings have still not been issued. He asked that Dr. M.A. Lugo-López be authorized to visit Guyana on his return trip from this meeting, in order to determine reasons for the delay. Permission was approved.
4. Mr. Jeffers proposed that CFCS offers membership to Agricultural Engineers in the Caribbean. The reason being that there is no forum for this group of professionals to associate with. This proposal was accepted and approved.

5. Dr. Wahab was nominated as special collection agent for the CFCS in Jamaica. This nomination was accepted and approved.
6. Dr. Pierre was nominated as special collection agent for the CFCS in Guyana. This nomination was accepted and approved.
7. Mr. Gonzalez took the floor to thank the membership for electing Mr. Mejia president and him as vice president. He announced that the meeting would be held in Santo Domingo, Dominican Republic, probably in July or August of 1979, and that the meeting theme will be announced long before the meeting date.
8. Mr. Payne asked that the secretary record a vote of thanks by the membership to the organizing committee in Suriname for their excellent work.

There being no further business, the meeting was adjourned.

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INTRODUCTION

WELCOME ADDRESS OF THE ACTING DIRECTOR OF THE MINISTRY OF AGRICULTURE AND ANIMAL HUSBANDRY (J. A. Drielsma)

Your Excellency, President of the Republic of Suriname
Mr. Prime Minister
Mr. Minister of Agriculture
Distinguished guests
Ladies and Gentlemen

It is a great honour for me to welcome you on behalf of the Department of Agriculture to this occasion.

If I say that this is an honour for me, I do not only refer to the fact that so many distinguished persons are gathered here, but also to the fact that we are here to commemorate the 75th anniversary of our Agricultural Experiment Station, or as we refer to it THE EXPERIMENT STATION.

This of course implies a certain pride, and with reason are we proud of our Experiment Station, not only because it is one of the oldest Agricultural research institutes of our region, but because of the important work it has done in the past and is still doing. That its path has not always gone over roses, does not have to be stated here. Suriname is not a very large Country, but in proportion to its population it covers a huge area. It is logical that we are faced with the same range of problems of a large Country with a large population.

Research in itself being expensive, this is the more so in Suriname, with its small population and limited financial resources. Moreover, Suriname is a Country in development and since development implies change, this also has a marked effect on our Agriculture. The old colonial system of Plantation Agriculture is disappearing and gradually being replaced by Commercial Agricultural enterprises.

But this is not our main headache, since the big boys can for a good deal take care for themselves. Our problem lies mainly in the peasant farming, where we are now in a transition fase from the traditional peasant (subsistence) agriculture to a form of modern semi mechanized agriculture.

This has affected our Agricultural research fundamentally. This is logical, since you can only have sound development if the changes are taking place on the basis of concrete results of research.

As I have already mentioned our limited financial resources, becomes now significant, since we are not able to tackle all the problems that arise as the consequence of our development. So priorities had to be set forth. The choice was also need to the fact that we have to counter-balance the monocrop position of rice. In our Symposium at the 70th anniversary of the Agricultural Experiment Station, rice was the topic.

Since the development of maize and peanut production is high on our priority list, the choice for this Symposium fell on these crops. So the contribution that the discussions of this week will have to the national economy and more in particular, the Suriname Agriculture will be of very great importance. So it is not out of politeness but with a certain amount of selfishness that I hope that your discussion will be very fruitful.

To the foreign guests I would wish them a very pleasant stay in our country.

**WELCOME ADDRESS OF THE PRESIDENT OF
THE CARIBBEAN FOOD CROPS SOCIETY
(F.A. del Prado)**

Your Excellency President Dr. Ferrier, Honourable Ministers of Cabinet, members of Parliament, distinguished guests, colleagues, ladies and gentlemen.

Last year when I was again elected President of this distinguished body of agricultural scientists, I knew that a tremendous task was awaiting us in Suriname to organize this 15th meeting of the Caribbean Food Crops Society, this time a combined meeting with the Suriname Agricultural Experiment Station, het LandbouwProefstation, which next month shall celebrate its 75th anniversary. Those of you that are members of the executive committee, or have been, have experienced the many months of hard work that precedes the official opening which is today.

The previous meeting of the Caribbean Food Crops Society held in Suriname in 1967, our fifth meeting, is remembered by many old timers. It was hard work then, many good papers were presented and the social activities we arranged, were enjoyed by all.

During this week that you are going to be with us you'll be able to see some of our work. We shall not only meet here at the Torarica Hotel, but we are going to be out twice on fieldtrips. I can promise you that it is going to be a week of hard work, but a week in which we can learn a lot from each other.

It is a somewhat other type of meeting, a combined one of the Caribbean Food Crops Society and the Suriname Agricultural Experiment Station. A symposium where the emphasis shall be on maize and peanuts. Of both crops large amounts are imported every year in many of our countries resulting in a drain of foreign currency.

Your Excellency President Dr. Ferrier, distinguished guests, ladies and gentlemen, in this region we have a great many scientists and the knowledge which we can use for the production of more and better food. However, knowledge and the scientists alone, cannot feed our peoples. We have to plant more and harvest more, which shall result in better living standards for our farmers and eventually a better economic structure for our countries.

So much land is available, and so much can, and has to be done, individually, on a country basis and regionally. Let us scientists of this region with the aid of our respective Governments show that we can produce more and better food to feed our hungry world. Too many people are still starving in many countries due to hunger, even on our continent.

At the Fourteenth Regional Meeting of the Food and Agricultural Organization of the United Nations held in Lima, Peru in 1976, we were told that our countries could supply the world with many crops which grow better and show higher yields due to scientific practices.

Let all of us keep this in mind and strive to reach this goal. It is feasible because the potentialities are present. All we need is hard work and more hard work, good management, financial, and political backing.

I know that it is a difficult task that lies ahead of us, but a task which gives satisfaction when done right.

Your Excellency, Honourable Ministers of Cabinet, Mr. President of Parliament, distinguished guests, ladies and gentlemen, as President of the Caribbean Food Crops Society I am wishing you, my friends and colleagues from abroad, a pleasant and fruitful conference in Suriname.

WELCOME TO OUR FRIENDLY NATION!

**WELCOME ADDRESS OF THE DIRECTOR
OF THE AGRICULTURAL EXPERIMENT STATION
(F.W. Van Amson)**

On the 4th of December the Agricultural Experiment Station will commemorate its 75th anniversary.

The history of the last 75 years was especially influenced by two world wars. Increased technological developments, mainly as a result of these wars, resulted in enormous achievements in various fields.

These again had a tremendous impact on the social behaviour of men. Economic values changed rapidly, upsetting certain societies.

All these changes also influenced the different aspects of the Suriname society.

Before 1903 the abolition of slavery had a strong effect on the economy. As a result of this abolition a shortage of laborers occurred and gradually the plantation agriculture became a marginal proposition.

At the turn of the century the witches broom disease in cacao also contributed to a rapid decline of our once flourishing agriculture.

However, it was in particular this disease that stimulated scientific agricultural research in Suriname.

Referring to the last 75 years there are some significant issues, which structured agriculture and agricultural research in Suriname.

One of the consequences of the abolition was the establishment of a group of small holders. Former slaves and contract-laborers were the new farmers who started small scale farming, mainly supplying the local market with their products.

The aversion against the old plantation system was strong resulting in a gradual increase of independent farmers.

The plantations were mainly located on heavy clay soils. A complicated pattern of small beds and trenches was necessary to promote an effective drainage. However, the lay-out was such, that exploitation was only possible with intensive hand labor.

In the past it was thought that cacao was a good alternative, because this crop is easy to grow, to maintain and to harvest.

The before-mentioned witches broom disease however made a careful reconsideration essential.

Attempts to establish plantings with resistant cacao varieties failed; meanwhile, research indicated that citrus was a promising crop for the old plantations.

Between the two world wars the results of rice experiments on the heavy clay soils in the district Nickerie looked hopeful.

These results in combination with breeding studies at the Agricultural Experiment Station formed the fundamentals for future research on the mechanization of rice.

In the meantime the small-holders developed into a very functional group in our society. Vegetables, fruit and animal products were produced by this group.

In a way research contributed to a certain extent to the development of this group through the channels of the Agriculture Extension Service.

The economic crisis between the two wars also had negative effects on our agriculture, particularly on our export.

After the second world war funds became available to stimulate agriculture. Again attempts were made to re-activate plantation agriculture.

However, gradually it became clear that this system, because of the demand for manpower, was obsolete. Education and training attracted Surinamese to better payed jobs compared to agriculture in its old form.

A confrontation with modern highly sophisticated commodities had a tremendous influence on the behaviour of men. This also resulted in an increase of the aversion for a risky and tire-some form of agriculture.

There was a need to initiate new studies in order to be able to obtain results which could be used as a model suitable to a contemporary way of living in agriculture.

This was a big challenge!

This challenge was accepted in the district of Nickerie and eventually resulted in large scale mechanized rice operations as an alternative to exploit the heavy clay soils.

At the same time this system, more or less adapted, also appealed to people interested in middle- and small scale farming.

From the success of this operation it can be concluded that new and better farming systems in Suriname, must stress the use of machines.

This can be introduced on relative small holdings with an intensive use of the land or on large scale farming systems with heavy equipment. Besides the mechanized rice operations on the clay soils small holdings can be stimulated in the northern part of the country. Particularly on the sand and shell ridges of the Young Coastal Plain, while large scale operations can be introduced on the excessively drained sand to sandy loam soils of the Zanderij formation.

Research is being carried out in both locations and the next step will be an integration of the results into a farming system most suitable for that particular region.

Often the question has been raised on the importance and use of agricultural research in the developing countries.

Agricultural research produces very seldom spectacular results, unless these can be translated in hard financial data.

Large scale agricultural operations after the second world war are: the Foundation of Mechanized Agriculture, the banana Company, both in the Young Coastal Plain. The palm oil estates and the beef cattle activities on the well drained soils of the interior. Years of studies were however required to indicate that a large scale operation was economically feasible.

Not only is research needed to study new crops and new farming systems, but there must always be an organization or institute that is alert to cope with calamities which can threaten certain crops, in a most unexpected way.

A few years ago "moko" disease was observed in an isolated plantain area. Moko is a very serious disease, that can completely destroy banana plantations in a short time. Alertness resulted in a timely control of the disease.

Coconut palms died from an unknown disease called "hartrot". Research carried out in co-operation with experts from the → indicated that probably flagellates were the causative agent of the death of the palms. This unique finding attracted international attention and resulted in provisional measurements to check the spread of the disease. However, extended fundamental research is needed to study the disease in order to be able to introduce a permanent control system.

It was not only in the field of plant pathology that research contributed to our agricultural development. After the second world war soil research was stimulated. Soil surveys started and in a second phase studies about the interaction of soil properties and crop production were initiated. In a later stage fertilizer trials with various crops were carried out.

Plant protection and soil studies are centred around a variety of annual and perennial crops while Agro-technological research is adapted to develop techniques for processing and conserving certain agricultural products.

Suriname is a country with good potentials for agriculture. However, research will be needed to indicate what farm model has to be used in a particular region.

Given the natural potentials of soils and climate, it will be a "new" farmer who will and can exploit these potentials with a reasonable profit.

A new farmer who will differ completely from the farmer of some decades ago.

Suriname is a large country with a small population. To exploit our soils economically, skilled farmers, who will operate the land with modern techniques, have to be introduced.

Finally I have to indicate some misconceptions which exist in relation to agricultural research. Stimulating agriculture is not only related to research and the type of farmer!

As was mentioned before, research is carried out to study interactions between crops and growth factors or to study specific problems of certain crops.

However, research is only a means to reach a certain goal. This goal is generally a higher and better production to improve the living conditions.

This can only be achieved by necessary steps taken by the government. These steps are not controlled by research, but have a direct influence on the policy of research.

If the results of research are not translated and promoted through other channels, than research becomes more or less sterile and hardly contributes to an increase of agriculture production.

Ladies and gentlemen, I do hope that with this brief sketch I have been able to introduce you into some research aspects which have been carried out and into a vision along which agriculture research has to develop.

It is my sincere wish that this meeting will contribute to stimulate the development of our agriculture in a modern way. I wish you a very fruitful meeting!

**OPENING ADDRESS BY MR. J. SISAL, MINISTER OF AGRICULTURE,
ANIMAL HUSBANDRY AND FISHERIES**

After the Minister has formally addressed his Excellency the President of the Republic of Suriname and the other distinguished guests, he presents the following statement:

“For the development of the agricultural sector during the coming 10 – 15 years, the Ministry of Agriculture, Animal Husbandry and Fisheries has prepared a multi annual integrated agricultural development plan.

As a contribution to the national goals, the main objectives of the agrarian sector are an increase in production and the creation of full employment with a reasonable minimum income for the producer.

Research is the basis of development, in this case of agricultural development. It is well known however, that research is a very complex, costly and time consuming activity. Developing countries have to consider very carefully therefore which crops to focus their attention on.

For this symposium the topic is maize and peanuts (groundnuts).

These two crops are very important to the economic development of Suriname. We import quite a lot of these products, although it is possible due to our conditions here to cultivate these crops on a commercial basis.

There is a lot of research still needed of course, especially in the field of farm mechanisation, crop protection, selection of varieties etc.

I am convinced however, that we can provide for our own wants with regard to these two crops.

The problems we have here are not typical for Suriname, that's why this international gathering of research people can contribute a lot to help solve these mutual problems.

During the workshops and the field trips, there will be enough time I hope to exchange experience, knowledge and skills with regard to these two crops.

I wish you all a pleasant and very fruitful time during your stay in Suriname”.