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*Joint symposium on maize and peanut. Held in Suriname  
on behalf of the 75th Anniversary of  
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*November 13 – 18, 1978*



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## *ECONOMIC ASPECTS*

### **MICRO-ECONOMIC ASPECTS OF MAIZE IN SURINAM IN RELATION TO IMPORT SUBSTITUTION**

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#### **INTRODUCTION**

In Surinam maize is grown mostly as a catchcrop after clearing virgin or secondary forest. Most of the area planted with maize consists of small plots (0.1 – 0.5 ha) with a few plots larger than 2 ha. Total acreage amounted to  $\pm$  100 ha in 1977, with a total production of 210 tons dry crops; local production is used as poultry feed; small amounts are prepared as cooked corn (green corn) and maize meal. Total import amounts to 23,000 tons of grains (1977).

#### **PRODUCTION TECHNIQUES AND COST OF PRODUCTION**

Local production technique is still on a primitive level. After clearing and burning the forest, maize is planted as the first crop. Thereafter the area is used for other crops (ground provisions; vegetables, pulse).

There is a minimum of tillage (cutlass or hoe): sowing, weeding and harvesting are done by hand; no fertilizer and pesticides are applied. Yields of the plots with this traditional cropping system are very low (750-1200 kg/ha).

Apart from the system mentioned above there are a few farms where maize is regularly planted once a year or once in two years. Mechanization of seedbed-preparation is becoming an often used practice on these farms, due to the increasing labor costs. Also more attention is paid to the crop on these relatively larger farms, resulting in higher yields (up to 1800 kg of grains/ha).

- Production costs for the traditional system ranges from Sf 935 – Sf 1035/ha. With the low yields which are obtained on these plots the cost per kg varies from Sf 1.00 – Sf 1.10/kg (grain).
- Mechanization of seedbed preparation and the application of fertilizers as is done by the few farmers holding larger plots results in production costs of  $\pm$  Sf 0.29 per kg (grains).
- A couple of field experiments were carried out by the Ministry of Agriculture, where more emphasis was laid on the mechanization aspects and the aspects concerning plant nutrition and plant-protection. These experiments resulted in a cost-price for grain corn of  $\pm$  Sf 0,29 per kg (grains).  
Those experiments included the following activities:
  - a. seedbed preparation with 2 and 4-wheel tractors
  - b. sowing by 1-row handsower
  - c. thinning and plant replacement with machete
  - d. fertilizing by hand
  - e. weed and insect control with knap-sack sprayer
  - f. harvesting by hand
  - g. treshing by mobile field-tresher (Borgia).

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A total of 38 man-days were needed for the 1 ha-crop (except seedbed preparation and field control).

#### **COST OF PRODUCTION IN RELATION TO IMPORT SUBSTITUTION**

With reference to the national development target of import-substitution of agro-imports and bearing in mind the existing import price of maize (grains), the results of the above-mentioned experiments should be subject for further study.

Compared with the traditional cropping system and the system whereby only seedbed preparation is done with machines, the latter appears promising.

#### **MAIZE PRODUCTION THROUGH PROJECT-DEVELOPMENT**

As a consequence of the still existing constraints (e.g. plant protection, crop rotation), no commercial large-scale operations of maize-growing can be expected in the nearest future. This does not mean that the acreage of the individual small-holders cannot gradually increase.

Bringing at the farmers disposal the necessary inputs such as machinery and implements, intensive extension services, marketing and credit facilities, will in short term certainly result in a gradual increase of local maize production of up to 1000 hectares (2500 tons = 10% of imports). An important role should be played by pilot farms (eq. Tijgerkreek, L.O. Commewijne) providing inputs and marketing services to surrounding farmers in an outgrower setting. Besides, such a setting offers opportunities to conduct further practical studies on aspects of further mechanization, co-operation, farm size and income crop rotation.

This and the exploitation of one or two pilot-farms in the interior can provide further useful data for projects of middle and large scale maize operations.

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Table 1. Regional division maize acreage and production (1973 – 1977)

District		1973	1974	1975	1976	1977
Commewijne	(ha)	21.6	20.1	10.5	7.1	16.9
	(ton)	36.6	37.3	21.4	6.6	33.2
Coronie	(ha)	29.4	37.0	34.0	37.0	15.0
	(ton)	43.9	66.2	60.0	66.2	22.6
Marowijne	(ha)	16.6	—	21.8	17.0	46.4
	(ton)	49.6	—	64.0	19.0	108.9
Suriname	(ha)	11.7	7.0	10.4	3.8	8.0
	(ton)	23.8	10.7	9.5	3.6	18.1
Saramacca	(ha)	59.7	54.0	65.2	30.0	—
	(ton)	94.0	73.3	115.7	36.4	—
Para	(ha)		2.3			
	(ton)		5.9			
Totaal	(ha)	139	120.4	141.9	94.9	86.3*
	(ton)	247.9	193.4	270.6	131.8	182.8

\* dried cobs

Source: Ministry of Agriculture  
Agro-Economic Division

Table 2. Imports of maize

1975	17.000 tons* value Sf 3.40 million
1976	22.000 tons value Sf 4.35 million
1977	23.000 tons value Sf 5.18 million

\*yellow corn unmilled

Source: USDFA Service  
American Embassy in Surinam

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Table 3. Estimate of inputs and production costs (traditional system)

	mandays per		costs per ha
	ha	acre	
seedbed preparation and sowing	25	10	Sf 375,-
weeding	20-30	6-12	Sf 300,- – Sf 400,-
picking and hurking	12	5	Sf 180,-
drainage	3	1	Sf 45,-
seed	–	–	Sf 25,-
tools and bags	–	–	Sf 10,-
<b>Total labour input 60-70</b>	<b>22-28</b>		
<b>Total production costs</b>			<b>Sf 935 – Sf 1.035</b>
Average production 1000 kg per ha (400 kg per acre)			
<b>Total per ha</b>		<b>43 mandays</b>	<b>Sf 1.360,-</b>

US\$ 1.00 = Sf 1.77

Source: Ministry of Agriculture  
Agro Economic Division

Table 4. Inputs and production costs (transitional system)

	mandays per ha	costs per ha
seedbed preparation by contractors machines	–	375
sowing and thinning	10	150
fertilizing	3	45
weeding	10	150
drainage	5	75
picking and hurking	15	225
seed (25 kg)	–	25
Urea and NPK (600 kg)	–	300
tools and bags	–	15
<b>Total per ha</b>	<b>43 mandays</b>	<b>Sf 1.360,-</b>

Average yields 1800 kg/ha; 70-80 bags of 35 kg (dry cobs)

US\$ 1.00 = Sf 1.77

Source: Ministry of Agriculture  
Agro Economic Division

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Table 5. Production costs of field experiments Min. of Agriculture  
Tijgerkreek West – 1 ha (2,5 acres)

	wages <sup>1)</sup>	costs of machinery	materials	total costs
seedbed preparation		Sf 175.00		Sf 175.00
sowing – thinning and plant replacement	Sf 62.50			62.50
weed control		37.50		37.50
fertilizing		50.00		50.00
pest control		75.00		75.00
picking and transport		162.50		162.50
seed (20 kg)			Sf 20.00	20.50
herbicides			22.50	22.50
pesticides			64.00	64.00
fertilizer			380.00	380.00
Total field production costs				Sf 1,049.00
Field production costs per kg (yield 4650 kg/ha)			Sf 0.23/kg	
husking and treshing			0.04/kg	
drying <sup>2)</sup>			0.02/kg	
Total production costs			Sf 0.29/kg	
US\$ 1.00 = Sf 1.77				

1) Wages were calculated on the basis of Sf. 12.50/manday.  
Adjustment of these costs to Sf 15.00/manday would add another  
Sf 0,02 to the realized production costs, this bringing the cost-price to Sf 0.31/kg.

2) Estimation by the Agro Technical Division- Min. of Agric.

Source: Ministry of Agriculture

## CONCLUSIONS

1. Development of maize production in Suriname is only possible by through integrated approach whereby all the various aspects concerning the crop are taken into account.
2. Substitution of 10% of imported maize can be achieved on short term providing the necessary inputs to farmers: an important role in this development should be played by pilot farms.
3. For obtaining further data on the various aspects of middle and large scale maize production pilot-farms should be established in the interior.

*Maize – Economic aspects*

NAME OF PAPER: Micro-economic aspects of maize in Surinam in relation to import substitution.  
(A.Graanoogst)

Question by: van Marrewijk  
Country: The Netherlands

QUESTION: Leaving out of discussion whether the computations of cost-price of maize in Surinam (based on one single experiment) has much validity, I should like to raise the question whether local production should necessarily be cheaper than world market prices, especially in the early phase of introducing new crops. Since diversification of agricultural production and import substitution are political goals, one should create the right atmosphere for the pursued change. This might include protection of local farmers by restricting imports, imposing import taxes and by a system of guaranteed prices.

ANSWER: It is agreed with Mr. v. Marrewijk that for realization of the objectives concerning diversification of agro-production and substitution of agro-imports the right atmosphere should be created. Apart from the suggested economic measures like import-restriction, import-taxes and guaranteed prices for farmers, the right atmosphere also includes non-economic measures such as methods of research focused on the local needs. However, before putting into operation the suggested economic measures the following should be taken into account: unmilled corn is mainly imported for the processing of poultry-feed. Putting up e.g. import-taxes, 26% at present source, Marketing Section Ministry of Agriculture, will result in higher poultry prices provided no further steps are taken like raising productivity in poultry-farming and price-control. Since consumption of poultry meat is almost the only way to relatively cheap protein for the lower-income classes, a raise in poultry prices should be avoided (social economic reasons) unless alternative inexpensive sources of protein-supply such as pulse and fish are available. In this context the need for an integrated program on maize-research including crop rotation calls for special attention.