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**C. F. C. S.**

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# MAIZE IN JAMAICA : PRESENT STATUS & FUTURE POSSIBILITIES

S. M. SEHGAL

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## HISTORICAL SKETCH

Maize (*Zea mays* L.) or corn has been grown in Jamaica for centuries. Sloane (*Natural History of Jamaica* 1687-89) records that when he visited the island he found corn growing commonly. Varieties with red, yellow or white grains were grown. During 1918-19, the Government, Jamaica Agricultural Society, and other agencies promoted corn production in the island. The farmers in the parishes of St-Ann and Trelawny planted corn extensively and as a result little, if any, corn was imported into the island in 1919. The increased production led to depressed prices and in subsequent years the area in corn was considerably reduced. To meet its domestic needs, Jamaica kept importing huge quantities of this cereal year after year. In 1939, two important steps were taken by the Government to enable the island to be self-supporting in corn and cornmeal. 1. A cornmeal factory was erected. 2. A corn improvement programme was initiated to evolve a suitable type of corn which would be high yielding and be of a yellow colour for cornmeal. The work was carried out by Mr. L. N. H. LARTER, Botanist of the Agricultural Department. Mr. LARTER isolated a yellow segment from the widely grown and very variable local red corn of that time. The yellow variety thus evolved was named Jamaica Selected Yellow or « J. S. Y. ». The seed of J. S. Y. was increased and distributed to the farmers.

In 1940-41, corn was once more extensively planted and in 1942, Jamaica, after a lapse of 22 years, was once more self-sufficient in this cereal. In subsequent years, the emphasis of the Government shifted to the production of other food crops such as yams, sweet potatoes, etc. and minimum guaranteed prices were fixed for many of these crops. The growing of these crops proved to be more profitable than corn and as a consequence, corn production rapidly declined.

## PRESENT STATUS

### *Local Production and Imports*

The island's requirements for corn, at present, are about 65,000 short tons. The local production is estimated to be around 4,000 to 5,000 short tons (Table I). In

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*Research Station, Pioneer Hi-Bred Corn. Co. Caymanas Estate, Spanish Town, Jamaica.*

1968, Jamaica imported 104,983,484 lbs of whole corn at a value of £ 1,402,409 and 11,227,967 lbs of cornmeal at a value of . 351,484. In all, Jamaica spent one and three-quarter million pounds on corn and cornmeal imports (Table 2).

There are, at present, about 12,000 acres in corn. Almost all corn, except a few hundred acres in the lowlands of St-Catherine, Trelawny, and St-Thomas, is grown in small scattered patches on red or brown bauxite soils at altitudes ranging from sea level to 2,500 ft. The principal parishes where maize is grown are St-Elizabeth, Manchester, St-Ann and Trelawny. The average yield for the island is about 12-15 bushels per acre, a few progressive small farmers around 30 bushels per acre, and the large growers approximately 60-65 bushels per acre.

### *Cultural Practices*

There are two planting seasons — « spring » corn is planted in March-April and « fall » corn in August-September. Both planting seasons are patterned after rainfall distribution.

On small holdings, land is prepared either by forking or by « contract » ploughing and harrowing with machinery. Planting distances usually adopted are 3' × 3' or 3' × 4' with 3 to 5 seeds per hole. On « red dirt » soils spacing of 2' × 1' with one seed per hole or 2' × 2' with 2 seeds per hole has been recommended (MITCHELL, 1949). The corn crop is frequently inter-cropped with yams, sweet potatoes, gungo peas, and pumpkins. Manures and fertilizers are not commonly applied but their use is recommended (HEWITT, 1954) and is on the increase. The variety commonly grown is J. S. Y. This is being replaced by hybrid corn developed by the Pioneer Hi-Bred Corn Co. and distributed to the farmers by the Extension Department of the Ministry of Agriculture. The harvesting, shelling, and drying, at small farms, is done by hand. Most of the corn produced is consumed for food and feed at the farms—very little enters commerce.

On large farms mechanized maize production is carried out. There are only half-a-dozen such farms (Caymanas Estate in St-Catherine, Wales and Merrywood in Trelawny, Developments Ltd. and Fred M. Jones Estate in St-Thomas) which produce some corn. The cultural practices recommended are described in detail in a recent paper by SEHGAL and BROWN (1968). A summary of the recommended practices is given below :

1. Prepare a smooth seed bed of a reasonably good tilth. This can be achieved either by ploughing followed by harrowing or by the use of a Rotovator.
2. Soil tests should be used to determine the amount and kind of fertilizer that should be used, but, generally speaking, a minimum of about 120 lb of nitrogen and 60 lb each of phosphate and potash is recommended.
3. Aim for 16, 500 plants per acre. Too heavy or too light a stand is undesirable.
4. Immediately after planting, apply 2 lb Atrazine 80 W herbicide (or Gesaprim) per acre over the rows. This will control weeds in the early stages of plant growth and will eliminate the need for weeding. Mix Atrazine with enough water for spraying so that the chemical is uniformly distributed over the entire area.
5. To control budworms (*Spodoptera frugiperda*), use 1 1/2 lb Sevin 85 W or 1 1/4 lb Dipterex 95 W per acre mixed with water. It is extremely important that the spray is directed into the leaf whorl for effective insect control.

6. Cultivate if necessary. Avoid deep cultivation close to the rows when the plants are more than 6" high.

7. Irrigate if necessary. Do not allow the leaves to wilt at any stage of plant growth. Irrigation at flowering stage is absolutely essential and must be resorted to if there is no adequate rain.

8. Maize will not tolerate water-logged conditions. If water tends to stand in the field, drain it off as quickly as possible.

9. Corn can be harvested mechanically by the ear corn picker, pickersheller, or corn combine. The corn should be properly dried and stored in clean tight bins to reduce damage by storage insects. For fumigation of the grain, phostoxin is recommended.

#### *Economics of Production*

The cost of production varies considerably. On irrigated lands, the mechanized maize production cost is around . 30 per acre. This includes machinery depreciation, overheads, cost of hybrid seed, insecticides, herbicides, and fertilizer. On small holdings where minimum inputs (improved seed, no mechanization except implemental tillage, very little fertilizer, no insecticides and herbicides) are used, the production cost is around . £ 12 to . £ 15 per acre.

### FUTURE POSSIBILITIES

#### *Research*

In the Corn Belt of the United States, maize hybrids are available with a yield potential of 200 bushels per acre. At present such hybrids are unknown in the tropical world. There is a ceiling of around 100 bushels per acre in the currently available tropical hybrids or varieties. A breeding programme by the Pioneer Hi-Bred Corn Co. is under way in Jamaica to develop hybrids with a much higher yield potential than those currently available. The other research objectives are to develop hybrids which are adapted to mechanization, which have improved nutritional qualities, which respond to high fertility and are insensitive to photoperiod, which can withstand high density of plant population per acre without going barren, which are resistant to disease and tolerant to insects (SEHGAL, 1966). Various breeding techniques are being employed to achieve these objectives (SEHGAL, 1965).

The Government Agronomist, Mr. E. R. H. MARTIN, is concentrating his efforts on several things including varietal improvement, yield testing, and understanding of cultural practice alternatives (\*). There is a great need to understand the agronomy of the « tropical corn » plant and any research findings on this subject can prove to be extremely useful.

#### *Production*

Productivity per unit of land area is dependent on a variety of factors — the three most important ones are : seed, soil and season. The seed should have built-in

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(\*) MARTIN, E. R. H., 1966 Corn, Sorghum, and Rice. Unpublished.

genetic potential for high yields ; the soil should be neither too acid nor too alkaline, the soil fertility should be properly brought into balance by the application of fertilizers ; the season should be neither too dry nor too wet, if it is dry there should be provision for irrigation, if it is wet there should be means to drain off excess water. Only a large progressive farmer who has the will and resources can effectively control the variables which hinder optimum productivity. Unfortunately, the accepted Government policy in Jamaica is to promote corn production at small holdings and leave the big growers in traditional crops, especially sugar cane. Will small farmers meet the challenge and grow enough corn profitably to meet the needs of the country ? This only time will tell ! However, the Extension Department of the Ministry of Agriculture has full hopes and they expect to raise the local production from 4 000 tons to 30 000 tons by the year 1973 (\*).

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TABLE 1

*Local production and imports whole corn, Jamaica*

Year	Production '000 lb	Imports '000 lb
1940 .....	13 774	1 938
1941 .....	25 575	324
1942 .....	11 779	—
1943 .....	9 756	2 816
1965 .....	10 720	50 764
1966 .....	11 000	109 376
1967 .....	8 050	103 092
1968 .....	7 736	104 983

TABLE 2

*Value of whole corn and cornmeal imports, Jamaica*

Year	Whole corn value £ '000	Corn meal value £ '000	Total value £ '000
1965 .....	587	179	766
1966 .....	1 332	125	1 457
1967 .....	1 124	211	1 335
1968 .....	1 402	351	1 753

(\* Five Year Agricultural Extension Programme-Corn, Onions, Red Peas, Congo Peas. Unpublished.