MAIZE IN THE MARKHAM VALLEY

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INTRODUCTION

Maize was grown on about 700 hectares of the Markham Valley in 1978. About a third of the crop was grown by smallholders. As this crop is produced over a short period and demand for it is all year round, storage is necessary.

Variety testing has been the main continuing research programme and as a result, two improved varieties are available. Hopefully, up to 20% of the area will be sown to them this year.

IMPROVED VARIETIES

Hybrid QK 394 with an average yield of 7.4 t/ha has consistently given almost 2 t/ha better yields than the standard hybrid QK 217 in experiments. This is because it has more cobs per plant and bigger grains. This variety silks a few days later than QK 217 at 60 days after sowing and is less susceptible to lodging (falling over). Both hybrids were developed by breeders at D.P.I. Kairi in North Queensland. A limited quantity of QK 394 is now available in Papua New Guinea.

The open pollinated (OP) variety Suwan was developed in Thailand and produces an average of 5.5 t/ha under test conditions. This is 0.3 t/ha better than the standard OP variety Metro, and not much lower than hybrid QK 217. Suwan has a larger grain size than Metro, is slightly earlier maturing (55 days to silking) and is resistant to downy mildew. Downy mildew is a very serious disease which may become more common in PNG as maize production expands.

White maize varieties from the Philippines performed as well as yellow OP varieties in their first field test in 1977. The white grain can be milled into grits and used instead of, or mixed with, rice. It is the staple food in parts of the southern Philippines. If people in PNG like it, the local demand for maize products could be increased greatly.

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Downy mildew on maize

SOWING

Hybrid varieties such as QK 217 and QK 394 should be sown at 17 kg/ha. Open pollinated varieties such as Metro and Suwan should be sown at 12 kg/ha to give a plant population of 50 000 plants/ha i.e. 1 plant every 30 cm in rows 70 cm apart.

Sowing dates are listed below for various maize growing area.

Erap-Leron	-	January
Leron-Mutsing-Umi	-	mid-January to mid-February
Umi-Gusap-Dumpu	-	mid-February to mid-March

Sowing at these times will usually mean that there is enough moisture for crop growth and yield and dry enough conditions for harvest. This may not always be true, however. For instance, the 5 week dry spell in February and March at Marambung in 1977 reduced experimental yields to 1.5 t/ha through moisture stress even though sowing was done at the recommended time.

Waterlogged soils or light, gravelly soils should not be sown to maize.

LAND PREPARATION

New land should not be planted to maize but if there is no choice, ammonium sulphate should be used to provide sulphur. On a short fallow up to 100 kg/ha of nitrogen is required (10 bags/ha of ammonium sulphate). On a long fallow and in a normal crop rotation, 25-50 kg/ha of nitrogen should be enough.

Soil analyses can be used to find out if there is enough phosphorous present. A level of 10 ppm is too low and 10 to 20 kg/ha of phosphorous should be applied (2.5 - 5 bags/ha of single superphosphate or 1.25 - 2.5 bags/ha of triple superphosphate).

Part of a 400 ha maize crop at Raumion in 1978

WEED CONTROL

Apply atrazine at 1-2 kg a.i./ha (1.25 - 2.5 kg/ha of 80% product). Stomp (pendimethalin) at 1.5 kg a.i./ha has shown promise for control of *Rottboellia*.

INSECT PEST CONTROL

Maize has very few pest problems in the Markham Valley. Armyworm *Spodoptera* sp. can cause leaf damage during the first three or four weeks. Any one of the following insecticides should control it: BHC granules 6% (1.5 kg a.i./ha), carbaryl (1 kg a.i./ha), acephate (0.5 kg a.i./ha).

Heliothis armigera feeds on the silk at the end of the cob but does not do enough damage to need controlling.

The maize stemborer *Ostrinia furnicalis* is common on the northern side of the New Guinea mainland as well as on the islands. Spray trials on New Britain and in the Markham Valley have shown that control of stemborer does not give an increase in yield.

YIELDS AND RETURNS

Depending on the variety and season the crop should mature 95 to 110 days after sowing.

Threshing maize : cobs in background, waste in foreground and thresher on right

Average commercial yields have been about 2.5 t/ha in the past but these may improve with the new varieties. At a current price of K100/t and costs of production ranging from K100 to K150/ha, net returns of up to K150 can be expected.

CONTACT D.P.I. BUBIA FOR FURTHER INFORMATION ON MAIZE GROWING.