

### Highlights of this Survey:

1. Sweet Potato can be cultivated twice a year in succession on paddyland where rice cultivation is not possible due to shortage of water.
2. Well drained sandy loam soils are more suitable for sweet potato cultivation.
3. Sweet potato planting material needs to be renewed periodically to get sustained high yields.
4. Staggered planting helps to harvest the crop in instalments to suit labour available and also send the produce to the market in instalments so that adverse effects of Market Price fluctuations can be avoided to a certain extent.

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### PERFORMANCE OF FINGER MILLET (*Eleusine coracana* (L.) Gaertn.) VARIETIES UNDER SOUTHERN DRY ZONE CONDITIONS.

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K.K.Perera, Research Officer  
Angunukolapelessa.

Finger millet (*Eleusine coracana* (L.) Gaertn.,) locally known as 'Kurakkan' had been cultivated traditionally since ancient times in Sri Lanka. It is grown mainly under chena conditions, with a low yield range of about 800-1000 kg/ha. This poor yield is mainly due to the existing local varieties poor cultivation practices by the chena farmers. The departmental recommended variety MI 302 is low yielding, compact ear head type, uneven maturity and susceptible for pests and diseases. Therefore, the improvement of Kurakkan varieties with the following desirable characters are urgently needed to increase its production the characters are: High yielding ability, late maturity for maha (90-110 days), early maturity for yala (75-90 days), even maturity, open ear head type, tolerant to pests, diseases and lodging.

## Materials and Methods:

The experiments were laid out at the Regional Research Station, Angunukolapelessa. The soil type sandy-clay belong to Reddish Brown Earth with low humic gley). It was laid in a randomized complete block design. In four seasons namely 1981/82 Maha, 82/83 Maha, 82 Yala and 83 Yala. The detail of the test entries, plot sizes, number of replicates and rainfall data during the cropping period are given in table 1, 2. The Maha and the 82 Yala trials were conducted purely under rainfed conditions while the other Yala trial was conducted with supplementary irrigation. Seeds were sown thinly in rows spaced 30 cm apart and seedlings were thinned out after the establishment of seedlings to 3-4 cm in height with a distance of 15 cm within the row. A fertilizer dose of 62 kg/ha of urea, 48 kg/ha of conc. super phosphate and 45/kg/ha of muriate of potash were applied. Nitrogen was applied in two split doses of 15 kg/ha at planting and 47 kg/ha at 4 weeks after planting. The  $P_2O_5$  and  $K_2O$  were applied as a basal dressing.

The observations were recorded on yield per plot, yield per plant, tillers and effective tillers per plant ear length, No. of fingers per ear head, ear head type, culm height, lodging percentages, incidence of pests and diseases, days to 50% flowering and days to mature.

## Results and Discussion:

### a). Yield and yield component.

The yield data of different varieties during the four consecutive seasons and mean yield of each season are presented in Table 2, 3. 1982 Yala experiment had shown that the variety JNR 3B 1008 recorded the highest grain yield of 2785 kg/ha followed by HPB 83-4 and K5. However, there is no statistically significant different among the varieties at 5% significant level. The Co 10 variety also performed well and recorded a grain yield of 2577 kg/ha.

The Yala 83 experiment consisted of 27 entries and the yield different was statistically non significant because of high SE due to uneven plant growth as a result of insufficient and uneven issue of

supplementary water to some varieties. However, several varieties had given over 2000 kg/ha. Varieties JNR 3B 1008 Co 10 and HPB 83-4 performed well during the both seasons (82 Yala and 83 Yala) recording a mean yield of 2717, 2351 and 2813 kg/ha respectively.

The 1982 Yala experiment was conducted mainly under rainfed condition. It revealed that, when there is a better distribution of rains, the crop establishment become easy under pure rainfed condition during the Yala season.

During the Maha season the recommended variety MI 302 gave poor yields in comparison to some Indian varieties and they significantly outyielded with the recommended cultivar, Co 10, PR 202, JNR 3B 1008, HR 231-1 and HPB 83-4 varieties recorded a better grain yield during 81/82 Maha and 82/83 Maha seasons accounting for an increase ranging from 85%-135% over the recommended variety.

The yield component studied during each season have not shown any statistically significant difference among the varieties except the tiller count studied during 83 Yala and 82/83 Maha seasons.

b). Ear head characters.

Testing varieties consisted of open and compact ear head type while all Indian varieties and local variety-1 were open type, compact ear head type was recorded on the variety MI 302 and a local variety-2. The other ear head characters such as ear length and the number of fingers per ear head of some varieties were significantly different with the recommended variety.

c). Maturity.

During the Yala season the crop had taken more days to mature in comparison to the Maha season. The local variety-2 and the recommended variety took over 100 days to mature during the Maha season while the other varieties took less than 100 days to mature.

MI 302 and local variety-2 produced ear heads unevenly and two pickings are needed to harvest. But the Indian varieties were fairly even in mature during

the Maha season. However uneven maturity was observed on the varieties PR 202, HR 228, E 1-2-1, PR 717, PES 18 and PES 19 during the Yala season. Therefore, these varieties were not adopted to the Yala condition.

d). Lodging.

The varieties tend to lodge at the maturity period however the lodging incidence was not recorded at the vegetative period and low incidence was observed at flowering. The MI 302, BR 407 and T 20 had shown low incidence of lodging and a bushy type local variety which was collected from Pallebedda area had shown no incidence of lodging. Rest of the varieties are susceptible to lodging and it vary from season to season.

Low incidence of lodging is an important aspect because it makes difficult to harvest when the crop has lodged. However, the farmers sometime have a ratoon crop when the crop has lodged.

e.) Pest and diseases.

Finger millet is affected by blast (*Pyricularia* Sp) during Yala and maha seasons. But there was no severe outbreak of this disease during the seasons in which the experiment was conducted. Leaf blast infection was prominently seen during the vegetative period of the crop however, it was recovered after sometime during the same stage. The neck blast infection was not recorded. The local varieties were tolerant to the leaf blast in comparison to the introductions. It was observed that the blast disease of finger millet becomes severe during the dry period and it tends to decrease during the rainy period.

Stemborer is one of the most important pest of finger millet and it damage was seen in improved varieties. But there was no heavy incidence of stem-borer damage except in some varieties such as MI 302 and Indraf-5.

Conclusion:

Overall performance of the varieties indicate that the varieties JNR 3B 1008, HPB 83-4 and Co 10 perform well during the Yala seasons with supplementary irrigation while the varieties Co 10, PR 202, JNR 3B 1008, HR 231-1 and HPB 83-4. perform well

during Maha seasons under pure rainfed conditions. If there is sufficient rains during Yala season then there would be a chance to raise the crop successfully under pure rainfed conditions.

The main disadvantage of the above Indian varieties was that they tend to lodge during the maturity period.

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