

PROGRAM: Vegetables and Ornamentals

SUBPROGRAM: Vegetables

PROJECT: Japanese Taro Observation Trial 2002

Project Officers: M. Traynor and P. Hopkinson

Location: CPHRF

Objectives:

Compile basic yield and quality data under local conditions.

Compare the yields of different sized corm propagules.

Provide a sample of harvested corms to the Project Coordinator for quality assessment.

Identify any crop management issues that may need addressing.

Introduction:

The need to diversify vegetable production was identified as a priority by Asian vegetable growers and is included in current business plans for the Vegetable Research Program. Although the large “Bunlong” taro variety is produced locally, the small-corned Japanese type is unknown to growers. A project currently run by the University of Central Queensland has identified seasonal demand and supply of this taro in Japanese markets. Australia has an excellent opportunity to export to Japan during the seasonal production shortfall of the major Asian suppliers. Planting material was supplied to DBIRD to participate in initial production trials, which are being conducted on a range of sites in NSW, Queensland and the CPHRF in Darwin.

Method:

Planting material

Japanese taro (*Colocasia esculenta* var. *antiquorum*) cultivar “Ishikawa wase”

Propagule size ranges (10-20 g) (20-30 g) (30-60 g) (100-300 g)

Trial design

Raised beds 50-cm wide and 30 cm high.

1.0 m between beds.

0.3 m plant spacing.

Propagule sizes planted separately in non-replicated plots.

Corms planted 10 – 20 cm into hills.

Management:

Basal fertiliser

CK55 at 100 g/m of row

Super at 100 g/m of row

Gypsum at 200 g/m of row

Injection fertiliser

0 – 1 month: corm emergence/no injection

1 – 4 month: 320 kg N/ha

213 kg K/ha

100 kg P/ha

4 – 6 month: 80 kg N/ha

120 kg K/ha

48 kg Ca/ha

Irrigation

2 x 20-cm high flow T-Tape per bed.

Watering time was 30 minutes per day for early growth, increasing to 30 minutes twice per day after corm initiation.

Planting date: 01/12/2001

Harvest date: 28/5/2002 to 2/7/2002

Pest and disease control was not required for the trial.

Results:

The crop was planted and grown during the hot and humid conditions of the wet season with fairly regular monsoon rainfall from January through to March. With weekly injections of fertiliser, growth was fast and vigorous. Vegetative growth peaked in early April, about four months from planting. In early May, plant leaves were turning a paler colour and leaf petioles were starting to bend over. These visual signs indicate that corm development is complete. By mid May, leaves were dying back and progressive harvests commenced in late May. Grading was done on corm weight only, and excluded other external characteristics.

Table 1. Average corm number and weight for each propagule size

Propagule	Grades								Mother corm Weight (kg)
	Small (<20 g)		Medium (20-40 g)		Large (40-60 g)		X-Large (>60 g)		
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	
10-20 g	22	0.26	24	0.71	15	0.75	7	0.61	0.22
20-30 g	26	0.30	28	0.81	16	0.78	9	0.79	0.22
30-60 g	34	0.38	35	0.95	34	1.65	12	1.18	0.32
100-300 g	90	1.14	83	2.37	53	2.76	34	4.21	0.46

Although the sample plant numbers were low, the increase in total yield with larger propagules is evident. The percentage of unmarketable yield for each propagule size was not significantly different. If only medium and large grades are suitable for export, approximately 40% of harvested yield was unmarketable.

Table 2. Average yield per plant

Harvest date	Grades								Mother corm Weight (kg)
	Small (<20 g)		Medium (20-40 g)		Large (40-60 g)		X-Large (>60 g)		
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)	
04/06/2002	16	0.20	20	0.64	14	0.73	8	0.75	0.22
11/06/2002	24	0.30	21	0.63	15	0.74	7	0.58	0.24
18/06/2002	21	0.23	23	0.67	14	0.69	4	0.38	0.21
25/06/2002	19	0.22	19	0.57	14	0.70	7	0.60	0.21

Table 2 shows that progressive weekly harvests of seven plants during June showed no noticeable difference in yield. This suggests that optimum harvest maturity for a December planting is at six months and that delays in harvest will not affect yield.

Observations and comments:

- With suitable irrigation, all year production is possible under local tropical conditions. This would allow targeting any export market window.
- Yearly selection of propagules for the desired shape from the harvested crop may help reduce the variation in corm shape that was evident in this trial.
- All corms were quite strongly attached together when plants were lifted from the bed. They were separated manually, adhering roots removed and then washed with high-pressure water. On a large scale, mechanisation to separate and clean the corms would be required.
- While plant spacing of 0.3 m may be suitable for smaller propagules, it should be increased to allow for potential yield increases of larger propagules.
- Samples of marketable corms from the eight trial sites around Australia were sent to the Project Coordinator in Sydney to assess appearance and eating quality. Our corms from the CPHRF trial were rated highly.