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Progress Report. July - December, 1987.

Title of the project - Collection, Classification and evaluation
of Dioscoreas, Aroids and Plectranthus spp.

Professor. H. P. M. Gunasena

Following research activities were in progress during the reporting period at the University Experimental Station, Dodangolla, Kundasale.

1. Germplasm conservation.
2. Germplasm evaluation experiment for Innala (Coleus rotundifolius)
3. Vegetative propagation experiments (Dioscorea spp.)
4. Multiplication of Dioscorea Yam cultivars.
5. Yield potential of Aroids in response to NK fertilizers

1. Germplasm conservation

All accessions are being conserved at above Experimental Station. These include Dioscoreas, Aroids and Plectranthus spp.

2. Germplasm Evaluation of Innala (Coleus rotundifolius)

The field experiment designed to evaluate yield and vegetative characters of 18 Innala accessions had to be abandoned due to a fungus infestation, and the severe drought. The fungus was identified as Rhizoctonia solani. This experiment will be repeated in March, 1988.

3. Vegetative propagation experiments Dioscorea spp.

Experiments on rapid multiplication techniques have reached the termination stage and are being harvested. As stated earlier two methods were used:

- a. Mini sett technique and
- b. Rooted vine cuttings for seed tuber production.

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The details of these experiments have given in the previous Progress Report.

3.1 Mini sett technique

- 3.1.1. The five groups of seed tubers from each of the 10 accessions obtained from experiments 1986, are under investigation in a field experiment designed to evaluate their yield and vegetative performance.

Destructive samples were taken for growth measurements monthly. Final yield is being taken and this experiment is scheduled to be completed at the end of January, 1988.

- 3.1.2. Mini sett technique experiment designed to evaluate and confirm the results of the experiment conducted in 1986 with three weights of tuber pieces from each of the 10 cultivars is at its final stage now.

The scheduled times of field operations had to be adjusted due to the drought conditions that prevailed. (see rainfall data given in Table I.

Sprouted tuber pieces were established in the field in August and monthly destructive samples were taken for growth measurements. The crop is yet in the field and will be ready for final harvest at the end of January, 1988. Tubers produced at the end of fifth month after field planting for each treatment combination are given yield of 25g. seed tuber pieces from 1986 experiment. Results seems to be satisfactory. The yield reduction in 1987 25g. tuber sett may be due to the severe drought that occurred during the crop growth period.

3.2 Rooted vine cuttings

- 3.2.1. The tubers obtained from the 1986 vine cutting experiment are being investigated for their yield and vegetative performance in a field experiment. Monthly destructive samples were taken to measure their growth characters. The final harvesting has been scheduled for the end of January, 1988. The mean tuber yield per plant for each of the 10 cultivars are given in Table. 3.

The yields are satisfactory. Tuber yield per vine cutting is also given in the same Table. The weight of tubers are from the sample taken at the end of fifth month after field planting.

3.2.2. The experiment designed to evaluate the tuber production in vine cutting under field conditions was not satisfactory. The vine cuttings were rooted under high humidity conditions potted in polythene bags for hardening before field planting. Adverse weather conditions affected the plants in the field giving unsuccessful results. Plant mortality was more than 80 percent. This could be due to the severe drought that occurred during initial stages of growth of the cuttings.

4. Multiplication of Dioscorea cultivars are in progress.

5. Yield Potential of Aroids in response to N & K fertilizer

The experiment was established July 1987. The design was a RCBD with three replicates. The treatments were as follows;

N	0	50	75	100	Kg/ha
K	0	100	150	200	Kg/ha

P 200 kg/ha for all treatments applied basally.

The following measurements are being taken from the 2nd week of planting at fortnightly intervals

- i. Leaf area, cm^2
- ii. Dry weights of leaf, petiole tubers
- iii. Fresh weight of tubers

The experiment is in progress and its growth performance is very satisfactory.

6. Involvement of Postgraduate Students

Mrs. N. Hartschandra completed her M.Phil Thesis Defence Examination in July 1987. She is presently undertaking adaptability studies on potential Dioscorea varieties in the Colombo District under the sponsorship of the Department of Agriculture. Mr. D.A.P. Dissanayake has completed further research towards his M.Phil Degree. Some of his field trials were badly affected by the drought and disease occurrence and had to be abandoned.

Mr. J.P. Keerthisinghe, another M.Phil student has been involved with the project since July 1987. It is likely that he will contribute towards this project until project completion. However, it will not be possible to complete his M.Phil research programme due to lack of funds in this project.

7. Request for Extension

The research during the course of this year 1987, was badly hampered due to drought. Some of the research have to be repeated for confirmation. Mr. Dissnayake too will have to undertaken some more research for his M.Phil Degree. Therefore a no cost extension is requested for one year, beginning January, 1988.

Table 1. Rainfall data for 1985, 1986 & 1987 inches.
 Experimental Station, Dodangolla, Kundasale.

<u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Spt.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1985	4.52	2.30	7.32	2.00	5.88	16.6	7.43	4.48	5.68	12.6	11.2	7.00	87.01
1986	19.28	4.92	5.44	6.68	4.44	3.48	3.88	7.54	4.80	14.3	3.48	2.48	80.72
1987	3.00	-	3.20	7.76	8.36	4.16	-	3.28	7.56	18.9	8.08	7.16	71.46

Table 2 Tuber yield per plant (kg) at the end of fifth month for 1986 and 1987 experiments.

Cultivars	Year	sett weight g.		
		35g.	25g.	15g.
Iniala	1986	-	0.43	-
	1987	0.41	0.38	0.35
Nigerian	1986	-	0.54	-
	1987	0.53	0.49	0.45
Raja ala	1986	-	0.48	-
	1987	0.39	0.36	0.33
Thambala	1986	-	0.50	-
	1987	0.55	0.47	0.40
Kahata ala	1986	-	0.51	-
	1987	0.46	0.35	0.25
Rata ala	1986	-	0.54	-
	1987	0.52	0.50	0.44
Le-dantha	1986	-	0.57	-
	1987	0.53	0.51	0.41
Angili ala	1986	-	0.49	-
	1987	0.47	0.45	0.40
Hingurala	1986	-	0.36	-
	1987	0.38	0.33	0.26
Kombuwalli	1986	-	0.55	-
	1987	0.47	0.43	0.40

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Table 3 Tuber yield from vine cuttings and seeds; tubers of vine cuttings

<i>Cultivar</i>	<i>Tuber yield from vine cutting 1986</i>	<i>Tuber yield per plant from seeds of vine cuttings 1987</i>
<i>Iniala</i>	32.86	270.00
<i>Nigerian</i>	31.95	350.00
<i>Raja ala</i>	26.05	150.03
<i>Thambala</i>	34.59	543.80
<i>Kahata ala</i>	33.93	627.17
<i>Rata ala</i>	20.11	393.43
<i>Le-dantha</i>	33.03	660.13
<i>Angiliala</i>	32.56	411.10
<i>Hingurala</i>	20.23	123.50
<i>Kombuwalli</i>	29.88	336.70