

ANNUAL REPORT IN 1998
ACTIVITY PLAN IN 1999

February 1999

Agricultural Extension Improvement Project in Gampaha

C o n t e n t s

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UP LAND CROP

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**ACTIVITY EVALUATION IN 1998 AND
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**SHORT SUMMARY OF THE ANNUAL REPORT IN
1998**

Summary of Administration

1 Expenditure:

Japan side spent Rs2,014,171.75 for General local cost, Rs1,412,088.05 for the Extension and Enlightenment and also Rs925,939 for the Technical exchange Program. Sri · Lanka side spent Rs2,164,260.75 for fuel, allowances, the verification field rental fee , renovations of DATC and so on.

2 Staff:

Mr.S.Rahubadda was assigned to The post of Project Director in place of Mr. S.Amarasakara Mr.Nandana K. jayasiri was assigned to The post of Project Coordinator in place of Mr.G.V.S.Perera.

3 Expert

Mr. OKUDA assumed duties as a long term expert of training and teaching material. Dr.YONEYAMA assumed duties as a short term expert of Soil born disease. Mr.TAKAO assumed duties as a short term expert of Farming Management.

4 Equipment:

We obtained a lorry as technical equipment of 1997. We ordered the technical equipment of 1998 too.

5 Training

Mr.H.S.A.P.Peris, Miss.K.U.M.Champika, Mrs.R.M.W.K.Rathnayaka, Mrs.Ranjane Perera and Mr.W.L.Siriwardena were trained in Japan in '99.

6 Meeting:

Joint committee meeting was held in May. Operation committee meetings were held 10 times. Weekly meetings were held every monday.

7 Report:

Dr.YONEYAMA and Mr.TAKAO made presentations. Monthly reports were submitted to the operation committee.

8 Other:

R/D and TSI were revised. A Technical Exchange Program was implemented in The Philippines.

Summary of the Annual Report In 1998

1. Trial plot

We observed the 3 vegetable crops and 4 other crops under different shading conditions and also the effect of dolomite and coirdust applications.

Verified departmental recommendations on fertilizing, sucker controlling and on weeding on Banana cultivation.

Observed the yield content, growing condition and water content for green gram, Cowpea and maize mulching with paddy straw.

Verified the farmers technique of distinguishing male and female plants on papaya cultivation

Trial of ridge and furrow method using the Moncut and Trichoderma fungicides to control the soil borne disease in cocoyam cultivation.

Identification of pathogen which was isolated from diseased cocoyam and practiced control methods.

Checking pathogenicity against other crops and tested the method of the 'Ridomil' application.

2. Verification

Continued 3 years crop rotation plan utilizing poultry manure as a basal fertilizer.

Followed up departmental recommendations on Pineapple cultivation with coconut.

Started *Dioscoreaceae* crops and ginger cultivation on a largescale, and at commercial level.

SHORT SUMMARY OF THE ANNUAL REPORT IN 1998

Weather reports of January to December (1998) were taken and analyzed at AEIP Ambepussa. Additional reports were collected from Gampaha Botanical Garden and Pasyala Horticultural Centre. Two sets of meteorological equipment were handed over to Makandura and Bombuwela to utilize them and to exchange meteorological data.

Well water conditions were surveyed in order to realize the condition of water resources of farmers group. To improve the use of irrigation techniques, water saving irrigation techniques were tested and guidance was given to make farmers aware of the correct uses of limited irrigation water resources. Well water store and delivery system and movable water distribution system was introduced to group farmers on farmers level and distributed water pumps to group farmers in order to improve their irrigation system.

Construction work of a pump house was started in Oct.1998 to supply water from Mahaoya to be used during the dry period.

Generally there was wet weather conditions throughout the year 1998 than in normal years.

Short summary of the extension activities in 1998

1. Model group

(1) Total of two farmers groups were organized in this year, namely , at Urapola in 98 Yala season and at Magalegoda in 98/99 Maha season respectively. The total number of groups had reached to 11 with 116 members.

(2) Free subsidy of production materials such as seeds, seedlings fertilizer and planting materials to the farmers was changed to loan system and this amount will be paid back to the group fund with certain interest from this season. The total amount from 10 groups had reached to Rs877,716 as by September 1998.

(3) Implemented a special program (to support the establishment of large scale farming) on Banana, Pineapple, and Ginger.

2. Training & training material development

(1) A guideline on fostering production group was formulated in the AI workshop which was conducted during June, July and August in Ambepussa.

(2) Special emphasize was made on the farmers skill training on the specific crops (Betel, Ginger, Banana, Pineapple, Passion fruit and etc.) in the group training period as well as in the special spot training at the group sites and research stations.

(3) The projects introduction Video film was completed in English and in Sinhala edition and 10 copies was distributed to the related organizations at home and abroad.

ACTIVITY RESULT IN 1998

ADMINISTRATION SECTION

1 Expenditure : We spent Rs2,014,171.75 for the general cost from the funds extended by the Japanese side(section) , and also Rs1,412,088.05 for the Extension and Enlightenment cost.

Rs925,939 for the Technical Exchange Program was allocated by the Japan side. Expenses of SriLanka section was Rs2,164,260.75 for fuel, Allowances, field rental fee, renovations of DATC and etc. In this year we were in difficulty due to a shortage in the budget, because the budget of JICA in '98 was reduced. In addition the project telephon bills and the salary of the staff increased and we had also to purches parts of laboratory equipment.

2 Staff : Mr.S.Rahubadda was assigned as The Project Director in place of Mr. S.Amarasakara. He was the chairman of the joint committee in May. Mr.Nandana K. Jayasiri was assigned as The Project Coordinator in place of Mr.G.V.S.Perera. Mr.G.V.S.Perera was one of important people who gave great cooperation to us. We regret his leaving. We hope Mr.Nandana K. Jayasiri too will extend similar cooperaton to us.

3 Expert : Mr. OKUDA arrived on the 16th January as a long term expert of Training and Teaching material. Dr.YONEYAMA arrived on the 31th August as a short term expert of soil born disease and researched for one month. He had successful results. Mr.Jayakody and Mr.ONO worked with him. They contacted HODI also.

Mr.TAKAO arrived on the 17th Sep. as a short term expert of farming management. He had great results despite short period of work lasting only two months. His research methods will be used practically for reserch of the extension section.

4 Equipment : A lorry arrived in February as technical equipment of 1997. We hope to use the lorry more for group activities.

We ordered the technical equipment of 1998 in December.

This order was late due to difficulty of getting qoutations and also because of procedure of application.

5 Training in Japan : Mr.H.S.A.P.Peiris was sent for training on general agriculture for three weeks. He visited research institutes, agriculture extension offices and an agricultural cooperative, farmers and so on in Kanagawa and Okinawa prefectures. Miss.K.U.M.Champika was trained on Farming management, Exteusion and Teaching material for three months at

the reserch institute in Kanagawa prefecture and Tokyo University of Agriculture. Mrs.R.M.W.K.Rathnayaka was trained on analysis and cultivation techniques for three months at the reserch institutes in Kanagawa prefecture and Okinawa prefectures. Mrs.Ranjane Perera was trained in vegetable cultivation techniques for three months at KOIBUCHI agricultule senior college(technical college) in Ibaragi prefecture. We had difficulty in the selection on suitable training places for the above members. We should have contacted the Japanese side more often. Ms.W.L.Siriwardena was trained in General agriculture for three weeks in Ibaragi, Fukuoka and Oita prefectures.

6 Meeting : Joint committee meeting was held in May. Main topics were sustainability of the project activities and using laboratory equipment. Operation committee meetings were held ten times in 1998. Weekly meeting were held every monday.

7 Report : Dr.YONEYAMA had a seminar on the results of the research. Mr.TAKAO had a seminar on the result of his research. Monthly reports were submitted to the operation committee.

8 Other : Revision of R/D and T S I were done in January. A loog time was taken to make Sri · Lankan side undestand the motives of Japanese side and also fixing the date for signing.

Technical Exchange Program was implemented in The Philippines in July. AIs and Counterparts had good experience. We hope this good experience will be used effectively for our activities.

Annual Report in '98 (1)

	'98 Jan. Feb. Mar.	'98 Apr. May. Jun.	'98 Jul. Aug. Sep.	'98 Oct. Nov. Dec.
Expenditure				
Japan Side	Rs902269.55	Rs827217.63	Rs1683109.7	Rs939591.92
SriLanka Side	Total Rs2164260.75			
Staff		<input type="checkbox"/> Mr. Rahubadda was assigned as The Project Director in place of Mr. Amarasakara <input type="checkbox"/> Mr. Nandana was assigned as The Project Coordinator in place of Mr. G.V.S. Perera.		
Expert	<input type="checkbox"/> Mr. OKUDA was dispatched as a long term expert for Training and teaching material		<input type="checkbox"/> Dr. YONEYAMA was dispatched as a short term expert of soil born disease and researched for one month. <input type="checkbox"/> Mr. TAKAO was dispatched as a expert of farming management for two month.	
Equipment	<input type="checkbox"/> We obtained a lorry as technical equipment of 1997.		<input type="checkbox"/> We ordered technical equipment of 1998.	
Training	<input type="checkbox"/> Mr. H.S.A.P. Peiris was trained on general agriculture for three weeks.		<input type="checkbox"/> Ms. K.U.M. Chempika was trained on Farming management, Extension and Teaching material for three months	<input type="checkbox"/> Ms. W.L. Siriwardena was trained on general agriculture for three weeks.

Annual Report in '98 (2)

	'98 Jan. Feb. Mar.	'98 Apr. May. Jun.	'98 Jul. Aug. Sep.	'98 Oct. Nov. Dec.
Training			<input type="checkbox"/> Ms.R.M.W.K.Rathnayaka was trained on analysis and cultivation techniques for three months. <input type="checkbox"/> Ms.Ranjane Perera was trained in vegetable cultivation techniques for three months.	
Meeting	<input type="checkbox"/> Operation committee meetings were held <input type="checkbox"/> Weekly meetings were held	<input type="checkbox"/> Joint committee meeting was held in May. <input type="checkbox"/> Operation committee meetings were held <input type="checkbox"/> Weekly meetings were held	<input type="checkbox"/> Operation committee meetings were held. <input type="checkbox"/> Weekly meetings were held	<input type="checkbox"/> Operation committee meetings were held. <input type="checkbox"/> Weekly meetings were held.
Report	<input type="checkbox"/> Monthly reports were submitted to operation committee.	<input type="checkbox"/> Monthly reports were submitted to operation committee.	<input type="checkbox"/> Dr.YONEYAMA had a seminar on the result of his report. <input type="checkbox"/> Monthly reports were submitted to operation committee.	<input type="checkbox"/> Mr.TAKAO had a seminar on the result of his report. <input type="checkbox"/> Monthly reports were submitted to operation committee.
Other	<input type="checkbox"/> R/D and TSI were revised.		<input type="checkbox"/> Technical Exchange Program was implemented in The Philippines	

ACTIVITY RESULT IN 1998

UPLAND CROP CULTIVATION SECTION

Activity Result on Trial

1997/1998 Maha

The yields of Okra, Chilli and Brinjal were observed under 35% and 59% shading conditions and in the open field. There was no statistical difference due to the out break of pest and disease in the late stage of Okra cultivation. But there was a statistical difference in the yield under different shading conditions of Chilli cultivation. The yield of Brinjal in open field is 2.3 time more than in 35% and 58% shading condition. Okra and Chilli seem to be tolerating shading condition, but production of Brinjal is low under shading.

The effect of dolomite and coir dust application for Chilli, Okra and Brinjal was examined. Soil structure had improved after applying coir dust. The most effective method for Okra production is to adjust pH value of the soil.

The Farmer's technique is not reliable and we could not distinguish male and female plants at the seed stage.

1998 yala

The yield of Chilli, Okra, Brinjal, Maze, Cocoyam and Ginger were observed under 35% and 58% shading conditions, and in the open field. There was a statistical difference at 1% probability in yield under shading conditions on Okra cultivation. Number of branches were more in the open field. There was no statistical difference in yield under different shading conditions on Chilli cultivation. Healthy seedlings grown in second nursery seem to give such results. Therefore nursery technique should be focused more in future for vegetable cultivation. The yield of Brinjal in the open field is 3 time more than 35% shading condition. In 1998 Yala also, Okra and Chilli seem to be shade tolerant, but Brinjal production is low under shading.

The effect of dolomite and coir dust application for Chilli, Okra and Brinjal was examined. Result shows the most effective method for Okra production is to adjust pH value of the soil.

HORDI advised the using ridge and furrow method, the using of Moncut and *Trichoderma* to control the soil borne disease of Cocoyam. Result show ridge method and application of Moncut seem to reduce the number of disorder plants. But we need more continuous trials.

Pythium sp. was isolated from roots of infected Cocoyam in Minuwangoda. This infected Cocoyam showed that outer leaves turned yellow and roots began to rot . And them Ridomil has an effect on controlling this *Pythium* sp. in simple test. So it is proposed that Cocoyam seedlings should be treated with "Ridomil" before planting. Now Ginger, Pineapple Papaya, Banana, and *Dioscorea* varieties are recommended to cultivate as alternative crops of Cocoyam. The pathogenicity of isolated *Pythium* sp. against Ginger was examined 4 times and *Dioscorea* was examined 3 times. Inoculation test found that isolated *Pythium* sp. had no pathogenicity against Ginger and *Dioscorea*.

Moreover, the effect of Ridomil was observed in the field. Ridomil effect on controlling disease of cocoyam was shown. The number of leaves, plant height and growing condition of leaves are good. But further field trials should be certain of the effect of Ridomil application.

Activity Result on Verification

1997/1998 MAHA

3 Years crop rotation had been carried out. Production of Okra under the coconut trees shows almost same result as in the trial under the different shading conditions. But CV is high. This yield of Okra varies widely under the coconut trees and production of chilli under the coconut trees shows very low yield compared with the result of planting under different shading conditions. We find it difficult to keep table vegetable production under the coconut trees.

Pineapple was cultivated in the verification farm. We found high yield of Pineapple, when fertilizer was applied to both Pineapple and Coconut in correct time. If Pineapple cultivation is continued for a long period, plant distance be kept more than at departmental recommendations. This yield was taken in natural condition without applying flowering hormone.

Departmental recommendation of fertilizer, sucker controlling and Weeding on Banana cultivation was verified in this season. In rainy season, Sigatoka disease was found in Banana field. Removing infected leaves, weeding and making good ventilation can control this disease. Kolikuttu variety shows sensitiveness to weevil attack and disease.

1998 Yala

Ginger was cultivated in verification farm.

The yield of Rajala was higher than depermental standard and Higurala yield was less than departmental standard. At the time of harvesting we observed that the coconut root hindered the growth of yams. Therefore plant distance should be 60 cm X 60 cm in order to get a higher yield.

Three year crop production was observed this season. Results show that; The production of vegetable was poor, due to heavy rain, damage of pest and disease. We can not expect stable production from vegetable cultivation under coconut trees.

Activity Result on Trial Plot

Crop Production Section	Activities	Result	Discussion
<p>T.S.I 1) Improvement of cultivation technology <u>97/98 Maha</u></p>	<p>1. Observed the yield of 3 vegetable crops which are chillie, Okra & Brinjal under 35%,58% shading conditions and control plot in open field.</p> <p>2. The effect of dolomite and coirdust application for chillie Okra and Brinjal.</p> <p>3. Verified departmental recommendation of fertilizing sucker controlling and weeding on Banana cultivation with coconut.</p>	<p>Result of, Chillies (table 1) Okra (table 2) Brinjal (table 3)</p> <p>-Result of Okra (table -4)</p> <p>-Average yield of Banana is 13.6 ± 0.27kg /Bunch (n=94) Income is Rs. 21932/= from 0.25ac. Result of production cost (table 5) Departmental recommendation of chemical fertilizer which we used. i Urea 110 g ii. R.P 150 g iii. M.O.P. 190 g <u>Plump Management</u> up to 4 months -No suckers After 4 months - 01 sukera After 7½ ,, - 01 sucker <u>Weeding</u> Weed controlled by using grass cutter.</p>	<p>-There was no statistical difference due to out break of pest and disease in the late stage of okra cultivation. But there was a statistical difference at 5% level of probability for yield in the beginning stage (table 2) -There was no statistical difference for yield under different shading conditions of chillie cultivation (table 1) The yield of brinjal in open field 2.3 times more than under 35% and 58% shading net houses (table 3) -Okra and chillies seems to be the shading tolerance, but production of brinjal is low under shading.</p> <p>-Soil structure has improved after applying coirdust. -The most effective method for okra production is to adjust pH value of the soil (table 4)</p> <p>-In rainy season, sigatoka disease was found in banana field. Removing infected leaves, weeding and making good ventilation can control this disease. Kolikutta variety shows sensitive to weevil attack and diseases. Therefore this variety is not recommended to our project area.</p>

Activity Result on Trial Plot

Crop Production Section	Activities	Result	Discussion
1998 Yala	4. Verified the farmers' technique of distinguishing between male and female plants at the stage of Papaya seeds.	table 6	-Result shows that technique is not reliable and we could not distinguish between male and female plants at the stage of seeds (table 6)
	5. Observed the yield of 6 crops which were chillie, Okra, Brinjal, Maize, Cocoyam and Ginger under 35%, 51%, and 58% different shading conditions.	-Result of Chillies (table 7) Okra (table 8, 9) Brinjal (table 10) Maize (table 11,12) Cocoyam (table 13) Ginger (table 14,15)	-There was a statistical difference at 1% probability for yield under shading conditions, on Okra cultivation. Number of side branches were more in open field (table 7 and 8). There was no statistical difference for yield under different shading conditions on chillie cultivation Healthy seedlings grown in second nursery seem to give such results. There for nursery technique should be more focused in future for vegetable cultivation. (table 6) -The yield of brinjal in open field is 3.times more than 35 % shading treatment (table 9) In 1998 Yala also, Okra and chillie seem to be the tolerance, but Brinjal production is low under shading
	-The effect of dolomite andcoirdust applied for chillies, Okra and Brinjal.	-Result of Okra (Table 16)	
	6. Observed the yield content growing condition and water content for Green gram (MI-2) cowpea (MI.35) and Maize (Ruwan) mulching with paddy straw.	-The yield of Green gram with mulching 11.3kg/100m ² without mulching 7.0kg/100m ²	-Severe damaged by pod borer and parrot attack for cowpea.
7. Trial of ridge and furrow method using with "Moncut" and Trichoderma" to control the soil borne disease in Cocoyam (Advised by HORDI)	- Table 17	-Ridge method & application of "moncut" seem to reduce the number of disorder plants. But we need more continuous trials.	

Activity Result on Trial Plot

Crop Production Section	Activities	Result	Discussion
/998 Yala	<p>8. Observed the effect of 28% and 58% shading conditions for pineapple cultivation.</p> <p>9. Identification of pathogen isolated from disorder cocoyam and control methods.</p> <p>10. Checking pathogenicity against another crops.</p> <p>11. Ridomil application trial in the field.</p>	<p>Under 28% shading conditions yield 759.2kg from 490 plants Average sugar content 17.3 under 58% shading conditions yield 719.25kg from 486 plants. Average Sugar content 19.6</p> <p>-attached report</p> <p>-Ginger (table 18,19,20, &21) Dioscorea (table 22, 23)</p> <p>table 24, 25, & 26</p>	<p>Shading net was destroyed by wind. Therefore we could not collect data.</p> <p>-Pythium spp was isolated from roots of infected cocoyam in Minuwangoda. This infected cocoyam showed that outer leaves turned yellow and roots became rotting. And then Ridomil has an effect on controlling this pythium spp in simple test. So it is proposed that cocoyam seedlings should be treated by Ridonil before planting.</p> <p>-Ginger, Pineapple, Papaya, Banana and Dioscorea varieties are recommended to cultivate as alternative crops of cocoyam. -The pathogenicity of isolated pythium spp. against Ginger was examined 4 times and Dioscorea was examined 3 times. Inoculation test found that isolated pythium spp. had no pathogenicity against Ginger and Dioscorea.</p> <p>-The tendency of Ridomil effectation was shown. The number of leaves plant height and growing conditions of leaves are good. But further field trials should be continued to make sure the effect of Ridonil application.</p>

Activity Result on Verification Farm

Crop Production Section	Activities	Result	Discussion
97/98 Maha	<p>1. Continued 3 years crop rotation plan using with poultry manure as basal</p> <p>2. Followed up departmental recommendations on Pineapple cultivation under coconut.</p>	<p>-Yield result Result of production cost Okra :345.4 ± 27.10g/ plant n=25 CV=39.2% Bushita : 47.1 ± 6.51g/ plant n= 24 CV = 67.81 Chillies : 105.2 ± 11.30g/ plant n = 25 CV = 53.7% 5 sample areas with 5 plants</p> <p>-Result of production cost (table:27)</p>	<p>-Production of Okra under the coconut shows almost same result as a trial under the different shading conditions. But CV is high. This yield of Okra varies widely under the coconut and production of chillies under the coconut shows very low yield compared with results of trials under the different shading conditions. We find it difficult to keep stable vegetable production under the coconut.</p> <p>-We found high yield of pineapple, when application of fertilizer was done both of pineapple and coconuts in correct time. If pineapple cultivation continue long period, plant distance should be kept more than departmental recommendation. -This yield was taken in natural condition without applying flowering Hormone;</p>
98 Yala	<p>3. Ginger and Dioscorea cultivations in larger scale as commercial level.</p> <p>4. Continued 3 years crop rotation plan using with poltery manure as basal.</p>	<p>-1. Rajala 105kg/70 vines (6000kg/01ac) ii. Hingurala 105kg/208m² (2000kg/01ac) iii. Ginger (Local)420kg /400m² (4000kg/01ac)</p> <p>-Okra:261.8 ± 19.30g (n=25) CV 36.9%</p>	<p>-The yield of Rajala was higher and Higurala yield less than departmental stand. At the time of harvesting we observed that there was a big competition with coconut roots. Plant distance was 60cm X 60cm. So we suggest to reduce the plant distance to get higher yield.</p> <p>- The production of vegetable was poor, due to rain, pest and diseases. Can not expected stable production from vegetable cultivation under coconut.</p>

Table 1: Yield of chillies under different shading conditions in 1997/1998 Maha

treatment	yield (kg/plot)
open	2.1
35% shading (black)	1.7
35% shading (green)	1.9
58% shading (black)	1.9
significance	non
LSD	

Each treatment had 5 plants and 3 replications.

Date of sowing: Oct. 10, 1997

Date of transplanting: Nov. 20, 1997

Fruits were sampled 9 times since Jan. 28, 1998 to Apr. 23, 1998.

Table 2: Okra total yield and yield up to January 23, 1998 under different shading conditions in 1997/1998 Maha

treatment	total yield (kg/plot)	yield (kg/plot) up to Jan. 23, 1998
open	1.5	1.0
35% shading (black)	1.8	0.8
35% shading (green)	1.8	0.8
58% shading (black)	1.6	0.6
significance	non	5%
LSD		0.19

Each treatment had 5 plants and 3 replications.

Date of sowing: Nov. 22, 1997

Fruits were sampled 11 times since Jan. 15, 1998 to Feb. 9, 1998.

Table 3: Yield of brinjal under different shading conditions in 1997/1998 Maha

treatment	yield (kg/plot)
open	8.2
35% shading (black)	3.5
35% shading (green)	3.8
58% shading (black)	3.1
significance	1%
LSD	2.17

Each treatment had 5 plants and 3 replications.

Date of sowing: Oct. 10, 1997

Date of transplanting: Dec. 11, 1997

Fruits were sampled 13 times since Feb. 2, 1998 to July 1, 1998.

Table 4: Yield of okra under the coir dust application and dolomite application in 1997/1998 Maha

treatment	yield (kg/plot)
coir dust and dolomite application	2.6
dolomite application	3.8
coir dust application	0.2
control	0.4
significance	1%
LSD	1.16

Each treatment had 5 plants and 4 replications.

Date of dolomite application: Oct. 17, 1997

Date of sowing: Dec. 17, 1997

Fruits were sampled 20 times since Feb. 2, 1998 to Mar. 20, 1998.

Table 5: Gross income of banana cultivation in Verification farm in 1998

production cost (Rs)		income (Rs)	
making 126 holes	1,638.00	sales of selling banana	20,432.00
price of Furadan	410.00	(1,277 kg x @16.0Rs)	
labor costs	1,890.00	sales of selling suckers	1,500.00
fertilizer expense	5,334.00	(100 suckers x @15.0Rs)	
total	11,471.00		2,1932.00
profit			1,0461.00

Date of planting: Aug. 15, 1997

Table 6: Investigation of male and female plants distinguished by Dorupe farmer

type of flower on the plant	male plants	female plant
	by farmers	by farmers
only perfect flowers	3	7
perfect and male flowers	6	7
only female flowers	7	10
only male flowers	7	12
total	23	36

Date of sowing: Apr. 30, 1998

Date of planting: Jun. 3, 1998

Date of final observation: Dec. 18, 1998

Table 7: Yield of chillies under different shading conditions in 1998 Yala

treatment	yield (kg/plot)
open	2.2
35% shading (black)	1.4
35% shading (green)	1.9
58% shading (black)	1.5
significance	non
LSD	

Each treatment had 5 plants and 3 replications.

Date of sowing: Jun. 10, 1998

Date of transplanting: Jul. 2, 1998

Fruits were sampled 4 times since Sep. 7, 1998 to Oct. 27, 1998.

Table 8: yield of okra under different shading conditions in 1998 Yala

treatment	yield (kg/plot)
open	2.7
35% shading (black)	1.7
35% shading (green)	2.5
58% shading (black)	1.8
significance	1%
LSD	0.85

Each treatment had 5 plants and 3 replications.

Date of sowing: Jun. 19, 1998

Fruits were sampled 25 times since Aug. 14, 1998 to Oct. 12, 1998

Table 9: Okra plant height, number of blanches and diameter at 50 cm height on October 1, 1998

treatment	plant height (m)	number of blanches	diameter at 50 cm height (mm)
open	2.27	4.1	24.5
35% shading (black)	2.49	1.2	21.8
58% shading (black)	2.21	2.5	21.6
significance	non	1%	non
LSD		1.69	

Each treatment had 8 plants and 3 replications.

Date of sowing: Jun. 19, 1998

Table 13: Plant height, number of leaves and color of cocoyam
on September 24, 1998

treatment	plant height	leaf number	greenness
open	113.1 ± 3.09	6.6 ± 0.18	light green
35% shading (black)	147.8 ± 2.60	8.0 ± 0.27	green
35% shading (green)	148.7 ± 2.23	6.9 ± 0.28	green
58% shading (black)	156.3 ± 1.24	7.2 ± 0.23	dark green

Average ± SE (n=10)

Date of planting: Jun. 25, 1998

Table 14: Plant height of ginger on September 16,
1998 in 1998 Yala

treatment	plant height (cm)	CV (%)
open	39.0 ± 0.70	8.0
30% shading (white)	47.5 ± 0.73	6.9
60% shading (white)	57.3 ± 1.13	8.8

Average ± SE (n=20)

Date of planting: Jun. 15, 1998

Table 15: Yield of ginger under different shading
conditions in 1998 Yala

treatment	yield (g/plant)	CV (%)
open	347.5 ± 37.72	34.3
30% shading (white)	335.0 ± 18.71	17.7
60% shading (white)	250.0 ± 15.37	19.4

Average ± SE (n=10)

Date of planting: Jun. 15, 1998

Date of recording: Nov. 22, 1998

Table 10: Second yield of brinjal under different shading conditions in 1998 Yala

treatment	yield (kg/plot)
open	3.7
35% shading (black)	1.2
35% shading (green)	1.0
58% shading (black)	1.6
significance	1%
LSD	1.24

Each treatment had 5 plants and 3 replications.

Date of sowing: Oct. 10, 1997

Date of transplanting: Dec. 11, 1997

Date of pruning: Jul 1, 1998

Fruits were sampled 7 times since Aug. 9, 1998 to Nov. 9, 1998.

Table 11: Grain yield of maize under different shading conditions in 1998 Yala

treatment	grain yield (g/head)	CV (%)
open	150.6±8.70	22.4
35% shading (black)	131.0±8.84	26.1
35% shading (green)	116.7±7.48	24.8
58% shading (black)	125.3±7.92	24.5

Average±SE (n=15)

Date of sowing: Jun. 4, 1998

Date of harvesting: Oct. 10, 1998

Table 12: Plant height of maize under different shading conditions on September 4, 1998 in 1998 Yala

treatment	plant height (cm)	CV(%)
open	190.3±7.03	11.7
35% shading (black)	187.2±6.43	10.9
35% shading (green)	175.6±4.85	8.7
58% shading (black)	174.8±5.72	10.4

Average±SE (n=10)

Date of sowing: Jun. 4, 1998

Table 16: Yield of okra under the coir dust application and dolomite application in 1998 Yala

treatment	yield (kg/plot)	pH (H ₂ O)	pH (KCl)
coir dust and dolomite application	1.5	7.00	5.95
dolomite application	2.2	7.35	-
coir dust application	1.2	5.95	4.65
control	1.0	5.70	4.30
significance	1%		
LSD	0.66		

Each treatment had 5 plants and 4 replications.

Date of sowing: Jul. 14, 1998

Fruits were sampled 21 times since Sep. 7, 1998 to Oct. 28, 1998

Table 17: Effect of ridge method, furrow method, and application of Moncut and Trichoderma for control of cocoyam soil-borne disease in Verification farm

treatments			degree of infection			
			3+	+	±	-
ridge	Moncut		0	3	9	3
ridge	Moncut	Trichoderma	0	5	5	5
ridge		Trichoderma	1	7	7	0
ridge			2	11	2	0
	(sub total)		(29)		(31)	
furrow	Moncut		2	6	3	4
furrow	Moncut	Trichoderma	4	7	3	1
furrow		Trichoderma	5	10	0	0
furrow			4	11	0	0
	(sub total)		(49)		(11)	

Date of planting: Jun. 26, 1998

Date of application: Jul. 16, 1998 (Moncut), Sep. 14, 1998 (Trichoderma)

Date of final observation: Oct. 26, 1998

Moncut: 4.5 g/25 plants, Trichoderma: 1.0 kg/plant

3) Pathogenicity of isolated No. 7 against each organ of cocoyam

Materials: Each organ of cocoyam plant was injured by knife and then was inoculated with mycelium disc. And inoculated cocoyam plants were replanted into sterilized soil.

Results:

Table: Result of inoculation test

Treatments	Number of inoculation	Number of infection	Symptoms	
Inoculated	Roots	12	12	water soaked rot
	Stem	6	6	soft-rot
	Yam	6	6	soft-rot
non	Roots	3	0	non
	Stem	2	0	non
	Yam	2	0	non

Note: inoculated date: 11 Sep. 1998

observed date: 14 Sep. 1998

① Isolated No. 7 showed the symptoms of soft-rot and water soaked rot on roots, stem and yam after inoculation: this isolate infected the whole plant of cocoyam. The symptoms of inoculation test was same as the symptoms of damaged cocoyam in farmer's field

4) Re-isolation of pathogenic fungi

Materials: To re-isolate pathogen on water agar medium from diseases parts with normal technique

Results:

Table: Re-isolation of pathogenic fungi

Applied parts	Isolated results	Genus in isolated fungi
Rotted yam	+	<i>Pythium</i> sp.
Rotted stem	+	<i>Pythium</i> sp.
Rotted roots	+	<i>Pythium</i> sp.

Note: re-isolated date: 14 Sep. 1998

① *Pythium* sp. was re-isolated from the infected roots, stem and yam after inoculation of isolated No.7. This was the same pathogen as inoculum: Isolate No.7.

② I propose the name "Root and stem rot" caused by *Pythium* sp. for the present disease.

Report on soil-borne disease of cocoyam

1) To isolate pathogen from damaged cocoyams

Materials: Roots which turned brown color

Roots which is like water soaked and soft rotted

Yam which turned brown color and rotted

Results: 10 fungi were isolated.

2) To confirm pathogenicity against cocoyam

Materials: Applied fungi---isolated No.1-10 and *Sclerotium rolfsii* (from Horticultural Research and Development Institute)

Results:

Table: Result of pathogenicity test

Isolates	Yam	Stem	Genus name of fungus
No.1	+ dry rot	+ rot	<i>Fusarium solani</i>
No.2	+ dry rot	+ rot	<i>Fusarium solani</i>
No.3	+ dry rot	+ rot	<i>Fusarium solani</i>
No.4	+ dry rot	+ rot	<i>Fusarium solani</i>
No.5	±	—	<i>Penicillium</i> sp
No.6	±	+ rot	<i>Rhizoctonia</i> sp
No.7	+++ soft rot	+++ soft rot	<i>Pythium</i> sp.
No.8	+	+	<i>Rhizoctonia</i> sp.
No.9	—	—	<i>Rhizoctonia</i> sp.
No.10	—	—	<i>Rhizoctonia</i> sp.
<i>Sclerotium</i>	+++ rot	-----	<i>Sclerotium rolfsii</i>

Note: inoculated date: 9 Sep. 1998

observed date: 11 Sep. 1998

- ① The isolated No. 7 indicated the highest pathogenicity.
- ② Judging from microscopic observation of isolated No. 7 and quick growth of it's mycelium on PDA medium, it was confirmed as *Pythium* sp.
- ③ Horticultural Research and Development Institute isolated *Sclerotium rolfsii* from the disorder cocoyam in farmer's field, and it showed high pathogenicity.

5) Control test

Results

Table: Result of Degree of infection

Soil Inoculation	Chemical Treatment to the soil	Injure of seedlings			
		Seedlings Inoculation		Seedlings non-Inoculation	
		Dipping (chemical)	no	Dipping (chemical)	no
yes	yes	4.2	0.0	12.5	18.1
yes	no	4.2	87.5	33.4	59.8
no	yes	15.3	8.4	4.2	2.8
no	no	1.4	45.9	2.8	4.2

Note: treated date: 17 Sep. 1998
 kept water date: 18 Sep. 1998
 final investigation date: 22 Sep. 1998

- ① Treatment of inoculation to soil and inoculation to seedlings without chemical (Ridomyl 0.04% solution) application indicated D.I. (degree of infection) of 87.5. And treatment of only inoculation to seedlings and without chemical application also indicated D.I. of 45.9.
- ② Method of dipping inoculated seedlings in chemical solution showed high effect of control.
- ③ Method of pouring chemical solution (Ridomyl 0.075% solution, 100ml/pot) to inoculated soil showed high effect of control.
- ④ Treatment of dipping non-inoculated seedlings in chemical solution and planted in inoculated soil indicated D.I. of 33.4. This is slightly high. This explains that the effect of control does not promise well in severe contaminated soil, or poor quality of seedlings showed incorrect result.
- ⑤ It follows from what has been said that dipping seedlings in chemical solution or pouring chemical solution to soil enable to control the present disease.

Table 18: Pathogenicity of isolated No. 7 against ginger

part of plant	cocoyam			ginger-1			ginger-2		
stem	+	+	±	-	-	-	-	-	-
root	+++	±	+++	±	±	-	-	±	±
yam	++	++	+	-	-	±	-	-	-

Date of inoculation: Dec. 7, 1998

Date of observation: Dec. 11, 1998

--: no infection, ±: suspicious, +: slight infection

++: moderate infection, +++: severe infection

Table 19: Pathogenicity of isolated No. 7 against ginger

part of plant	cocoyam			ginger		
stem	+	+	-	-	-	-
root	+++	++	++	-	-	-
yam	++	+	-	-	-	-

Date of inoculation: Dec. 14, 1998

Date of observation: Dec. 17, 1998

--: no infection, ±: suspicious, +: slight infection

++: moderate infection, +++: severe infection

Table 20: Pathogenicity of isolated No. 7 against ginger

part of plant	cocoyam			ginger		
yam	++	+	-	-	-	-

Date of inoculation: Dec. 14, 1998

Date of observation: Dec. 17, 1998

--: no infection, ±: suspicious, +: slight infection

++: moderate infection, +++: severe infection

Table 21: Pathogenicity of isolated No. 7 against ginger

part of plant	cocoyam				ginger			
yam	+++	+++	+++	+++	-	-	-	-

Date of inoculation: Dec. 24, 1998

Date of observation: Dec. 28, 1998

--: no infection, ±: suspicious, +: slight infection

++: moderate infection, +++: severe infection

Table 22: Pathogenicity of isolated No.7 against Dioscorea varieties

	part of plant	cocoyam	higulala	raja-ala	kekulu-ala	kukulala
test 1	yam	3+ 3+ 3+ 3+	± ± ± ±	± ± ± ±	± ± ± ±	± ± -- ±
test 2	yam	3+ 2+ 2+ 2+	± ± ± ±	± ± ± ±	± ± ± ±	-- -- ± ±

Date of inoculation: Dec. 30, 1998

Date of observation: Jan. 4, 1999

--: no infection, ±: suspicious, -: slight infection, 2+: moderate infection

3+: sever infection

Table 23: Pathogenicity of isolated No.7 against Dioscorea varieties

	part of plant	cocoyam	higulala	raja-ala	kekulu-ala	kukulala
yam		+ + + +	-- -- --	± ± ± ±	+ ± ± ±	± ± ± --

Date of inoculation: Jan. 5, 1999

Date of observation: Jan. 8, 1999

--: no infection, ±: suspicious, +: slight infection

2+: moderate infection, 3+: sever infection

Table 24: Effect of Ridomil application for control of cocoyam soil-borne disease in the field

		1	2	3	4	5	6	control
number of leaves	application Sep. 28, 98'	5.0	3.9	2.1	3.4	2.3	2.8	1.8
	observation Nov. 4, 98'	5.1	4.6	4.6	4.1	5.0	5.0	1.8
degree of infection	application Sep. 28, 98'	±	+	+	++	+	+	++
	observation Sep. 28, 98'	±	--	--	+	--	--	++

Date of plant: Jun. 25, 1998

--: no infection, ±: suspicious, +: slight infection, ++: moderate infection

Table 25: Effect of Ridomil application for control of cocoyam soil-borne disease in the field

		1	2	3	4	5	6	7	control
	application								
number of leaves	Nov. 4, 98'	1.0	2.1	3.7	4.0	4.0	4.0	4.0	1.3
	observation								
	Dec. 11, 98'	1.0	3.1	3.6	4.2	4.1	5.1	3.4	1.0
	application								
plant height (cm)	Nov. 4, 98'	40.0	55.0	85.0	107.0	109.0	113.0	106.0	53.0
	observation								
	Dec. 11, 98'	28.0	50.0	86.0	116.0	116.0	114.0	106.0	47.5
	application								
degree of infection	Nov. 4, 98'	++	++	+	+	+	±	±	++
	observation								
	Dec. 11, 98'	++	++	±	±	--	--	--	++

Date of plant: Jun. 25, 1998

--: no infection, ±: suspicious, +: slight infection, ++: moderate infection

Table 26: Effect of Ridomil application for control of cocoyam soil-borne disease in the field

		1	2	3	4	5	6	7	control
	application								
number of leaves	Nov. 4, 98'	3.9	5.2	3.0	3.1	3.4	7.2	6.0	2.8
	observation								
	Dec. 11, 98'	4.1	5.0	4.9	4.0	4.9	5.1	3.0	3.0
	application								
plant height (cm)	Nov. 4, 98'	170.0	187.0	174.0	86.0	104.0	186.0	186.0	83.0
	observation								
	Dec. 11, 98'	167.0	190.0	159.0	96.0	131.0	191.0	204.0	81.0
	application								
degree of infection	Nov. 4, 98'	±	--	±	++	+	++	--	++
	observation								
	Dec. 11, 98'	±	±	--	--	--	--	±	+

Date of plant: Jun. 25, 1998

--: no infection, ±: suspicious, +: slight infection, ++: moderate infection

pineapple

Table 27: Gross income of pineapple in Verification

1 Production cost			
1-1 management			
items of working	labor	expenses	remarks
1st land preparation	2	1,500.0	by tractor
2nd land preparation	1	1,200.0	by tractor
terracing	5	635.0	by tractor
cleaning seedlings	4	508.0	
treatment of seedlings	4	508.0	insecticide and fungicide
planting	10	1,270.0	
mulching of coir dust	5	635.0	using 2-wheel tractor
application of fertilizer	12	1,532.0	
weeding and cleaning fence	12	1,552.0	
application of chemicals	4	516.0	
earthing up	14	1,651.0	
removing suckers	11	1,433.0	
irrigation	16	2,096.0	
harvesting	6	774.0	
cutting un-necessary leaves	5	655.0	
sub total	111	16,465.0	
1-2 items purchased			
items		expenses	
suckers		12,000.0	
Dimethoate		750.0	800 cc
Dithane M35		225.0	400 g
coir dust		5,000.0	20 lorries
fertilizer		9,966.0	906 kg
sub total		27,941.0	
2 sales of fruits and suckers			
items		income	
fruits		50,405.0	5040.5 kg x @10.0 Rs
suckers		27,500.0	11000 suckers x @2.5 Rs
sub total		77,905.0	
profit = (2) - (1-1) - (1-2)		33,499.0	

ACTIVITY RESULT IN 1998

WATER MANAGEMENT SECTION

Activity Result in 1998

1. 97/98 Maha

Meteorological data collection was started from the beginning of the year at the AEIP, Ambepussa. First quarter of 1998 had a dry period and April to middle of December period had wet weather. Humidity remained below 70 % in Jan. Feb. and March. Average wind speed was below one meter per second and no wind damage occurred to crop cultivations.

A surveys was done to understand the well water condition for farmer group. Except in the wet season the shallow well water supply was not sufficient for farming as this supply is combined with their domestic uses. Handed over nine electric pumps and one engine driven pump to the group farmers to improve the irrigation facilities. Farmers had utilized the group fund to buy another three electric pumps.

Perforated pipe irrigation was done after reading the tensio meters (PF-2.3) and minimum quantity of water provided was about 35 mm per application. Moisture conservation in the field was very high with black polythene covered next to straw. Applied straw mulch twice per crop due to the fast decaying of straw. Weeds were totally controlled by polythene and straw mulch in addition to moisture conservation. Rapid growth of plants was observed in mulched places than in the open field.

2. 1998 Yala

There was a dry period in early 1998. Average air temperature was about 28^{0C} and soil temperature was more than two degrees above air temperature. April to September humidity was over 72% Due to the scarcity of water during the first part of the year, water saving irrigation system called perforated pipe irrigation trial was conducted as a supplementary irrigation method. Locally available pvc pipes, polythene sheets and straw used in these experiments were popularised among farmers. Okra was included in Yala as an experimental crop in this trial.

3. 1998/99 Maha

Two sets of meteorological equipments were handed over to research stations at Bombuwela and Makadura in order to exchange weather reports. In October humidity increased to 81.2% This condition could be favorable in spreading disease in plants. Excess moisture conditions prevailed in lowland crop cultivation areas during the months of September and October. This condition was very bad for land preparation, nursery preparations and planting etc. Conducted a practical training class in operation and maintenance for pump owners in model groups. Storing water and irrigating the plants was an essential part of water saving irrigation technique and supply of water pipes and tanks were also done.

Activity Results - Water Management

TSE/CROP SEASON	ACTIVITIES	RESULTS	DISCUSSION.
1 -4	<p>Improvement of water management technology.</p> <p>1- Study collection and analysis of basic information</p> <p>1-1 Meteorological and soil condition data.</p> <p>2. Water resource situation and availability.</p>	<p>-Collect rainfall data from Pasyala, Gampaha and Ambepussa.</p> <p>Started data collection on wind speed, temperature, humidity, rainfall, ground temperature and illumination.</p> <p>-Handed over two sets of meteorological equipment to Makandura and Bombuwela.</p> <p>-Studied seven model group farmers well water conditions.</p>	<p>-First 3 months showed dry condition. Mulching helped to reduce evaporation by getting the rainfall of 156.5 mm in April, weather started to change. May and October received high rainfall of 329.0 mm and 509.5 mm respectively.</p> <p>(Annex -1) Fixed the relevant equipment in Bombuwala.</p> <p>-Forty six farmers wells of seven model groups were surveyed. Dry period survey show insufficient water for irrigation by pumps Use of mulch is essential part of water conservation during the first three months of the year. Rainy period survey shows the maximum availability of water. Wells were full of water because to the recovery rate was high. (Annex-2).</p>
1 - 4 - 2	<p>-Improvement of water saving irrigation technique.</p>	<p>-Okra and green chili is being tested during 1998.</p> <p>Perforated pipe irrigation system used for the test.</p> <p>Mulching material keeps moisture longer time, without loss.</p> <p>Controls weeds as well.</p> <p>Open place temperature is 2-3°C higher than the treatment plots.</p> <p>There was no effect on seed germination with different treatments</p>	<p>-In okra and green chilies three beds covered with straw. Three beds covered with black polythene and another three beds kept open. Another five beds kept for traditional watering. Three soil thermometers also kept under three treatments.</p> <p>Beds kept covered with mulch during April to June, pH meter show reading between 1.5 to 2.1.</p> <p>Straw was applied two times in one cultivation season while black Polythene remains longer time without damage.</p> <p>High vegetative growth was observed in polythene covered okra cultivation, while good chili growth in straw treated plots was also observed.</p> <p style="text-align: right;">Annex 3</p>

Activity Results - Water Management

TS/CROP SEASON	ACTIVITIES	RESULTS	DISCUSSION.
1-4-2	I. Making a water distribution pipe line to use in Banana cultivation in Bemulla.	-Applied water from the stream near the field to save Banana plants.(dry season)	The pipe line was movable, made out of 2" canvas hose with Δ water delivery hydrants 1" rubber hose connected to hydrant and did hose watering to the plants. As a result of watering uniform growth could be obtained in many farmers field.
1-4-2	ii. Making a fixed water distribution pipe line at farmers place, Minuwangoda. iii. Improvement of water management activities.	-Member farmers could see the water distribution demonstration to be adopted in their lands. -Distributed water pumps among model group farmers to facilitate watering.	-Green chillies, okra cultivated using irrigation facilities. -Distributed water pumps as follows. 1" Electric 3 pumps Bemulla. 2" Kerosene 2,, " 1" Electric 1 pump Badalgama 1" ,, 2 ,, Pallewela 1" ,, 1 ,, Mirigama 1" ,, 1 ,, Nittambuwa 2" Kerosene 1 ,, Minuwangoda. <i>Annex 4</i>

Annex 1

Atmospheric temperature, humidity and rainfall at AEIP

1998

Month	Period	Atmospheric temperature (°C)			Humidity (%)			Rainfall (mm)		
		Ave.	Max.	Min.	Ave.	Max.	Min.	total	sum	
Jan.	first ten days	27.9	32.4	23.9	66.2	81.3	50.7	18.5		
	second ten days	27.3	33.5	22.8	69.7	86.7	44.7	0.0		
	last ten days	28.8	36.2	22.9	64.5	87.6	33.4	0.0	18.5	19
Feb.	first ten days	29.0	35.2	24.2	61.0	81.2	38.0	3.0		
	second ten days	28.9	35.1	23.7	63.9	85.0	38.9	0.0		
	last ten days	29.0	36.3	24.1	67.9	88.5	35.4	4.5	7.5	26
Mar.	first ten days	29.6	37.3	23.9	61.6	86.0	29.5	0.0		
	second ten days	30.1	36.7	24.5	66.3	86.6	35.1	0.5		
	last ten days	30.1	37.4	24.5	64.8	87.4	34.2	99.5	100.0	126
Apr.	first ten days	29.2	36.7	24.6	71.9	91.2	40.4	88.0		
	second ten days	29.6	35.9	25.4	74.1	91.3	46.2	43.0		
	last ten days	29.5	35.6	25.1	71.8	90.1	47.3	25.5	156.5	283
May.	first ten days	28.7	36.4	24.7	78.0	92.9	47.7	176.5		
	second ten days	27.8	32.4	25.1	82.0	92.0	62.0	207.5		
	last ten days	29.7	33.4	26.4	74.7	88.4	57.6	10.0	394.0	677
Jun.	first ten days	28.7	32.4	25.8	77.0	89.4	61.5	36.2		
	second ten days	28.3	31.5	25.6	76.1	88.3	61.2	68.5		
	last ten days	27.4	30.5	24.6	78.7	90.0	63.9	66.5	171.2	848
Jul.	first ten days	28.3	31.5	25.5	72.1	83.8	56.5	2.0		
	second ten days	26.8	30.6	24.1	81.3	91.1	65.6	184.5		
	last ten days	27.0	29.7	24.8	78.5	88.4	65.4	55.0	241.5	1089
Aug.	first ten days	27.1	30.3	24.8	81.0	91.2	65.9	68.5		
	second ten days	27.2	31.2	24.6	80.5	91.5	63.7	78.0		
	last ten days	27.1	31.0	23.9	76.1	90.8	59.1	51.5	198.0	1287
Sep.	first ten days	26.8	30.8	23.8	80.4	91.3	63.2	253.5		
	second ten days	27.6	31.4	24.6	76.9	91.4	58.9	23.5		
	last ten days	26.8	30.5	24.1	80.4	92.3	62.2	52.0	329.0	1616
Oct.	first ten days	26.7	30.7	24.6	81.9	92.1	64.3	152.0		
	second ten days	26.5	31.2	23.4	80.5	92.4	59.5	254.5		
	last ten days	26.5	31.5	23.4	81.3	93.8	60.1	103.0	509.5	2126
Nov.	first ten days	26.1	31.5	23.2	82.2	93.7	58.0	170.0		
	second ten days	26.7	32.4	23.3	82.0	95.0	56.6	73.0		
	last ten days	27.4	34.6	22.5	75.8	95.1	42.7	0.0	243.0	2369
Dec.	first ten days	26.1	32.7	23.1	83.6	95.5	55.4	173.0		
	second ten days	26.2	32.8	22.2	79.1	94.8	51.5	113.0		
	last ten days	25.9	32.2	21.7	76.8	93.9	51.0	22.5	308.5	2677
Average		33.4	39.7	29.0	90.0	108.1	62.9	89.2		2677

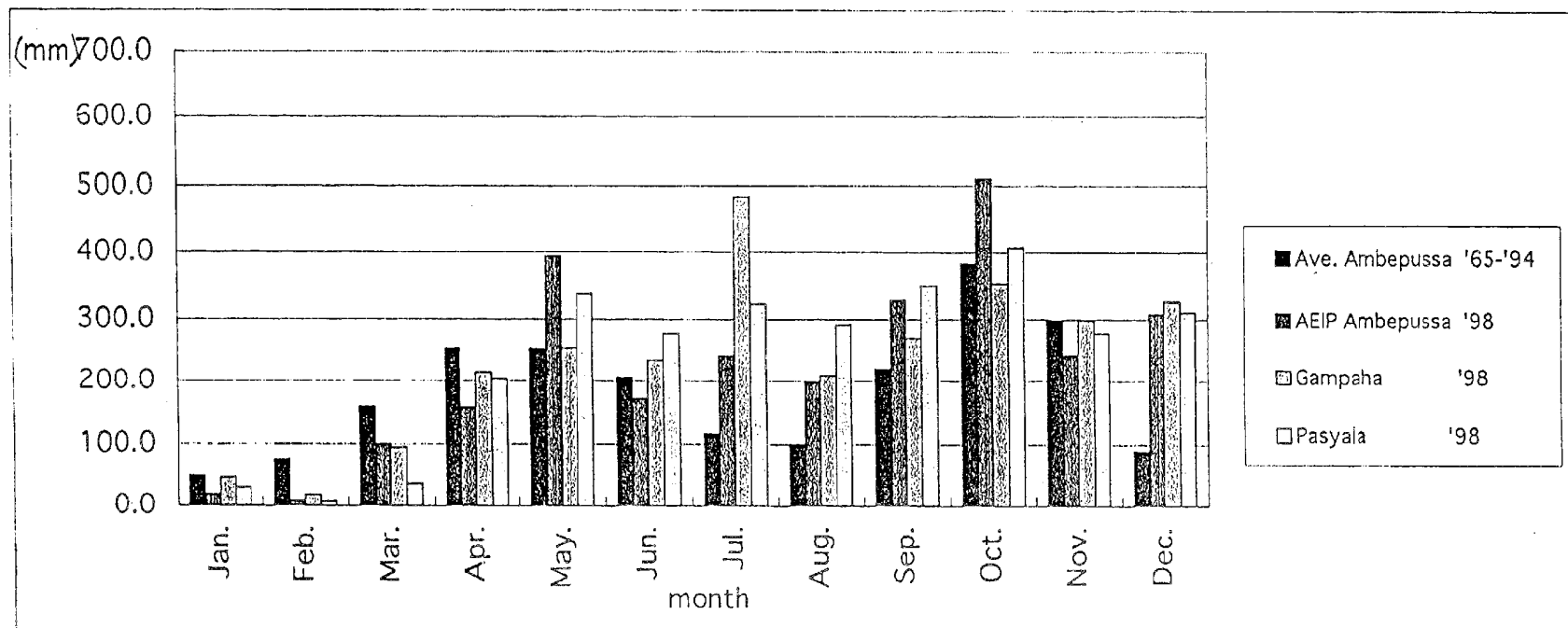
WAM.FD.8-3

Monthly rainfall

at the AEIP (Ambepussa seed farm), Gampaha botanical garden and Pasyala horticulture center

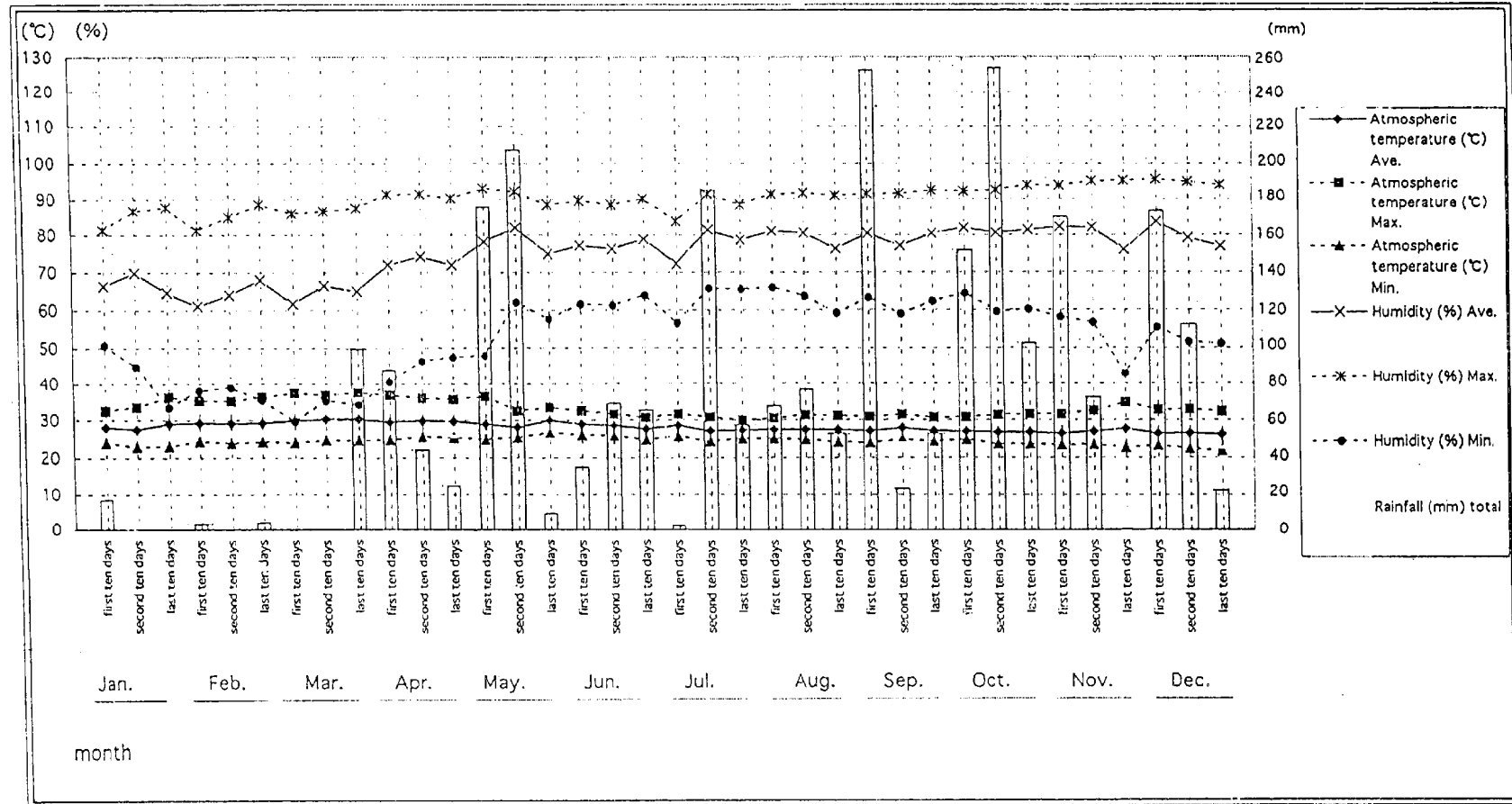
(mm)

Name of observatory and Year	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Ave. Ambepussa '65-'94	47.7	75.6	157.1	253.6	253.0	204.8	114.7	98.9	219.1	382.1	298.9	89.3	2,195
AEIP Ambepussa '98	18.5	7.5	100.0	156.5	394.0	171.2	241.5	198.0	329.0	509.5	243.0	308.5	2,677
Gampaha '98	45.8	16.8	94.2	213.6	254.4	233.8	482.9	208.7	270.3	352.7	298.8	327.1	2,799
Pasyala '98	29.0	7.0	35.0	203.2	337.4	278.0	322.5	291.0	349.3	406.0	278.0	311.0	2,847

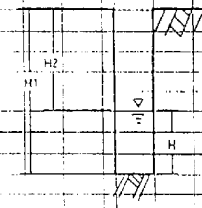


WM.No.1-2

Atmospheric temperature, humidity and rainfall at AEIP (1998)



Condition of water sources in model gropes																																							
No.	Model Group's Name	Water source												Well condition										Capacity															
		Well				Bath type well				Str. am	H1				H2				H (H1-H2)				Diameter				Well				Bath type well								
		MAHA	YALA	MAHA	MAHA	MAHA	YALA	MAHA	MAHA			MAHA	TALA	MAHA	MAHA	MAHA	YALA	MAHA	MAHA	MAHA	MAHA	MAHA	YALA	MAHA	MAHA	MAHA	MAHA	MAHA	YALA	MAHA	MAHA	MAHA	MAHA	MAHA	MAHA	MAHA	MAHA	MAHA	MAHA
		Mar.'97	Jun.'97	Dec.'97	Mar.'98	Mar.'97	Jun.'97	Dec.'97	Mar.'98		Mar.'97	Jun.'97	Dec.'97	Mar.'98	Mar.'97	Jun.'97	Dec.'97	Mar.'98	Mar.'97	Jun.'97	Dec.'97	Mar.'98	Mar.'97	Jun.'97	Dec.'97	Mar.'98	Mar.'97	Jun.'97	Dec.'97	Mar.'98	Mar.'97	Jun.'97	Dec.'97	Mar.'98	Mar.'97	Jun.'97	Dec.'97	Mar.'98	
		(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)	(No.)		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	
1	Marandagahamula	6	7	7	7	4	3	3	3	0	4.4	5.0	5.0	5.0	3.6	2.9	2.7	4.4	3.2	0.9	2.1	2.3	0.6	1.8	1.5	1.6	1.6	1.6	1.5	4.1	4.6	1.1			9.3	13.8	14.0	10.7	13.9
2	Mouwangoda	11	11	11	9	1	1	1	1	0	6.4	6.4	6.4	6.7	4.7	3.7	2.9	4.9	2.0	1.2	2.7	3.5	1.4	3.4	1.4	1.4	1.4	1.4	2.6	4.6	5.9	2.1			40.0	40.0	40.0	31.0	40.0
3	A. Bogarnua	12	12	18	18	0	0	1	1	2	5.3	5.3	5.6	5.6	4.8	3.4	3.2	4.8	3.3	0.5	1.9	2.4	0.8	2.3	1.5	1.5	1.5	1.5	0.9	3.5	4.2	1.3					4.0	0.8	4.0
4	Nittambuwa(Ellakala)	8	8	8	8	0	0	0	0	0	6.2	6.2	6.2	6.2	5.6	4.0	4.3	5.5	4.6	0.6	1.3	1.9	0.7	1.6	1.6	1.6	1.6	1.5	3.4	4.9	1.7								
5	Mingama	9	8	9	10	1	1	1	1	0	5.7	6.3	6.5	5.0	5.1	4.2	4.1	5.1	4.1	0.7	2.1	2.4	0.9	1.9	1.5	1.5	1.5	1.5	1.3	4.0	4.6	1.7			4.2	11.6	11.6	6.3	11.6
6	Badalgama	7	7	7	7	1	1	2	2	1	8.2	8.2	8.2	8.2	7.1	7.3	4.3	6.9	5.0	1.1	1.0	4.0	1.3	3.3	1.7	1.7	1.7	1.7	3.3	3.1	10.7	3.8			7.6	7.6	6.7	4.4	6.9
7	Bemulla	3	3	3	3	0	0	0	0	2	4.4	4.4	4.4	4.4	3.6	2.8	1.9	3.4	2.6	0.8	1.6	2.5	1.1	1.9	1.4	1.4	1.4	1.4	1.1	3.5	5.3	2.0							
Total & average		56	56	63	62	7	6	8	8	5	5.8	6.0	6.0	5.9	4.9	4.2	3.3	5.0	3.6	0.9	1.8	2.7	1.0	2.3	1.5	1.5	1.5	1.5	1.7	3.7	5.7	1.9			15.3	18.2	15.2	10.6	15.3



Month of Measurement
 MAHA : Mar. 1997
 YALA : Jun. 1997
 MAHA : Dec. 1997
 MAHA : Mar. 1998
 MAHA : Dec. 1998

Moisture Behavioural Pattern

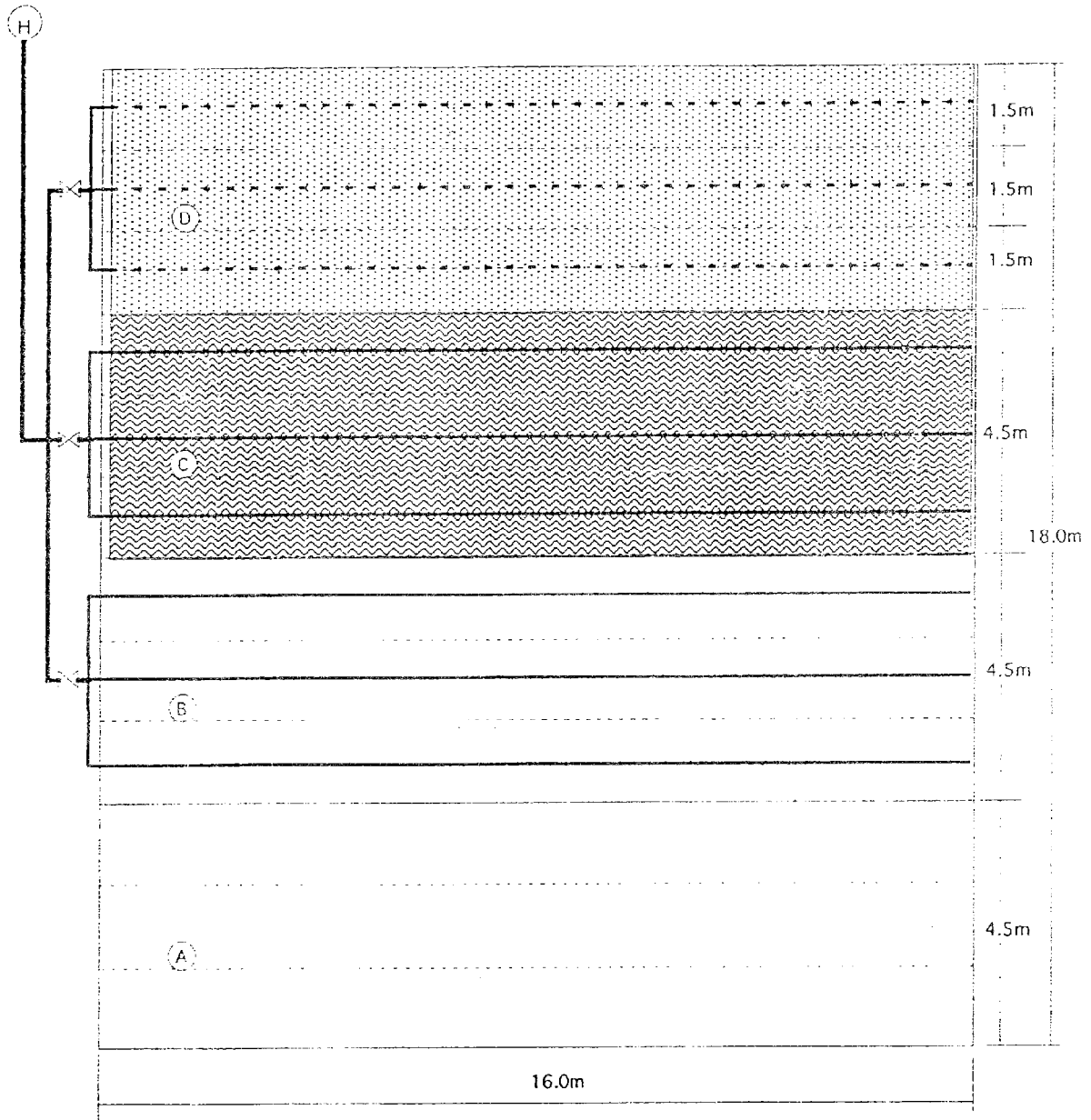
Experiment the effects of mulch for moisture conservation in crop cultivation.

After land preparation in May Okra seed planted on 21st, May 1998 and land divided in to four blocks. (see fig 1) Block 'C' mulched by black polythene and block D with straw.. A and B blocks had no mulch, kept open.

Third week of May received over 100mm of rain. (see fig 2). After 21st of May to the end of June, received the total rainfall of 180mm, Mulching the beds with straw and polythene were done with seeding. Mulching had kept moisture in available water form.(pF range 1.5-2.0) Open field moisture was always below than mulched beds. It behaved between the range of pF 1.7 to 2.2. Uniform moisture retention was seen clearly in straw mulched beds.

Polythene mulch also showed the ability of keeping moisture in favourable range of pF 1.5 to 1.8. The above observation clearly pointed out the effect of mulch to keep up soil moisture conservation for highland crops.

Field layout



288 m² (72 m² * 4 b.)

1. pF meter : 20
2. 1 1/2" Φ T socket(equal) : 7
3. 1 1/2" Φ * 1" Φ T socket(reducing) : 9
4. 1 1/2" Φ Ball valve : 3
5. 1" Φ Socket : 27
6. 1" Φ Cap : 9
7. 1 1/2" Φ Cap : 7
8. PVC pipe : 1" Φ * 4m * 36P
9. PVC pipe : 1 1/2" Φ * 4m * 4.5P
10. Polythene sheet : 1.5mW * 51m(17m * 3)



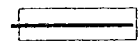

-  : straw mulch
-  : polythene sheet mulch
-  : without mulch
-  : hand watering without mulch

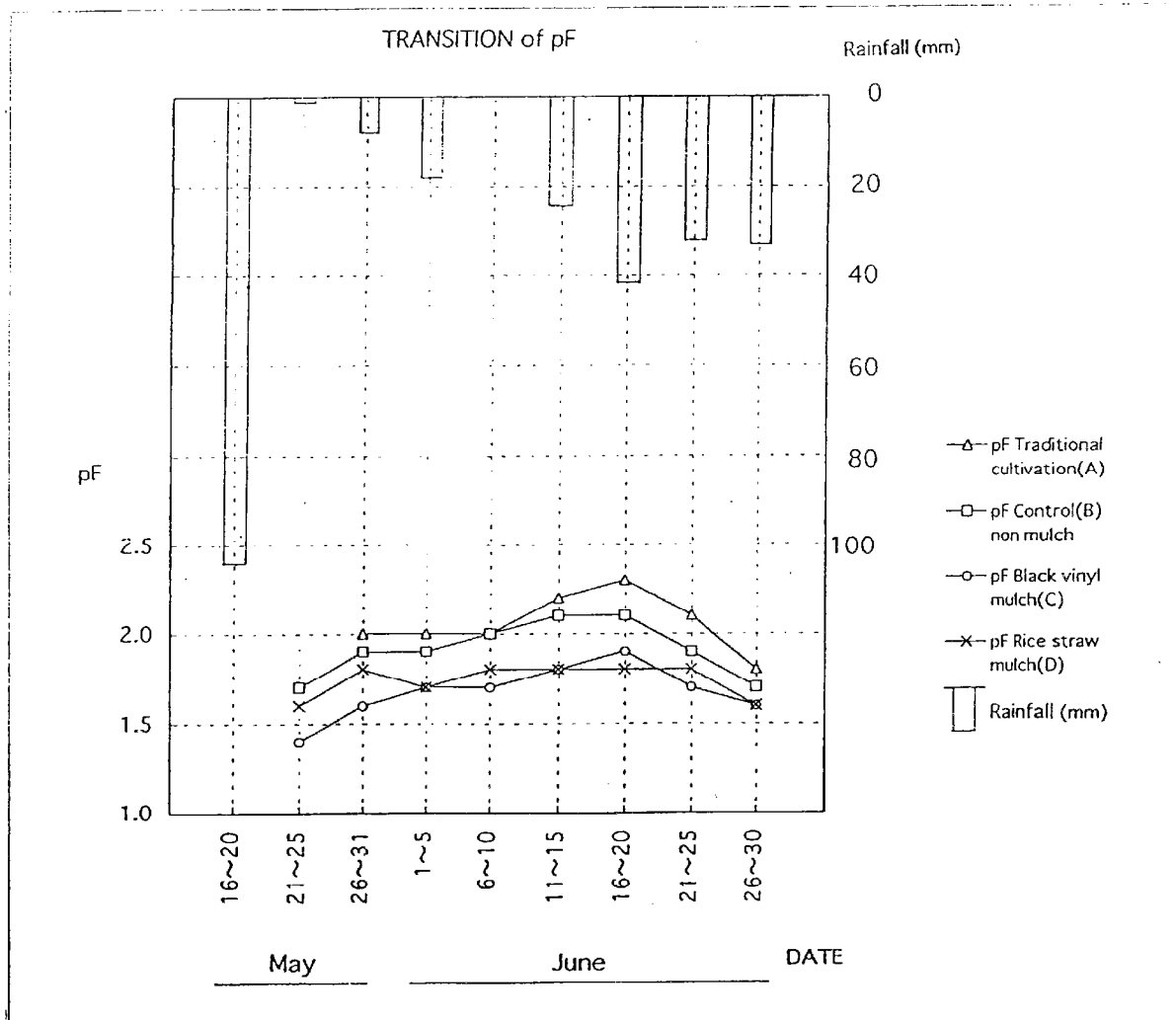
Fig 2

Table: Growing performance of Okra on June 26, 1998

Treatment	Plant height (cm)	Stem diameter (cm)	Number of leaves	Size of leaf (x cm)	Size of leaf (y cm)
Black vinyl mulch	89.9±1.66	2.0±0.05	13.1±0.18	43.5±0.87	51.5±1.38
Rice straws mulch	85.3±1.46	1.8±0.06	11.0±0.39	42.1±1.34	46.3±1.45
Cotrol non mulch	78.2±1.60	1.7±0.06	11.5±0.27	38.9±1.22	43.8±1.18
Traditional cultivation	70.5±2.13	1.5±0.06	10.7±0.15	36.6±1.22	43.2±1.52

Average±SE (n=10)

Sowing date: May 21, 1998



Sowing : 21 May 1998
Germination : 25 May 1998

21. Dec. 1998 (1/3) (WTM2-(2)-3)

WATER PUMP DISTRIBUTION

No	Group name	AEIP or Fund	Own	Model	Serial No.	Purchase date	Operating hours	Note
1	Maradagahamula (Weragodamulla)	1		(1) EY20-200SF	AK7134	Jan. '96		R.Samaranayaka Rajapaksha
	*		1	1"Φ				Pemasingha
	*		1	2"Φ				Liyanage
	*		1	3"Φ				Kularatuna
	*		1	4"Φ				R.Samaranayaka Rajapaksha
2	Minuwangoda (Yatiana)	1		(1) EY20-200SF	AK7135/3076098	Jan. '96		K.M.A. Mahes Kumarasingha ✓
		1		(2) EY20-200SF	AQ1317 3336209			B.A.Jayatilake ✓
		1		(3) 0.75Kw		Mar. '96		A.A. Danasingha ✓
	*		1	1"Φ				K.M.A. Mahes Kumarasingha
	*		1	2"Φ				Ramya Kumarasingha
	*		1	3"Φ				G.K. Kumarasingha
	*		1	4"Φ				G.K. Kumarasingha
	G.F.	1		(4) N110T/1		21. Oct. '98		A. Leelawathi
	G.F.	1		(5) N110T/1		21. Oct. '98		Nan Salin anona
	G.F.	1		(6) N110T/1		21. Oct. '98		Somalathna
3	Aluthgama Bogamuwa	1		(1) 0.75Kw	AN5640/	Mar. '96		A.H.Abeysekara
		1		(2) N110T/1	AQ9765 4455-143	17.Feb.'98		Nihal Disanayaka
		1		(3) EY20-200SF	AK7137/3075928	Jan. '96		Raja Disssanayaka
	G.F.	1		(4) N 1 1 0	1" Φ	Feb.'98		Shelton Moses
	G.F.	1		(5) Indian type	2" Φ	Feb.'98		Leel Kumara
4	Nittambuwa (Ellakala)	1		(1) EY20-200SF	AK7136/3075926	Jan. '96		N.Rose Kumar
		1		(2) N110T/1	AQ9758 4455-136	6.Jan.'98		Jayasena
	G.F.	1		(3) N110T/1		May '98		Lalith Ranaweera
	G.F.	1		(4) N110T/1		May '98		K.P. Guna Singhe
	sub total	16	8	24				G.F. : through G. Fund, * : own purchase

No.	Group name	AEIP Fund	Own	Model	Serial No.	Purchase date	Operating hours	Note
5	Mirigama(Nalla)	1	(1)	EY20-200SF	AK7139/3075997	Jan. '96		M.R.Gunatilaka
	(Delwala Nalla)	1	(2)	N110T/1	AQ9768 4455-146	9, Feb. '98		M.V.Premarathna
	*		1	1" Φ				K.A.A. Somapala
	*		1	2" Φ				K.A. Wasantha Hemasiri
	*		1	3" Φ				N.S. Kodsinga
	*		1	4" Φ				Gunarathna
6	Badalgama	1	(1)	N110T/1	AQ9770 4455-148	Feb. '98		Piyadasa Rajapaksa
	(Kehel Ella)							
7	Bemula	1	(1)	EY20-200SF	AK1701/3076318	Dec. '97		N.A. Jayatissa
	(Talgasmote)	1	(2)	EY20-200SF	AQ1321 3336235	18, Mar. '98		A. Nissanka
		1	(3)	N110T/1	AQ9756 4455-134	9, Feb. '98		W.P. Karunawathi
		1	(4)	N110T/1	AQ9764 4455-142	9, Feb. '98		N.A. Dharmasena
		1	(5)	N110T/1	AQ9760 4455-138	9, Feb. '98		W.M. Sumanaratna
	G.F.	1	(6)		1" Φ	Aug. '98		Susantha Wimalasiri
	G.F.	1	(7)		1" Φ	Aug. '98		Wimala Subasinghe
8	Pallewela	1	(1)	EY20-200SF	AK3133	Dec. '97		W.M. Pemasada Danapala
	(Mangedara)	1	(2)	N110T/1	AQ9771 4455-149	9, Feb. '98		Nihal Pemasiri
		1	(3)	N110T/1	AQ9774 4455-152	9, Feb. '98		K.K. Jayasekara
	G.F.	1	(4)	N110T/1		Mar. '98		Nayanathilake
	G.F.	1	(5)	N124T/1		Oct. 98		L. C. Ratnayaka
Subtotal		15	4	19				G.F. : through G. Fund, * : own purchase

No	Group name	AEIP Fund	Own	Model	Serial No.	Purchase date	Operating hours	Note
9	Dompa	1		(1) N125T/1	AQ9186,4431-43	5.12.'97		R.S.W.Ranatunge
	(Indolmulla)	1		(2) N125T/1	AQ9187,4431-44	5.12.'97		RA.Ariyathna
		1		(3) N125T/1	AQ9188,4431-45	5.12.'97		B.A.Dharma Sena
		1		(4) N125T/1	AQ9189,4431-46	5.12.'97		U.A.Chandrapala
		1		(5) N125T/1	AQ9190,4431-47	5.12.'97		U.A.Bandu Sena
	*		1	1 N110T/1				U. A. Jayasena
10	Urapora							
	(Bopetta)		1	1	1"Φ			domestic use
	*		1	2	1"Φ			
	*		1	3	1"Φ			
11	Magalegoda							
	sub total	5	4	9				
	Grand total	36	16	52				G.F. : through G. Fund, * : own purchase

ACTIVITY RESULT IN 1998

EXTENSION SECTION

Summary of the activities in 1998

1-4 Model group

1) 1997/98 Maha season

(1) Free subsidy of production materials such as seeds, seedlings, fertilizer and planting materials to the farmers was changed to loan system and the amount will be paid back to the group fund from this season.

(2) Implemented special program (To support the establishment of large scale farming which covers more than 1.0 acre, on Banana and Pineapple in this season.

Total 7,232 plants of Banana were planted by 32 farmers from 7 groups including Bennmulla group where a 10 acre of Banana plantation was established in the abandoned paddy field and 5.57 acre of Pineapple was cultivated by 7 farmers from 6 groups.

(3) Introduced 2.5 acres of Passion Fruit by 3 farmers in Nittanbuwa and Palewella.

(4) Total 63,870 plants of Cocoyam were cultivated by 83 farmers in 1997 Yala season but about 37% of plants were damaged by the soil borne disease.

Total 10.5 ton of Cocoyam was shipped to the export market during February to April in 1998 period. The price was Rs.30-27 per kg.

(5) Agricultural company was organized in Dompe with 12 members.

1998 Yala season

(1) The 10th group was organized at Urapola with 10 members in this season. Total membership of the group in the project reached to 127 members within the 10 groups. Major crops in this group will be Banana, Pineapple and Cocoyam.

(2) Special program on Banana, Pineapple and Ginger was implemented in this season. Supplied 800kg of Ginger seed to the Minuwangoda, A/Bogamuwa, Badalgama and Mardagahamula, 1,450 of Banana suckers to the Urapola, Mirigama and Palewella and 2,000 pineapple suckers to the Nittanbuwa group.

Ginger was cultivated in a total of 15.37 acre by 33 farmers from 9

groups. The area was expanded more than 3 times than 1997 Yala season.

4,756 plants of Banana were planted by 28 farmers from 9 groups including 1,970 plants in Urapola group.

Pineapple was planted in 11 acres by 4 farmers from 4 groups.

(3) About 26,620 plants of Cocoyam was planted by 34 farmers. The area of Cocoyam were reduced to 41% than 1997 Yala season due to an outbreak of soil borne disease.

(4) The subsidy of the production materials was stopped from this season on principle. The revolving fund will be utilized as a loan scheme to the members for the expansion of farm management.

1998/99 Maha season

(1) An additional group was established at Magalegoda with 6 members under the guidance of Benmula extension adviser.

Total number of groups reached to 11 with 116 members.

(2) The special program was implemented on Banana and Pineapple in the Dompe, Urapora and Magalegoda new group.

Supplied 24,000, 40,000 and 12,000 of pineapple sucker to the Dompe, Urapora and Magalegoda respectively.

300 Banana suckers were supplied to Magalegoda.

(3) Benmula farmers sold 3,500 of Banana suckers at the rate of Rs.16 /plant to the Badaigama, Magalegoda, IRDP as well as to the farmers in the surrounding areas.

(4) The total group fund among 11 groups sum reached to Rs. 877,716.18 by September 1998.

1-5) Training material development

(1) Project introduction video was completed in English and Sinhala edition and 10 copies were distributed to the related organizations at home and abroad.

(2) A guideline on 'Fostering farmers production group' was made in the work shop of agricultural instructors(AI).

(3) A series of introduction of AEIP in Gampaha was produced by JICA Sri Lanka office through Rupawahini corporation.

(4) Many kinds of hand outs were produced by counterparts and

agricultural instructors during the training and/or guidance period.

(5) Many kinds of field problems were recorded by slide as well as by photographs of each section.

1-6) Training

(1) AI meeting

The meeting is held on last Tuesday of every month. The aim of the meeting is to evaluate monthly activities, to prepare next month activity plan and to discuss on AI's training needs as well as field problems.

(2) Monthly AI technical training

AI Technical training programme was conducted to introduce skill oriented programme according to the training needs. Three group trainings on ginger & yam cultivation, book keeping and Cocoyam cultivation were conducted. One work shop (June, July & August) was conducted during June, July and August and formulated a guideline on fostering farmers group.

(3) Farmers training

Two group trainings on water pump maintenance and loan system on perennial crops were conducted.

Five special spot trainings were carried out by counterparts on planting of cocoyam, Banana and pineapple at Urapola and on the maintenance of grass cutter and power sprayer at Benmula and also on raising brinjal nursery at Dompe and on planting Banana and pineapple at Magalegoda.

(4) Study trip

A study trip for farmers was organized twice. 95 farmers from 10 group visited Dambulla, Gannoruwa and Kundasale government institutes.

24 betel leaf and pepper cultivation farmers from 5 groups visited Narammola research station.

Two study trips were conducted by Counterparts and experts to the Drip irrigation scheme at Nattandiya and protected agriculture cultivation station at Bandarawla.

Technical exchange program with Bohol Integrated Agricultural

Promotion Center in the Philippines was carried out during 3-11 August 1998. Two counterparts, three agricultural instructors, one field supervisor, one farmer and an expert attended to the meeting.

(5) Seminar

Two seminars were carried out by Dr.Yoneyama and Mr.M.Takao, short term experts from Japan, on the topic of Soil boned disease on cocoyam and also on the development of farm management and farmers groups respectively.

Activity Result in 1998

TSI / Crop Season	Activities	Result	Discussion
1. TSI-2-1,2-2,2-3,2-4, Improvement of Agricultural Extension Method. 1.1997/1998 Maha season. (From January 1998)	-1.1 Cocoyam survey	-1.1-1. Conducted on 7-9 January for 8 groups to determine optimum harvesting time of Cocoyam.	- Harvesting can be start after one month. Export quality yarns still less.
	-1.2 Cooperative shipping of Cocoyam.	-1.2-1. Shipped total 6.6 tons of Cocoyam to the 3 exporters.	- From 27th February to 28th March shipped this amount at the rate of Rs.27-30/Kg.
	-1.3 Spot and field rounding guidance.	-1.3-1. Conducted by AI once in every month supported by counterparts from AEIP.	- Ginger, Banana and Pineapple cultivation in farmers groups were increased and Cocoyam cultivation decreased.
	-1.4 Farmers general group meeting for Yala season 1998.	-1.4-1. General meetings were held from 13th February to 13th March. Total attendance from 9 groups were 93 farmers.	-Total number of group became to 10
	-1.5. New group survey.	-1.5-1. Surveyed two locations in Urapola & Udupila and decided to established one group from Urapola with 8 members.	
2. 1998 Yala season.	-2.1. Farmers general group meeting	-2.1-1. Held first general meeting of Urapola group on 19th March.	-Farmers decided to cultivate Pineapple and Banana as major crops.
	-2.2. Supplying of fertilizer & planting materials.(Special program)	-2-2-1. Distributed 800 kg of Ginger, 1450 Banana suckers, 800 suckers of Pineapple, Papaya 1065 plants and total 10 tons of Urea, T.S.P. M.O.P., Rock phosphate & Dolomite within the farmer groups.	-Special program was implemented on Banana, Pineapple and Ginger.
	-2.3 Spot & field rounding guidance.	-2.3.1. Conducted by AIs once in every month supported by counterparts from AEIP.	-Educated farmers on Banana treatment and planting method, nursery preparation of Papaya, Land preparation for Ginger cultivation , Pruning of Passionfruit, Control of banana weevil and Fertilizer application to Banana.
	-2.4 Cooperative shipping of Cocoyam	-2.4.1. Shipped 3.9 tons of Cocoyam to export market	- Total amount of Cocoyam shipped for export market was 10.5 ton.
	-2.5 Group cultivation.	-2.5.1. 33 Farmers from 9 groups planted Ginger for 15.37 ac.	- Did not give any financial or material support for farmer groups except Dompe, Urapola and Magalegoda.Total amount of group fund in ten farmer groups is shown in Annex 1
3. 1988/99 Maha season.	-3.1 Farmers general group meeting.	-3.1-1 Held farmer groups general meeting from August -- 31st to 8th September. Total 90 members from 10 groups were attended.	

Activity Result in 1998

TSI / Crop Season	Activities	Result	Discussion
<p>TSI 3 Development and preparation of training materials for training & extension work.</p>	<p>-3.2 Spot & field rounding guidance.</p> <p>-3.3 Organization of new farmer group.</p> <p>-3.4 Supplying of fertilizer.</p> <p>-3.5 Special supporting program to develop commercial level farming</p> <p>3-1 Preparation of training manuals.</p>	<p>-3.2.1 Conducted by AIs once in every month supported by counterparts from AEIP.</p> <p>-3.3.1 Bemmulla AI organized new group in Magalegoda with 6 members.</p> <p>-3.4.1. Distributed 2450kg of urea, R.P, M.O.P, & Dolomite to Urapola group.</p> <p>-3.5-1. Supported to cultivate 19 acres of Pineapple in Dompe, Urapola and Magalegoda by supplying 68000 of suckers.</p> <p>3.1-1. Following hand outs, and slides were produced by counter parts as training materials.</p> <p>1. Treatment of pineapple suckers grading and transplanting (15 slides)</p> <p>2. Dioscorea cultivation including nursery management and diseases (4 pages)</p> <p>3. Dioscorea cultivation in Gampaha district (4 Pages).</p> <p>4. Banana Cultivation including cultivation calendar in wet zone (one page)</p> <p>5. Guideline on fostering of production groups(5 pages)</p>	<p>-Guided farmers specially on control of Ginger disease, Banana and Pineapple cultivation of new groups. Pepper cultivation was newly introduced to Mingama and Minuwangoda groups with subsidy of department of export Agriculture.</p> <p>-Surveyed on 17th September & held general meeting on 6th October</p> <p>-10ac of Pineapple was planted by 4 farmers and 2ac of Banana planted by two farmers.</p>
	<p>-3.2 Video films.</p>	<p>6. Reference paper for the workshop to make out guideline on fostering production group in the AEIP (30 pages)</p> <p>7. Moisture behavioural pattern (2 pages)</p> <p>-3.2-1 Following video films were produced</p> <p>1. Introduction of AEIP in English and Sinhala edition,</p> <p>2. JICA video program with Rupawahini cooperation</p> <p>3. Charcoal making from paddy husk</p> <p>4. watering system</p> <p>5. D.A.T.C. special training program.</p>	<p>Crop Section</p> <p>Crop Section</p> <p>Crop Section</p> <p>Crop Section</p> <p>Extension section -Produced in the AIs work shop on 08th June, 20th July and 24th August.</p> <p>Extension Section</p> <p>Water management section</p>

Activity Result in 1998

TSI / Crop Season	Activities	Result	Discussion
<p>TSI.4 -Training on the improved extension method for extension personnel and village officers.</p>	<p>-3.3 Cropping calendar for Banana cultivation. -3.4 Slide & pictures</p> <p>4-1 Monthly AI meeting</p> <p>4-2 Monthly AI technical training</p> <p>4-3 AI workshop</p> <p>4-4 Farmer training at AEIP</p> <p>4-5 Field study trip for farmers.</p> <p>4-6 Field study trip to advanced farmers field & research station (counterpart)</p> <p>4-7. Special spot training for farmers</p>	<p>-3.3-Prepared a cropping calendar to improve farmers cultivation practices. -3.4.1 Recorded many kinds of model group activities & field problems.</p> <p>-4.1.1 Held on last Tuesday of every month. Evaluated monthly activities, prepared next month activity programs and discussed on training needs & farmers requirements. -4.2-1. Monthly AI training was conducted based on skill oriented according to the needs as follows; 1) Ginger & Yam cultivation on 29th January . 2) Cocoyam workshop on 16th February 3) Book keeping workshop on 10th November. -4.3.1. Formulated a guideline on fostering of farmers groups. Conducted 8th June, 20th July and 24th August . -4.4-Maintenance of water pump to 11 farmers on 27th of March. -4.4-2 Introduction of the loan system of perennial crop project & coconut development board to 24 farmers on 17th of July. -4.5-1 Visited Dambulla advance farming areas, Gannoruwa and Kundasale government Institutes. Attended total 95 farmers from groups. -4.5-2 Bombuwala research station. -4.5-3 Export agriculture research station in Narammala for Betel and Pepper cultivation study with 24 farmers and 5 AIs on 13th October from 5 model groups. -4.6-1 Visited drip irrigation scheme at Iranawila -4.6-2 Visited protected agriculture cultivations at Bandarawela. -4.6-3 Visited open university audio visual center on 16th July -4.7-1 Cocoyam, Banana & Pineapple training in Urapola on 28th April for 8 farmers. -4.7.2 Maintenance of Grass cutter training in Bernmulla on 8th January for 12 farmers. -4.7-3 Training of Betel cultivation on 22nd September at Dompe. 11 farmers attended from Mirigama and Minuwangoda groups 4.7-4 Training on Pine apple cultivation on 10th December in Dompe. 6 farmers.attended from Urapola and Magalegoda groups.</p>	<p>Extension and Crop sections</p> <p>Each sections</p> <p>Group fund management must be strengthened</p> <p>Each sections.</p>

Activity Result in 1998

TSI / Crop Season	Activities	Result	Discussion
5. Others	-5.1 Seminar	-4.7-5 Operation of power sprayer for Sigatoka disease control to Banana at Bemmulla group. -4.7-6 Training on group activities & farming techniques on 12th October in Aluthgama Bogamuwa and Bemmulla groups for Magalegoda groups. -5.2-1 Identification of Cocoyam disease on 23rd September. Attended 7 AIs and 5 CPs. -5.2-2 Improvement of group activities & farm management on 13th November. Attended 9 AI s and 6 CPs. -5.2-3 Technical exchange program on extension with Bohol Agricultural Development Promotion Project in Philippine. Attended 2CP, 1EX, 4AIs, 1F during 3-11 August.	

Present Condition Of Fund in the Groups (98/99 Maha General Meeting Time)							Annex-1
Groups	Groups Established	No of Farmer	Bank Deposit	Loan to Farmer			Total
				Water Pump	Fertilizer	Planting Material	
Nittambuwa	1995/96Maha	9	61601.76	22823.71	—	—	84425.47
A. Bogamuwa	1995/96Maha	14	65127.16	18728.54	—	937.50	84793.20
Mirigama	1995/96Maha	10	42331.18	15091.00	20310.00	23820.00	101552.18
Minuwangoda	1995/96Maha	12	47724.00	27733.00	—	33235.00	108692.00
Maradagahamula	1995/96Maha	12	53390.02	10016.20	—	5439.24	68845.46
Bemmulla	1996/97Maha	17	62754.05	14382.30	8760.00	45401.44	131297.79
Badalgama	1996/97Maha	7	36151.64	4631.00	825.00	10869.00	52476.64
Pallewela	1997Yala	9	55948.10	15988.74	—	22255.00	94191.84
Dompe	1997Yala	12	50605.80	18192.50	17973.25	28750.00	115521.60
Urapola	1998Yala	8	14630.00	—	7540.00	13750.00	35920.00
Magalegoda	1998/99Maha	6	—	—	—	—	—
Total	11 Groups	116	490263.71	147586.99	55408.25	184457.18	877716.18

Results of cultivation in production group since 1995/97 Maha to 1998/99 Maha

Crop season	Crops	Mirigama		Nittanbuwa		MinuwangodA.		Bogamuw		Maradagaha		Badalgama		Benmula		Pallawela		Dompe		Urapola		Magalegoda		Total			
		Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area		
95/96 Maha	Chillie(ac)	8	1.62																					8	1.62		
	Okra(sc)					1	0.05	1	0.25	1	0.01													3	0.31		
	Beans(ac)							1	0.16	1	0.12													2	0.28		
	Eggplant(pcs)			1	60			1	75															2	155		
	Banana(pcs)	1	450	11	332	1	40	2	550	7	170													22	1,572		
	Pineapple(ac)			1	0.5	1	0.5																	2	1		
	Papaya(pcs)					1	60																	1	60		
96 Yala	Chillie(ac)	6	0.87	1	0.01	2	0.33	9	2.68	16	0.07														34	3.98	
	Okra(sc)	1	0.25			1	0.12	1	0.35	1	0.01			3	0.62										7	1.35	
	Eggplant(pcs)	6	2050	1	0.12	3	200	12	1735	7	275														29	4,260	
	Gourd(ac)	1	0.12			1	0.08			1	0.56														3	0.76	
	Banana(pcs)	1	450	1	25	4	160	1	100	2	50														9	785	
	Papaya(pcs)			1	100																				1	100	
	Cocoyam(pcs)	5	900	11	1720	5	450	9	2850	19	4750														49	10,870	
96/97 Maha	Chillie(ac)			2	0.37	2	0.38	3	0.41	1	0.25			2	0.5										10	1.91	
	Okra(sc)	1	0.25			2	0.26					1	0.5	3	0.65										7	1.66	
	Long bean	1	0.25			1	0.25			1	0.25														3	0.75	
	S. potato					1	0.03																		1	0.03	
	Bitter gourd	3	1.25					1	0.25																4	1.50	
	Tomato							1	0.06																1	0.06	
	Snake gourd							3	0.38																3	0.38	
	Know gourd							1	0.06																1	0.06	
97 Yala	Chillie(ac)							3	0.62	2	0.5			1	0.5											6	1.62
	Okra(sc)					1	0.5			1	0.5															2	1.00
	Eggplant(pcs)																	3	2							3	2.00
	Ginger(ac)	2	1	2	0.75					2	0.75	1	0.12	1	0.25	4	2	1	0.25							13	5.15
	S. potato(ac)	1	0.25			1	0.25	1	0.25																	3	0.75
	Banana(pcs)	1	150	1	150	2	300	1	150					4	450											9	1,200
	Pineapple(ac)			1	1																					1	1.00
	Papaya(pcs)			2	275			3	225							2	500	3	625							10	1,625
	Cocoyam(pcs)	6	6100	8	1720	12	14010	11	6550	9	7990	8	8420	8	8200	9	3630	12	7250							83	63,870
	Betel leaf(w)															7	1123									7	11,123
	Cassava(ac)	4	1.75					1	1	1	0.5					3	3									9	6.25

Annex 2

Crop season	Crops	Mirigama		Nittanbuwa		Minuwangoda		A. Bogamuwa		Maradagaha		Badalgama		Bennmuia		Pallawela		Dompe		Urapola		Magalegoda		Total			
		Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area	Far	Area		
97/98 Maha	Chillie(ac)				1	0.5						1	0.25					3	1					5	1.75		
	Okra(sc)							3	0.33							1	0.25	1	0.25					5	0.83		
	Eggplant(pcs)							1	0.25															1	0.25		
	Gourd(ac)																		1	0.5					1	0.50	
	S. potato(ac)							1	0.25		1	0.5													3	1.25	
	Banana(pcs)	8	1280		1	50		4	520		4	1000	2	900	12	3282	1	200							32	7,232	
	Pineapple(ac)	1	0.5	2	1.75	1	1.5					1	0.5			1	1	1	0.5						7	5.75	
	Papaya(pcs)					1	75		3	120					1	50			5	375					10	620	
	Betel leaf(w)					1	500						1	1500					1	500					3	2,500	
Passion(ac)			2	1.5												1	1							3	2.50		
98 Yala	Chillie(ac)															1	0.12							1	0.12		
	Okra(sc)	1	0.25									1	1.25												2	1.50	
	Beans(ac)											1	0.5												1	0.50	
	Eggplant(pcs)																								1	0.50	
	Gourd(ac)																		1	0.5					1	0.50	
	Ginger(ac)	5	1.75	1	0.5	1	0.5	3	1.25	3	1.25	2	1	5	2.75	8	3.75	5	2.62						4	1.75	
	S. potato(ac)									2	0.5														2	0.50	
	Banana(pcs)	4	645	1	50	8	585	4	475	1	200	2	650	1	40			1	150	6	1970				28	4,765	
	Pineapple(ac)	1	4	1	1.5	1	1.5															1	4			4	11
	Papaya(pcs)								2	175																2	175
	Cocoyam(pcs)	2	1500			7	7220	6	3350	2	350			1	750	9	4950	2	4000	2	1500				31	23,620	
	Cassava(ac)					1	1																		1	1.00	
	98/99 Maha (as of Dec.)	Banana(pcs)	2	325	1	40	3	125	1	300	2	150	3	325	2	65	6	755			3	975	2	300	25	3,360	
Pineapple(ac)		2	3.75	1	2							1	1						12	4	2	6	4	10	22	26.75	
Betel leaf(w)		1	1000			3	1300												2	3000					8	5,300	
Papaya(pcs)																1	100				1	300				2	400
Pepper(pcs)		1	680			2	200					1	340													4	1,220
Eggplant(ac)																			2	0.5						2	0.50
Chillie(ac)						1	0.12												1	0.12						2	0.24
Luffa(ac)		1	0.25																1	0.5						2	0.75
Gourd(ac)																			1	0.5						1	0.50
Okra(ac)						1	0.12		1	0.12																2	0.24

List of references bought from outside institutes (1998)

(1) Books from Agrarian Research And Training Institute

1. Training methodology
2. Traditional food plants in Sri Lanka
3. Kabanika Pohora
4. Food commodity Prices
5. Gowijanatha / vol. 12
6. Gowijanatha / vol. 8
7. Gowijanatha 1995 May / July
8. Conservation farming

(2) Books from International Rice Research Institute (IRRI)

1. Rice-feeding insects of trop. Asia
2. Climate change and Rice
3. Rice blast modeling & forecasting
4. Bacterial blight of Rice
5. Rice roots : nutrient and water use
6. Green manure production systems
7. Neem pesticides in rice : potential
8. Crop loss assessment in rice
9. A handbook for weed control in rice
10. Illustrated guide to pest... English
11. Rice blast disease

(3) Slides from IRRI

1. Morphology of the rice plant
2. Methods of growing rice
3. Weed identification in lowland
4. Methods of weed control

(4) Video Programs

1. Keeping that great fresh taste from Ministry of Agriculture, Forestry and Fisheries, Japan.
2. Agriculture Extension Improvement Project from Rupavahini Cooperation

ACTIVITY EVALUATION IN 1998

AND

ACTIVITY PLAN IN 1999

A d m i n i s t r a t i o n

1 Budget

Rs1,500,000 will be allocated by Japan for the General local cost. (Jan.~Jun.) Rs890,000 will be allocated by Japan for the Extension and Enlightenment cost.(Jan.~Jun.)

The budget of the project period from IRDP is not decided yet. Only monthly fuel budget has been decided. (Rs4,000 for two pick up trucks per month, Rs1500 for a van) Rs1,135,000 will be allocated by Sri Lanka (W.P) for the local cost and the Extension and Enlightenment cost. (Jul.~Dec.)

2 Staff

Laboratory staff will be assigned for activities of AEIC.

3 Expert

A short term expert will be sent to advise the use of laboratory equipment.

4 Equipment

The equipment of '98 will arrive in January.

5 Training

Dr.T.T.Ranashingha will be trained for 3 weeks (General agriculture)

6 Meeting

Joint committee meeting will be held in March and June.

Operation committee meeting will be held monthly.

Weekly meetings will be held every Monday up to June.

AEIC may have weekly meetings when required.

7 Report

A short term expert will report on his specific activities.

Evaluation report will be submitted.

Seasonal(or monthly) reports will be submitted.

8 Other

The evaluation mission from Japan will visit in April.

Annual Plan in '99

	'99 Jan. Feb. Mar.	'99 Apr. May. Jun.	'99 Jul. Aug. Sep.	'99 Oct. Nov. Dec.
Expenditure Japan Side	<input type="radio"/> Rs650,000 will be allocated by Japan for General local cost. <input type="radio"/> Rs420,000 will be allocated by Japan for the Extension and Enlightenment cost.	<input type="radio"/> Rs750,000 will be allocated by Japan for General local cost. <input type="radio"/> Rs45,000 will be allocated by Japan for the Extension and Enlightenment cost.		
SriLanka Side	<input type="radio"/> Only monthly fuel budget has been decided. (Rs4000 for 2 pick up truck, Rs1500 for a van)		<input type="radio"/> Rs1,135,000 will be allocated by Sri Lanka (W.P) for the local cost and the Extension and Enlightenment cost.	
Staff			<input type="radio"/> Laboratory staff will be assigned for an activity of AEIC.	
Expert		<input type="radio"/> A short term expert for laboratory equipment		
Equipment	<input type="radio"/> The equipment of '98 will arrive in January.			
Training		<input type="radio"/> Dr.T.T.Ranashingha will be trained		
Meeting	<input type="radio"/> Joint committee meeting will be held <input type="radio"/> Operation committee meetings will be held <input type="radio"/> Weekly meetings will be held	<input type="radio"/> Joint committee meeting will be held <input type="radio"/> Operation committee meeting will be held <input type="radio"/> Weekly meetings will be held	<input type="radio"/> Operation committee meeting will be held <input type="radio"/> Weekly meeting will be held	<input type="radio"/> Operation committee meeting will be held <input type="radio"/> Weekly meeting will be held
Report	<input type="radio"/> Evaluation reports will be submitted <input type="radio"/> Monthly reports will be submitted	<input type="radio"/> A short term expert's report <input type="radio"/> Final report will be submitted <input type="radio"/> Monthly reports will be submitted	<input type="radio"/> Seasonal (or monthly) reports will be submitted	<input type="radio"/> Seasonal (or monthly) reports will be submitted

ACTIVITY EVALUATION IN 1998
AND
ACTIVITY PLAN IN 1999

1. Trial plot

(1) Implemented program and problems in 1998

The yield of 3 kinds of vegetables was studied under two different shading conditions in pipe houses and in the open field. There was a statistical difference at 5% level of probability per yield of okra at the commencement stage but no statistical difference due to outbreak of pests and diseases in the latter stage. The yield of Brinjal in open field was 2.3 times more than in 35% and 58% shading conditions. There was a statistical difference per yield under different shading conditions of chilli cultivation. Healthy seedlings had grown in the second nursery.

The effect of dolomite and coir dust application for chilli, okra and brijal was examined. Soil structure had improved after applying coir dust and the most effective factor for okra production is to adjust pH value of the soil.

Removing infected leaves weeding and making good ventilation can control Sigatoka disease in Banana cultivation. Kolikuttu variety is not recommended in project area due to sensitivity to weevil attack and diseases.

Farmer's technique of distinguishing male and female plants in the seeds of papaya was investigated in the trial plot. But we could not distinguish them in the seeds.

Pythium spp was isolated from roots of infected cocoyam in Minuwangoda. This infected cocoyam showed that outer leaves turned into yellow and roots began to rot. A simple test showed that Ridomil had an effect in controlling *Pythium* spp. So it was proposed that cocoyam seedling should be treated by Ridomil before planting.

Ginger, Pineapple, papaya, Banana and *Dioscorea* varieties are recommended to be cultivated as alternative crops of cocoyam. Then the pathogenicity of isolated *Pythium* spp against Ginger and *Dioscorea* were examined. Inoculation test found that isolated *Pythium* spp had no pathogenicity against them.

(2) Focus of the Program in 1999

We will focus on 5 yield trials under 35%, 51% and 58% shading conditions and control (open field) using ginger, tomato, radish, cucumber and pumpkin. Second is selecting tolerance brinjal variety against pod borer and focus to be given in future to improve the vegetable cultivation.

Field trials should be continued to make sure of the effect of Ridomil before planting as pre-treatment.

2. Verification Farm

(1) Implemented Program in 1998

We started third crop rotation with chilli, okra, and bushita.

Production of Okra under the coconut trees showed almost the same results as under the different shading conditions. We found it is difficult to maintain stable vegetable production under the coconut trees.

When fertilizer was applied to both pineapple and coconut at the correct time, pineapple gave good enough yield.

The yield of Raja-ala was high and Hinguralla lower than departmental standard. We suggest to reduce the plant distance to get a higher yield.

(2) Focus of the Program in 1999

We will focus on the improvement of this crop rotation using chilli, okra and bushita. Application of chicken manure to improve the soil structure and to use paddy straw to keep the soil moisture and to control weed.

Activity Plan on Trial in 1999
Crop Production Section

TSI NO	Activities	Target period	Place	Responsibility	Target	Remarks
1-1	Improvement of Cultivation technology					
1.	To select suitable crop varieties under different shading conditions.	March 1999-1999 Dec	A.E.I.P	Ex/Cp	1000 m ²	-Ginger, Tomato raddish, Cucumber and Pumpkin under 35%, 51%, 58%, shading conditions
2.	-Introduction of suitable Brinjal variety in open field and pruning under shading conditions.	"	"	"	230m ²	-To select tolerance Brinjal variety against for podborer attack
3.	-Diseases of ginger cultivation.	March 1999-2000 Feb.	"	"	1000m ²	-To observe the diseases of Ginger cultivation.
4.	-To select the optimum plant distance under the different shading conditions on cocoyam.	March 1999-2000 March	"	"	06 plots	-Under 28% and 58% shading conditions.
5.	-Investigating effectiveness of 'Ridomil' for cocoyam soil borne disease of cocoyam.	"	"	"	60 plants	-Soaking seedlings in Ridomil before planting as pre-treatment

Training Materials for 1999 - Crop Production Section

TSI NO	Activities	Target period	Place	Responsibility	Target	Remarks
1.	Preparation of Pamphlet on potting media of secondary nursery for vegetable cultivation.	Mar - Sep.1999	A.E.I.P	Ex/CP	01	-
2.	Preparation of slides and leaflets on grafting of cucumber and pumpking.	-Sep -Dec 1999	„	CP	12	-
3.	Making pamphlet on Banana cultivation.	-Feb - Ag: 1999	„	EX/CP	01	-
4.	Preparation of leaflet on cost of production of vegetable cultivation with coconut.	-Jan - Ap. 1999	„	„	01	-
5.	Preparation of leaflet and slide on land preparation for Ginger Cultivation	-Mar.- May 1999	„	Ex/CP	01	-
6.	Preparation of pamphlet and slides on pruning of Passion fruit cultivation.	-Jan - Feb 1999	„	„	01	-

Water Management

1. Implemented program and problems in 1998

Meteorological data collection was started from January 1998. Rainfall data was collected from Pasyala Horticultural Center and Botanical garden at Gampaha to represent the model group farming locations. This activity was important in understanding the weather pattern because rainfall was highly connected with farming activities in Gampaha district.

Well water condition was another main factor that limited farmers' activities during the dry periods of the year. Due to the lack of water in the wells farmers could not irrigate sufficiently as they used to in watering the plants. Therefore a large number of fruit & vegetable plants became weak in growth and the number of bearing plants were reduced and as such the harvest itself was reduced.

Crop growing soil in trial field and many farmers' lands are gravel. Therefore it has no ability of keeping moisture for a longer time unless it rains more frequently or irrigated.

Distribution of water pumps to the farming group was increased. But utilization of water pumps for agricultural work had not reached the maximum level. Safety precautions were not sufficient in the use of electric pump in garden work in Dompe area.

2. Focus of the program in 1999

- 1). Continuation of meteorological data collection at Ambepussa, Pasyala and Gampaha.
- 2). Introduction of water saving irrigation techniques at demonstration levels.
- 3). Preparing manuals about water saving irrigation techniques for farmers.
- 4). Special training program for farmers about operation and service of water pumps.

(With DATC Ambepussa and with Jinasena company, Colombo)

- 5). Guiding farmer groups in terracing slope land and in adopting soil and water conservation methods.

Activity Plan Trial in 1999 - Water Management

TSI/CROP SEASON	ACTIVITIES	TARGET PERIOD	PLACE	Responsibility	Target	Remarks
1-4 Improvement of water management technology.	1. Collection and analysis of meteorological data.	Jan-Dec.	-AEIP Ambepussa Makandura, Bombuwela Pasyala Gampaha	-Water management	-Five stations	-Further details to be obtained from Natural Resource Center Peradeniya and Met. Dept. Colombo -Use of three phase meter and oven dry method.
	2. Study on soil moisture.	„	-AEIP field	- „		
	3. Study on water resource conditions.	„	-Seven model groups	- „	-Dry and wet season	
	4. Introduce soil / water conservation method.	„	-Dompe Pallewela	- „	-Two locations	
	5. Information collection for irrigation / drainage activities.	„	-Selected place	- „	-Research stations and farmer fields.	
	6. Demonstration a suitable watering technique for farmers	„	-Selected model group	- „	-Four models	
1 - 5	1. Maintenance of irrigation facilities.	Jan-Dec. <i>June</i>	-Verification field	-Water Management		-Aluthgama Bogamuwa Minuwangoda Bemulla and Nittambuwa,
	2. Improving soil moisture conservation.	„	„	„		
	3. Improve of drainage facilities.	„	„	„		

Extension section

Activity evaluation in 1998 and activity plan in 1999

1) Evaluation in 1998

(1) The number of farmers groups which were organized in the AEIP since 1995/96 Maha season had reached to 11 with a total membership of 116. Two groups were organized at Urapola in 1998 Yala season and at Magalegoda in 1998/99 Maha season respectively.

(2) The Special Program (To encourage commercial scale farming) was implemented successfully on Banana, Pineapple and Ginger in 1998 Yala season and a total of 19 acres of Pineapples program was implemented (6 acres in Dompe, 10 acres in Magalegoda and 3 acres in Urapola) and 2 acres in Banana to Magalegoda in 1998/99 Maha season.

(3) The subsidy program from the Project to the production group had been stop since 1998 Yala season except for the implementation of ' Special Program ' to the groups when they made special programs to develop commercial cultivation on perennial crops.

The other groups had continued their farming or expanding their farming by their own capital as well as by utilizing the group fund.

(4) Cultivation of other crops such as Banana, Pineapple, Ginger, Papaya, Betel, Pepper, Passion fruit had increased remarkably and had become the major crops in the group, on the other hand, the vegetable and cocoyam cultivation had decreased.

(5) An AIs workshop was carried out three times successfully and a guideline on 'The farmers group guidance' was formulated.

(6) The training of AIs and farmers was conducted effectively and efficiently through the skill oriented training programme, on the spot training and in the group training programme as well as in the study trips according to their needs.

(7) The Audio visual teaching materials were fully utilized to conduct the training effectively and efficiently.

2) Problems

(1) Cocoyam cultivation in 1998 Yala season had declined more than 40% from last year because of the damage caused by soil borne diseases. About 34 farmers in the project had been cultivating cocoyam i.e about 26,000 plants (2.6 ha). The disease was caused by ' Pythium 'according to the identification by Dr.Yoneyama ,a short term expert from Japan.

(2) Ginger was cultivated by 33 farmers in 15.37 acres in 1998 Yala season. The serious outbreaks of soil borne disease, air borne disease and stem borer damages were reported by many farmers.

(3) The main stem of Banana sucker become rotten after planting and the growing was delayed by 3-4 months. The reason was identified as the delay for planting after up- rooting the sucker.

(4) The utilization of group fund is still very low in many groups. An abilities of AIs and group officers on the fund management must be improved.

(5) The group activity is inactive in some groups. The membership of the group should be increased annually to have a healthy group development.

3) Focus of the activity planning in 1999

(1) The system of farmers group guidance by agricultural instructors and supervision from the government authority for the self motivated production activity as well as sustainability of the production group must be constructed before the expiration of the Project.

(2) Diagnoses on the farmers group development programme will be necessary to evaluate group activity and farmers attitude towards the group development in future.(Jan-Feb.)

(3) Profitability Index on the major crops must be surveyed as a technical standard of farmers, to improve their future farm management as well as to bring about a ence of competition among farmers.

Activity plan on Farmer groups in 1999

T S I	Activities	Target period	Place	Responsibilities	Target	Remarks
2. Improvement of Agricultural Extension method	1. Surveys					
	1-1. Evaluation of group activities and farmer activities.	Jan-Fe	Farmer groups	Exs & Cps	10 production groups	
	2-2. Profitability survey on major crops.	Fe-Mar	Farmer groups	Exs & Cps	Pineapple, Passionfruit, Ginger, Papaya	
	2. Promotion of self motivated production groups.					
	2-1. Technical guidance to existing farmers groups	Jan-Jun. Jun.-De	Farmer groups	Exs, Cps & AIs	12 production groups.	
	2-2. Organizing and technical guidance to new farmers groups.	Jan-Fe	Farmer groups	Exs, Cps & AIs	1998/99 Maha	
	2-3. Supporting to hold group general meetings.	Fe and Aug.	Farmer groups	AIs & Group members	Two times per each groups.	
2-4. Motivation of group activities. 1) Production material support. 2) Group fund guidance.	Jan-De	Farmer groups	Cps & AIs	12 groups		

Activity plan on making training materials in 1999

T S I	Activities	Target period	Place	Responsibilities	Target	Remarks
3. Development of training materials.	3-1 Preparation of slides and pictures on field problems and activity records.	Jan-De.	AEIP	All section	Several types	
	3-2 Completing of video film regarding water management systems.	Mar.	AEIP	Extension & Water Mgt sections	1 Film	
	3-3 Preparation of pamphlet on potting media of secondary nursery for vegetable cultivation.	Mar.-Sep.	AEIP	Crop section	1 pamphlet	
	3-4 Preparation of slides and leaflets on grafting of Cucumber and Pumpkins.	Sep.-Dec	AEIP	Crop section	1 leaflet and 12 slides	
	3-5 Making pamphlet on Banana cultivation.	Feb.-Aug.	AEIP	Crop section	1 pamphlet	
	3-6 Preparation of leaflet on cost of production of vegetable cultivation with Coconut	Jan.-Ap.	AEIP	Crop section	1 leaflet	
	3-7 Preparation of leaflet and slides on land preparation for Ginger cultivation.	Mar.-May	AEIP	Crop section	1 leaflet and slides	
	3-8 Preparation of pamphlet and slides on pruning of Passionfruit cultivation.	Jan.-Feb.	AEIP	Crop section	1 pamphlet and slides	
	3-9 Preparation of pamphlet on maintenance and operation of water pump.	Feb.-Ap.	AEIP	Water Mgt. section	1 pamphlet	
	3-10 Preparation a pamphlet on effect of mulch for vegetables.	Feb.-June	AEIP	Water Mgt. section	1 pamphlet	

Activity plan on Training in 1999

T S I	Activities	Target period	Place	Responsibilities	Target	Remarks
4. Implementation of training	4-1 AIs work shop.	Jan-De	AEIP	AEIP	3 times	
	4-2 Monthly AI meeting.	Jan-De	DDAO	AEIP	12 times	
	4-3 Field study tour.	May	Advanced field AEIP	AEIP	1 time	
	4-5 Farmers training.	Jan-De	Farmer groups	AEIP	1 time	
	4-6 Field rounding training.	Jan-De		AI	12 times	