SEED PRODUCTION IN CHIMBU PROVINCE

By Emmanuel D. Cena - Rural Development Officer (O.I.C. Vegetables) Chimbu Province

INTRODUCTION

A programme in subsistence nutrition has been started. People are being encouraged to grow more, and it is becoming obvious that the demand for planting materials will become a serious problem. The question as to how and where to produce these planting materials could hamper our programmes as most farmers cannot afford to buy imported seeds.

It was decided to establish a seed-production programme aimed at minimizing the problem of getting seed from other places, and for the province to be self-sufficient in seed distribution. We are also trying to produce seeds of high protein value to supply the Community and Provincial High Schools, Health Centres and villages so that nutrition problems can be combated.

The main group of people affected by malnutrition are younger children, and mothers during pregnancy and after birth.

MATERIALS AND METHODS

Source of seeds for the starting phase:

1. Highlands Agricultural College, Mount Hagen, Western Highlands Province.
2. Highlands Agricultural Experimental Station, Aiyura, Eastern Highlands Province.
3. Lowlands Agricultural Experimental Station, Keravat, East New Britain Province.
4. Kuk Tea Experimental Station, Western Highlands Province.

Cultural procedure:

The programme was started in May 1976 in an area of 0.1638 ha at the Extension Centre, Kundiawa. The area was divided into six

lots of 280 sq m each. Raised beds of 1 m x 10 m were made and planted to 6 different kinds of leguminous crops: Pea *(Pisum sativum)*, Beans *(Phaseolus vulgaris)*, Peanut *(Arachis hypogaea)*, Soybeans *(Glycine max)*, Mungbeans *(Vigna radiata)*; and to Irish potato *(Solanum tuberosum)*. Crop rotation was closely observed to see that there was no duplication of planting in the same plots. Fertilizers, insecticides, fungicides and proper cultural practices were employed.

Seed inoculation:

Inoculum was obtained from the Pathology Section of the Department of Primary Industry at Konedobu. Three kinds of strains for peanut, soybeans and mungbeans were applied. Performance of the inoculated and uninoculated seeds at 2 and 4 months after sowing was closely observed and recorded.

Seeding:

As these plants were directly seeded, shallow furrows in plots of 1 m were constructed at a distance of 0.45 m apart to provide 2 rows on each plot. The depth of planting depended on the size of seeds to be planted. As a general rule, the soil cover should be four times the diameter of the seeds. Seeding was done by sowing the seeds thinly in furrows and the distance depended on the crops planted. Generally, legume plants like beans, peas, mungbeans, soybeans and peanut have an average distance of 10 cm between plants to provide equal distribution of plants per unit area. This also depends on the soil fertility level. Watering was done during the first two weeks after sowing to hasten its germination. Irish potato was planted at a distance of 0.7 m between rows and 35 cm within rows.

Fertilization and cultivation:

Application of complete fertilizer, spread thinly in the furrows at planting time, provided a readily available source of nutrients as soon as the seeds germinated. Two weeks after germination, or when the plants were about 20 cm high, cultivation and hilling-up followed. A second application of fertilizer was done before flowering time at the same rate as the first application and was applied as side dressing. Hand weeding was done to prevent early weed competition.

Pest and diseases control:

Spraying with chemicals was employed at two week intervals which served as protection to the growing plants from any pests and diseases that may occur. It was observed that minor pests like cutworms and aphids were mostly controlled throughout the growing period. Irish potato seed pieces were cured with fungicide two weeks prior to planting time.

RESULTS

The results showed that there was no apparent difference between the inoculated and uninoculated seeds throughout the growing

period as indicated by the same vegetative colour, height of plants at 2 and 4 months period, and abundant nodules on both treatments (Table 1). This may be due to equal fertility level of the soil and the continuous application of fertilizer during its growing period.

As shown in Table 2, beans gave a yield of 46.6 kg with an average of 2219 kg per ha; Irish potato gave 235 kg and an average of 8393 kg per ha; mungbeans gave 25 kg and an average of 893 kg per ha; peanut gave 71.36 kg and an average of 2549 kg per ha and soybeans gave 30 kg and an average of 1071 kg per ha. Good yields were obtained during the favourable weather conditions throughout the growing period from May to August 1976. Other plants thrived well until maturity except pea which was affected by early bean fly. Irish potato exhibited good growth during the first planting but was affected by tuber rot during the second planting.

Because of the existing demand for seeds, the area was expanded in three districts and has a total of 1.45 ha. Further expansion is planned. Cultural practices have improved and seed multiplication has continued. The department was able to establish 75 pilot projects in schools, health centres and villages throughout the province during 1977-1978. It is hoped to establish 10 more projects in each district at the end of 1979. Table 3 shows the comparative yearly seed distribution.

DISCUSSION

To combat nutrition problems in the villages, it is suggested that similar programmes be adopted in other places where a high degree of malnutrition exists. This could be started within a community or school if practical assistance can be given or taught.

Provincial projects planned to combat malnutrition include:

1) Provincial-wide distribution of high protein seed. For this purpose the following expansion of our programme is planned:

   a) At Kerowagi, beans and other legumes to supply Kerowagi and Kup areas will be grown.

   b) At Kundiawa, beans and other legumes to supply Kundiawa and Chuave areas will be grown.

   c) At Karimui, beans and other legumes to supply Karimui and Bomai areas will be grown.

   d) At Gembogl, Irish potato to supply the high altitude areas of Gembogl, Kerowagi and some portion of Kundiawa, will be grown.

   e) At Kilau, Irish potato to supply the Gumine and Salt Nomane areas will be grown.

2) Supervised vegetable pilot projects in schools and rural health centres will be expanded. "Planting Kits", which contain exact amount of seeds and fertilizers for a specific area plus instructions and cultural practices of certain vegetable crops, will be distributed.

3) Supervised village vegetable pilot projects will be expanded and planting kits provided.

4) In 1979, bulb onion and Irish potato production for high altitude areas will commence.

Dwarf snake beans

Irish potato

Corn

Peanut

Table 1

LEGUME RHIZOBIUM TRIAL

INOCULATED

Crop	Area (ha)	Average Height (cm)		Average Spread (cm)		Plant Colour	Nodules
		2 mo.	4 mo.	2 mo.	4 mo.		
Mungbeans	.028	57.75	74.20	55.74	57.74	Green	Abundant
Soybeans	.028	56.37	90.50	55.62	60.00	Green	Abundant
Peanut	.028	9.60	21.10	35.87	45.60	Green	Abundant

UNINOCULATED

Crop	Area (ha)	Average Height (cm)		Average Spread (cm)		Plant Colour	Nodules
		2 mo.	4 mo.	2 mo.	4 mo.		
Mungbeans	.028	52.70	74.80	52.6	52.60	Green	Abundant
Soybeans	.028	51.00	75.80	55.60	69.60	Green	Abundant
Peanut	.028	10.80	22.05	39.80	42.50	Green	Abundant

Table 2

SEED PRODUCTION INITIAL HARVEST

Crop	Area (ha)	Average Height At Maturity (cm)	Number of Days*	Actual Yield (kg)	Computed Average Yield per Hectare (kg)
Beans	.021	65.02	88	46.6	2219
I. Potato	.028	60.05	100	235	8393
Mungbeans	.028	74.65	99	25	893
Peanut	.028	21.05	153	71.36	2549
Soybeans	.028	83.15	107	30	1071

* Number of days taken from the date of sowing to harvesting time.

Table 3

COMPARATIVE YEARLY SEED DISTRIBUTION

Crop	Quantity in Kilograms Year		
	1976	1977	1978
Beans (brown beauty)	40.11	266.12	81
Beans (purple king)	-	3.75	145.50
Beans (snake)	-	-	40.25
Corn	197.93	14	471.15
Mungbeans	23.25	17.50	33.50
Peanut	91	157.67	457.60
Potato (irish)	1 049.57	-	370
Soybeans	43.05	62.14	119.79
Wingedbeans	15	35.50	20
TOTAL	1 459.90	556.68	1 738.79