THE PERFORMANCE OF IRISH POTATO IN THE HIGHLANDS

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INTRODUCTION

Although in the lowlands sweet potato can be ready for harvesting after 3-4 months, it can take very much longer to reach maturity in the highlands. At the limit of cultivation in Simbu Province at about 2600 m a.s.l. (above sea level), the smallholder may have to wait 11-12 months after planting before he can start harvesting his crop. This means that there must be long-term planning for food requirements and a large area of ground must be under cultivation at any one time. Also fences to keep pigs out of gardens must be made to last a long time for a relatively small return of sweet potato.

Other root crops should therefore be considered as high-energy foods.

Cassava and yam do not grow at such high altitudes and taro takes even longer than sweet potato to reach maturity. Some varieties need almost 2½ years. The Irish potato (*Solanum tuberosum*) however, gives high yields in a short time and is suited to a cool, moist climate like that of the highlands of Papua New Guinea.

ADVANTAGES OF IRISH POTATO

The Irish potato is a temperate crop although it comes originally from the highlands of tropical South America above 2000 m a.s.l. In the Papua New Guinea highlands it takes about 80-100 days to reach maturity depending on the altitude and the variety, and its yields are generally much higher than those from sweet potato. So not only do you get a harvest much sooner than you would from sweet potato, but you also get a bigger harvest.

New varieties of Irish potato are imported to Papua New Guinea from Australia by the National Seed Potato Project of D.P.I. N.S.P.P. holds a number of varieties. Six of these were assessed in two trials in the Simbu Province - one at 2400 m and the other at 1500 m a.s.l.

Young potato plants

In both trials 12-12-17 fertilizer was applied at planting at a rate of about 500 kg/ha. The high altitude trial was on a silty loam soil at a 20° slope. The mid altitude trial was on a clay soil at a 10° slope.

The results of the trials are given in Table 1. For comparison, Table 2 shows some examples of sweet potato yields in Simbu Province. These yields are recorded from ordinary village gardens, selected at random. No bought fertilizer was used.

There is obviously a big difference in the yields you can expect from different varieties. In both these trials 'Caliban' did badly.

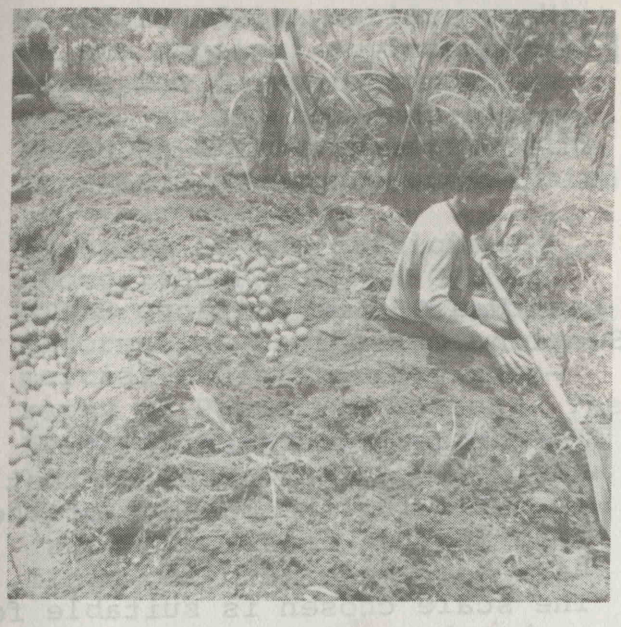
'Sequoia' is the variety recommended by the N.S.P.P. and this is the variety that did best at the higher altitude. 'Sequoia' was selected as the main variety for Papua New Guinea potato production on the basis of high yields in trials mostly around 1500 m a.s.l., so the poorer performance in the mid altitude trial was possibly because of a soil effect. There are bound to be differences like this in different areas. However, 'Sequoia' has in general shown itself to be the best and most reliable yielder.

TABLE 1. PERFORMANCE OF SIX VARIETIES OF IRISH POTATO AT TWO DIFFERENT ALTITUDES

	Yield (t/ha)		Average tuber weight (kg)		Days to harvest	
Altitude (m a.s.l.):	2400	1500	2400	1500	2400	1500
'Caliban'	5.5	7.5	0.08	0.09	101	93
'Tasman'	20.8	9.8	0.09	0.10	101	81
'Up-to-date'	17.3	12.2	0.04	0 11	101	93
'Pontiac'	22.9	16.2	0.12	0.15	101	81
'Red la Soda'	16.7	13.3	0.07	0.10	101	81
'Sequoia'	25.2	10.7	0.09	0.10	101	93

TABLE 2. SOME EXAMPLES OF SWEET POTATO YIELDS AT DIFFERENT ALTITUDES IN SIMBU PROVINCE

Altitude (m a.s.l.)	Days to first harvest	First harvest yield (t/ha)
2640	323	2.5
2480	328	3.7
2160	279	10.2
1440	151	9.8



Harvesting potatoes in the Chimbu Valley

PROBLEMS WITH IRISH POTATO

Irish potato, however, is a more difficult crop to grow than sweet potato. To perform well, it requires fertile soils (particularly in terms of phosphate). It must be harvested when it is ready or the tubers will rot.

Its main problem is disease. Because of this, potatoes should not be grown continually in the same patch of ground: the crop must be rotated so that disease is not carried over into the next crop. The most serious diseases are bacterial wilt and target spot.

Target spot which is caused by the fungus (*Alternaria solani*) results in circular blotching of the leaves. Nearly all plants are attacked by it unless they are sprayed regularly with a fungicide. The disease causes the plants to dry off before they are properly mature, and in this way reduces yield. If the disease enters the crop during the early growth stages, yield can be substantially reduced.

Bacterial wilt is a more serious disease because there is no cure for it. This disease causes the plants to wilt and die, and also causes the tubers to rot.

The only way to avoid this disease is to plant seed which is known to be free of the disease. It should be planted in land that has not had infected potatoes growing in it. Great care must be taken to avoid carrying soil from other places onto the land (e.g. on feet or spades). Any land that is known to have had infected plants growing in it should not be replanted to potatoes for several years after the last volunteer potatoes (potatoes growing from old tubers left in the ground) have died out. The longer the land can be left, the better.

Another very serious disease is late blight, caused by *Phytophthora infestans*. This can completely destroy crops. Fortunately, it is not present in Papua New Guinea and new imports are always carefully screened for the disease.

Tubers store well in a cool, dry, fairly dark place and can be kept for about three months.

FURTHER READING

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