VEGETABLE GROWER SURVEY - 1993

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ABSTRACT

The results of a survey of vegetable growers conducted in February to May 1993 in selected districts are presented. The information obtained reveals significant differences between districts in crops grown, technology adopted by farmers, pest and disease problems encountered and marketing practices. Growers also reported on the perceived problems affecting their production. While finance, marketing and transport are major constraints, technical constraints recognised by farmers include pest and disease problems and lack of irrigation.

INTRODUCTION

In order to assist Fresh Produce Development Company (FPDC) with establishment of a specialised extension service for vegetable growers a baseline survey was carried out in selected areas where it was planned to place extension officers. The areas were selected because of their reputation as being established producers of marketed vegetables. In each area approximately 40 growers were selected at random and asked questions about their vegetable production activities. The results of the survey provide an insight into farmer practices and problems in 8 vegetable growing districts in the highlands and Central Province.

The area surveyed only included gardens where vegetable crops were being grown for sale (Table 1). Some farmers had other gardens planted to traditional crops for subsistence use which were not included in the survey. The large gardens in the Tambul area included some significant commercial potato plantings. In Hiri district only a few farmers were surveyed; in this area only farmers with access to irrigation can engage in vegetable production. These farmers generally have larger areas under production. In Waghi district the large planted area was due to inclusion of a number of farmers engaged in commercial scale pineapple production.

Table 1. **Areas surveyed for vegetable growers**

District	Area surveyed (m^2)	No. of farmers	Average area (m^2)
Tambul	570,892	41	13,924
Hiri (Central)	79,705	9	8,856
Waghi	277,914	40	6,948
Goilala (CP)	205,010	38	5,395
Mendi (SHP)	73,307	40	1,832
Goroka (EHP)	59,807	40	1,495
Laiagam (Enga)	49,161	35	1,405
Gembogl (Simbu)	52,071	40	1,302

Table 2. **The most important crops grown in each surveyed district**

District (no of farmers)	Crop	No. of farmers (% of sample)	Crop	Area (m^2) (% of total)
Tambul (41)	Potato	37 (90)	Potato	386,168(67.6)
	Cabbage	34 (83)	Kaukau	93,240(16.3)
	Cauliflower	23 (56)	Cabbage	47,992 (8.4)
	Broccoli	23 (56)	Broccoli	25,986 (4.6)
	Kaukau	8 (44)	Cauliflower	11,025 (1.9)
	Carrots	1 (27)	Strawberry	5,007 (0.9)
Hiri (9)	Cucumber	7 (78)	Watermelon	4,464 (18.1)
	Corn (maize)	6 (67)	Corn (maize)	13,512 (17.0)
	Tomato	6 (67)	Pumpkin1	3,375 (16.8)
	Capsicum	5 (56)	Taro1	2,000 (15.1)
	Watermelon	4 (44)	Cucumber	6,605 (8.3)
	Bean	3 (33)	Capsicum1	2,056 (2.6)
	C/cabbage	3 (33)		
	Spring onion	3 (33)		
Waghi (40)	Kaukau	31 (78)	Kaukau	125,149(45.0)
	Cabbage	21 (53)	Pineapple	93,190(33.5)
	Spring onion	20 (50)	Cabbage	19,633 (7.1)
	Tomato	15 (38)	Tomato	7,590 (2.7)
	Lettuce	13 (33)	Corn (maize)	6,546 (2.4)
	Carrots	11 (28)	Spring onion	4,084 (1.5)
Goilala (38)	Kaukau	31 (82)	Kaukau	183,279(89.4)
	Cabbage	17 (45)	Peanut	6,870 (3.4)
	Spring onion	17 (45)	Potato	6,356 (3.1)
	Potato	15 (40)	Strawberry	2,169 (1.1)
	Peanut	9 (24)	Corn (maize)	2,047 (1.0)
	Tomato	9 (24)	Cabbage	1,532 (0.7)
Mendi (40)	Cabbage	32 (80)	Kaukau	39,608 (54.0)
	Kaukau	29 (73)	Potato1	9,820 (27.0)
	Potato	29 (73)	Cabbage	7,519 (10.3)
	Spring onion	3 (33)	Corn (maize)	1,478 (2.0)
	Corn (maize)	11 (28)	Lettuce	1,471 (2.0)
	Carrots	9 (23)	Taro	561 (0.8)
	Lettuce	9 (23)		
Goroka (40)	Carrots	24 (60)	Kaukau	20,379 (34.1)
	Cabbage	18 (45)	Carrot1	1,694 (19.6)
	Spring onion	6 (40)	Cabbage	6,729 (11.3)
	Potato	5 (38)	Potato	6,024 (10.1)
	Broccoli	2 (30)	Broccoli	3,183 (5.3)
	Tomato	1 (28)	Tomato	2,091 (3.5)

Table 2 (continued). **The most important crops grown in each surveyed district**

District (no of farmers)	Crop	No. of farmers (% of sample)	Crop	Area (m^2) (% of total)
Laiagam (37)	Potato	34 (92)	Potato	24,308 (49.4)
	Cabbage	12 (32)	Kaukau1	4,506 (29.5)
	Broccoli	10 (27)	Cabbage	4,490 (9.1)
	Carrots	10 (27)	Broccoli	2,814 (5.7)
	Kaukau	10 (27)	Cauliflower	805 (1.6)
	Spring onion	4 (11)	Spring onion	545 (1.1)
Gembogl (40)	Carrots	32 (80)	Cauliflower	4,964 (28.7)
	Cauliflower	32 (80)	Carrot	9,953 (19.1)
	Cabbage	26 (65)	Cabbage	5,970 (11.5)
	Broccoli	25 (63)	Kaukau	4,408 (8.5)
	Snowpeas	20 (50)	Broccoli	3,676 (7.1)
	Potato	19 (48)	Potato1	2,394 (4.6)
	Strawberry	19 (48)		

Table 2 shows the importance of different crops in each area surveyed. All survey areas except Hiri represent Highlands vegetable production areas. However these may be subdivided into high altitude areas (above the coffee limit of c. 1800 m) and coffee growing areas (1000 to 1800 m). In the high altitude areas brassicas and potatoes were the most important crops. In the coffee growing areas other crops such as lettuce, tomatoes and beans were also important. Goilala is somewhat different because of its remoteness and poor transport infrastructure. Here traditional crops still predominate, while peanuts appear to be the main cash crop. Hiri district is the only lowland area surveyed and is quite different from the other areas, with watermelon, pumpkin, corn and taro the most important crops. Capsicum, cucumber and tomato are also grown to a significant extent.

FARMING PRACTICES

Farmers were asked questions about fertilizer use, pest and disease control practices and varieties of different crops planted. The answers revealed significant differences in farming practices and technology adoption between the areas surveyed.

FERTILIZER USE

The number of farmers using fertilizer (Table 3) ranged from only 37% in Goilala to 100% in Laiagam, Tambul and Hiri districts. This is indicative of the less developed status of Goilala district, where obtaining fertilizer is difficult because of poor transport and lack of suppliers.

The most widely used fertilizer is 12:12:17 NPK compound fertilizer (Table 4). Chicken manure is used where available; availability varies greatly from one district to another. Triple superphosphate (TSP) is important in Tambul district and is also used in Mendi and Laiagam in neighbouring provinces. Other fertilizers used include potato mix and urea. The latter is recognised to be beneficial for cabbage production. The use of compost does not appear to have been widely adopted.

PEST AND DISEASE CONTROL

The percentage of farmers using chemical pest control varied from 23% (Laiagam) to 95% (Tambul) (Table 5). Both Laiagam and Goilala had a low level of sprayer ownership and chemical use. In some districts farmers who did not own a sprayer reported using chemicals for pest and disease control; presumably they borrow a sprayer when required.

The important pests and diseases as reported by farmers are shown in Table 6. Bacterial wilt was an important problem in most potato growing areas. In Goroka target spot was mentioned as a potato disease problem. Cutworm was reported as causing serious damage to potatoes. Cutworm was also a serious pest of brassicas. Brassicas were widely reported as being attacked by caterpillars. Both diamond back moth and cluster caterpillar were mentioned as being serious pests. In Gembogl snail damage was also

Table 3. **Number of farmers using fertilizer (by district)**

District	Farmers using fertilizer	Farmers not using fertilizer	Percentage using fertilizer
Laiagam	35	0	100
Tambul	41	0	100
Hiri	9	0	100
Mendi	36	4	90
Gembogl	33	7	83
Goroka	33	7	83
Wahgi	31	9	78
Goilala	14	24	37

Table 4. **Type of fertilizer used (number of farmers)**

District	Chicken Manure	Compost	12:12:17	TSP	Other
Laiagam	8	1	30	9	2
Tambul	1	0	37	35	4
Hiri	2	0	6	0	3
Mendi	21	6	15	5	6
Gembogl	8	3	21	0	12
Goroka	6	0	16	0	4
Waghi	14	1	18	2	6
Goilala	2	3	2	0	4
TOTAL	**62**	**14**	**145**	**51**	**41**

Table 5. **Number of farmers using chemicals for pest and disease control**

District	Number owning a sprayer	Percent of sample	Number using chemicals	Percent of sample
Tambul	35	95	39	95
Hiri	8	89	8	89
Goroka	25	63	28	70
Mendi	33	83	28	70
Gembogl	15	38	24	60
Waghi	26	65	21	53
Goilala	3	8	12	32
Laiagam	22	63	8	23

Table 6. **Major pests and diseases reported by farmers**

District	Crop	Major pest	Crop	Major disease
Tambul	Potato Brassicas Strawberry	Cutworm Caterpillars Cutworm Beetles	Potato Cabbage	Bacterial wilt Bacterial soft rot
Hiri	Tomato Cabbage	Caterpillar (fruit worm?) Diamond back moth		
Goroka	Cabbage Broccoli Tomato Spring onion	Diamond back moth Cluster Caterpillar Fruit worm Aphids	Potatoe	Target spot
Mendi	Potato Cabbage	Cutworm Cutworm Caterpillar	Potato	Bacterial wilt
Gembogl	Brassicas Strawberry	Caterpillar Diamond back moth Cutworm Snail Beetle	Potato Cauliflower	Bacterial wilt Bacterial soft rot
Waghi	Cabbage Tomato	Cutworm Cluster Caterpillar Fruit worm (borer)		
Goilala	Cabbage Strawberry	Cutworm Caterpillar Diamond back moth Beetle	Potato	Bacterial wilt
Laiagam	Brassicas	Cutworm	Potato	Bacterial wilt

reported. Bacterial soft rot was reported as attacking cabbage (Tambul) and cauliflower (Gembogl). In those districts where strawberries were being grown beetles were noted as pests requiring control. In tomato fruit worm (borer) was commonly reported as being troublesome.

SEED SUPPLY AND VARIETIES

Farmers were asked the question: 'Is it easy to get seeds of the variety you want when you want it? .Answers are recorded below:

District	Yes	No	% yes
Hiri	8	1	89
Waghi	28	11	72
Tambul	27	12	69
Goroka	13	24	35
Gembogl	13	27	33
Laiagam	6	29	17
Goilala	6	32	16
Mendi	6	33	15

Those farmers close to Mt Hagen or Port Moresby had a good access to seed supply. Goroka appears to be much less well supplied. Availability of seed was poor in Goilala, Laiagam and Mendi.

The varieties used (combined data for all districts) are shown in Table 7. Many farmers however used any available variety. Sequoia is the predominant potato variety. Of the cabbages open pollinated varieties Golden Acre and Early Drumhead predominate. Green Coronet is the most widely planted hybrid. Only for broccoli is hybrid seed generally used. Green Duke is by far the most popular.

Table 7. **Preferred varieties of main vegetable crops (no. of farmers)**

Broccoli	Green Duke	50
	Winter Harvest	16
Carrot	Manchester Table	31
	Topweight	26
	New Kuroda	7
Cauliflower	Snowball Y	28
	Phenomenal 4 month	19
Cabbage	Early Drumhead	39
	Golden Acre	34
	Sugarloaf	17
	Green Coronet	14
Lettuce	Great Lakes	22
Potato	Sequoia	95
	Kennebec	13
Strawberry	Redland Crimson	6
Tomato	Grosse Lisse	28
	Beefsteak	6

Farmers were asked where they marketed their produce. A separate response was obtained for each crop marketed. This information has been used to

Table 8. **Relative importance of different market outlets (%)**

	Own village	Road side	Trad. Market	Dealer/ depot	Retail store	Other
Gembogl	0.7	18.1	33.1	48.1	0.0	0.0
Goilala	15.0	0.0	44.0	17.0	17.0	7.0
Goroka	0.5	7.7	36.7	29.5	12.1	13.5
Hiri	0.0	3.6	45.2	22.6	15.5	13.1
Laiagam	16.4	36.8	26.9	12.9	2.9	4.1
Mendi	1.6	14.8	57.4	6.0	6.0	14.2
Tambul	0.5	14.5	63.8	17.4	1.4	2.4
Waghi	1.8	14.2	40.4	34.4	1.4	7.8
Average	4.6	13.7	43.4	23.5	7.0	7.8

Table 9. **Major constraints to vegetable production reported by farmers**

District	Constraint	No. of farmers (% of sample)
Gembogl	**Non-availability of other agricultural inputs**	**14 (35)**
	Pests	12 (30)
	Labour shortage and cost	9 (23)
	Marketing	8 (20)
	High price of agricultural inputs	7 (18)
	Lack of proper equipment	7 (18)
	Poor soil	7 (18)
	Tribal fighting & compensation	7 (18)
Goilala	**Transport, lack of or too expensive**	**27 (71)**
	Marketing	26 (68)
	Lack of irrigation	23 (61)
	Weather	22 (58)
	Pests	10 (26)
Goroka	**Finance**	**12 (30)**
	Pests	10 (25)
	Disease	9 (23)
	Lack of irrigation	8 (20)
	Labour shortage and cost	7 (18)
Hiri	**Finance**	**5 (56)**
	Land cultivation/ no tractor	3 (33)
	Labour shortage and cost	2 (22)
	Lack of irrigation	2 (22)
	Transport, lack of or too expensive	2 (22)
Laiagam	**Marketing**	**27 (77)**
	Transport, lack of or too expensive	18 (51)
	Labour shortage and cost	11 (31)
	Tribal fighting and compensation	8 (23)
	Finance	7 (20)
Mendi	**Finance**	**21 (53)**
	Marketing	20 (50)
	Pests	13 (33)
	Disease	12 (30)
	Transport, lack of or too expensive	11 (28)
Tambul	**Marketing**	**38 (93)**
	Transport, lack of or too expensive	26 (63)
	Finance	24 (59)
	Labour shortage and cost	12 (29)
	No extension officer advice	11 (27)
	Non-availability of seed	11 (27)
Waghi	**Labour shortage and cost**	**20 (50)**
	Transport, lack of or too expensive	18 (45)
	Pests	17 (43)
	Disease	13 (33)
	Finance	13 (33)

prepare Table 8 which gives the relative importance of different markets to farmers in each district. The traditional open market remains the most important outlet for growers in most districts. However sales to dealers predominate in Gembogl (Simbu) and are important in Goroka and Waghi districts. In Laiagam district roadside sales are particularly important (probably produce sales to vehicles travelling from Wabag to Porgera). Only in Central Province and Goroka do sales to retail stores exceed 10% of reported outlets. In Central Province sales to stores in Port Moresby are significant. Growers in Goroka are known to drive to Lae to sell their produce to stores.

CONSTRAINTS TO PRODUCTION

Farmers were asked to list the major problems affecting their production. The five most important constraints in each district are listed in Table 9.

Many of these constraints were not due to technical factors, but were of a more general economic or social nature. Finance available to growers was listed as the major constraint in Goroka, Mendi and Hiri districts and was also considered important in Laiagam, Tambul and Waghi. Marketing was listed as the most important constraint in Laiagam and Tambul, and was a major constraint in Gembogl, Goilala and Mendi districts. Transport was the major constraint in Goilala (a district with very poor road access), but was also listed as an important constraint in five other districts. Tribal fighting was regarded as a constraint in Gembogl and Laiagam districts.

A number of technical constraints were mentioned. The importance of these constraints varied from district to district. Pests were a problem in Gembogl, Goilala, Goroka, Mendi and Waghi; diseases were regarded as important in Goroka, Mendi and Waghi. Lack of irrigation was, not surprisingly, considered a serious problem in Hiri district, but was also mentioned as a constraint in Goilala and Goroka. These highland areas tend to have a pronounced dry season.

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