



## Production and Marketing of Potato and Poverty Reduction: Linkages and Pathways

Dr. Channaveere Gowda B.N<sup>1</sup> and Dr. K.G.Suresh Kumar<sup>2</sup>

<sup>1</sup> Associate Professor and HOD, PG Department of Economics, Vivekananda Institute of Management, Dr. Rajkumar Road, Rajajinagar II Stage, Bangalore-55, Karnataka

<sup>2</sup> Associate Professor in Economics, AVK College for Women, Hassan, Karnataka

### Abstract

*This paper studies the linkages between increases in Production and Marketing of Potato and poverty reduction. The evidence suggests that there are multiple pathways through which increases in potato productivity can reduce poverty, including real income changes, employment generation, rural non-farm multiplier effects, and food prices effects. However, barriers to technology adoption, initial asset endowments, and constraints to market access may all inhibit the ability of the poorest to participate in the gains from potato productivity growth. However there are multiple, complex pathways linking production and market of potato productivity to real income changes that respond to various market forces. There is strong evidence for indirect poverty reduction through employment generation, rural non-farm multiplier effects, and food prices effects; however contextual factors determine whether market forces resolve most favorably for the poor. Furthermore, the resulting equilibrium in agricultural and labor markets may affect poor net food buying households differently than poor net food producers. The available evidence supports the theories that when incomes from marketing and production of potato and the real wage rate increase and the rural non-farm economy grow, real household incomes increase and the percentage of the population living below international poverty lines decreases. Nutritional status or other aspects of well being, such as health measures and education, may also improve.*

**Keywords:** potato, productivity, non-farm economy, employment generation, technology

### Introduction

This paper studies the linkages between increases in Production and Marketing of Potato and poverty reduction. The evidence suggests that there are multiple pathways through which increases in potato productivity can reduce poverty, including real income changes, employment generation, rural non-farm multiplier effects, and food prices effects. However, barriers to technology adoption, initial asset endowments, and constraints to market access may all inhibit the ability of the poorest to participate in the gains from potato productivity growth.

Potato productivity is defined in several ways throughout the study, including as general output per unit of input, farm yield by crop or total output per hectare, and output per worker. Regardless of which measure is used, empirical studies support the idea that improvements in Potato productivity are important for poverty reduction (Mellor 1999). However, productivity growth can catalyze a wide range of direct and indirect effects that mediate the pathways to poverty alleviation (Thirtle et al. 2003). The appropriate methodology for measuring Potato productivity is also the subject of debate; this brief sets aside these methodological debates and takes the productivity measures in the various studies as a given.

An overview of several studies illustrates the variety of approaches contributing to the consistent finding that Potato productivity is important for poverty reduction. Datt and Ravallion

(1998) found output per unit of land to be statistically significant as a determinant of the squared poverty gap (using national, annual Indian data). Timmer (1997) uses output per worker as the productivity measure, which Mellor (1999) agrees is a better measure of productivity to identify linkages to non-agricultural growth since it encapsulates the additional ways through which farm households earn income. Byerlee, Diao and Jackson (2009) Review s of several case studies and use bivariate analysis to compare potato production growth per worker across countries. They show that the countries with the highest potato production growth per worker experienced the greatest rate of rural poverty reduction (Byerlee, Diao, and Jackson 2009). Fan, Hazell and Thorat (1999) measure the relationship between total factor productivity and poverty outcomes by investigating returns on different productivity increasing investments. They find that investments in roads, agricultural research, development, and extension had the greatest impact on both productivity and poverty reduction (Fan, Hazell, and Thorat 1999).

This brief study to distinguish between increases in output and in productivity since these do not necessarily have similar impacts, however, the study is not always clear on this distinction. In some cases, output and productivity increase together. In other cases they can vary inversely with differential consequences for poverty. A new technology, for example, can have a variety of impacts with different consequences for output, profits and employment. First, if the technology reduces needed inputs, production costs will decrease (raising profits), but output may not be affected and employment could be reduced. If instead the technology raises yields, output and (most likely) employment will increase, but profits will not necessarily increase. Alternatively, if the technology raises labor productivity, wage rates will increase but probably at the expense of the quantity of labor employed, and with unclear effects on profits and output. A technology that permits expansion of cultivated area, might raise output, employment and profits, but is likely to lower yields. Finally, productivity gains may not result in poverty reduction if the decline in output prices outweighs the gain from increased productivity (Thirtle et al. 2001). The complex relationships between direct and indirect general equilibrium effects underpin the following discussion which conducted in Hassan district of Karnataka it states that linkages between potato productivity and poverty reduction.

#### **Cultivation aspects of potato:**

**Input Use:** The average quantity of different inputs used by the small, large and pooled producers per acre and their values for potato crop are presented in Table 1. It could be noticed from the table that the total cost of cultivation per acre incurred by the small, large and pooled category producers of potato was Rs 7,326.17, Rs 10,447.66 and Rs 10,214.82 respectively.

**Table 1. Average quantity of inputs and their value per acre, in potato cultivation by different categories of producers**

		Units	Small producers			Large producers			Pooled category		
			Quantity	Value	Percent	Quantity	Value	Percent	Quantity	Value	Percent
A	Variable costs										
1.	Seeds	Kgs	288.25	1141.25	25.36	308.50	2401.98	33.5	576.38	2638.16	37.2
2.	Farm yard manure	Metric Tonnes	5.07	615.50	13.68	6.25	930.00	13.0	6.80	876.75	12.4
3.	Fertilizer	Kgs	101.50	224.47	4.99	362.10	647.64	9.0	536.16	432.71	6.1
4.	Human labour	Man days	34.47	1718.50	38.18	62.46	1750.32	24.4	74.47	1851.86	26.1
5.	Bullock labour	Pair days	4.35	215.00	4.78	6.79	323.50	4.5	5.98	265.90	3.8
6.	Plant protection chemicals	Rs	-	357.91	7.95	-	765.00	10.7	-	714.18	10.1
7.	Irrigation	Rs	-	63.00	1.40	-	72.00	1.0	-	68.00	1.0
8.	Interest on operational expenses	Rs	-	165.16	3.67	-	273.19	3.8	-	237.61	3.4
	Total variable costs	Rs	-	4500.79	71.27	-	7163.63	78.74	-	7085.17	79.01
B	Fixed costs										
1.	Depreciation	Rs	-	46.28	1.92	-	53.21	2.70	-	59.62	3.20
2.	Land revenue	Rs	-	9.50	0.39	-	10.33	0.53	-	8.50	0.50
3.	Rental value of land	Rs	-	1758.50		-	1850.00		-	1813.21	
	Total fixed costs	Rs	-	1814.28	28.72	-	1913.54	21.26	-	1881.33	20.98
	Total cost of cultivation	Rs	-	6315.07	100.00 (86.19)	-	9077.17	100.00 (86.86)	-	8966.50	100.00 (87.77)
	Marketing cost	Rs	-	1011.10	(13.80)	-	1370.02	(13.11)	-	1248.32	(12.23)
	Total cost	Rs	-	7326.17	(100.00)	-	10447.19	(100.00)	-	10214.82	(100.00)

Source: field survey

The variable costs amounted to Rs 4500.79, Rs 7163.63 and Rs 7085.17 respectively. The cost of seed formed the major item of cost of these respondents (Rs 1141.25, Rs 2401.98 and Rs 2638.16) accounting for 25.36, 33.5 and 37.2 percent of the total cost of cultivation. Thus as the area under potato increased the cost also increased. The next important was to cost of human labour (34.47, 62.46 and 74.47 mandays) which amounted to Rs 1718.50, Rs 1750.32 and Rs 1851.86 respectively. Further it can be observed from the table that the cost of FYM increased by these respondents occupied the third place accounting for Rs 615.50, Rs 930.00 and Rs 876.75 per acre. The average quantity of N, P and K applied in kgs per acres by these categories of respondents was 48:36:41, 51:40:48 and 50:38:49 respectively. The cost towards the same formed the fourth important item of cost (Rs 224.47, Rs 647.64 and Rs 432.71 respectively) which accounted for - 4.99, 9.0, and 6.1 percent in that order of the total cost of cultivation.

Plant protection measure were undertaken by all the potato growing farmers and the cost towards the same accounted for 7.95, 10.7 and 10.1 percent in that order of the total cost of cultivation. The cost of irrigation accounted for only 1.40, 1.0 and 1.0 percent in that order of the total cost of cultivation. Interest on operation expenses was 3.67, 3.80 and 3.40 percent respectively. It is further observed that the fixed costs (rental value of land, depreciation and land revenue together) accounted for 28.72, 21.26 and 20.98 percent respectively of the total cost of production. The rental value of these respondents land was the major item of fixed costs which alone accounted for 24.0, 17.7 and 17.9 percent of total costs.

It is interesting to note that the cost of marketing alone was Rs 1011.10, Rs 1370.02 and Rs 1248.32 respectively accounted for 13.80, 13.11 and 12.23 percent of the total cost.

### **Output and Returns:**

The average yield, gross and net return per acre of potato in case of small, large and pooled category producers are presented in Table 2. The total cost per acre of potato in small producers, large producers and pooled category of producers inclusive of the marketing cost was Rs 7326.17, Rs 10447.19 and Rs 10214.82 respectively. The average yield of potato was 65.41, 63.94 and 64.66 quintals respectively and from the same they realised a gross return of Rs 10537.55, Rs 14961.96 and Rs 13938.92 respectively. Thus, the net return worked out at Rs 3211.38, Rs 4514.77 and Rs 3724.10 respectively after deducting the total cost inclusive of marketing cost. In case of large producers the net return was more when compared to small producers. The net return per rupee of variable cost and total cost was Rs 0.71, Rs 0.63 and Rs 0.52 respectively for small, and large and pooled category producers. The net return per rupee of investment was higher in case of large producers when compared to those of small producers.

**Table 2. Average yield and returns per acre of cultivation by different categories of producers**

Particulars	Small producers	Large producers	Pooled Category
Yield (Qtls/acre)	65.41	63.94	64.66
Gross Price (Rs/Qtl)	161.0	234.0	218.0
Gross Returns	10537.55	14961.96	13938.92
Total cost inclusive of marketing cost (Rs)	7326.17	10447.19	10214.82
Net return (Rs)	3211.38	4514.77	3724.10
Net return per rupee of variable cost	0.71	0.63	0.52
Net return per rupee of total cost	0.44	0.43	0.36
Cost of marketing/qtl	37.91	40.00	38.66
Cost of cultivation (Rs)	113.0	136.0	126.32

Total cost of production /qtl (Rs)	150.91	176.0	164.98
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Source: field survey

The cost of cultivation per quintal worked out to Rs 113.0, Rs136.0 and Rs 126.32 respectively. The cost of production per quintal, after including the marketing cost was Rs 150.91, Rs 176.0 and Rs 164.98 respectively. In case of large potato producers, production was more profitable compared to small producers, under irrigated conditions.

### Resource productivity and allocation efficiency of resources in potato production:

In this section, an attempt has been made to study the productivity of resources involved in the production of potato crop. In order to determine whether the factors of production were used optimally, the efficiency of the allocation of resources was studied by comparing the marginal value product and opportunity cost of each of the factors of production. The results of the resource productivity and allocation efficiency analysis are presented in this section. The estimated function for the small and large groups together with a pooled function is presented in Table 3.

### Resource Productivity;

Perusal of Table 3. Indicated that the models were adequate in explaining the behaviour of yield as evident by the high  $R^2$  values. It was observed from the table that on small farms, FYM and Plant Protection Chemicals (PPC) were found to be contributing significantly to the yield. A one percent increase in the use of FYM and PPC would increase the yield return by 0.194, 0.31 and 0.040 percent respectively. It is seen that  $R^2$  for small producers was 0.671 which indicated that 67 percent of the variation in the yield from potato was mainly due to the variation of factors considered in the model. However, the variables like bullock labour, FYM, and fertilizer were found to be non significant (statistically).

On the large farms, many of the coefficients indicated significant relationship with the dependent variable. Only PPC significantly influenced the yield and a one percent increase in PPC would increase the yield by 0.112 percent. However, other variables such as human labour, seed, FYM, fertilizer were found to be non significant (statistically).

**Table 3: Results of cob-Douglas regression function**

Category	Sample size	Intercept	Human labour	Seed	FYM	PPC	R2	beta
Small producer	50	7.606	0.591 (0.362)	0.454 (0.278)	0.194* (0.090)	0.040* (0.190)	0.671	1.0
Large producer	50	2.938	0.103 (0.102)	-0.014 (0.151)	0.085 (0.035)	0.112* (0.058)	0.663	1.02
Pooled category	100	3.566	0.043 (0.120)	0.109 (0.154)	0.102* (0.041)	0.127* (0.066)	0.738	1.04

Source: field survey \* Significant at 5 % level

The value of  $R^2$  was 0.563 which indicated that 94 percent of the variation in the yield was because of the variation of the independent variables used in the model. The value of beta coefficient b1 was 1.01 which indicated a constant return to scale. A one percent increase in all the inputs used in the production simultaneously would increase the yield by 1.01 percent.

A separate regression was run for the sample as a whole. It could be noticed from Table 3. that in case of pooled category, FYM and PPC significantly increased the yield.

In case of pooled respondents, the value of  $R^2$  was 0.738 which indicated that 73 percent of the variation in the yield was mainly due to the variation of all the factors of production considered in the model. The summation of beta coefficient was 1.04 showed a production process with constant return to scale. A one percent increase in all the factors of production simultaneously would increase the yield by 1.04 percent.

### **Marketing of potato**

The net return from potato not only depends on its level of production but also on its efficient marketing. Hence it becomes a necessary to analyse the costs of marketing of potato incurred by the farmers and also costs and returns of various market intermediaries who trade in potato. The results of marketing of potato are presented under the following sub-heads. Channels of potato marketing Average marketing costs incurred by the various categories of potato producers.

### **Costs and returns of various market intermediaries.**

#### **Price spread.**

#### **Channels of potato marketing**

Producers of potato in Hassan taluk had chosen mainly three market intermediaries namely village level traders, commission agents and wholesalers to market their produce. The results on the marketing channels are presented in Table 4.

The table reveals that small producers sold 7.8 percent of their total produce at Bangalore Market through commission agents. They also sold 8.6 percent of the total produce directly to village level traders in their respective villages. They sold 56.6 percent of the produce directly to wholesaler at Hassan regulated market. The remaining 27.0 percent of their total produce was sold at Hassan market through commission agents.

In case of large producers, it is interesting to note that 3.9 percent of the total produce was sold at the Bangalore market through commission agents. This was lower as compared to that of small producers. The next important centre for them was village level traders. They sold 19.6 percent of the total produce directly to village level traders in their respective villages. Another important feature to be noted here is that the large producers sold 60.0 percent of the total produce at Hassan market directly to wholesales. They also sold 16.5 percent of their total produce at the Hassan Market through commission agents none was sold at other places.

When the whole sample was considered, it could be seen that Bangalore was not as important centre for the potato producers of Hassan taluk. They sold only 5.7 percent of the total produce at Bangalore market, 14.4 percent at their respective villages, 58.4 percent at Hassan market and none in other marketing centres. It could also be seen that 21.5 percent of the production was sold through commission agents.

**Table 4: Details regarding the place of sale, agency to/through whom sold the quantity sold by various categories of potato producers**

Place	Agency	Small producers		Large producers		All producers	
		Quantity (qtl)	Percent	Quantity (qtl)	Percent	Quantity (qtl)	Percent
Village	Village level traders	206	8.6	520	19.6	726	14.4
Hassan	Wholesalers	1360	56.6	1590	60.0	2950	58.4
Bangalore	Commission Agents	187	7.8	103	3.9	290	5.7
Hassan	Commission	648	27.0	436	16.5	1084	21.5

	Agents						
Other places	-	-	-	-	-	-	-
Total		2401	100.0	2649	100.0	5050	100.0

Source: Field Survey

**Average marketing costs incurred by the various categories of potato producers:**

Producers of potato had to incur a considerable amount of expenditure towards the cost of gunny bags bagging, transportation, loading and unloading, weightiest, commission charges, market cess and other miscellaneous items like boarding, lodging etc., to market their produce. All these expenses are together called as marketing costs of potato. The results of analysis of marketing costs incurred by different categories of respondent are presented in Table 5. It is evident from the table result that cost of gunny bags, transportation, commission, loading and unloading charges were the important items of expenditure. All these together constituted 88.80 percent of the total marketing cost in case of small producers, 83.67 percent in case of large producers and 84.52 percent in case of the sample as a whole. Large producers incurred a higher transportation cost per acre (Rs 223.00) when compared to small producers (Rs 180.0). This is true even in case of commission charges also. Large producers paid Rs 205 as commission charges but small producers paid only Rs 185. The cost of gunny bags and bagging charges together accounted for 5.61, 5.02, 5.28 percent of the

**Table 5: Average marketing costs per acre incurred under different categories of potato producers**

Particulars	Small producers	Large producers	Pooled Category
Transactions			
Quantity Sold (Qtls)	65.41	63.94	64.66
Sale value (Rs)	10537.55	14961.96	13938.92
Sale price (Rs/Qtl)	161.0	234.0	218.0
Marketing Cost per quintal (Rs)	37.91	40.00	38.66
Net Price (Rs/Qtl)	123.09	194.0	179.34
Costs			
Gunny bags	64.25	67.92	66.48
Bagging	48.87	40.1	44.38
Weightment	30.0	30.0	30.0
Loading and unloading	110.0	110.0	110.0
Transportation	180.0	223.0	196.0
Hamali	9.0	8.50	8.25
Market cess	204.12	204.12	204.12
Commission charges	185.0	205.0	195.0
Miscellaneous expenses	125.0	125.0	125.0
Total Cost	956.24	1013.64	979.23

Source: Field Survey

Total marketing costs of small, large and pooled producers respectively. The expenses towards loading and unloading, hamali market cess and other miscellaneous items together accounted for 0.93, 0.70, and 0.83 percent of marketing cost in case of small, large and pooled producers respectively. Thus, the large producers incurred relatively higher costs for marketing of potato to small producers of respondents as large producers handled larger quantities of produce.

The per quintal total cost of marketing was more in case of large producers (Rs 40.00) as compared to small producers (Rs 37.91). When the farmers of the sample as a whole are considered

the total marketing cost of potato per quintal was Rs 38.66 and the price obtained was Rs 218.0 per qtl. It is interesting to note that the net prices per quintal received by small and large producers were Rs 123.09 and Rs 194.0, respectively and the same for the sample as a whole was Rs 179.34. Thus, the above findings of the study indicate that the large potato growers would market their produce more efficiently as compared to small producers on account of scale economy.

**Costs and returns of various market intermediaries:**

A systematic analysis of costs and returns of various intermediaries involved in marketing of potato would help to understand the existing market practices. This also helps to know the various services rendered by these intermediaries and their economic performance in the marketing of potato. The market intermediaries studied were village level traders, commission agents, wholesalers, trader cum retailers, retailers and cart vendors. The intermediaries operating in Hassan and Bangalore regulated market were considered in this study as major portion of this produce was sold in these two markets by the sample producers.

**Village level traders:**

The results on costs and returns of village level traders are presented in Table 6. The important cost incurred by these traders was on transportation commission charges, wastage and loading, and unloading charges etc. It could be seen Table 6 that on an average 275 qtl potato valued at Rs 185000 was handled by each of the village level trader during the study period. The total marketing cost incurred was Rs 8450. The commission charge was the major item of cost which form 23.77 percent of the total cost and followed by transportation cost which accounted for 17.80 percent. It could be noted that wastage and loading and unloading charges accounted for 5.90 and 14.20 percent of the total cost respectively. The other expenses incurred towards market cost like hamali, weighment charges, interest on working capital and miscellaneous expenses together accounted for 26.60 percent of the total cost.

**Table 6. Average costs and returns of village level traders of potato**

Particulars				
A	Transaction	Quantity (Qtl.)	Price (Rs)	Total value(Rs.)
	Sale	250	720	185000
	Purchased	275	610	167750
	Gross return (Rs)			17250
B	Costs			
			Amount (Rs)	Per cent
1.	Transportation		1500	17.8
2.	Wastage costs		500	5.9
3.	Loading and unloading charges		1200	14.2
4.	Hamali charges		500	5.9
5.	Commission charges		2000	23.7
6.	Market cess		350	4.1
7.	Weigh ment charges		400	4.7
8.	Miscellaneous expenses		1000	11.8
9.	Interest on operating costs		1000	11.8
	Total		8450	
C	Net return (A-B) Rs		8800	
D	Net return/Qtl Rs		50.28	

Source: field survey



It is further observed from the table that on an average each village level trader handled potato worth Rs 1, 10,250 realising a gross return of Rs 28,000. Thus the net return earned from potato trade was Rs 15,600 per acre and the same per qtl of potato was Rs 89.14.

**Commission Agents:**

The commission agents play a prominent role in the marketing of potato by providing a link between producers and the buyers. These commission agents collect commission from the producers at a specific rate (5 percent) for the service they render in the process of marketing of the produce. The results on costs and returns of commission agents operating in Hassan and Bangalore market are present in Table 7. On an average the commission in Hassan market handled 4,650 quintals of potato valued at Rs 3403800. On the other hand in Bangalore market the commission agents handled 5150 quintals of potato valued at Rs3893400. The table indicates that commission agents in Hassan incurred on an average incurred a total cost of Rs 16650 as against Rs 21150 by their counterparts in Bangalore. The major item of this cost in Hassan was towards staff salary (Rs 5400) followed by shop rent (Rs 4700), Licence fee and taxes paid (Rs 250 and miscellaneous expenses Rs 2350). It is interesting to note that miscellaneous expenses which include conveyance, refreshments, gifts, alms, etc., and per quintal cost was Rs 1.98, The per quintal net return was Rs 33.01. It could be further observed from the table that in the Bangalore market commission agents incurred a total cost of Rs 21150. The major item of this cost was towards shop rent which accounted for 39.2 percent followed by the salary of the staff 31.2 percent, licence fee and

**Table 7. Average costs and return of commission agents of potato**

	Particulars	Hassan		Bangalore	
A	Transaction				
1.	Quantity handled (Qtl)	4650		5150	
2.	Average sale price (Rs/Qtl)	732.0		756.0	
3.	Sale value (Rs)	3403800		3893400	
4.	Commission received (%)	5.00		5.00	
5.	Gross commission realised	170190.0		194670.0	
B	Costs (Rs)				
	Items	Amount (Rs)	Per cent	Amount (Rs)	Per cent
1.	Shop rent	4700	28.2	8300	39.2
2.	Salary of the staff	5400	32.4	6600	31.2
3.	License fee & taxes paid	250	1.5	250	1.2
4.	Telephone and electricity charges	650	3.9	750	3.5
5.	Expenses on stationery	450	2.7	500	2.4
6.	Miscellaneous expenses	2350	14.1	2150	10.2
7.	Interest on working capital	2850	17.1	2600	12.3
	Total	16650	100.00	21150	100.00
C	Total Net return (Rs) (A-B)	153540		173520	
D	Net return/Qtl (Rs)	33.01		33.69	

Source: field survey

Taxes paid 1.2 percent and miscellaneous expenses 10.2 percent. The per quintal net return was Rs 33.69. The total income retained in the form of commission by commission agents in Hassan and Bangalore markets was Rs 1,70,190 and Rs 1,94,670.0 respectively.

The net return to commission agents in these markets after deducting all costs was Rs 1,53,540 and Rs 1,73,520 respectively. On an average each commission agent earned a net profit of Rs 33.01 and Rs 33.69 per quintal of potato transacted in Hassan and Bangalore market handled a comparatively larger quantity than those at Hassan market.

### Wholesalers:

Wholesalers operation in Bangalore market purchased potato from producers through commission agents. But, in case of Hassan market, they purchased directly from producers. Potato purchased was sold at their wholesale shops located in the market yard to retailers of the local or other nearby markets. The results on costs and returns of wholesalers of Hassan and Bangalore markets are presented in Table 8. The wholesalers of Hassan and Bangalore market transacted on average 4050 and 4700 quintals respectively. The average marketing costs incurred to handle these quantities were Rs 20,304 and Rs 19,758 respectively.

The major item of expenses of these intermediaries was the cost incurred on the several of Hamalis. This alone accounted only for 0.10 percent and 0.10 percent of the total cost at Hassan and Bangalore markets respectively. Hamalis do the work of loading and unloading, grading, weighing, bagging, stitching and stocking. The next important item of cost was towards licence fee and taxes. At Hassan market, this item accounted for 4.70 percent and at Bangalore for 3.50 percent of the total cost. Wastage accounted for 1.50 and 1.8 percent of the total cost. Shop rent formed 32.8 and 26.1 percent respectively. The average gross income received by wholesalers was Rs 4, 05,000 and Rs 3, 53,000 in Hassan and Bangalore markets respectively.

**Table 9. Average costs and returns of wholesales of potato**

A	Particulars	Hassan		Bangalore	
		Purchased	Sold	Purchased	Sold
	Quantity (Qtl)	4050	4050	4700	4600
	Price Qtl (Rs)	920	1020	1070	1170
	Total value (Rs)	3726000	4131000	5029000	5382000
	Gross return (Rs)	405000		353000	
B	Costs Rs	Amount (Rs)	Per cent	Amount (Rs)	Per cent
	Items				
1.	Shop rent	6650	32.8	5150	26.1
2.	Salary of the staff	7750	38.2	7200	36.4
3.	Hamali charges	14.0	0.1	8.0	0.1
4.	Wastage costs	300.0	1.5	350	1.8
5.	Telephone and electricity charges	590	2.9	700	3.5
6.	Expenses on stationery	300	1.5	450	2.3
7.	Miscellaneous expenses	1850	9.1	2300	11.6
8.	Licence fee and taxes	950	4.7	700	3.5
9.	Interest on operating capital	1900	9.4	2900	14.7
	Total	20304	100.00	19758	100.00

	Cost of handling/qtl	1.30		
C	Net return(Rs) (A-B)	38694.70		333242
D	Net return (Rs. /Qtl)	94.98		70.90

Source: Field Survey

Wholesalers at Bangalore market handled comparatively more quantity than those at Hassan market. This enabled them to minimise the unit cost of handling, even though they paid more shop rent, hamali charges, wastage cost, licence fee and taxes etc. The average net return realised by the wholesalers was Rs 38,694.70 and Rs 3,3242 in Hassan and Bangalore respectively. These findings indicate that the economic performance of wholesalers at Bangalore was better than those at Hassan.

#### **Trader – cum –Retailers:**

Traders-cum-retailers operating in Bangalore and Hassan markets purchased potato from the wholesalers and marketed the sums in shandies. Here the intermediaries are held at various places. The results on costs and return of Trader-cum-retailers are presented in Table10. On an average each intermediary operating in Hassan and Bangalore markets handled 483 and 157 qtls respectively. They incurred marketing expenses of Rs. 8235.0 and Rs 7705 in Hassan and Bangalore markets respectively. In both the cases, the major item of cost of interest on working capital accounting for 55.86 and 58.40 percent of the total marketing cost in Hassan and Bangalore market.

**Table10. Average costs and returns of trader-cum-retailers of potato**

A	Particulars	Hassan		Bangalore	
		Purchased	Sold	Purchased	Sold
	Quantity (Qtl)	438	438	157	157
	Price Qtl (Rs)	980	1070	1030	1490
	Total value (Rs)	429240	468660	161710	233930
	Gross return (Rs)	39420		72220	
B	Costs Rs	Amount(Rs)	Per cent	Amount(Rs)	Per cent
	Items				
1.	Transportation cost	20.0	0.24	50.0	0.65
2.	Cost of gunny bags	15.0	0.18	15.0	0.19
3.	Licence fee	1170	14.21	540	7.01
4.	Wastage costs	130.0	1.58	350	4.54
5.	Miscellaneous expenses	2300	27.93	2250	29.20
6.	Interest on working capital	4600	55.86	4500	58.40
	Total	8235.0	100.00	7705	100.00
C	Net return (Rs) (A-B)	31185		64515	
D	Net return (Rs. /Qtl)	71.19		410.92	
E	Total cost/qtl (Rs)				

Source: Field Survey

The cost of gunny bags accounted for 0.18 and 0.19 percent respectively. Licence fee, interest on miscellaneous expenses together formed 27.93 percent at Hassan and 29.20 percent at Bangalore markets

**Retailers:**

Retailers operating in Bangalore and Hassan markets purchased potato from wholesaler and sold to consumers through their retail shops. The results on costs and return of potato are presented in Table 11. It could be seen from the table that the retailers of Hassan and Bangalore market handled 150 qtls and 235 qtls. They incurred marketing expenses of Rs 9,10 and Rs 25,670 respectively.

**Table 11. Average costs and returns of retailers of potato**

A	Particulars	Hassan		Bangalore	
		Purchased	Sold	Purchased	Sold
	Quantity (Qtl)	150	145	235	235
	Price Qtl (Rs)	1030	1510	1040	1570
	Total value (Rs)	154500	218950	244400	368950
	Gross return (Rs)	64450		124550	
B	Costs Rs	Amount (Rs)	Per cent	Amount (Rs)	Per cent
	Items				
1.	Shop rent	1000	10.9	7050	27.5
2.	Wastage costs	250	2.7	480	1.9
3.	Licence fee	505	5.5	760	3.0
4.	Electricity charges	320	3.5	610	2.4
5.	Transportation costs	50	0.5	150	0.6
6.	Salary of the staff	-	-	-	-
7.	Cost of gunny bags	15	0.2	20.0	0.1
8.	Miscellaneous expenses	1850	20.2	4600	17.9
9.	Interest on working capital	5150	56.3	12000	4.7
	Total	9140	100.00	25670	100.00
C	Net return (Rs) (A-B)	55310.0		98880	
D	Net return (Rs. /Qtl)	368.73		420.76	
E	Total cost/qtl (Rs)	60.93		109.23	

Source: Field Survey

The expenditure on shop rent, transportation cost, salary of the staff, cost of gunny bags and wastage formed bulk of the total cost which together accounted for 13.84 and 29.41 percent of the total marketing costs of the retailers of Hassan and Bangalore markets respectively. Other cost components like electricity charges, interest on working capital, licence fee and miscellaneous expenses together accounted for 85.61 and 70.0 percent respectively. The gross return to retailers from the business was Rs 64,450 and Rs 1,24,550 in Hassan and Bangalore market respectively. The net return realised by them worked out to Rs 55310 and Rs 98880 respectively.

**Summary and conclusion :**

There is much empirical evidence for poverty reduction through increases in marketing and productivity potato. Much of the study suggests that this effect occurs through the impact on real household incomes of growers and traders, however there are multiple, complex pathways linking production and market of potato productivity to real income changes that respond to various market forces. There is strong evidence for indirect poverty reduction through employment generation, rural non-farm multiplier effects, and food

prices effects; however contextual factors determine whether market forces resolve most favorably for the poor. Furthermore, the resulting equilibrium in agricultural and labor markets may affect poor net food buying households differently than poor net food producers. The available evidence supports the theories that when incomes from marketing and production of potato and the real wage rate increase and the rural non-farm economy grow, real household incomes increase and the percentage of the population living below international poverty lines decreases. Nutritional status or other aspects of well being, such as health measures and education, may also improve. However, initial asset endowments, and land assets in particular, are significant determinants of households' ability to access and effectively use productivity enhancing knowledge and technologies. Poor households face barriers to technology adoption and market access. In sum, the importance of productivity and marketing potato sector growth and to poverty reduction is complex and depends on a variety of contextual factors including the initial distribution of poverty, asset endowments, strength of market linkages and the extent and nature of the poor's participation in the agricultural sector.

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