Economics of major pulses and oilseeds grown by the tribal farmers in tarai region of Uttarakhand

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ABSTRACT : The study conducted in tarai region of Uttarakhand was based on data collected from 45 tribal farmers for the agricultural year 2008-09. The study aims at examining the cost of and return from major pulses and oilseeds grown by the tribal farmers. Economics of the crops was measured using total cost concept. The major pulses grown by the tribal farmers were lentil, gram and pea. A major oilseed grown by the tribal farmers was mustard. Among all the pulses, highest total cost was incurred in pea. Among all pulses, lentil was the most profitable crop followed by gram and pea. Moreover, mustard proved as the highest profit giving crop.The area has vast potential to grow these crops on commercial basis but there is need to tap this potential to benefit the tribal farmers. There is need to provide efficient infrastructure support so as to maximize the returns of the growers. Major policy implication is to focus on the gram and pea crops and there is need to promote lentil and mustard cultivation.

Key words: Cost, farmers, oilseeds, pulses, returns, tribes.

The rural population of India also constitutes tribal people who mainly depend on agriculture and allied activities for their livelihood. India has the second largest tribal population in the world which constitutes 8.20 per cent of its total population **(**India, 2009). According to 2011 census, 104 million scheduled tribes in India i.e., 8.59 per cent of the total population. Decadal growth of the tribal population in India is 23.66 per cent (from 2001 census). This change in the population is plus 0.2 per cent point in Uttarakhand, Mizoram, Meghalaya, Assam, Jharkhand, Gujarat and Tamil Nadu. There are 0.29 million tribal people residing in Uttarakhand, which constitutes 2.89 per cent of state's total population and 0.28 per cent of the India's total scheduled tribe population. The decadal growth of tribe population in Uttarakhand is 13.97 per cent (from 2001 census). Out of the state's total scheduled tribe population, male constitutes 0.15 million and female constitute 0.14 million. In Uttarakhand, around 0.26 million tribal people live in rural area and 0.03 million live in the urban area of the state (Statistical Profile of Scheduled Tribes in India, 2013). More than the three fourth of the state's total population depends on agriculture for their livelihood and 90 per cent of the tribes live in rural areas and depend on agriculture for their livelihood. The tribes constitute weakest section of State's and India's population from the ecological, economical and educational angles (Padhi, 2005).

Uttarakhand is primarily an agricultural state. Agriculture sector of Uttarakhand is the most significant sector, which provides employment to about 70 per cent of state's population, though it contributes only 17 per cent to the state's gross domestic product (Watershed Management Directorate, 2012). Total area under agriculture in the state is only 0.75 million hectare which accounts for only 13.3 per cent of the total reported area with the cropping intensity of 158 per cent, which is significantly higher than the national average of 129 per cent (State Planning Commission, Government of Uttarakhand, 2011-12). Uttarakhand consists of 13 districts and spreads over plains, terrain, sub-mountainous and alpine zones. The growth of food grain production is quite variable in different areas. As a result, agriculture scenario presents a mixed picture. In the hills the major crops grown include wheat, paddy, mandua, ramdana and potato, whereas in the plains the major crops are wheat, paddy, pulses, sugarcane and mustard. On tribal farms more than 90 per cent of the tribal cropped area was found devoted to subsistence food crops viz., paddy and wheat across the farming systems wherein crops are grown in the tarai region of Uttarakhand (Raghav and Srivastava, 2014). It is possible to increase the farm income of tribal farmers through reallocation of existing farm resources optimally under all the farming systems being followed by them (Raghav and Srivastava, 2015).

Udham Singh Nagar District is the food bowl of Uttarakhand State. Udham Singh Nagar district is famous

for its agriculture and irrigation on synchronized pattern. Over the years, it has become very popular for its productivity in paddy crops; that's why, it is rightly called "*ChawalkiNagari*" in Uttarakhand (District Groundwater Brochure, 2012). Agriculture is the primary occupation of the people in Udham Singh Nagar; about 64 per cent of the total work force is engaged in farming in the district. Kharif and Rabi are the two major cropping seasons. The main kharif crops are rice, soybean, urd, moong and till and the rabi crops are wheat, barley, gram, lentil, mustard and sunflower. The sugarcane crop is also grown very intensively as it is a cash crop (State Planning Commission, Government of Uttarakhand, 2011-12). In the tarai region of Uttarakhand tribal farmers used to grow all the crops which are essential for their livelihood (Raghav and Srivastava, 2013).

MATERIALS AND METHODS

The state is comprised of 13 districts, namely, Chamoli, Pauri, Tehri, Uttarkashi, Dehradun, Haridwar and Rudraprayag in the Garhwal region and Nainital, Almora, Pithoragarh, Udham Singh Nagar, Champawat and Bageshwar in the Kumaon region. Out of these 13 districts, four districts (Nainital, Haridwar, Dehradun and Udham Singh Nagar) have large area as tarai and bhabhar, whereas the other nine districts comprise the hill region of the state. Out of these three regions (tarai, bhabhar and hilly), tarai region has largest concentration of tribes, that is why this region was selected for the study. In tarai region, Udham Singh Nagar district has largest population of tribes, therefore, this district was selected purposively for the study. Out of seven development blocks, one block was selected purposively having largest population of tribes (District Statistical Bulletin, Udham Singh Nagar, 2006). Thereafter, 45 farmers were selected randomly from the different villages. To measure the economics of major pulses and oilseeds grown by the tribal farmers, total cost and returns were calculated. Total costs were calculated by estimating total material cost, total operational cost and other costs. Total returns from the various crops were calculated by valuing the total output at the prices received by the tribal farmers.

RESULTS AND DISCUSSION

Economics of Pulses

Major pulses grown on the tribal farms were lentil, pea and gram. All pulses lentil, pea and gram crop was planted predominantly during the rabi season in the study area. Cost of returns from pulse crops is given in Table 1.Cost is the expenses incurred on raising a crop like seed, fertilizer, machinery cost, labor cost, etc. whereas, return is the value of output produced from that crop.

Cost of and Returns from Lentil crop

Among all pulses grown by the tribal farmers, lentil crop occupied the highest area in the study area. Total cost incurred in cultivation of one hectare of lentil was Rs. 22971. Out of total cost, share of total variable cost (Rs.11123/ha.) was highest followed by rental value of owned land (Rs.9479/ha). Among expenditures on total variable cost, share of operational cost was Rs. 4602/ha. The table reveals that tribal farmers did not hire the labour for the farming practices. Therefore, operational cost comprised of compensation for machinery, bullock labour and owned (family) labour. On an average, machinery cost incurred in cultivating one hectare of land was Rs.1678. Cost of owned human labour is the imputed value at prevailing wage rate in the study area during the study period i.e., Rs. 2924/ha. Among all the components of material cost, share of irrigation cost was highet followed by fertilizer and manures, seed and plant protection chemicals. Other cost comprised of interest on working capital, rental value of owned land, land revenue, depreciation and interest on fixed capital. These all components together constituted more than 50 per cent of the total cost on the cultivation of one hectare of lentil. Table reveals that total returns obtained from the one hectare of land was Rs.26373, out of which returns obtained from the main product and by product were Rs. 26007. and Rs.366, respectively. On an average, the yield of lentil crop was found to be 5.21qt./ha. in the study area. After deducting total variable cost and total cost from the total returns, net return over variable cost was found to be Rs. 15250/ha. while net return over total cost was Rs. 3401/ha.

Cost of and Returns from Gram crop

The second important pulse crop grown by the sample tribal farmers was gram. Table depicts the cost of cultivation of gram in the study area and reveals that the major share of operational cost was incurred on owned human labour. Overall average imputed cost incurred on human labour was Rs.2119/ha. i.e., 9.40 per cent of the total cost of cultivation. It is observed from the table that material cost accounted for Rs. 5970/ha. i.e., 26.48 per cent of the total cost. Among all the material cost, highest cost was incurred on irrigation i.e., Rs. 2626/ha., i.e. around 12 per cent of the total cost. Cost incurred on seeds and, fertilizers and manure was almost equal i.e., 6.32 and 6.05 per cent of the total cost. Whereas, cost incurred on plant protection chemical shared the least proportion of the total cost, among the all components of material cost. The table depicts that the large proportion of other cost

Table 1: Cost of and Returns from Pulses and Oilseed crops on the Tribal Farms during the Year 2008-09

Particulars	Lentil	Gram	Pea	Mustard
(I) Operational Cost (Rupees per hectare)				
Machinery and Bullock Labour	1678.33 (7.31)	1719.55 (7.63)	1851.94 (5.36)	2599.77 (11.76)
Human Owned	2923.54 (12.73)	2118.86 (9.40)	2006.11 (5.81)	2217.95 (10.03)
Labour Hired	-	-	-	-
Sub Total	4601.88 (20.03)	3838.41 (17.03)	3858.05 (11.16)	4817.73 (21.80)
(II) Material Cost (Rupees per hectare)				
Seed	1242.92 (5.41)	1424.32 (6.32)	3030.83 (8.77)	1088.41 (4.92)
Fertilizer and Manure	1527.71 (6.65)	1363.64 (6.05)	1728.33 (5.00)	904.09 (4.09)
Plant Protection Chemicals	1157.50 (5.04)	555.45 (2.46)	709.72 (2.05)	611.14 (2.76)
Irrigation	2592.71 (11.29)	2626.36 (11.65)	3024.72 (8.75)	2474.77 (11.20)
Sub Total	6520.63 (28.39)	5969.77 (26.48)	8493.61 (24.58)	5078.18 (22.97)
Total Variable Cost	11122.71 (48.42)	9808.18 (43.51)	12351.67 (35.74)	9896.14 (44.77)
(III) Other Cost (Rupees per hectare)				
Interest on Working Capital	143.54 (0.62)	135 (0.60)	162.78 (0.47)	134.32 (0.61)
Rental Value of Owned Land	9479.17 (41.27)	9750 (43.25)	10472.22 (30.31)	9750.00 (44.11)
Land Revenue	27.00 (0.12)	27 (0.12)	27.00 (0.08)	27.00 (0.12)
Depreciation	1537.71 (6.69)	2109.55 (9.36)	2088.33 (6.04)	1611.14 (7.29)
Interest on Fixed Capital	661.04 (2.88)	711.5 (3.16)	753.61 (2.18)	684.77 (3.10)
Total Cost	22971.17 (100.00)	22541.09 (100.00)	34555.61(100.00)	22153.36 (100.00)
(IV) Yield (Quintal per hectare)				
Main Product	5.21	4.55	6.67	5.0
By Product	2.29	2.5	6.39	7.95
(V) Return (Rupees per hectare)				
Main Product	26006.88	22095.91	23009.17	22143.86
By Product	365.63	370.45	369.44	1090.91
Total Returns	26372.50	22466.36	23378.61	23219.77
Net Return Over Variable Cost	15249.79	12658.18	11026.94	13338.64
Net Return Over Total Cost	3401.33	-74.73	-11177.00	1135.41

was incurred on rental value of land which was Rs. 9750/ha. in the study area. However, share of interest on working capital and land revenue was less than one per cent of the total cost. After adding all components, total cost emerged from the study area was Rs. 22541/ha. It is found that the total returns obtained from the gram was Rs. 22466/ha. Net return over variable cost was Rs.12658. However, net return over total cost was found to be negative. Overall average yield of gram was 4.55qt./ha.

Cost of and Returns from Pea crop

The third pulse crop grown by the sample tribal farmers was pea. Total cost incurred in cultivation of one hectare of pea was Rs. 34556/ha. Out of total cost, share of total variable cost (Rs.12352/ha.) was highest followed by rental value of owned land (Rs. 10472/ha). Among expenditures on total variable cost, share of operational cost was Rs.3858/ha. The table reveals that tribal farmers did not hire the labour for the farming practices. Therefore, operational cost was comprised of machinery bullock labour and owned family labour. On an average, machinery cost incurred in cultivating one hectare of land was Rs. 1852. Owned human labour is the imputed value of prevailing wage rate in the study area during the study period i.e., Rs. 2006/ha. Among all the components of material cost, share of seed cost was highest followed by irrigation, fertilizer and manures, and plant protection chemicals. Other cost constitute more than 50 per cent of the total cost for the cultivation of one hectare of pea. Table reveals that total returns obtained from the one hectare of land was Rs. 23379, out of which returns obtained from the main product and by product were Rs. 23009/ha. and Rs. 369/ha, respectively. On an average, the yield of pea was found to be 6.67 qt./ha. After deducting total variable cost from the total returns, net return over variable cost was found to be Rs.11027/ha.

Economics of Oilseeds

Mustard was the only oilseed grown by the tribal farmers predominantly during the rabi season in the study area. Cost of and returns from the crop is given in Table 1. The table reveals that the major share of operational cost was incurred on machinery and bullock labour followed by owned human labour. Overall average imputed cost incurred on machinery and bullock labour, and imputed cost on human labour was Rs. 2599/ha. and Rs. 2218/ha., respectively. It is observed from the table that material cost accounted for Rs. 5078/ha. i.e., 22.97 per cent of the total cost. Among the material cost, highest cost incurred

on irrigation i.e., Rs. 2475/ha., 11.20 per cent of the total cost. Cost on seeds and fertilizers and manure was almost equal i.e., 4.92 and 4.09 per cent of the total cost, respectively. Whereas, cost of plant protection chemical shared the least proportion of the total cost, among the all components of material cost. Table presents that the large proportion of other cost was incurred on rental value of land which was Rs. 9750/ha. However, share of interest on working capital and land revenue was less than one per cent of the total cost. After adding all components, total cost emerged from the study area was Rs.22153/ha. It is found that the total returns obtained from the mustard was Rs. 23220/ha. Net return over variable cost was Rs. 13339/ha. and net return over total cost was Rs. 1135/ha. Overall average yield of mustard was 5.0qt./ha.

CONCLUSION

In the study area, it was found that tribal farmers used to grow all crops which are essential for their livelihood. They grow crops for subsistence only not for profit. They are quite better in farming. Among all pulses crop, lentil was the most profitable crop followed by gram and pea. Moreover, mustard proved as the highest profit giving crop.The area has vast potential to grow these crops on commercial basis but there is need to tap this potential to benefit the growers. There is need to provide efficient infrastructural support so as to maximize the returns of the growers. Pulse crops i.e., gram, pea and lentil appeared profitable in the region, but it was observed that areas allocated under these crops were quite less. Hence, production of these crops should be promoted in the study area so that farmers can increase their on- farm profit.

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