A comparative study on economics of cultivation of horticultural and non-horticultural crops in West Bengal

ABSTRACT

The study was based on secondary data collected from a research paper (entitled as Income of Agricultural Households from Crop Production in Cooch Behar District of West Bengal in India) published in J. Interacad., 21(4): 482- 491, 2017. This study mainly highlighted income of agricultural households from crop production in Cooch Behar district of West Bengal. The present study attempted to find contribution of horticultural crops in generating income of the agricultural households. The crops grown by the agricultural households were categorized into two: horticultural crops and non-horticultural crops. Size class wise per hectare cost, per hectare gross returns & net return were estimated for each individual crops as well as for these two categories of crops as a whole. Average net return per agricultural household (farm) earned from horticultural and non-horticultural crops were worked out to determine agricultural income of the households. The concept of Cost C was used in working out per hectare cost of cultivation of various crops under two categories. Tabular method of analysis was extensively used in the study. The data set in the source pertained to 2010-11 agricultural year. The results indicated that the highest percentage of land was allocated to potato accounting for 28.16 per cent of gross cropped area (GCA) in the category of horticultural crops. Land allocated to the category of horticultural crops accounted for 31.16 per cent of the GCA.Among non-horticultural crops the highest percentage of land was allocated to aman paddy accounting for 34.62 per cent of GCA**.** Other important crops were jute, boro paddy, wheat, mustard covering 24.56 per

cent, 5.68 per cent, 2.45 per cent, 2.05 per cent respectively. Land allocated to non-horticultural crops accounted for 68.84 per cent of the GCA. The results also revealed the highest cost in banana cultivation recording Rs. 127584 per hectare. The other crops in descending order of cost/hectare in the category of horticultural crops were potato, pointed gourd, garlic, etc. Per hectare cost were estimated to the extent of Rs. 81780, Rs. 80800, Rs. 68109 respectively. Among non-horticultural crops the highest cost per hectare was recorded for boro paddy and it was Rs. 52950 per hectare. Cost of jute, wheat, aman paddy, mustard and lentil per hectare was estimated as Rs.39466, Rs.34151, Rs.33356, Rs.25513 and Rs.23564 respectively. There was a wide difference between cost/hectare of horticultural and non-horticultural crops as a whole.Cost/hectare was Rs.79881 for the former and Rs.36628 for the later. Among the horticultural crops the highest net return to the extent of Rs.177653 per hectare was earned from banana. The other important crops in this category were garlic, ridge gourd, bitter gourd, watermelon, etc. fetching net return (NR) per hectare to the extent of Rs.163984, Rs.66100, Rs.58400 and Rs.53127 etc. An amount of NR to the extent ofRs.34180/hectare was collectively earned from horticultural crops. Among the non-horticultural crops the highest net return to the extent of Rs.22321/hectare was earned from lentil. Per hectare net returns to the extent of Rs.5903, Rs.4899, Rs.4127,Rs.2403 and Rs.1614 were fetched from mustard,boro paddy, wheat, aman paddy and jute respectively. An amount of Rs.2433/hectare was collectively earned from non-horticultural crops. Average agricultural income earned from crop production was Rs.28044 per household. About 87 per cent of this income was generated from horticultural crops. The study calls for crop planning on the basis of demand and consumption requirement of people for both the horticultural and non-horticultural crops.

KEYWORDS:

Cost of cultivation, gross return, net return, vegetable crops and gross cropped area.

INTRODUCTION:

In the realm of agricultural, the cultivation of crops, whether horticultural or non-horticultural, holds paramount importance in ensuring food security, economic stability and livelihood enhancement. Among these, the horticulture sector emerges as a dynamic force, offering multifaceted benefits ranging from diversification opportunities to income generation and nutritional security. India, in particular, stands as a significant player in the global horticultural arena, with its fruits alone accounting for a noteworthy 10% of the world's production [1]. The sector's rapid growth, contributing 28% to the agricultural GDP and being the fastest-growing within agriculture, underscores its pivotal role in poverty alleviation and nutritional enhancement [2].Horticultural crops play a pivotal role in bolstering economic prosperity and livelihoods, offering a plethora of advantages. Notably, these crops contribute significantly to export value, with their high per unit area yield serving as a boon for farmers. Moreover, the sector serves as a beacon of employment opportunities, particularly for women and marginalized communities, thereby fostering inclusive growth [3]. The positive growth trajectory witnessed by horticultural crops, coupled with their ability to ensure quick transportation to domestic markets, further underscores their economic significance. Additionally, the cultivation of perennial horticultural crops facilitates carbon sequestration, thereby contributing to environmental sustainability while providing economic benefits through carbon credits [4].While horticultural crops bask in the limelight, it's imperative not to overlook the significance of non-horticultural crops in the agricultural landscape. Traditional crops continue to form the backbone of agricultural economies, offering stability and sustenance to millions of farmers

worldwide [5]. The diversification of cropping patterns, including the cultivation of non-horticultural crops, ensures a balanced agricultural ecosystem, mitigating risks associated with market fluctuations and climate variability.

However, despite the myriad benefits, the horticultural sector grapples with several challenges. Breeding high-quality and adaptable varieties, establishing effective cultivation practices, optimizing post-harvest handling, and streamlining sales mechanisms remain critical areas requiring attention [6]. Nevertheless, the sector holds immense potential for innovation and growth, particularly in enhancing food security, promoting a vibrant lifestyle, and addressing global market demands for quality produce.The economic importance of horticultural and non-horticultural crops in agriculture cannot be overstated. As nations strive to achieve sustainable development goals, harnessing the potential of both sectors is imperative. By addressing challenges, leveraging opportunities, and embracing innovative practices, the agricultural landscape can be transformed into a beacon of prosperity, ensuring food security, economic stability, and environmental sustainability for generations to come.

MATERIALS AND METHODS:

The study was based on secondary data collected from a research paper (outlined asIncome of Agricultural Households from Crop Production in Cooch Behar District of West Bengal in India) published in J. Interacad., 21(4): 482- 491, 2017 [7]. This study mainly highlighted the income of agricultural households from crop production in Cooch Behar district of West Bengal in India. The present study attempted to find contribution of horticultural crops in generating income of agricultural households. The crops grown by the agricultural households were

categorized into two: horticultural crops and non-horticultural crops. Size class wise per hectare cost, per hectare gross returns & net return were estimated for each individual horticultural and non-horticultural crops as well as for these two categories of crops as a whole. Average net return per household (farm) earned from horticultural and non-horticultural crops were worked out to determine agricultural income of the households. The concept of Cost C was used in working out per hectare cost of cultivation of various crops under two categories.

RESULTS AND DISCUSSION:

Table 1: Operational land under horticultural and non-horticultural crops grown by agricultural households in different size classes of farms.

Size class	Number of agricultural households	Operational holding (ha)	Area under horticultural crops (ha)											
			Potato	Chilli	Beet	Radish	Cucumber	Pointed gourd	Bitter gourd	Ridge gourd	Wax gourd	Garlic	Water melon	Banana
Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12	Col. 13	Col. 14	Col. 15
Marginal (< 1 ha)	36.00 (72.00)	20.60 (42.45)	11.64 (27.75)	0.78 (1.86)	0.06 (0.14)	0.09 (0.21)	0.31 (0.74)	0.03 (0.07)	0.09 (0.21)	0.03 (0.07)	0.03 (0.07)	0.03 (0.07)	0.03 (0.07)	0.19 (0.45)
Small (1-2 ha)	10.00 (20.00)	12.06 (24.85)	4.28 (19.29)	0.13 (0.59)	-	-	-	0.13 (0.59)	-	-	-	0.40 (1.80)	-	-
Semi-medium	2.00 (4.00)	6.00 (12.36)	5.20 (32.28)	0.13 (0.81)	-	-	-	-	-	-	-	-	0.53 (3.29)	-

(2-4 ha)														
Medium (4-10 ha)	2.00 (4.00)	9.87 (20.34)	9.30 (33.44)	0.13 (0.47)	-	-	0.13 (0.47)	-	-	-	-	-	-	-
Combined	50.00 (100.00)	48.53 (100.00)	30.42 (28.16)	1.17 (1.08)	0.06 (0.06)	0.09 (0.08)	0.44 (0.41)	0.16 (0.15)	0.09 (0.08)	0.03 (0.03)	0.03 (0.03)	0.43 (0.39)	0.56 (0.52)	0.19 (0.17)

(Continued)

Table 1 (contd.)

Size class		Area under non-horticultural crops (ha)								
	Total horticultural crops	Aman paddy	Boro paddy	Wheat	Lentil	Mustard	Jute	Total non-horticultural crops	Gross cropped area	Cropping intensity
	Col. 16	Col. 17	Col. 18	Col. 19	Col. 20	Col. 21	Col. 22	Col. 23	Col. 24	Col. 25
Marginal (< 1 ha)	13.31 (31.71)	13.97 (33.31)	2.13 (5.08)	1.03 (2.45)	0.34 (0.81)	0.86 (2.05	10.30 (24.56)	28.63 (66.21)	41.94 (100.00)	203.59
Small (1-2 ha)	4.94 (22.27)	8.91 (40.17)	1.47 (6.63)	0.80 (3.61)	-	0.13 (0.59)	5.93 (26.73)	17.24 (77.73)	22.18 (100.00)	183.91
Semi-	5.86	5.32	-	-	-	0.13	4.80	10.25	16.11	268.50

medium (2-4 ha)	(33.56)	(33.02)				(0.81)	(29.79)	(42.62)	(100.00)	
Medium (4-10 ha)	9.56 (34.38)	9.20 (33.08)	0.13 (0.47)	-	0.13 (0.47)	-	8.79 (31.60)	18.25 (65.62)	27.81 (100.00)	281.76
Combined	33.67 (31.16)	37.40 (34.62)	3.73 (3.45)	1.83 (1.69)	0.47 (0.44)	1.12 (1.04)	29.82 (27.60)	74.37 (68.84)	108.04 (100.00)	222.63

N.B. : i) Figures in parentheses in col. 2 & 3 indicates percentage to total of all size classes.
ii) Figures in parentheses in col. 4, 5....., col. 23 in each individual size class indicates percentage to gross cropped area.

The Table 1 shows of operational land allocated by the agricultural households to horticultural and non-horticultural crops. As a whole, a large number of crops were found to be cultivated by the farmers. Land was allocated by the farmers to twelve horticultural and six non- horticultural crops. Farmers in marginal size class were reported to have cultivated horticultural crops like potato, chilli, beet, radish, cucumber, pointed gourd, bitter gourd, ridge gourd, wax gourd, garlic, water melon and banana. The non-horticultural crops consisted of aman paddy, boro paddy, wheat, lentil, mustard and jute. The number of both horticultural and non-horticultural crops was observed to decrease across the higher size classes of farms. The common crops grown across all the size classes of farms were noted to be potato, chilli, aman paddy and jute.

So far percentage allocation of land to various crops was concerned it was found that 31.74% of gross cropped areawas covered by horticultural crops in marginal size class of farms. In this size class land allocated to non-horticultural crops was noted to account for 68.26 per cent of the gross cropped area (GCA). The land allocated to horticultural crops accounted for 22.27 per cent, 36.37 per cent and 34.38 per cent of

the GCA respectively in small, semi- medium and medium size classes of farms. On the other hand the non-horticultural crops were found to cover 77.73 per cent, 63.63 per cent and 65.62 per cent respectively in small, semi-medium and medium size classes of farms. As a whole, agricultural land under horticultural and non-horticultural crops was noted to cover 31.16 per cent and 68.84 per cent respectively.

Table 2: Cost of cultivation of various crops grown by agricultural households in different size classes. (Rupees)

Size Class	Horticultural crops											
	Potato	Chilli	Beet	Radish	Cucumber	Pointed gourd	Bitter gourd	Ridge gourd	Wax gourd	Garlic	Water melon	Banana
Marginal	954289 (81984)	36046 (46213)	2091 (34850)	4963 (55144)	18232 (58813)	2552 (85067)	5679 (63100)	1797 (59900)	1866 (62200)	2379 (79300)	2090 (69667)	24241 (127584)
Small	356891 (83386	6002 (46169)	-	-	-	10376 (79185)	-	-	-	26908 (67270)	-	-
Semi-medium	441389 (84883)	6613 (50869)	-	-	-	-	-	-	-	-	36019 (67960)	-
Medium	735181 (79052)	6268 (48215)	-	-	7750 (59615)	-	-	-	-	-	-	-
Combined	2487750	54929	2091	4963	25982	12928	5679	1797	1866	29287	38109	24241

	(81780)	(46948)	(34850)	(55144)	(59050)	(80800)	(63100)	(59900)	(62200)	(68109)	(68052)	(127584)

(Continued)

Table 2 (contd.) **(Rupees)**

Size Class	Non- horticultural crops								
	Total horticultural crops	Aman paddy	Boro paddy	Wheat	Lentil	Mustard	Jute	Total non-horticultural crops	All crops
Marginal	1056225 (79356)	442272 (31659)	112824 (52969)	36209 (35154)	8110 (23853)	21692 (25223)	390306 (37894)	1011413 (35327)	2067638 (49300)
Small	400177 (81007)	295848 (33204)	77491 (52715)	26287 (32859)	-	3435 (26923)	229049 (38625)	632110 (36665)	1032287 (46541)
Semi-medium	484021 (82597)	183224 (34441)	-	-	-	3447 (26515)	191604 (39918)	378275 (36905)	862296 (53526)
Medium	749199	326184	7188	-	2965	-	365907	702244	1451443

	(78368)	(35455)	(55292)		(22809)		(41628)	(38479)	(52191)
Combined	2689622 (79882)	1247528 (33356)	197503 (52950)	62496 (34151)	11075 (23564)	28574 (25513)	1176866 (39466)	2724042 (36628)	5413664 (50108)

N.B. : Figures in parentheses indicates cost per hectare.

The table 2 displays cost of cultivation of various horticultural and non-horticultural crops in different size classes of farm. In marginal size class per hectare cost of cultivation was found to be highest in banana among horticultural crops. Cost of cultivation per hectare was noted to decrease gradually across various crops like point gourd, potato, garlic, water melon, bitter gourd, wax gourd, ridge gourd, cucumber, etc. A lowest cost per hectare was recorded for beet. In small size class per hectare cost was found to be highest in potato among different crops grown in this size class. In other size classes also the highest cost per hectare was recorded for potato. Inter-size class comparison of cost per ha in respect of potato crop revealed that the cost was highest in semi-medium size class and was lowest in medium size class. In case of chilli the highest cost was recorded in semi medium size class. It was found to lowest in small size class of farm. As a whole, cost per hectare was noted to be highest in banana and was observed to decline gradually across the different crops like potato, point gourd, garlic, bitter gourd, wax gourd, etc. These cost were estimated as Rs.127584, Rs.81780, Rs.80800, Rs.68109, Rs.63100, and Rs.62200 respectively.

Among six non-horticultural crops grown in marginal size class of farms boro paddy was found to record the highest cost per hectare. The cost per ha was noted to gradually decline across different crops like jute, wheat, aman paddy, mustard and lentil. In small size class also the highest cost per hectare was recorded for boro paddy and was found to gradually decrease across jute, aman paddy, wheat and mustard. In medium size

class of farms the cost per hectare of aman paddy was noted to be highest. Inter-size class comparison in respect of two common non-horticultural crops i.e. aman paddy & jute revealed escalation of cost per hectare across the higher size classes of farms.

As a whole, cost of boro paddy per hectare was noted to be highest among different crops and it was lowest for lentil. The other crops in descending order of cost per hectare were found to be jute, aman paddy, wheat and mustard. Cost per hectare of all horticultural crops was observed to be highest in semi medium size classes of farms and was lowest for medium size classes of farms. A wide difference was noted between cost per hectare of horticultural and non-horticultural crops in each of the size classes of farms.

Table 3: Gross return of various crops grown by agricultural households in different size classes.(In Rupees)

Size Class	Horticultural crops											
	Potato	Chilli	Beet	Reddish	Cucumber	Pointed gourd	Bitter gourd	Ridge gourd	Wax gourd	Garlic	Water melon	Banana
Marginal	1381826 (118713)	44104 (56543)	2571 (42850)	7899 (87767)	33600 (108387)	3011 (100367)	10935 (121500)	3780 (12600)	3335 (111167)	8000 (266667)	3860 (128667)	57995 (305237)
Small	517931 (121012)	6952 (53477)	-	-	-	12189 (93762)	-	-	-	91800 (229500)	-	-
Semi-medium	557281 (107169)	7634 (58720)	-	-	-	-	-	-	-	-	64000 (120755)	-

Medium	1071600 (115226)	7180 (55234)	-	-	13470 (103615)	-	-	-	-	-	-	-
Combined	3528638 (115997)	65870 (56299)	2571 (42850)	7899 (87767)	47070 (106977)	15200 (95000)	10935 (121500)	3780 (12600)	3335 (111167)	99800 (232093)	67860 (121179)	57995 (305237)

(Continued)

Table 3 (contd.)

(Rupees)

Size Class	Non-horticultural crops								
	Total horticultural crops	Aman paddy	Boro paddy	Wheat	Lentil	Mustard	Jute	Total non-horticultural crops	All crops
Marginal	1560916 (117274)	473583 (33900)	123202 (57841)	39390 (38243)	15980 (47000)	26640 (30977)	405562 (39375)	1084357 (37875)	2645273 (63073)
Small	628872	314078	84466	30658	-	4330	235243	668775	1297647

	(127302)	(35250)	(57460)	(38323)		(33308)	(39670)	(38792)	(58505)
Semi-medium	628915 (107323)	195086 (36670)	-	-	-	4215 (32423)	206590 (43039)	405891 (39599)	1034806 (64234)
Medium	1092250 (114252)	354660 (38550)	8108 (62369)	-	5586 (42969)	-	377595 (42957)	745949 (40874)	1838199 (66098)
Combined	3910953 (116155)	1337407 (35761)	215776 (57849)	70048 (38278)	21566 (45885)	35185 (31415)	1224990 (41079)	2904972 (39061)	6815925 (63087)

N.B. : Figures in parentheses indicates gross return per hectare.

The table 3 reveals gross return of various horticultural and non-horticultural crops grown by the farmers. In marginal size class among different horticultural crops it was found that the highest gross return per hectare accrued to the farmers from garlic crop.The other important horticultural crops in respect of generating gross return were found to be water melon, bitter gourd, potato, wax gourd, cucumber, etc. In small size class also garlic was noted to generate the highest gross return per hectare. Among four horticultural crops potato occupied second position in generating gross return per hectare. In semi-medium size class among three horticultural crops water melon was noted to generate the highest level of gross return per hectare. Potato was also found to occupy second position in this size class of farms. In the medium size class among three horticultural crops potato was found to occupy the highest position in generating gross return per hectare. In this size class cucumber was noted to be another important horticultural crop. As a whole, the important horticultural crops in respect of generating gross return per hectare were found to be

garlic, bitter gourd, water melon, potato, wax gourd, cucumber, etc. These crops generated gross return per hectare to the extent of rupees 232093, rupees 121500, rupees 121179, rupees 115997, rupees 111167, rupees 166977 respectively.

So far non-horticultural crops were concerned it was found that the highest gross return per hectare were recorded for boro paddy in each of the size classes of farms among different crops grown in the size classes. Lentil crop was noted to occupy second position in generating gross returnin those size classes of the farm where it was grown by the farmers. As a whole, boro paddy was found to generate the highest gross return per hectare to the extent of rupees 57849. The other crops in descending order of yielding gross return per hectare were observed to be lentil, jute, wheat, aman paddy and mustard. These crops generated gross return of rupees 45885, rupees 41079, rupees 38278, rupees 35761 and rupees 31415 per hectare respectively. Comparison of per hectare gross returns between horticultural and non-horticultural crops revealed that the former recorded much more highgross return than that of the later. It was rupees 116155 and 39061 per hectare for horticultural and non-horticultural crops respectively.

Table 4: Net return earned from various crops grown by agricultural households in different size classes. (In Rupees)

Size Class	Horticultural crops											
	Potato	Chilli	Beet	Radish	Cucumber	Pointed gourd	Bitter	Ridge	Wax	Garlic	Water	Banana

							gourd	gourd	gourd		melon	
Marginal	427537 (36730)	8058 (10331)	480 (8000)	2936 (32622)	15368 (49574)	459 (15300)	5256 (58400)	1983 (66100)	1469 (48967)	5621 (187367)	1770 (59000)	33754 (177653)
Small	161040 (37626)	950 (7308)	-	-	-	1813 (13946)	-	-	-	64892 (162230)	-	-
Semi-medium	115892 (22287)	1021 (7854)	-	-	-	-	-	-	-	-	27981 (52794)	-
Medium	336419 (36174)	912 (7015)	-	-	5720 (44000)	-	-	-	-	-	-	-
Combined	1040888 (34217)	10941 (9351)	480 (8000)	2936 (32622)	21088 (47927)	2272 (14200)	5256 (58400)	1983 (66100)	1469 (48967)	70513 (163984)	29751 (53127)	33754 (177653)

(Continued)

Table 4 (contd.)

(In Rupees)

Size Class	Non-horticultural crops								
	Total	Aman	Boro paddy	Wheat	Lentil	Mustard	Jute	Total non-	All crops

	horticultural crops	paddy						horticultural crops	
Marginal	504691 (37918)	31311 (2241)	10378 (4872)	3181 (3088)	7870 (23147)	4948 (5753)	15256 (1481)	72944 (2548)	577635 (13773)
Small	228695 (46295)	18230 (2046)	6975 (4745)	4371 (5464)	-	895 (6885)	6194 (1045)	36665 (2127)	265360 (11964)
Semi-medium	144894 (24726)	11862 (2230)	-	-	-	768 (5908)	14986 (3122)	27616 (2694)	172510 (10708)
Medium	343051 (35884)	28476 (3095)	920 (7077)	-	2621 (20162)	-	11688 (1330)	43705 (2394)	386756 (13907)
Combined	1221331 (36274)	89879 (2403)	18273 (4899)	7552 (4127)	10491 (22321)	6611 (5903)	48124 (1614)	180930 (2433)	1402261 (12979)

N.B.: Figures in parentheses indicates net return per hectare.

The table 4 displays net returns accrued from different horticultural and non-horticultural crops. In the case of horticultural crops it was found that the highest net return per hectare resulted from garlic crop in marginal size class of farms. The other crops yielding per hectare net return in descending order were found to be banana, ridge gourd, pointed gourd, bitter gourd, cucumber, wax gourd, radish, etc. Inter-size class comparison in respect of potato crop showed that highest net return of this crop was generated in marginal size class of farms. It was noted to be

lowest in semi-medium size class of farms. The highest net return from chill crop was also recorded in marginal size class. It was noted to be lowest in medium size class.As a whole, the highest net return per hectare was found to come from banana crop. It was rupees 177653 per hectare. Garlic was observed to occupy second position in generatingper hectarenet return to the extent of rupees 163984. The other crops in respect of generating per hectare net return in descending order were noted to be ridge gourd, bitter gourd, water melon, wax gourd, cucumber, potato, etc. Per hectare net returns of rupees 66100, 58400, 53127, 48967, 47927, 34217 were accrued respectively from these crops.

So far non-horticultural crops were concerned the highest net return was generated from lentil in marginal size class. Among six crops per hectare net return was recorded to be lowest for jute crop. In small size class mustard was found to generate the highest net return per hectare among five crops. Lentil was not grown in the size class. This crop was also noted to generate highest net return in semi medium size class among three crops. In medium size class the highest net return per hectare was found to be accrued from lentil among four crops. As a whole, the crops generating per hectare net return in descending order were noted to be lentil, mustard, boro paddy, wheat, aman paddy and jute. Per hectare net returns of rupees 22321, 5903, 4899, 4127, 2403 and 1614 respectively were recorded for these crops. A comparison between horticultural and non-horticultural crops revealed much more high net return per hectare in the former than that in the later. It was rupees 34180 and 24331 per hectare for horticultural and non-horticultural crops respectively.

Table 5: Comparison of costs and returns per hectare between horticultural and non-horticultural crops. (In Rupees)

Size Class	Horticultural crops				Non-horticultural crops				All crops
	Cost/ha	Gross returns/ha	Net returns/ha	Net returns/household	Cost/ha	Gross returns/ha	Net returns/ha	Net returns/household	Net returns/household
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10
Marginal	79356 (224.63)	117274 (309.63)	37918 (1488.19)	14019 (691.95) (87.37)[1]	35327	37875	2548	2026 (12.63)[1]	16045 (100.00)[1]
Small	81007 (220.93)	127302 (328.17)	46295 (2176.54)	22869 (623.81) (86.18)[1]	36665	38792	2127	3666 (13.82)[1]	26535 (100.00)[1]
Semi-medium	82597 (223.81)	107323 (271.02)	24726 (917.82)	72447 (524.67)	36905	39599	2694	13808	86255

				(83.99)[1]				(16.01)[1]	(100.00)[1]
Medium	78368 (203.66)	114252 (279.52)	35884 (1498.91)	171525 (784.93) (88.69)[1]	38479	40874	2395	21852 (11.31)[1]	193377 (100.00)[1]
Combined	79882 (218.08)	116155 (297.37)	36273 (1490.91)	24426 (675.12) (87.09)[1]	36628	39061	2433	3618 (12.91)[1]	28044 (100.00)[1]

N.B i): Figures in parentheses under columns 2,3 and 4 of horticultural crops indicate extent of largeness of some variables in terms of percentage in respect of the same variables of non-horticultural crops in each of the size classes of farms.

N.B ii):Figures in parentheses with superscript 1 under columns 5 and 9 indicate percentage contribution of horticultural and non-horticultural crops respectively in generating household agricultural income.

The table 5 displays comparison of per hectarecost, return and net return per farm associated with contribution of horticultural and non-horticultural crops in generating household agricultural income in different size classes of farms. Per hectare cost, gross return and net return

were found to be considerably higher in horticultural crops than those of non-horticultural crops in each of the size classes of farms. The extent of largeness of per hectare cost of horticultural crops was observed to range from 204 per cent to 225 per cent over the per hectare cost of non-horticultural crops in different size classes of farms. Net return per farm earned from horticultural crops was also observed to be considerably higher than that earned from non-horticultural crops in each of the size classes. Percentage share of horticultural crops in generating household agricultural income was found to range from 84 per cent to 89 per cent and it was noted to be highest in medium size classes of farms. As a whole, per hectare cost of horticultural crops was noted to be 201 per cent higher than that of non-horticultural crops. The corresponding figures for per hectare gross return, net return and net return per farm were noted to be 297 per cent, 1405 per cent and 675 per cent respectively.

CONCLUSION:

Horticultural crops play important role in augmenting household agricultural income. If more and more resources, subject to its availability, are allocated to horticultural crops there will be a problem in marketing of these crops. Huge production of vegetable crops will lead to sharp fall in its price causing a low rate of increase in household agricultural income. Moreover allocation of large area of land to the horticultural crops will result in deficiency in production of food grain and other crops which are also important for consumption of human beings. The study calls for crop planning including both the categories of crops on the basis of demand and consumption requirement of people for horticultural and non-horticultural crops.

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