Chapter 4
Economic Analysis of Production Costs and Returns

One of the main objectives of the present study is to evaluate the impact of commercialisation of agriculture on the economic well-being of the farmers in this area. For this purpose, detailed costs and production data were collected through a questionnaire. This chapter presents a comparative study of cost of production, productivity, returns, and risks associated with different conventional and commercial crops on the basis of the above data. Attempts have also been made to estimate the total production of vegetables, their value, and impact of commercialisation on per capita income of farmers.

Table 4.1 presents a comparative view of the per hectare cost of cultivation, arrived at using the methodology discussed in Annex 1. The Table gives a detailed analysis of input and labour costs and their components. It also gives the break-up of labour mix, i.e., male and female, ploughman, and ordinary labour. The average wage rates are presented in Table 4.2.

It is interesting to note that a large proportion of labour input, particularly for commercial crops, is counted as ordinary labour. Commercial (vegetable) crops require a lot of labour inputs, particularly for plantation, irrigation, weeding, and collection of vegetables. Conventionally, these activities were performed by women. But, in view of the intense labour requirements, it is not possible for women alone to perform all these tasks, so men also contribute. Similarly, women also participate in marketing activities which were conventionally performed by men. Therefore, almost all the activities in the field as well as in the market, except for ploughing, are performed jointly by men and women. But women mostly carry out the tasks of weeding and manuring. The impact of commercialisation on total labour requirement, labour mix, and labour burdens of men and women has been analysed in Chapter 5.

For computation of prime cost of cultivation, all the inputs, except for organic manure, have been valued at market prices. But, since organic manure does not have a market price, its fair value has been estimated on the basis of the opinion survey of five experienced and educated farmers.

Table 4.3 presents a comparative study of the productivity and economic returns of different crops and risks associated with them. In order to look into the economic effects of commercialisation from different dimensions, different measurements of economic returns have been used in the analysis.

Market prices of different crops are required for evaluation of their economic value and returns. For this purpose, the selling price realised by farmers has been used in the case of commercial crops, while the purchasing price paid by them has been used in the case of cereals. However, market prices for different optional markets cannot be compared at par

Table 4.1: Comparative Study of the Average Cost of Cultivation of Different Crops per ha

S.N.	ITEM		WINTER CROPS		EARLY SUMMER CROPS				LATE SUMMER CROPS				
			Wheat	Peas	Paddy	Capsicum	Tomatoes	Chillies	Madua	Soyabean	Beans	Cauliflower	Potatoes
(A)	Average Output (kg)		1324	5236	1746	10437	8335	1235	1345	1710	6220	11931	10050
(B)	Inputs	(1) Seedlings											
		(i) Quantity (kg/No. of plants)	123	49	99	45732	25171	65867	17	86	41	72453	1112
		(ii) Rate	9.5	27	9.6	0.28	0.15	0.04	5	11.5	55	0.07	14.5
		Cost	1167	1323	950	12805	3776	2635	85	989	2255	5072	16124
		(2) Manure											
		(i) Quantity (kg)	771	915	599	983	1020	1647	264	289	410	1482	1287
		(ii) Rate	5	5	5	7.5	5	5	5	5	5	7.5	5
		Cost	3855	4575	2995	7373	5100	8235	1322	1445	2050	11,115	6,432
		(3) Urea											
		(i) Quantity (kg)	82	91	-	101	44	-	-	-	-	139	-
		(ii) Rate	4.5	4.5	-	4.5	4.5	-	-	-	-	4.5	-
		Cost	371	408	-	456	198	-	-	-	-	624	-
		(4) D.A.P.				-							
		(i) Quantity (kg)	82	132	-	74	103	49	-	-	103	117	87
		(ii) Rate	10	10	-	10	10	10	-	-	10	10	10
		Cost	820	1320	-	740	1030	490	-	-	1030	1170	870
		(5) Fungicides Cost (Rs)	-	2779	-	2351	2907	1976	-	-	1853	2940	-
	Total Cost of Inputs (Rs)		6213	9085	3945	23725	13011	1336	1407	2434	5159	20921	23426
(C)	Labour (hours)												
		(1) Ploughing – Ploughman	161	220	212	188	189	198	166	141	135	176	183
		(2) Plantation – Oridinary	9	85	10	375	319	370	11	82	60	407	395
		(3) Irrigation – Common	-	-	-	3419	3726	2265	-	-	-	2149	889
		(4) Weeding – Woman	-	474	786	1428	1507	1145	231	378	442	942	593
		(5) Manuring – Woman	193	124	132	208	162	132	102	82	31	350	165
		(6) Spraying Fungicides – Man	-	69	-	77	74	49	-	-	83	49	-
		(7) Harvesting & Processing – Ordinary	388	1026	427	847	613	1475	269	326	983	369	922
		Ploughman	128	-	79	-	-	-	90	156	-	-	-
		Woman	-	-	-	-	-	-	-	-	-	-	-
		Total Labour											
		Man	-	69	-	77	74	49	-	-	83	49	-
		Woman	193	598	918	1636	1669	1277	333	460	473	1292	758
		Ploughman	289	220	291	188	189	198	256	297	135	176	183
		Ordinary	397	1111	437	4641	4658	4110	280	408	1043	2925	2206
	Total Farm Labour Hours		879	1998	1646	6542	6590	5634	869	1165	1734	4442	3147

Table: 4.2: Average Wage Rates

	(Rs Per Hour)
Men	6.25
Women	5.92
Ploughmen	17.67
Horsemen	12.50
Ordinary	6.08

because of the differences in marketing costs involved with these options. Therefore, prices in all markets were converted into ex-farm value of crops by deducting the marketing costs from the prices (as discussed in Chapter 3). This was done for all marketing options and sample villages for each crop. Table 4.4 shows the average ex-farm value of different crops for different villages and their average. This average was used as a base for evaluation of economic value of crops in Table 4.3.

The following concepts of the economic returns have been used in the analysis.

1. Gross Monetary Return, computed as:

   total ex-farm value of crops
   - total out-of-packet costs + value of joint crops + value of joint products (fodder etc).

2. Value-Added or Factor Income, computed as:

   gross monetary return
   - imputed cost of self-owned physical inputs

   Factor income (or value-added) realised per labour hour has been computed as follows:

$$\text{V.A. per labour hour} = \frac{\textit{V.A. per ha}}{\textit{Labour hours required per ha}}$$

3. Net Profit, computed as:

   value added - imputed rent of land - imputed cost of total labour.

It is interesting to note that even the most popular vegetable crop from this area, i.e., capsicum, shows a net loss. It is evident from this fact that net gain or loss is not the basic consideration for crop decisions by farmers, and they do not evaluate their own labour at market wage rate. Farmers accept a crop if it provides them with good monetary returns and generates a high factor income, though it may involve a great deal of labour, provided a satisfactory return to their labour is being realised. Table 4.3 shows that potatoes generate the highest factor income followed by cauliflowers and capsicum. However, potatoes can be cultivated only at high altitudes under dryland farming conditions in the mountains. Capsicum is the most popular early summer crop in the area. Cauliflower had recently entered into the crop mix and was increasingly gaining popularity among late summer crops.

A Seasonal Index of Factor Income was developed to show how a farmer can increase his income by growing a vegetable crop instead of the conventional food grain during a particu-

Table: 4.3: Comparative Study of Returns from Different Conventional and Vegetable Crops

per ha

	WINTER CROPS		EARLY SUMMER CROPS						LATE SUMMER CROPS		
	Wheat	Peas	Paddy	Capsicum	Tomatoes	Chillies	Madua	Soyabean	Beans	Cauliflower	Potatoes
Average Output (kg)	1324	5236	1746	10437	8335	1235	1345	1710	6220	11931	10050
Ex-Farm Value (Rs Per kg)	5.05	5.55	4.40	5.01	2.35	36.14	4.00	8.63	3.91	4.58	7.18
Total Ex-Farm Value (Rs)	6686	29060	7684	52289	19587	44633	5380	14757	24320	54644	72159
Total Out of Pocket Expenses (Rs)	1191	5830	-	3547	4135	2471	-	-	5138	7270	16994
Value of Joint Crops (Rs)	1186	4541	-	4613	9880	-	1198	1328	1208	-	4118
Value of Joint Product (Rs)	4942	-	4942	-	-	-	5930	2471	-	-	-
Imputed Cost of Own Labour in marketing (Rs)	-	2625	-	5225	4175	619	-	855	3125	5963	5038
Equivalent monetary returns (Rs)	11623	30396	12626	58580	29507	42781	12508	19411	23515	53337	64321
Imputed Cost of Self-owned Inputs (Rs)	5022	4575	3945	20178	8876	10872	1407	2434	2050	13651	6432
Value Added (Factor Income) (Rs)	6601	25821	8681	38402	20631	31909	11101	16977	21465	39686	57889
Seasonal Index of Factor Income	100	391	100	442	238	368	100	153	193	357	521
Imputed Rent of Land (Rs)	1648	1648	1648	1648	1648	1648	1648	1648	1648	1648	1648
Ex-farm Labour Requirement (Hours)	879	1998	1646	6542	6590	5634	869	1165	1734	4442	3147
Labour Requirement in Marketing (Hours)	-	210	-	418	334	50	-	69	250	477	403
Total Labour Requirement (Hours)	879	2208	1646	6960	6924	5684	869	1234	1984	4919	3550
Imputed Cost of Labour (Rs)	8727	17019	12942	46743	45989	36973	7941	11010	15036	34636	25988
Net Gain or Loss (Rs)	- 3774	7154	-5909	-9989	-25358	-6712	1512	4319	7504	5050	30253
Value-Added Per Farm Labour Hours (Rs)	7.51	11.69	5.27	5.52	2.98	5.61	12.77	13.76	10.81	8.07	16.31
COR of Output	0.49	0.58	0.48	0.62	0.67	0.40	0.35	0.50	0.54	0.70	0.29
COR of Market Price	-	0.46	-	0.43	0.61	0.78	-	0.06	0.57	0.43	0.16
Risk Index	0.49	0.82	0.48	0.83	0.91	0.86	0.35	0.54	0.85	0.86	0.43

Table: 4.4: Average Ex-Farm Value of Different Crops for Different Villages (Year 1996-97)

Crop Groups	Crops	Village												
		A_1	A_2	A_3	A_4	B_1	B_2	B_3	B_4	C_1	C_2	C_3	C_4	Average
(A) Winter	a) Wheat	4.80	4.80	4.80	4.80	5.20	5.10	5.10	5.10	4.80	5.35	5.50	5.30	5.05
	b) Peas	5.26	5.64	5.54	5.84	5.45	5.37	5.00	4.90	5.53	6.60	6.64	4.84	5.55
(B) Early Summer Crops	a) Paddy	4.09	4.09	4.09	4.09	4.59	4.46	4.46	4.46	4.09	4.78	4.96	4.71	4.40
	b) Capsicum	5.71	5.38	5.25	4.96	4.76	4.84	5.18	4.92	5.12	5.07	4.47	4.50	5.01
	c) Tomatoes	2.93	2.53	3.03	2.15	2.25	2.31	2.87	2.58	2.39	1.46	1.77	1.93	2.35
	d) Chillies	-	-	-	-	-	-	-	-	-	-	36.14	-	36.14
(C) Late Summer Crops	a) *Madua*	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	b) Soyabean	8.95	9.30	8.70	-	8.70	8.50	8.30	8.60	-	8.40	8.47	8.38	8.63
	c) Beans	4.60	4.08	4.10	4.16	-	-	-	-	3.52	3.30	3.74	3.80	3.91
	d) Cauliflower	4.61	4.67	4.51	-	4.50	4.58	4.32	3.90	5.52	-	-	-	4.58
	e) Potatoes	-	-	-	-	-	-	-	-	7.89	-	6.47	-	7.18

lar crop reason. The index number was calculated as follows:

$$\text{Seasonal Index of Factor Income} = \frac{\text{V.A. of the crop}}{\textit{V.A. of conventional crop grown during the relevant crop season}}$$

Table 4.3 shows that a farmer can increase his income 3.91 times by growing peas instead of wheat. Similarly, he can increase his income 4.42 times by growing capsicum instead of paddy and 3.57 times by growing cauliflower instead of *madua* (a coarse millet).

Risk Index

An attempt has also been made to evaluate the risk associated with the cultivation and marketing of different crops. Although the variance is considered the best measurement of risk, it requires observations over a fairly large number of years, and this has not been possible. Therefore, we have used the 'Coefficient of Range (COR)' of output and market prices as a proxi-measurement of risk. The overall coefficient of range or 'Risk Index' has been determined as follows:

$$\text{Risk Index} = \frac{(1+C_1)(1+C_2) - (1-C_1)(1-C_2)}{(1+C_1)(1+C_2) + (1-C_1)(1-C_2)}$$

where, C_1 = COR of output and
C_2 = COR of market price

The respondents were asked to estimate the crop yield of their reference field under most favourable and most unfavourable conditions on the basis of their experiences. These estimates were used for the computation of COR of outputs. It was computed separately for all 12 villages and averaged. Information was also collected from respondents regarding the highest and lowest market prices of different commercial crops in different markets during the previous marketing season. This information was used for computation of the COR of market prices. In reference to each commercial crop, the COR of market price was calculated for all the market options and averaged. The COR of market price for cereals was assumed to be zero.

Table 4.3 shows that tomato cultivation is most risky, followed by chillies, cauliflower, beans, capsicum, and peas. Potatoes are the safest commercial crop. Soyabeans, although risky from the point of view of output, have a low overall risk due to a safe market (soyabeans are sold under the support pricing system). Almost all the vegetable crops, except for potatoes, are more risky than conventional crops.

Rationale of Present Crop Mix

The basic difference between an entrepreneur and a conventional farmer is that the decisions of an entrepreneurial farmer are not taken on the basis of conventions or rule of thumb, although he attempts to maximise his returns and to minimise his risks. The behaviour of an

Box 4: Differences in the Perceptions of 'Promoters' and 'Growers'

Keshawanand Badhani, a school teacher and farmer from Siltoonawas village, was filled with wonder when he found that the soyabean yield was very high in his field. In 1979, he had sent for soyabean seeds from Bhabar. He was the first farmer to grow this crop in the Garampani area. Many farmers in the same year asked him for seeds. Next year, the State Agriculture Department began a programme to promote soyabean farming and very soon it became a popular late summer crop in this area. Farmers found this crop several times more profitable than *madua* (coarse millet), the conventional late summer crop.

Many government agencies and NGOs are trying to popularise soyabean cultivation in mountain regions because, one, it is a good source of vegetable protein and, two, it also enriches the soil through nitrogen-fixing. But, after 15 years of cultivating soyabeans, many farmers in the Garampani area have developed a negative attitude towards this crop because of the following reasons.

i) It reduces the water retaining capacity of the soil,
ii) It has increased the problem of white grubs (*Kurmula*),
iii) The yield of this crop decreases very sharply with repetitive cultivation

Because of these observations, farmers have reduced the share of soyabeans in their crop mixes. Now it is sown on less than 20 per cent of the area under cultivation during the late summer crop season.

The scientists from the Vivekanand Laboratory of Hill Agriculture, Almora, do not completely rule out the above-mentioned observations. However, they note that the reasons may be different. Diseases such as charcolrot or yellow mosain may be responsible for diminishing the yield and excessive nitrogen in the soil or a high rate of soil erosion may cause symptoms such as drought (i.e., reduced water retaining capacity), according to a senior scientist. These are only hypotheses, the actual reasons can only be ascertained after research. However, immediate attention should be given to this situation.

entrepreneurial farmer cannot be explained with the help of the simple two-factor portfolio theory, because, not only does he have to find an optimum trade-off between the absolute returns and risks of a particular crop, he also has to consider the inter-crop linkage and the linkages between crop mix and extra-farm activities. In this section, we will try to understand how the farmers in Garampani area are making decisions about their crop mixes.

As explained earlier, farmers are not trying to maximise their net gains, but they are trying to maximise their factor incomes. This is because they do not evaluate their own labour at market wage rates, which has otherwise almost zero opportunity cost. But at the same time they want to assure a reasonable return for their labour (i.e., value-added per labour hour). That is why crops generating a higher factor income per hour are more popular among farmers in their respective zones of cultivation, e.g., cauliflower and capsicum in zone one and two and chillies and potatoes in zone three

Risk is another factor affecting the crop mix. Tomatoes, once a very popular vegetable crop in this area, are losing their popularity because of high risk (particularly in marketing) and low returns (due to increased competition and packaging costs). Chillies can also be grown in all the zones, but farmers near the market prefer to cultivate green vegetables (capsicum) as they perceive a high marketing risk with chillies.

A careful analysis of the risk and return matrices of different vegetables suggests that the farmers give more weightage to the marketing risk than to the production risk. This is because the production risk is systematic and unidirectional, while the marketing risk is unsystematic. For example, if weather conditions are unfavourable during a particular crop season, they will affect more or less all the crops for that season adversely. Therefore, if a farmer cultivating peas has to bear a loss, the one growing wheat would not be in any better position. The crop mix decision has only a limited role in minimising risks in the case of such systematic risk. On the other hand, the unsystematic marketing risk can be avoided by a change in crop mix. For example, if the market prices of peas become unfavourable it would hardly have any affect on wheat growers. Because of these reasons, the crops with high marketing risks are less popular (e.g., chillies, tomatoes, and beans).

Farmers also evaluate the impact of a particular crop on the fertility of soil and yields of other crops. Although scientists advocate that soyabean increases the fertility of the land through nitrogen-fixing with the help of bacteria, after 15 years' experience in cultivating this crop, farmers have observed that soyabean reduces the water carrying capacity of the soil. They also feel that this crop is associated with the increasing problem of *Kurmula* (white grub), a very harmful pest in this area. Farmers have also experienced a very rapid decline in the productivity of soyabean when it is cultivated on the same land repeatedly. Therefore, they have developed a negative attitude towards this crop. Soyabean, which had once become the most popular late summer crop, is losing its share in the crop mix (see Box 4).

Farmers in this region have not completely discontinued the cultivation of food crops because of the following reasons.

i) Food crops provide them with conventional food, fodder, and other valuable joint products that are not generally available in the market.

ii) Commercial crops are more risky, in terms of both the production risk and market risk, than conventional crops. A share of conventional crops in the crop mix provides farmers with some protection against such risks.

iii) Commercial crops require a lot of labour and good quality organic manure and some water for micro-irrigation. Farmers have to grow conventional crops due to scarcity of these inputs.

iv) Farmers are mainly dependent for food grains on the Public Distribution System (PDS) which is not very reliable and efficient. Therefore, conventional crops provide them with protection against food scarcity.

v) Some lands are not suitable for vegetable growing and only conventional food grains can be grown on these marginal lands.

vi) Farmers have traditional attachment to food crops.

Macro-estimates of Production and Income

In order to evaluate the overall impact of commercialisation of agriculture in this area, estimates of the total production of different crops and income realised by farmers from their cultivation were made using the methodology given below.

i) The total area under cultivation in different zones was estimated.
ii) Assuming that the *'sari'* (part cultivated – part fallow) system is being followed, the total land under cultivation is divided into two parts, each part is equal to the total land under cultivation during a particular crop season.
iii) The proportion of land being cultivated with different crops during a particular crop season was estimated separately for all zones.
iv) Areas cultivated with different crops in different zones were arrived at on the basis of the estimated area in different crop seasons and the proportion of the area cultivated with a particular crop during that season. The total area cultivated with different crops was also calculated (Table 4.5).
v) Total production of different crops in the study area was estimated on the basis of area cultivated and productivity. The production estimates were revised by a 10 per cent omission allowance.
vi) Ex-farm Value (per kg) of different crops and Factor Income (per kg) realised by farmers were calculated from the data given in Table 3.3. Using these figures, the total ex-farm value of different crops cultivated in the area under study and the factor income generated by them were estimated (Table 4.6).
vii) The total factor income from the same land without commercialisation was also estimated using the same methodology as above, assuming that the total area cultivated during different crop seasons would have been used to grow conventional food grains if commercial crops had not been grown. These estimates have been presented in Table 4.7.

Table 4.6 shows that the total agricultural income of farmers in the area under study is Rs 356 *lakh*(s) out of which Rs 306 *lakh*(s) were earned by selling vegetable crops. Thus, farmers in the area derive 86 per cent of their agricultural income (excluding income from horticulture and animal husbandry) from vegetable crops. The estimated population as on 1st April 1997 was 9,271 and per capita agricultural income after commercialisation was Rs 3,840.

Table 4.7 shows that if there were no commercialisation of agriculture, the total factor income of farmers would have been only Rs 131 *lakh*(s) and, therefore, per capita agricultural income without commercialisation would have been only Rs 1,413 (Table 4.8). So, the per capita agricultural income of farmers in this area has increased 2.72 times through commercialisation.

Table: 4.5: Cultivated Area under Different Crops

	Agroclimatic Zones								TOTAL	
Zone	Z_1		Z_2		Z_3		Z_4			
Area (ha)	248.57		441.53		410.03		280.15		1380.28	
Area under actual cultivation (ha)	199.75		321.88		273.53		201.71		996.87	
Crops	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)
(A) *Rabi* (Winter)										
(1) Peas	80	79.90	45	72.42	28	38.29	40	40.34	46	230.95
(2) Wheat	20	19.98	55	88.52	72	98.47	60	60.52	54	267.49
Total	100	99.88	100	160.94	100	136.76	100	100.86	100	498.44
(B) *Kharif* (Early Summer Crops)										
(1) Capsicum	70	69.92	34	54.72	30	41.03	25	25.21	38	190.88
(2) Tomatoes	30	29.96	22	35.41	33	45.13	25	25.22	27	135.72
(3) Chillies	-	-	8	12.88	12	16.41	-	-	6	29.29
(4) Paddy	-	-	36	57.93	25	34.19	50	50.43	29	142.55
Total	100	99.88	100	160.94	100	136.76	100	100.86	100	498.44
(C) *Jaid* (Late Summer Crops)										
(1) Soyabean	-	-	40	48.28	14	19.15	20	20.17	18	87.60
(2) Beans	33	32.96	10	16.09	19	25.98	35	35.30	22	110.33
(3) Cauliflower	34	33.96	24	54.72	-	-	-	-	18	88.68
(4) Potatoes	33	32.96	-	-	17	23.25	14	14.12	14	70.33
(5) *Madua*	-	-	26	41.85	50	68.38	31	31.27	28	141.50
Total	100	99.88	100	160.94	100	136.76	100	100.86	100	498.44

Table: 4.6: Macro-Estimates of Return From Different Crops in Garampani Area

CROP	Area under cultivation (ha)	Productivity (kg/ha)	Production (Tonnes)	Revised* Production Estimate (Tonnes)	Ex-Farm Value (*lakh* Rs)	Factor Income (*lakh* Rs)
(A) Commercial						
1. Peas	230.95	5236	1209	1330	74	66
2. Capsicum	190.88	10437	1992	2191	110	73
3. Tomatoes	135.72	8335	1131	1244	29	31
4. Chillies	29.29	1235	36	40	14	10
5. Soyabean	87.60	1710	150	165	14	16
6. Beans	110.33	6220	686	755	30	26
7. Cauliflower	88.68	11931	1058	1164	53	39
8. Potatoes	70.33	10050	707	778	56	45
Total (A)	943.78	-	6969	7667	380	306
(B) Cereals						
1. Wheat	267.49	1324	354	390	20	19
2. Paddy	142.55	1746	249	274	10	14
3. *Madua*	141.50	1345	190	209	8	17
Total (B)	551.54	-	793	873	38	50
Grand Total	1495.32	-	7762	8540	418	356

** The production estimates are revised by a 10 per cent omission allowance.*

Table: 4.7: Macro-Estimates of Return From Different Crops in Garampani Area without Commercialisation

Crop	Area Under Cultivation (ha)	Revised Estimate of Production (Tonnes)	Factor Income (*lakh* Rs)
(1) Wheat	498.44	660	33
(2) Paddy	498.44	870	43
(3) *Madua*	498.44	670	55
Total	1495.32	2200	131

Table 4.8: Vegetable Farming in Garampani Area
Some Macro Estimates

1.	Area under cultivation of the vegetable crops (ha)	1038
2.	No. of families	1400
3.	Level of commercialisation (weighted average)	63%
4.	Total vegetable grown (in tonnes)	7667
5.	Ex-farm market value of vegetable crops (*lakh* Rs)	380
6.	Income generated through vegetable crops (*lakh* Rs)	306
7.	Per family ex-farm value of vegetable crops (Rs)	27,100
8.	Per capita annual income generated through vegetable crops (Rs)	3,301
9.	Present per capita annual income (Rs) (Excluding income from horti-culture and animal husbandry)	3,840
10.	Per capita income under conventional cropping system (Rs)	1,413
11.	Increase in per capita income due to vegetable crops	2.72 times