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Farming Systems Diversification in North Konkan Region of Maharashtra — An Economic Analysis[§]

S.R. Torane[a*], B.K. Naik[b], V.S. Kulkarni[b] and J.M. Talathi[a]

[a]Department of Agricultural Economics, Dr B.S.Konkan Krishi Vidyapeeth, Dapoli-415 712, Maharashtra
[b]Department of Agribusiness Management, University of Agricultural Sciences, Dharwad-580 005, Karnataka

Abstract

The location-specific existing farming systems have been studied for their profitability and extent of diversification in the North Konkan region of Maharashtra. The study is based on the primary data collected from 360 farmers, as well as secondary data on agro-climatic parameters. The study area has been delineated into different clusters/sub- regions using hierarchical agglomerative method. The farming in the North Konkan region has been found highly varied in nature. The enterprises being followed and farm situations are of different nature across different clusters. The farm economy has also depicted a wide variation as per-farm income has been found to range from ₹ 1135 to ₹ 218015 across different farming systems. The most profitable farming systems in study area are: (i) Paddy + Irrigated plantation + Betelvines (B:C ratio, 2.02), (ii) Paddy + Pulses + Dairying + Poultry (B: C ratio, 1.74), (iii) Paddy + Vegetables + Dairying (B:C ratio,1.62), (iv) Paddy + Irrigated plantations + Rainfed plantation + Dairying (B: C ratio,1.57), (v) Irrigated plantations + Dairying (B:C ratio,1.56), and (vi) Paddy + Irrigated plantations + Flowers (B:C ratio,1.42). The diversification has shown a positive co-relation with profitability which underlines the importance of combination of enterprises.

Key words: Farming systems, Agricultural diversification, North Konkan region, Farm economy, SPSS, Crop diversification index

JEL Classification: Q12, Q15

Introduction

Agriculture constitutes one of the most crucial sectors of Indian economy by virtue of its being the single largest contributor to national gross domestic product (GDP) which hovers around 18.5 per cent (Rajmani, 2007) of the total income and provider of employment to 59.2 per cent of the total workforce. With declining farm sizes, it is becoming increasingly difficult to produce enough food for the country. The progress in production or steady growth in output is necessary to meet the challenges posed by the present economic, political and technological environment. On the other hand, farmers need to be assured of regular income for a living at least above the poverty line. In this context, adoption of farming system approach is one of the important solutions to meet this peculiar situation because in the farming system approach different enterprises can be undertaken meaningfully and based on the available resources, location-specific systems can be developed which will result into sustainable agricultural development. In view of this, the paper has studied the location-specific existing farming systems, along with their profitability and extent of diversification in the North Konkan region of the Maharashtra state.

* Author for correspondence,
Email: srtorane@gmail.com

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Data and Methodology

The study was conducted in the North Konkan region, which is one of the agro-climatic zones of the Maharashtra state. It is based on the primary as well secondary data for the year 2006-07. The tahsil level secondary data for 23 different agro-climatic parameters were collected and the study area was delineated by applying cluster analysis. Hierarchical agglomerative method was used for delineation of the study area. The discriminent analysis was carried out for the verification of clusters in which cluster membership of tahsil was applied as a grouping variable. The Statistical Package for Social Science (SPSS) was used to carry out cluster and discriminent analyses. The study area was divided into five distinct clusters (Similar results were observed by Naik, 1998), out of which, four clusters were selected for the study. The fifth cluster comprising Mumbai and the adjoining urban area was dropped from the study. The primary data for 90 sample farmers (30 small, 30 medium, and 30 large) was collected for the year 2006-07 from each cluster. Thus, a total of 360 sample farmers were randomly selected for the study. These clusters were renamed as (i) Northern Coastal Plains, (ii) Southern Coastal Plains, (iii) Northern Central Plains & Hills, and (iv) Southern Central Plains & Hills. Simpson's diversification index was used to examine the extent of diversification in the farming systems as well as diversification across the crops (cropping systems). This index has a range from zero to one and increases with the extent of diversification.

Analytical Tools

Diversification Index for Farming System

$$Di = 1 - \frac{(\sum Si)^2}{(\sum S)^2}$$

where,

Di = Diversification index,
Si = Share of net income of the i^{th} enterprise in per farm net income, and
S = Per farm net income of a farming system.

Crop Diversification Index

$$Di = 1 - \frac{(\sum Si)^2}{(\sum S)^2}$$

where,

Di = Diversification index,
Si = Share of area of the i^{th} crop enterprise in gross cropped area, and
S = Gross cropped area.

The Pearson's correlation coefficient was used to assess the linkage between diversification index and profitability of the farming systems. Simple tabular analysis and standard cost concepts were used to work out the cost and returns of different enterprises.

Results and Discussion

Existing Farming Systems

The study area was delineated as per the results of cluster analysis and has been presented in Table 1. In the study area, a total of 26 farming systems were identified in different clusters or regions. Out of these, 21 farming systems were considered for the study as major farming systems (10 % or more farmers in a cluster). The listing of existing farming systems along with the number of farmers who had adopted them and the per cent area under each system have been depicted in Table 2.

Table 1. Delineation of study area on the basis of agro-climatic parameters

Cluster No.	Name of cluster	Tahsils
1	Northern Coastal Plains (NCP) region	Talasari, Dahanu, Palghar, Vasai
2	Northern Central Plains & Hills (NCPH) region	Vikramgadh, Jawhar, Mokhada, Wada, Bhivandi, Shahapur, Murbad
3	Southern Central Plains & Hills (SCPH) region	Panvel, Karjat, Khalapur, Pen, Sudhagadh, Mangaon, Tala, Mahad, Poladpur, Roha
4	Southern Coastal Plains (SCP) region	Uran, Alibag, Murud, Shrivardhan, Mhasala
5.	Central region (CR)	Thane, Ulhasnagar, Ambarnath, Kalyan

Table 2. Existing farming systems in North Konkan region

Farming system No.	Farming system	Number of farmers	Area (ha)
	Cluster – I: Northern Coastal Plains region		
FS–I	Paddy + Irrigated plantations + Dairying	27	53.73
FS–II	Paddy + Grass + Dairying + Goat rearing	15	17.25
FS-III	Paddy + Irrigated plantations + Flowers	14	26.46
FS-IV	Irrigated plantations + Dairying	13	14.56
FS- V	Paddy + Irrigated plantations + Betelvines	11	21.89
FS- VI	Paddy + Irrigated plantations + Poultry	6	6.78
FS-VII	Paddy + Flower + Dairying	4	3.20
Sub-total		90	193.87
	Cluster – II: Northern Central Plains & Hills region		
FS–I	Paddy + Other cereals + Rainfed plantations + Dairying	21	37.38
FS-II	Paddy + Other cereals + Dairying + Goat rearing	18	25.38
FS-III	Paddy + Pulses + Dairying	15	23.25
FS-IV	Paddy + Vegetables + Poultry	13	19.50
FS-V	Paddy + Grass + Dairying	12	26.6
FS-VI	Paddy + Goat rearing	5	8.21
FS-VII	Paddy + Other cereals + Oilseeds	4	5.4
FS-VIII	Paddy + Grass + Goat rearing	2	1.96
Sub-total		90	147.24
	Cluster – III: Southern Central Plains & Hills region		
FS-I	Paddy + Vegetables + Dairying	22	43.56
FS-II	Paddy + Dairying	19	33.35
FS-III	Paddy + Dairying + Goat rearing	17	21.59
FS-IV	Paddy + Pulses + Dairying + Poultry	15	23.55
FS-V	Paddy + Rainfed plantations + Dairying	11	34.87
FS-VI	Paddy + Pulses + Goat rearing	6	8.52
Sub-total		90	165.44
	Cluster – IV: Southern Coastal Plains region		
FS-I	Paddy + Rainfed plantations + Dairying	23	33.12
FS-II	Paddy + Irrigated plantations + Dairying	18	23.04
FS-III	Paddy + Irrigated plantations +Rainfed plantations + Dairying	13	34.58
FS-IV	Paddy + Irrigated plantations + Vegetables + Dairying	12	16.80
FS-V	Irrigated plantations + Dairying	10	8.50
FS-VI	Paddy + Irrigated plantations + Rainfed plantations + Poultry	9	19.71
FS-VII	Rainfed plantations + Poultry	4	4.92
FS-VIII	Paddy + Irrigated plantations	1	1.43
Sub-total		90	192.10
Grand total		360	698.65

It was observed from Table 2 that in the Northern Coastal Plains region the five farming systems being followed were: (i) Paddy + Irrigated plantations + Dairying (FS-I), (ii) Paddy + Grass + Dairying + Goat rearing (FS-II), (iii) Paddy + Irrigated plantations + Flowers (FS-III), (iv) Irrigated plantations + Dairying (FS-IV), and (v) Paddy + Irrigated plantations (FS-V). The paddy enterprise was being followed in all the farming systems, except FS-IV. In addition to paddy and irrigated plantations, farmers also followed flowers, betelvines and dairying, which indicated awareness among the farmers to implement market-oriented farm production in this region, as Mumbai market is near to this region.

The farming systems in the Northern Central Plains & Hills region were: (i) Paddy + Other cereals + Rainfed plantations + Dairying (FS-I), (ii) Paddy + Other cereals + Dairying + Goat rearing (FS-II), (iii) Paddy + Pulses + Dairying (FS-III), (iv) Paddy + Vegetables + Poultry (FS-IV), and (v) Paddy + Grass + Dairying (FS-V). In this region, along with paddy, other cereals, pulses and vegetables were being grown. The goat rearing was followed mainly by the tribal farmers, while some land was kept idle for the grass enterprise. It was due to the demand for grass as cattle feed on one side and scarcity of certain inputs with farmers to cultivate other crop enterprises on other side.

In the Southern Central Plains & Hills region, the five major farming systems being followed were: (i) Paddy + Vegetables + Dairying (FS-I), (ii) Paddy + Dairying (FS-II), (iii) Paddy + Dairying + Goat rearing (FS-III), (iv) Paddy + Pulses + Dairying + Poultry (FS-IV), and (v) Paddy + Rainfed plantations + Dairying (FS-V). In this region, paddy was grown during *kharif* as well as *rabi* seasons and paddy and dairying were the major enterprises undertaken by the farmers along with vegetables and poultry.

The farming systems followed in the Southern Coastal Plains region were: (i) Paddy + Rainfed plantations + Dairying (FS-I), (ii) Paddy + Irrigated plantations + Dairying (FS-II), (iii) Paddy + Irrigated plantations + Rainfed plantations + Dairying (FS-III), (iv) Paddy + Irrigated plantations + Vegetables + Dairying (FS-IV), (v) Irrigated plantations + Dairying (FS-V) and (vi) Paddy + Irrigated plantations + Rainfed plantations + Poultry (FS-VI). The irrigated plantations and rainfed plantations were the main enterprises followed in addition to paddy in this region due to the suitable agro-climatic situation for these crops.

Cost and Returns Structure

The cost and return structure of different farming systems was estimated for each region (clusters) independently. It has been presented in Tables 3 to 6 and discussed region-wise in the following sections.

Northern Coastal Plains Region

The farming systemwise cost and returns profile of the Northern Coastal Plains region has been presented in Table 3. The enterprises followed in FS-I

Table 3. Cost and returns structure of major farming systems followed in Northern Coastal Plains region

(₹/farm)

Particulars	FS – I	FS – II	FS – III	FS – IV	FS - V
Total variable cost (TVC)	77062	38439	89183	70751	122005
Total fixed cost (TFC)	32991	19737	35259	30359	90355
Total cost (TC)	110053	58176	124442	101110	212360
Output / Returns					
Returns from crops	130033	15015	177077	113595	430375
Dairying	37083	31707		45133	
Goat rearing		12652			
Gross returns	167116	59374	177077	158728	430375
Net returns at TC	57063	1198	52635	57618	218015
Returns on per rupee invested at TC	1.52	1.02	1.42	1.56	2.02
Crop diversification index	0.65	0.47	0.85	0.35	0.45
Farming system diversification index	0.45	0.42	0.90	0.45	0.26

Table 4. Cost and returns structure of major farming systems followed in Northern Central Plains & Hills region

(₹/farm)

Particulars	FS – I	FS – II	FS – III	FS – IV	FS - V
Total variable cost (TVC)	40814	48426	35323	301231	47163
Total fixed cost (TFC)	9629	8786	8440	47819	10010
Total cost (TC)	50443	57212	43763	349050	57173
Output / Returns					
Returns from crops	40716	18029	35043	96263	24278
Dairying	24195	31494	19422		43919
Poultry				347898	
Goat rearing		16371			
Gross returns	64911	65894	54465	444161	68197
Net returns at TC	14468	8682	10702	95111	11024
Returns on per rupee invested at TC	1.29	1.15	1.24	1.27	1.19
Crop diversification index	0.60	0.26	0.60	0.47	0.50
Farming system diversification index	0.65	0.32	0.60	0.61	0.36

were paddy, sapota, coconut, arecanut, banana and dairying. The per farm total cost was ₹ 110053 and gross returns were ₹ 167116. The net returns at total cost were ₹ 57063/farm, resulting into returns on per rupee invested at total cost to be ₹ 1.52. The components of FS-II were paddy, grass, dairying and goat rearing. The per farm total cost was ₹ 58176 and per farm gross returns were ₹ 59374. The net returns over total cost were just ₹ 1198/farm, resulting into low returns on per rupee invested at total cost (₹ 1.02). In FS-III, the total cost was worked out to ₹ 124442/ farm and net returns over total cost were ₹ 52635/ farm. The farmers following FS-IV were engaged in cultivation of sapota, coconut and arecanut crops along with maintaining the dairy animals. The per farm gross returns were worked out to be ₹ 158728. The net returns over total cost were ₹ 57618/farm, resulting into returns on per rupee invested at total cost to be ₹ 1.56. The enterprises followed in FS-V were paddy, coconut, betelvines and arecanut. The per farm total variable cost was ₹ 122005. The total cost was worked out to be ₹ 212360. The per farm gross returns amounted to ₹ 430375 and returns on per rupee invested at total cost were ₹ 2.02.

Among the farming systems followed in the Northern Coastal Plains, the per farm net returns over total cost were maximum in FS-V (₹ 218015), followed by FS-IV (₹ 57618), and FS-I (₹ 57063). Similar results were obtained by Chipte (1997). The net returns per rupee invested at total cost were worked out to be ₹ 2.02 in FS-V, followed by ₹ 1.56 (FS-IV), ₹ 1.52 (FS-I), ₹ 1.42(FS-III) and ₹ 1.02(FS-II). The net returns per rupee invested were maximum in FS-V (₹ 2.02) which was mainly due to betelvine crop, indicating high profitability of the system. It can be concluded that the in North Coastal Plains, the farmers following the farming system paddy + irrigated plantations + betelvines (FS-V) were getting more profit than the farmers following other farming systems. However, it was observed that there were spatial limitations for this system, because this system could not be followed in whole of the region due to the requirement of specific climatic conditions. In the Northern Coastal Plains region, FS-I, FS-III and FS-IV have also shown a higher profitability.

Northern Central Plains & Hills Region

The enterprises followed in FS-I were paddy, fingermillet, mango, cashewnut, prosomillet and dairying. The per farm gross returns from various enterprises amounted to ₹ 64911. The returns on per rupee invested at total cost were ₹ 1.29. In FS-II, the enterprises were paddy, fingermillet, prosomillet, goat rearing and dairying. The per farm total cost and gross returns were worked out to be ₹ 57212 and ₹ 65894, respectively, resulting into net returns of ₹ 8682. The returns on per rupee invested at total cost were ₹ 1.15. The FS-III consisted enterprises such as paddy, black gram, cowpea, wal, green gram and dairying. The per farm total cost and gross returns were ₹ 43763 and

Table 5. Cost and returns structure of major farming systems followed in Southern Central Plains & Hills region

(₹ / farm)

Particulars	FS – I	FS – II	FS – III	FS – IV	FS - V
Total variable cost	54608	35492	38626	242220	71413
Total fixed cost	19912	7474	8569	24728	18030
Total cost (TC)	74520	42966	47195	266948	89443
Output / Returns					
Returns from crops	90015	24143	17162	29561	62246
Dairying	30706	19958	31810	32349	54958
Poultry				403152	
Goat rearing			10037		
Gross returns	120722	44101	59009	465062	117204
Net returns at TC	46202	1135	11814	198113	27761
Returns on per rupee invested at TC	1.62	1.03	1.25	1.74	1.31
Crop diversification index	0.71	0.44	0.27	0.59	0.58
Farming system diversification index	0.75	0.12	0.38	0.13	0.53

₹ 54465, respectively while returns on per rupee invested at total cost were ₹ 1.24. In FS-IV, enterprises followed were: paddy, brinjal, lady's finger and poultry. The total variable cost and total fixed cost amounted to ₹ 301231 and ₹ 47819, respectively with gross returns as ₹ 444161. The FS-V comprised following enterprises: paddy, grass and dairying. The per farm total cost was ₹ 57173 and gross returns were ₹ 68197. The net returns at total cost were maximum in FS–IV (₹ 95111), followed by FS-I (₹ 14468); this indicated that the farmers who followed FS-IV earned more from farming. It was also revealed that in FS-II and FS-V, the subsidiary enterprises like dairying and goat-rearing were playing important role in improving the economic condition of tribal farmers, because even if the net amount realized by the farmers was less, considering their asset position and paid out costs, the income earned under these farming system was highly supportive to them. It could be concluded that the area under rainfed plantations, number of dairy animals and number of poultry birds need to be increased to improve net returns of different farming systems in this region.

Southern Central Plains & Hills Region

The farmers following FS-I in this region undertake enterprises like paddy, bottle gourd, tomato, brinjal, smooth gourd, lady's finger, chilli and dairying. The per farm total variable cost and total cost were worked out to be ₹ 54608 and ₹ 74520, respectively (Table 5). The per farm gross returns were ₹ 120722 and returns on per rupee invested at total cost were ₹ 1.62. In FS-II, paddy and dairying enterprises were being undertaken. The per farm total cost and gross returns were ₹ 42966 and ₹ 44101, respectively. The per farm net returns at total cost were very low (₹ 1135) in this system. The enterprises followed under FS-III were paddy, dairying and goat rearing. The per farm total cost and gross returns were ₹ 47195 and ₹ 59009, respectively resulting into net returns of ₹ 11814 and net returns per rupee invested at total cost as ₹ 1.25. In FS-IV, the farm enterprises paddy, cowpea, wal, gram, green gram, dairying and poultry were being followed. The per farm total cost was worked out to be ₹ 266948 with gross returns of ₹ 465062. In FS-V, enterprises observed were paddy, mango, cashew and dairying.

It was revealed that inclusion of poultry and vegetable crops in the farming system had increased the cost relatively less and provided more net returns as compared to other enterprises. The per farm gross returns and total cost were ₹ 117204 and ₹ 89443, resulting into net returns of ₹ 27761. The net returns per rupee were ₹ 1.31. The vegetables, dairying, and poultry enterprises had more share in income, indicating the necessity of their inclusion in the farming system. The gross returns were maximum in FS-IV (₹ 465062), followed by FS-I (₹ 120722), FS-V (₹ 117204), FS-III (₹ 59009) and FS-II (₹ 44101). The returns on per rupee invested in farming systems ranged from ₹ 1.03 in FS-II to ₹ 1.74 in FS-IV. It was also observed that FS-IV and FS-I were highly profitable farming systems

Table 6. Cost and returns structure of major farming systems followed in Southern Coastal Plains region

(₹/farm)

Particulars	FS – I	FS – II	FS – III	FS – IV	FS - V	FS - VI
Total variable cost	42883	50067	80227	92434	38432	449977
Total fixed cost	12189	14447	31725	30885	12568	37795
Total cost (TC)	55072	64514	111952	123319	51000	487772
Output / Returns						
All crops	44829	45261	116688	140799	44456	84836
Dairying	34114	43674	59519	44860	24032	
Poultry						48639600
Gross returns	78943	88935	176207	185659	68487	571232
Net returns at TC	23871	24421	64255	62340	17487	83460
Returns on per rupee invested at TC	1.43	1.38	1.57	1.51	1.34	1.17
Crop diversification index	0.59	0.54	0.75	0.78	0.36	0.75
Farming system diversification index	0.55	0.63	0.72	0.78	0.47	0.54

in this region, while FS-II was found to be the least economical system.

Southern Coastal Plains Region

The farmers following FS-I (Table 6) had undertaken enterprises of paddy, mango, coconut and dairying in this region. The gross return were ₹ 78943 and the returns on per rupee invested at total cost were ₹ 1.43. In FS-II, enterprises such as paddy, coconut, arecanut and dairying were being undertaken by the farmers. The net returns over total cost were ₹ 24421 and returns per rupee invested at total cost were ₹ 1.38. The components of FS-III were paddy, coconut, arecanut, mango, cashew and dairying. The per farm total cost was ₹ 111952. The FS-IV consisted of enterprises like paddy, arecanut, coconut, brinjal, smooth gourd, bottlegourd and dairying. The per farm gross returns and total cost were ₹ 185659 and ₹ 123319, respectively. The per farm net income was ₹ 62340 and returns per rupee invested were ₹ 1.51. The components of FS-V were coconut, arecanut and dairying. The per farm gross returns were ₹ 68487 and returns on per rupee invested at total cost were ₹ 1.34. The farmers following FS-VI had undertaken farm enterprises such as paddy, coconut, arecanut, mango, cashew and poultry. The per farm gross returns were ₹ 571232 and net returns over total cost were ₹ 83460, resulting into returns on per rupee invested at total cost as ₹ 1.17.

Among the different farming systems in the region, per farm gross returns were maximum in FS -VI (₹ 571232), followed by FS -IV (₹ 185659) and FS-III (₹ 176207). The returns on per rupee invested were maximum in FS -III (₹ 1.57), followed by FS-IV (₹ 1.51), FS-I (₹ 1.43), FS-II (₹ 1.38), FS-V (₹ 1.34) and FS-VI (₹ 1.17). It was revealed that though the gross income and per farm net returns were higher in FS-VI than the other farming systems, the returns on per rupee invested were less, indicating operation of economies of scale.

A comparison of economics of identical farming systems across the regions suggested that FS-I and FS-IV in the Northern Coastal Plains region were more profitable compared to the similar systems, viz. FS-II and FS-V in the Southern Coastal Plains region. The net returns per rupee invested were also higher in the Northern Coastal Plains region than in the Southern Coastal Plains region in both these systems. Similarly, FS-5 of the Southern Central Plains & Hills region had marginally higher net returns over the FS-1 in Southern Coastal Plains region. However, the net returns per rupee in both the regions were at par in this farming system.

Crop Diversification

The crop diversification index was found to range from 0.26 to 0.85. The value of diversification index was maximum in FS-III (Cluster-I) in which paddy, irrigated plantations, and flowers were grown, followed by FS-IV in Cluster IV (0.78) in which paddy, irrigated plantations and vegetables were undertaken. A positive linkage was found between diversification index and

profitability, as the correlation coefficient was worked out to be 0.23.

Diversification of Farming Systems

The diversification index of farming systems ranged from 0.12 to 0.90, indicating a wide variation in distribution of per-farm income. The maximum diversification was found in Paddy + Irrigated plantations + Flower farming system in cluster-I, followed by Paddy + Irrigated plantations + Vegetables + Dairying farming system in cluster-IV. In all the farming systems, 52 per cent (11) were found to be the diversified farming systems in the study area. Similar results were obtained by Talathi (2002) in case of fruits and vegetable crops in the Thane district of Maharashtra. Across regions, diversification index of farming systems in the Southern Coastal Plains was found to be higher in most of the farming system, while it was lower in the Southern Central Plains & Hills region. At the overall level, the extent of diversification was higher in the Southern Coastal Plains region and Northern Coastal Plains region than in Southern Central Plains & Hills and Northern Central Plains & Hills regions. It indicated that the area which was nearer to the sea coast had higher diversification than the area away from the sea coast due to the advantage of appropriate microclimate and suitable topographic situations.

Conclusions and Policy Implications

The study has revealed that farming in the North Konkan region is highly varied in nature. The enterprises being followed and farm situations are of different nature across the identified clusters. The farm economy has also depicted a wide variation as per farm income has been found to range from Rs 1135 to Rs 218015 across different farming systems. The most profitable farming systems identified in the study area are: (i) Paddy + Irrigated plantation + Betelvines (B:C ratio, 2.02), (ii) Paddy + Pulses + Dairying + Poultry (B:C ratio, 1.74), (iii) Paddy + Vegetables + Dairying (B:C ratio,1.62), (iv) Paddy + Irrigated plantations + Rainfed plantation + Dairying (B:C ratio,1.57), (v) Irrigated plantations + Dairying (B:C ratio,1.56), and (vi) Paddy + Irrigated plantations + Flowers (B:C ratio, 1.42).

The region-specific farming systems need to be focused and promoted. The study has identified the following farming systems across different regions: (a) Northern Coastal Plains region: (1) Paddy + Irrigated plantations + Dairying, and (2) Paddy + Irrigated plantations + Flowers, (b) Northern Central Plains & Hills region: (1) Paddy + Other cereals + Rainfed plantation + Dairying, and (2) Paddy + Vegetables + Poultry; (c) Southern Central Plains & Hills region: (1) Paddy + Vegetables + Dairying, and (2) Paddy + Rainfed plantations + Dairying, and (d) Southern Coastal Plains: (1) Paddy + Rainfed plantation + Dairying, and (2) Paddy + Irrigated plantations + Rainfed plantation + Dairying. Of the total farming systems in the study area, 52 per cent have been found as the diversified farming systems. Also, the area which is nearer to the sea coast has shown higher diversification than the area away from the sea coast. The diversification has revealed a positive co-relation with profitability which underlines the importance of combinations of enterprises.

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