

Factors Affecting Gross and Net Income of Farmers in Different Farming Systems

Y.K. Sharma¹, G.S. Bangarva² and S.K. Sharma³

1. STA (Ext. Edu.), 2. Asso. Prof. (Ext. Edu.), SKN College of agriculture, Jobner, 3. Dy. Director, RAU, Bikaner

ABSTRACT

The present investigation was conducted in Dausa district of Rajasthan to study the factors affecting the gross and net income of farmers in different farming system. Education and extension contact have emerged out as the most important factor affecting annual gross income of crop farming system while cast, family type and transport facility have affected significantly the annual net income of crop farming system. Similarly, age cast and size of land holding were the important factor determining annual gross income of Crop + Labour farming system. However, family size positively and significantly and size of land holding negatively correlate in annual net income of Crop + Labour farming system. In the same way herd size was a significant factor in annual gross income of Crop + Dairy farming system. It was interesting to note that all the variables under study were non significantly correlated with annual net income of Crop + Dairy farming system. Family type and size of land holding were positively significant in annual gross income of Crop + Vegetable farming system and extension contact found positively significant correlate in annual net income of Crop + Vegetable farming system.

Key words: Farming system; Crop farming system; Labour farming system; Dairy farming system; Vegetable farming system

Agriculture is the backbone of national economy. Although the country has become self sufficient in production of food grains by virtue of green revolution, the small and marginal farmers have not been able to reap the real benefits of the productivity. Most of the areas in our country suffer almost every year from one or other forms of natural calamities like flood, unseasonable heavy rains or drought. Further, the pressure on the available agriculture land is increasing due to growing urbanization, population explosion and subsequent fragmentation of land. Our country has achieved breakthrough in food grain, milk, egg and vegetable production since advent of planning in 1951, India has achieved all time high food grain production of 211.78 million tones (2006-07), milk production of 90.7 million tones and vegetable production of 91.6 million tones in 2004-05. However, there still exists yawning gap between actual production and the potential in at above mentioned fields.

In view of the above facts there is strong need felt to commercialize agriculture and in order to ensure an all round development of farming families farming should be considered as a system in which crop and other enterprises that are compatible and complimentary are combined together. It should include all components of land such as soil, water, crop livestock, labour and other resources. The study of farming system and application of farming system approaches and bring a ray hope for

the betterment of farmers. In this manner in present study four farming systems namely Crop, Crop + Labour, Crop + Dairy and Crop + Vegetable have been identified which were prevailing in the area of investigation. Acceptance of a particular farming system is dependent on many factors. Hence, in this present investigation, it was tried to know the important variables which could affect the particular acceptance of farming system.

METHODOLOGY

The present investigation was conducted in Dausa district of Rajasthan a sample of 360 farmers comprising of all the three categories namely marginal, small and big farmers was selected randomly from 15 villages of three tehsils in the district. Multiple regression technique was used to know the individual and combined influence of the selected independent variables over annual gross and net income.

There were two dependent variables namely annual gross income and annual net income obtained from various farming systems under study. Similarly there were 14 independent variables namely age, cast, family type, education, size of land holding, house and farm building, farm machinery and power, transport facility, information and recreation facility, herd size, family size, source of energy, social participation and extension contact which could affect these systems.

RESULT AND DISCUSSION

Factor affecting annual gross income of crop farming system with selected independent variables : The individual and combined influence of the selected independent variables over annual gross income was assessed by applying multiple regression technique. Table 1 explained that all the 14 independent variables taken together explained to the extent of 20.75 percent of variation for crop farming system. The respective 'F' value was 1.7393 at 14 and 93 degree of freedom which was non-significant. Thus the result implied that all the 14 variables would not account for a significant variation for annual gross income of crop farming system.

Further it was also observed that 't' test of significance expresses that coefficient of regression 'b' value for annual gross income was significantly correlated with 'Education (X4)' at 5 per cent level of significance and the 'Extension contact' (X14) at 1 per cent level of significance. It could be inferred that these two independent variables have exerted influence on annual gross income in crop farming system.

Coefficient of regression 'b' value were non-significant for rest of the twelve independent variable in gross income namely Age, Caste, Family type, Size of land holding, House and farm building, Farm machinery and power, Transport facility, Information and recreation facility, Herd size, Family size, Source of energy and Social participation.

Table 1 : Factors affecting annual gross and net income from Crop farming system

N=107

S. No.	Independent variables	Annual gross income			Annual net income		
		b value (R.Cof.)	S. Error of b	't' value	b value(R. Cof.)	S. Error of b	't' value
1	Age	299.9444	267.4307	1.1215	293.1450	274.3956	1.0683
2	Caste	-756.2301	2591.0846	-0.2918	-6299.2098	2658.5658	-2.3694*
3	Family type	4477.3497	7422.6401	0.6032	6934.8303	7615.9524	0.9105*
4	Education	7873.6110	3402.6711	2.3139*	8745.7818	3491.2889	2.5050
5	Size of land holding	-649.5757	433.9154	-1.4970	-573.0349	445.2161	-1.2870
6	House & farm building	624.7157	1736.8108	0.3596	1224.3210	1782.0436	0.6870
7	Farm machinery & power	-6.4139	250.3214	-0.0256	149.6780	256.8470	0.5827
8	Transport facility	1096.3474	1447.5964	0.7573	5845.6457	1485.2971	3.9356**
9	Information & recreation facilities	-261.6109	816.1969	-0.3205	-451.8720	837.4536	-0.5395
10	Herd size	-1767.2374	2107.5935	-0.838	-3066.6472	2162.4818	-1.4181
11	Family size	935.7827	766.4223	1.2209	863.4478	786.3827	1.0979
12	Source of energy	1414.4144	1249.0031	1.1324	329.5968	1281.5316	0.2571
13	Social participation	-4706.9597	4893.1545	-0.9619	-6400.5882	5020.5899	-1.2748
14	Extension contact	3084.2186	1055.5968	2.9217**	-1844.5188	1083.0884	-1.7030
		R ² =	0.2075		R ² =	0.3693	
		F =	1.7393		F =	3.8906	
		df =	14, 93		df =	14, 93	

*Significant at 5% level of significance **Significant at 1% level of significance

Table-2 : Factors affecting annual gross and net income from Crop + Labour farming system

N=97

S. No.	Independent variables	Annual gross income			Annual net income		
		b value (R.Cof.)	S. Error of b	't' value	b value(R. Cof.)	S. Error of b	't' value
1	Age	406.5223	176.3644	2.3050**	234.2659	168.8193	1.4043
2	Caste	9062.2672	2901.0591	3.1237**	5185.9048	2744.0508	1.8898
3	Family type	-1107.8259	6442.0946	-0.171967	-9679.2641	-6093.44	-1.5884
4	Education	-2862.6475	3241.6746	-0.8830	-5433.3954	3066.2318	-1.7720
5	Size of land holding	-9618.0618	4000.5546	-2.4041**	-3046.6023	3784.0405	-8.8051**
6	House & farm building	-716.0724	1462.1301	-0.4897	1387.1983	1382.9982	1.0030
7	Farm machinery & power	311.2061	264.9214	1.1747	417.9805	250.5836	1.6680
8	Transport facility	-210.7317	1691.7951	-0.1245	-972.1929	1600.2334	-0.6075
9	Information & recreation facilities	-510.5504	1117.1811	-0.4337	-648.2596	11113.4709	-0.5821
10	Herd size	2297.7539	1798.3236	1.2777	-1008.4769	1700.9964	-0.5928
11	Family size	834.5868	629.4276	1.3259	2160.1160	595.3624	3.6282**
12	Source of energy	182.3544	1093.9950	0.1666	1549.0902	1034.7869	1.4970
13	Social participation	-579.9948	3335.0996	-0.1739	-953.0476	3154.6005	-0.3021
14	Extension contact	204.6494	930.1319	0.2200	47.9209	879.7922	0.0544
		R ² =	0.2474		R ² =	0.3265	
		F =	1.9493		F =	2.8750	
		df =	14, 83		df =	14, 83	

*Significant at 5% level of significance **Significant at 1% level of significance

Factors affecting annual net income of Crop farming system with selected independent variables : A close study of the data in the Table no. 1 explained that all the 14 independent variable taken together explained to the extent of 36.93 percent of variation for crop farming system. The respective 'F' value was 3.8906 at 14 and 93 degree of freedom which was significant at 1 per cent level of significance. Thus, the result implied that all the 14 variables would account for significant variation for annual net income of crop farming system.

Further examination of the data in Table 10 shows that the multiple regression b value of the independent variables. Caste, family type were found significant at 5 per cent level of significance and transport facility was found significant at 1 per cent level of significance. Coefficient of regression b value were non-significant for other independent variables namely Age, Education, Size of land holding, House and farm building, Farm machinery and power (X7), Information and recreation facility (X9), Herd size (X10), Family size (X11), Source of energy, Social participation, and Extension contact.

Factors affecting annual gross income of Crop + Labour farming system with selected independent variables : A close study of the data in the Table no. 2 explained that all the independent variables taken together explained to the extent of 24.74 % variation in the annual gross income obtained from Crop + Labour farming system. The respective 'F' value was 1.9493 at 14 and 83 degree of freedom which was significant at 5 per cent level of significance. Thus, the result implied that all the 14 variables would account for significant variation in annual gross income of Crop + Labour farming system. Further, it was also observed that 't' test of significance expresses that coefficient of regression (b value) for annual gross income was significantly correlate with only three variables Age, Caste and size of land holding at 1 per cent level of significance. It could be inferred that three independent variable have exerted significant influence on annual gross income in farming system Crop + Labour. Coefficient of regression 'b' value were non significant other independent variable.

Factors affecting annual net income of Crop + Labour farming system with selected independent variables : Table 2 depicts that all the fourteen independent variables taken together explained to the extent of 32.65 percent variation in the annual net income obtained from Crop + Labour farming system. The calculated value of 'F' was 2.870, which were found significant at 1 per cent level of significance at 14, 83 degree of freedom.

Thus the result implied that all the fourteen independent variables would account for significant variation in the annual net income from Crop + Labour farming system. A further examination of the data in Table 2 shows that the multiple regression coefficient

b value of the independent variable namely Size of land holding, Family size found significant at 1 per cent level of significance. The Size of land holding and Family size variables were more important for predicting the annual net income in farming system Crop + Labour.

Factors affecting annual gross income of Crop + Dairy farming system with selected independent variable : A close study of the data in the Table no. 3 explained that all the fourteen selected independent variables taken together explained to the extent of 40% variation in the annual gross income obtained from Crop + Dairy farming system. The respective 'F' value was 1.8098 at 14 and 38 degree of freedom which was non-significant at 5 per cent level of significance. Thus, the result implied that all the fourteen variables would not account significant variation in annual gross income of Crop + Dairy farming system.

Further, it was also observed that 't' test of significance expresses that coefficient of regression 'b' value for annual gross income was significantly correlated with one independent variable i.e. herd size at 1 per cent level of significance. It could be inferred that this one independent variable have exerted significant influence on annual gross income in farming system Crop + Dairy.

Factors affecting annual net income of Crop + Dairy farming system with selected independent variables : A close study of the data in the Table 3 explained that all the fourteen selected independent variable taken together explained to the extent of 28.21 % variation in the annual net income obtained from Crop + Dairy farming system. The respective 'F' value was 1.0667 at 14 and 38 degree of freedom which was non-significant at 5 per cent level of significance. Thus, the result implied that all the fourteen variables would not account significant variation in annual net income of Crop+ Dairy farming system. Further, it was also observed that 't' test of significant expresses that coefficient of regression 'b' value for annual net income was non-significant for all the fourteen independent.

Factors affecting annual gross income of Crop + Vegetable farming system with selected independent variables : Table 4 depicts that all the fourteen independent variables taken together explained to the extent of 47.5% variation for annual gross income from Crop + Vegetable farming system. The calculated value of 'F' was 0.8422 at 14 and 13 degree of freedom which was found non-significant. Thus the result implied that all the fourteen independent variables would not account for significant variation in the annual gross income from Crop + Vegetable farming system.

A further examination of the data in the Table 4 shows that the multiple regression coefficient b value of the independent variable namely family type found significant at 1 per cent level of significance and size of land holding found significant at 5% level of probability.

Table-3: Factors affecting annual gross and net income from *Crop+Dairy* farming system

N=52

S. No.	Independent variables	Annual gross income			Annual net income		
		b value (R.Cof.)	S. Error of b	't' value	b value(R. Cof.)	S. Error of b	't' value
1.	Age	508.1250	414.9012	1.2246	62.0744	251.1802	0.2471
2	Caste	7343.8178	4465.8957	1.6444	992.7283	2703.6426	0.3671
3	Family type	-3231.3400	14411.8907	-0.2242	-7577.1253	8724.9241	-0.8684
4	Education	7168.1678	5858.7920	1.3258	4955.3996	3546.8986	1.3971
5	Size of land holding	-672.8990	2094.9660	-0.3211	-2415.4902	1268.2874	-1.9045
6	House & farm building	-3356.2139	3059.3362	-1.0970	928.9573	1852.1148	0.5015
7	Farm machinery & power	319.2185	404.2348	0.7896	460.3350	244.7228	1.8810
8	Transport facility	-5910.1709	2907.9022	-2.0324	-459.6912	1760.4370	-0.2611
9	Information & recreation facilities	-3766.5961	2437.9648	-1.5449	-1980.8967	1475.9380	-1.3421
10	Herd size	11208.5605	2731.1278	4.1040**	3129.7493	1653.4182	1.8928
11	Family size	120.2265	1454.9359	0.0826	-255.3897	880.8147	-0.2899
12	Source of energy	-83.0358	2394.0124	-0.0346	-1898.0684	1449.3293	-1.3096
13	Social participation	13846.8930	9805.5989	1.4121	11221.0961	5936.2861	1.8902
14	Extension contact	-90.0589	2366.1985	-0.0380	109.7170	1432.4909	0.0765
	R ² =	0.4000			R ² =	0.2821	
	F =	1.8098			F =	1.066752	
	df =	14, 38			df =	14, 38	

*Significant at 5% level of significance

**Significant at 1% level of significance

Table-4 : Factors affecting annual gross and net income from *Crop+Vegetable* farming system

N=27

S. No.	Independent variables	Annual gross income			Annual net income		
		b value (R.Cof.)	S. Error of b	't' value	b value(R. Cof.)	S. Error of b	't' value
1	Age	-236.9584	303.7390	-0.7801	-320.9895	162.9107	-1.9703
2	Caste	6233.4803	5390.5753	1.1563	3545.3656	2891.2411	1.2262
3	Family type	39786.8935	12524.9715	3.1766**	9665.7729	6717.7826	1.4388
4	Education	998.5518	5944.1457	0.1679	790.1446	3188.1493	0.2478
5	Size of land holding	4861.9582	1899.6122	2.5594*	1936.8396	1018.8591	1.9009
6	House & farm building	-2897.0022	3799.3091	-0.7625	-15.3559	2037.7637	-0.0075
7	Farm machinery & power	-390.2015	492.7079	-0.7919	-426.15457	264.2644	-1.6126
8	Transport facility	-407.5870	3635.1029	-0.1121	315.7083	1949.6915	0.1619
9	Information & recreation facilities	-1849.8046	2433.9865	-0.7599	513.4924	1305.4714	0.3933
10	Herd size	-2124.0577	4101.3262	-0.5178	1279.5201	2199.7509	0.58186
11	Family size	-2314.2431	1999.9680	-1.15714	408.0197	1072.6851	0.3803
12	Source of energy	3149.1575	1637.1847	1.9235	982.9425629	878.1058	1.1193
13	Social participation	3340.0746	11232.8870	0.2973	-2208.4673	6024.7716	0.3665
14	Extension contact	2609.5477	2122.4272	1.2295	2566.1341	1138.3662	2.2542*
	R ² =	0.4756			R ² =	0.6563	
	F =	0.84226			F =	1.773167	
	df =	14, 13			df =	14, 13	

*Significant at 5% level of significance

**Significant at 1% level of significance

Coefficient of regression 'b' value were non-significant for rest of the 12 independent variables namely Age, Caste, Family education, House farm building. Farm machinery and power, Transport facility, Information and recreation facility, Herd size, Family size, Source of energy, Social participation, and Extension contact.

Factors affecting annual net income of Crop + Vegetable farming system with selected independent variables : A close study of the data in the Table 4 explained that all the fourteen selected independent variable taken together explained to the extent of 65.63 percent variation in the annual net income obtained from Crop + Vegetable farming system. The respective 'F' value was 1.7731 at 14 and 13 degree of freedom which was non-significant at 5% level of probability. Thus, the result implied that all the 14 variables would not account significant variation in annual net income of Crop + Vegetable farming system.

Further, it was also observed that 't' test of probability express that coefficient of regression 'b' value for annual net income was significantly correlated with Extension contact at 5 per cent level of significance. It could be inferred that one independent variable have exerted significance influence on annual net income of Crop + Vegetable farming system. Coefficients of regression 'b' value were non-significant for rest of the 13 independent variable. The results so arrived may be due to the fact that those farmers who have higher extension contact have better understanding than farmer who has less extension contact.

CONCLUSION

In the present study two dependent variables namely annual gross and net income of different farming system and 14 independent variables namely age, caste, family type, education, size of land holding, house and farm building, farm machinery and power, transport facility, information and recreation facility, herd size, family size, source of energy, social participation and extension contact were taken. From foregoing narration, it may be deduced that the size of land holding possessed by respondent is most important variables affecting annual gross and net income obtained from various farming system. On the contrary the variables namely house and farm building, farm machinery and power, information and recreation facility source of energy and social participation did not affect significantly either the gross income or the net income from the farming system. The direct influence of these variables could not be observed in the present investigation, however, the indirect effect of these variables over gross income and net income is a matter of future study. Since the education and extension contact were positively and significantly correlated with annual gross income of crop farming system. Therefore, literacy programme needed to strengthen and extension agencies should conduct more trainings and demonstrations to equip the farmers about improved practice of crop farming system and primary education should made compulsory for children.

REFERENCES

1. Asiwai, K.C. (2004). Problems, prospects and management of groundnut-wheat cropping system in Jaipur region of Rajasthan. *Ph.D. Thesis*, R.A.U., Bikaner, Campus: SKN COA, Jobner.
2. Choudhary, M. (1999). "A study on knowledge and adoption of improved cultivation practices of mothbean in Bikaner district of Rajasthan." *M.Sc. (Ag.) Thesis*, R.A.U., Bikaner, Campus : S.K.N. COA, Jobner.
3. Chauhan, S.K. and Moorti, T.V. (1993). Income expenditure, savings and investment behaviour on tribal hill sheep farm in Himachal Pradesh. *Indian Journal of Hill Farming* **6** (2) :159-165.
4. Murthy, R. (1990). Factors associated with the knowledge of cotton growers of Gunter district (A.P.). *Mah. J. Ext. Edu.*, **9** : 181-184.
5. Sagar, R.L. and Dohare, R.S. (2000). Adoption of health care in goat as related to some situational, socio-economic and extension characteristics of goat farmers. *IJSR*, **6** (1) : 36-41.
6. Singh, H. (1992). A study of farming systems amongst farmers in Mewat Area of India. *Ph.D. Thesis*, R.A.U., Bikaner, Campus : R.C.A., Udaipur.
7. Singh, K., Singh, J.P. and Singh, P. (1998). Adoption behaviour of small farmers in Bharathpur district of Rajasthan. *Raj. J. Ext. Edu.*, **7**: 6-93.
8. Singh, L. (1995). Resource management for rice-wheat management in Haryana. *Ph.D. Thesis*, HAU, Hisar.
9. Tyagi, K.C. and Sohal, T.S. (1984). Factors associated with adoption of dairy innovation : *IJEE*, **20** : 1-6.