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SOCIO-ECONOMIC PERSPECTIVES TOWARDS VERMICOMPOST TECHNOLOGY

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Abstract: *India is the second most populous country in the world. With the increasing population, the cultivable land resource is shrinking day to day. To meet the food, fiber, fuel, fodder and other needs of the growing population, the productivity of agricultural land and soil health needs to be improved. By increasing rice production significantly, green revolution has been the most remarkable technology in Asian countries. However, it also has negative impact on human health and the environment such as pesticide residues and land degradation. Therefore, organic farming, that does not use chemo-synthetic inputs, has become one of the alternatives, and through maintaining harmony with nature, it can be the means to achieve sustainable agriculture. A study was conducted in 2011-12 in Guntur district of Andhra Pradesh. The findings revealed that majority of the respondents were middle aged, having graduation with business as their main occupation, medium land holding and majority of them having experience of 3-6 years with the family size of less than members, having received trainings of 1-2, medium in social participation, economic orientation, market orientation, innovativeness, risk orientation and achievement motivation. These factors show the influence of the socio-economic characteristics in gaining higher farmers' income. It must be noted that farmers can easily convert to organic farming as it is profitable to do so. However, it is not only the matter of production, but also the matter of marketing or selling the vermicompost produce.*

Key Words: *Entrepreneur, Organic farming, Socio-economic status, Vermicompost*

Introduction: Agriculture in India contributes nearly one quarter of the crop and majority of the population is dependent on farm activities. The land holding per farmer in India is very meager compared to the other parts of the globe. According to the National Sample Survey conducted in 2003, 60.4 per cent of the rural households were engaged in farming activity and it indicates that nearly 89 million people are farmers, in which 60 million are holding less than 1 ha of land. Only 5 per cent own more than 4 ha of land [1].

Chemical fertilizers and pesticides were the major technologies promoted. This paid rich dividends in India, quadrupling food grain production from 50 million metric tons in 1950-51 to 206 million metric tons in 2006-07, and enabling India to become self-sufficient in food grains. Now the second green revolution is also in the offing, to boost agricultural production and meet the estimated requirement of 337 million metric tons by 2011-12. Unfortunately, these positive developments have been accompanied by gradual and negative side effects such as secondary salinity, decreased in soil fertility, growing insect resistance to pesticides, and increased costs of production, which are challenging the sustainability of conventional agricultural production at high levels [2]. Consequently, interest in organic agriculture as an eco-friendly system of cultivation is growing at both national and global levels. Organic farming is a holistic production management system. Besides crops, the cattle, duck, fish, possibly honeybee keeping, vermiculture are also to be promoted to provide sustainable income throughout the year, to get various organic manures and to develop rural industries. Such a system of farming enhances health of agro ecosystem that includes biodiversity, crop rotation and soil biological activity. Farmers turning to non-synthetic systems are coming out

with projects to enhance the soil biota, soil fertility. The research centers and agricultural universities are also turning to organic farming [3].

Vermicomposting, or composting with earthworms, is an excellent technique for recycling food waste in the apartments as well as composting yard wastes in the backyard. Earthworm castings in the home ground often contain 5–11 times more nitrogen, phosphorous and potassium on the surrounding soil. Secretions along with the soil passing through the earthworms make nutrients more concentrated and available for plant uptakes, including micronutrients [4]. The scope for production and use of vermicompost appears to be promising in the country with the government laying much emphasis on the promotion of organic farming. In addition several non-governmental organizations (NGO's) have also been playing a vital role in spreading the message of organic farming.

Methodology

The Guntur district of Andhra Pradesh was selected purposively for the study. The district comprises of 57 mandals, out of which 27 mandals were selected randomly. A list of sampling entrepreneurs from selected mandals was collected from the Department of agriculture, thus finally making randomly a total of 60 entrepreneurs constituted the sample for the purpose of this study. The whole study was divided into dependent and Independent variables in which the following variables were selected which are suitable for the study under which knowledge and attitude and age, education, occupation, land holding, experience in vermicompost preparation, family size, training received, social participation, economic orientation, market orientation, innovativeness, risk orientation, achievement motivation were taken respectively. Before giving a final shape to the interview schedule, the schedule was pre-tested with 10 per cent of the respondents of the non sample area to standardize the schedule and finally data was collected. Appropriate statistical techniques were used for analysing the data. Obtained data was clearly depicted in the form of tables. The study is based on ex-post facto type of research design.

Results and Discussion

Profile Characteristics of Vermicompost Entrepreneurs: The present day situations clearly show the dependency of agriculture is mainly on the socio-economic conditions of the farmers. The influence of the socio-economic characteristics was clearly depicted in the following subheads:

1. Independent Variables

1.1 Age

Table 1: Distribution of respondents according to their Age. (n =60)

SN	Category	Respondents	
		Frequency	Percentage
1	Young (<35 years)	16	26.66
2	Middle (36-50 years)	36	60.00
3	Old (>50 years)	08	13.33

It is evident from the Table 1 that nearly two third (60.00%) of vermicompost entrepreneurs belonged to middle age group followed by young age group (26.66%) and old age (13.33%) groups. From the above data, it can be inferred that vermicompost business was mostly carried out by middle aged individuals, where as younger generation was slowly getting attracted for an opportunity to carry out the business and also feel responsibility to take up independent decisions to implement their ideas. Usually farmers of middle age were enthusiastic and had more work efficiency than the older and younger ones. Further, individuals of middle age group have more family responsibility than the younger ones. This result was in accordance with the findings. [5, 6].

1.2 Education

Table 2: Distribution of respondents according to their Education. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Illiterate	03	05.00
2	Primary school	03	05.00
3	Middle school	08	13.33
4	High school	07	11.66
5	Collegiate	13	21.66
6	Graduate	19	31.66
7	Post Graduate	07	11.66

A glance of the Table 2 revealed that majority (31.66%) of vermicompost entrepreneurs were having Graduation followed by Collegiate (21.66%), middle school (13.33%), Post Graduation and High school (11.66%), Illiterate and Primary school (5.00%), education categories respectively. The probable reason for majority of vermicompost entrepreneurs for completing their Graduation knows the importance of education, as the key factor which determines the level of prosperity and provides persistent orientation to farmers where they gradually accept science and innovation and change over to better enterprise and ultimately reflects in better management. Therefore efforts are needed to educate the illiterates through adult education and functional literacy in villages to increase the level of education and educate

entrepreneurs to attend training programmes, so that they can build confidence in building up the business activities effectively. The present finding of the study was in conformity with the findings [7].

1.3 Occupation

Table 3: Distribution of respondents according to their Occupation. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Vermicompost (Vc) alone	-	-
2	Vc+ agriculture	13	21.66
3	Vc+business	18	30.00
4	Vc+service	08	13.33
5	Vc+agril+service	11	18.33
6	Vc+agril+business	10	16.66

The data presented in the Table 3 showed that majority (30.00%) of vermin compost entrepreneurs had vermicompost+ business as their main occupation followed by vermicompost+agriculture (21.66%), vermicompost+agriculture+service (18.33), vermicompost+agriculture+business (16.66%) and vermicompost +service (13.33%) as their Occupation. Based on the above results it could be inferred that majority of the entrepreneurs were involved in practicing vermicompost as additional activity along with their business mainly concentrating on improving their business to earn more profits. This result was in agreement with the findings [8].

1.4 Land Holding

Table 4: Distribution of respondents according to their Land holding. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Small (<5 acres)	27	45.00
2	Medium (5-10 acres)	28	46.66
3	Big (>10 acres)	05	08.33

On persual of Table 4, that nearly half (46.66%) of vermicompost entrepreneurs belonged to medium land holding category followed by small (45.00%) and big (8.33%) land holding's categories, respectively. Entrepreneurs inherit land holdings from their ancestors and some small entrepreneurs purchased land and fell under medium category. More labour requirement, high wage rates and low price for agricultural produce, forced the majority of entrepreneurs to go for building up of enterprises to achieve economic stability. This result was in line with the findings [9].

1.5 Experience in Vermicompost Preparation

Table 5: Distribution of respondents according to their Experience in vermicompost preparation. (n=60)

SN.	Category	Respondents	
		Frequency	Percentage
1	Low (<3 years)	26	43.33
2	Medium (3-6 Years)	26	43.33
3	High (>6 years)	08	13.33

From Table 5, it can be revealed that majority (86.66%) of vermicompost entrepreneurs had both medium and low experience in vermicompost technology, followed by high (13.33%) experience with more than six years. This trend might be due to lack of awareness, importance of vermicompost technology, lack of trainings and no proper intervention of the government.

1.6 Family Size

Table 6: Distribution of respondents according to their Family size. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Upto 5 members	43	71.66
2	>5 members	17	28.33

Table 6, clearly indicated that nearly three fourth (71.66%) of vermicompost entrepreneurs had their family size up to five members, followed by more than five members (28.33%). This might be due to their awareness regarding the increased cost of living and difficulties in maintenance of big family and they might have found it beneficial to have medium families to lead a better and comfortable life. This result was in agreement with the findings [10].

1.7 Training Received

Table 7: Distribution of respondents according to their Training received. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	No training	13	21.66
2	1-2 trainings	34	56.66
3	3-4 trainings	08	13.33
4	>5 trainings	05	08.33

From the findings furnished in the Table 7, more than half (56.66%) of the vermin compost entrepreneurs had 1-2 trainings followed by no trainings (21.66%), 3-4 trainings (13.33%) and more than 5 (8.33%) trainings respectively. Training is one of the means by which desirable changes in knowledge, skills and attitude of entrepreneur could be brought in and also is a means to bring continuous improvement in the quality of work performed by entrepreneur. A trained entrepreneur could manage his business activity better and get more profits which in turn contribute for socio-economic development. The vermin compost entrepreneurs should be inculcated the spirit of attending the training programmes for their benefits, special training programmes may be designed to suit to the needs and interest of the entrepreneur.

1.8 Social Participation

Table 8: Distribution of respondents according to their Social participation. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<12.21)	10	16.66
2	Medium (12.21-23.22)	41	68.33
3	High (>23.22)	09	15.00
	Mean=17.7	S.D =5.50	

Table 8, clearly indicated that more than two third (68.33%) of vermicompost entrepreneurs had medium social participation followed by 16.66 per cent and 15 per cent of the entrepreneurs having low and high social participation, respectively. This might be due to many entrepreneurs were members of PACS and Rythu mitra Groups (RMG) and few in co-operative societies, Gram Panchayats and lions and youth clubs. Hence there is a need to enhance the social participation by encouraging them to become members in social organizations and establishment of different societies, would also increase their social participation. This result was in conformity with the findings [11].

1.9 Economic Orientation

Table 9: Distribution of respondents according to their Economic orientation. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<20.26)	11	18.33
2	Medium (20.26-26.73)	40	66.66
3	High (>26.73)	09	15.00
	Mean=23.5	S.D =3.23	

A glance of the Table 9 revealed that two third (66.66%) of vermicompost entrepreneurs fell under medium economic orientation category followed by low (18.33%) and high (15.00%) economic orientation categories. This was because their desire to stabilize and improve economically with clear-cut understanding of the advantage of vermicompost technology. In general entrepreneurs were profit motive and very particular about increasing their productivity. The result was in agreement with the findings [5].

1.10 Market Orientation

Table 10: Distribution of respondents according to their Market orientation. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<9.58)	08	13.33
2	Medium (9.58-13.17)	45	75.00
3	High (>13.17)	07	11.66
	Mean=11.38	S.D =1.79	

A cursory look at the Table 10 indicated that three fourth (75.00%) of vermicompost entrepreneurs belonged to medium market orientation in category, whereas 13.33 per cent and 11.66 per cent of the entrepreneurs belonged to low and high market orientation, respectively. This might be due to lack of prices in the market which were not affordable by the entrepreneurs. Further some educational programmes with a focus on creating awareness among entrepreneurs about infrastructure and other market facilities must be organized. The results were in accordance with the findings [12].

1.11 Innovativeness

Table 11: Distribution of respondents according to their Innovativeness. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<13.32)	12	20.00
2	Medium (13.32-16.70)	35	58.33
3	High (>16.70)	13	21.66
	Mean = 15.01	S.D = 1.69	

A close observation from the Table 11 revealed that majority (58.33%) of vermicompost entrepreneurs had medium level of innovativeness, followed by high and low i.e., 21.66 and 20.00 per cent level of innovativeness, respectively. The results indicated that most of the entrepreneurs might be attributed to the high level of education, which helped them to acquire new technologies and are quite earlier in adopting the innovations than others. They had become aware of innovative activities and enterprises to improve their standard of living. The results were in agreement with the findings [13].

1.12 Risk Orientation

Table 12: Distribution of respondents according to their Risk orientation. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<10.73)	08	13.33
2	Medium (10.73-14.13)	47	78.33
3	High (>14.13)	05	08.33
	Mean=12.43	S.D =1.70	

It is apparent from the Table 12 that more than three fourth (78.33%) of vermicompost entrepreneurs belonged to medium risk orientation followed by low (13.33%) and high (8.33%) risk orientation, respectively. The individuals with more education, medium experience and land holding might have exhibited the vermicompost entrepreneurs to take the risk at medium level despite other threatening factors like high initial investment and maintenance of vermicompost units, aberrant climatic conditions etc., were prevented to take higher risks. This result was in accordance with the findings [5,6].

1.13 Achievement Motivation

Table 13: Distribution of respondents according to their Achievement motivation. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<22.94)	08	13.33
2	Medium (22.94-27.65)	39	65.00
3	High (>27.65)	13	21.66
	Mean = 25.3	S.D = 2.35	

The data represented in the Table 13 revealed that nearly two third (65.00%) of the vermicompost entrepreneurs belonged to the medium achievement motivation followed by high (21.66%) and low (13.33%) achievement motivation. Few of them had low achievement motivation because of lack of enthusiasm and zeal in taking up of vermicompost technology. Some of them had high achievement motivation. This might be due to their orientation towards hard work, utilization of all the materials (i.e., on farm and off farm), innovativeness and risk orientation for taking up of vermicompost technology for improving social status in rural society. The results were in accordance with the findings [14].

2. Dependent Variables

2.1 Knowledge

Table 14: Distribution of respondents according to their Knowledge. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<28.42)	11	18.33
2	Medium (28.42-34.81)	38	63.33
3	High (>34.81)	11	18.33
	Mean = 31.6	S.D = 3.19	

It was clear from the Table 14 that majority (63.33%) of the vermicompost entrepreneurs had the medium level of knowledge followed by equal per cent (18.33%) of low and high levels of knowledge. The plausible reason might be due to the fact that the government officials did not show much interest in educating the respondents in transfer of technology regarding the recommended practices of vermicompost technology. The officials appear to have simply distributed the earthworm seed and required materials for entrepreneurs without adequate technical guidance. The results were in agreement with the findings [9].

Table 15: Correlation coefficient between profile characteristics and Knowledge of vermicompost entrepreneurs (n=60)

S.No.	Independent variables	'r' values
1	Age	0.101NS
2	Education	0.729**
3	Occupation	0.648**
4	Land holding	0.171NS
5	Experience in vermicompost preparation	0.595**
6	Family size	-0.157NS
7	Training received	0.658**
8	Social participation	-0.062NS
9	Economic orientation	0.612**
10	Market orientation	0.670**
11	Innovativeness	0.659**
12	Risk orientation	0.676**
13	Achievement motivation	0.649**

*** Significant at 0.01 level of probability; NS - Non-significant*

From the table 15, out of thirteen independent variables eight of them such as education, occupation, experience in vermicompost preparation, training received, economic orientation, market orientation, innovativeness, risk orientation and achievement motivation with the Knowledge were found to be positively significant at 0.01 level of probability. Whereas age, land holding, family size and social participation were found to be non-significant.

2.2 Attitude

Table 16: Distribution of respondents according to their Attitude. (n=60)

SN	Category	Respondents	
		Frequency	Percentage
1	Low (<114.74)	07	11.66
2	Medium (114.74-133.89)	43	71.66
3	High (>133.89)	10	16.66
	Mean = 124.31	S.D = 9.57	

On persual of the Table 16 nearly three fourth (71.66%) of the vermicompost entrepreneurs had moderately favourable attitude towards vermicompost technology followed by high (16.66%) and low (11.66%) attitude levels. From this we can conclude that majority of the entrepreneurs (88.32%) were having favourable attitudes towards the vermicompost technology. This might be due to the fact that trustworthiness of entrepreneurs towards vermicompost technology in bringing out profit and maintenance of soil health and in improving the quality of products. It is, therefore inferred that this has created a considerable impact on the minds of the entrepreneurs. This favourable attitude may be a reflection of the success in implementation of vermicompost technology. Therefore one can motivate others to take up the vermicompost technology inorder to get benefit out of it. The results were in agreement with the findings [15].

Table 17: Correlation coefficient between profile characteristics and Attitude of vermicompost entrepreneurs.(n=60)

S.No.	Independent variables	'r' values
1	Age	-0.039NS
2	Education	0.593**
3	Occupation	0.589**
4	Land holding	0.099NS
5	Experience in vermicompost preparation	0.545**
6	Family size	-0.044NS
7	Training received	0.598**
8	Social participation	-0.001NS
9	Economic orientation	0.642**
10	Market orientation	0.593**
11	Innovativeness	0.631**
12	Risk orientation	0.656**
13	Achievement motivation	0.601**

*** Significant at 0.01 level of probability; NS - Non-significant*

Above Table 17 reveals that out of thirteen independent variables eight of them such as education, occupation, experience in vermicompost preparation, training received, economic orientation, market orientation, innovativeness, risk orientation and achievement motivation with the Attitude were found to be positively significant at 0.01 level of probability. Whereas age, land holding, family size and social participation were found to be non-significant.

Conclusion: The Green Revolution had increased food production significantly, but on the other hand, it had negative impact on human health and the environment. In order to minimize this, vermicompost technology became an alternative solution. Experiments and research have proven that vermicompost technology besides being environmental friendly is also economically viable. The detailed analysis of profile of Vermicompost technology indicated that majority of the respondents were middle aged, having graduation with business as their main occupation, medium land holding and majority of them having experience of 3-6 years with the family size of less than members, having received trainings of 1-2, medium in social participation, economic orientation, market orientation, innovativeness, risk orientation and achievement motivation. This was because of higher educational qualification which gains knowledge and higher attitude towards vermicompost technology. The reasons for most farmers converting to vermicompost technology which is the most important in organic farming are health and environment, economic: lower production cost and higher profit and selling price, peer influence and marketing of produce. Among these, the economic reason plays the most important role in the adoption of vermicompost technology.

References

1. Revathi, K. (2010). Biotechnological Agricultural Methods. *Kisan world*. 27(12). 37-39.
2. Balak, Ram. (2003). Impact of human activities on land use changes in arid Rajasthan: Retrospect and Prospects. *In Human impact on desert environment Jodhpur (India).* 44-59.
3. Lakshamanan, K.K. (2010). Organic farming marches on. *Kisan World*. 37(9):21-24.
4. Rajkumar, K. and Muthukumar, M. (2009). Vermicomposting: solid waste management. *Kisan World.* 17-19.
5. Goswami, B. and Samajdar, T. (2011). Knowledge of Fish growers about Fish Culture Practices. *Indian Research Journal of Extension Education.* 11(2): 25-30.
6. Gowda, A.T., Ramesh, Babu, Ch., Ramnaidu, G.B.M. and Rao, V.S. (2011). Profile characteristics of sugarcane growers in Mandhya district of Karnataka. *The Andhra Agricultural Journal*. 58(2): 123-126.
7. Ram, D., Singh, M.K., Gopimohan, N. and Ghadel, K. (2010). Entrepreneurial behaviour of Vegetable growers. *Journal of communication studies.* 28: 51-58.
8. Saha, D., Akand, A.H and Hai, A. (2010). Livestock farmers Knowledge about rearing practices in Ganderbal District of Jammu and Kashmir. *Indian Research Journal of Extension Education.* 10(2): 15-19.
9. Meena, M.S., Kumar, A., Singh, K.M. and Meena, H.R. (2009b). Farmers Attitude towards Post-Harvest Issues of Horticultural Crops. *Indian Research Journal of Extension Education.* 9(3): 15-19.
10. Sivanarayana, G., Ramadevi, M. and Venkataramaiah, P. (2008). Awareness and Adoption of Cotton (*Gossypium hirsutum L.*) IPM Practices by the farmers of Warangal district in Andhra Pradesh. *Journal of Research, ANGRAU.* 36(4): 33-40.
11. Reddy, T.S.P., Prabhakar, K. and Reddy, P.G. (2006). Analysis of Influence of selected independent variables on Attitude of Rice farmers

towards Eco-friendly Technologies. *Journal of Research, ANGRAU*. 34(4): 37-44.

12. Chaudhari, R.R. (2006). A study on Entrepreneurial behaviour of Dairy farmers. *Ph. D Thesis*, University of Agricultural Sciences, Dharwad, Karnataka, India.
13. Immanuel, S. and Kangasabapathy, K. (2005). Constraints in Linkage between Fishermen and Extension Personnel in Marine Fisheries. *Journal of Extension Education.* 17(3&4): 3792-3794.
14. Vijayakumar, K., Pochaiah, M. and Raghupathi Reddy, G. (2003). Correlates of Entrepreneurial behaviour of floricultural farmers. *MANAGE Extension Review*. 4(1): 153-164.
15. Nagdeve, D.P. and Venkataramaiah, P. (2010). Attitude of farmers towards the IPM practices in Dry Land Paddy. *The Andhra Agricultural Journal.* 57(4): 429-431.