ECONSPEAK: A Journal of Advances in Management IT & Social Sciences,
Vol. 8, Issue 5, May 2018 Impact Factor 5.132 ISSN: (2231-4571)
www.skirec.org Email Id: skirec.org@gmail.com

# Government Training Centres can promote Organic Farming amongst the farmers: Statistical evidence from Sitapur district

**Dr. Mukesh Yadav**

Associate Professor in Geography, Government College for Women, Hisar, Haryana

## ABSTRACT

**Background:** The adoption of sustainable agriculture in India is not a new trend wherethe states like Madhya Pradesh and Sikkim have made phenomenal contributions in this segment. However, most states are still lagging; therefore, this study aimed to study the possible factors that enable the promotion of the "Organic Farmer Percentage" (OFP).
**Methods:**An MLR-based approach was employed to predict the cause ofincreasingOFPin the Sitapur district of Uttar Pradesh, India.
**Results:** All four selected factors, namely: Livestock density, Government training centres (GTCs), Non-governmental training centres (NTCs), and Cost of procuring chemical fertilizers (CPCF), correlated statistically with the OFP strongly; however, onlyGTCs ($p < 0.05$)was significant in predicting the OFP.
**Conclusion:** The study focussed on the factors affecting the promotion of OFP and inferred the exciting findings which can be used in addressing the existingcomplications in the promotion of organic farming amongst the farmers of rural India.

**Keywords:***Organic farming; Sustainable agriculture; Chemical fertilizers; Government training centres; non-government organizations; Multiple Linear Regression*

## 1. Introduction

Concerns regarding the impact of pesticides on the environment, ecosystem, and health have grown during the past ten years (Nicolopoulou-Stamati et al., 2016; Carvalho, 2017). It has been established that pesticides harm both farmers' and consumers' health. Depending on the type and extent of pesticide exposure, the negative consequences might range from acute to chronic effects (Damalas &Koutroubas, 2016). One of the most logical solutions for sustainable agriculture to these issues is organic farming (Lee et al., 2015). For the maintenance of soil productivity, development of biodiversity, and pest control, organic farming systems rely on biofertilizers, manure, crop rotation, and mechanical cultivation. By the end of 2017, 20% of all agricultural land worldwide was organic. Furthermore, all continents are seeing an increase in organic farms. The value of the world's organic markets has also climbed, reaching USD 97 billion. Customers now accept organic items more readily since they think they are healthier and more environmentally friendly (Smith & Paladino, 2010; Sethi et al., 2017).

Studies from the past have covered the variables that affect the adoption of organic farming. These studies have identified several variables, including farm structure, psychobehavioral and psychological variables, demographic features, and other reasons. Most research that is now accessible has looked into the demographic traits and agricultural variables that affect farmers' adoption of organic farming. However, there are discrepancies among the reported

results about the connections of some of these factors (Läpple& Van Rensburg, 2011; Rana et al., 2012). According to a study by Liu et al. (2017), farmers' ages were more likely to influence the adoption of organic agriculture.

On the other hand, a Singh et al. (2015) study claimed that the age of farmers was less likely to play a role. Similarly, Rana et al. (2012) found a positive correlation between farm size and experience and the adoption of organic farming. In contrast, a study by Danso-Abbeam et al. (2017) found a negative correlation between farm size and experience and the adoption of organic farming. The results of certain factors were included or were not indicative of outcomes, and a comprehensive analysis of the available literature has not been done, even though the studies that are now accessible have explored factors that influence the adoption of organic farming.

Contrary to conventional farming, organic farming is acknowledged to be better for the environment, ecosystems, and people's health (Shennan et al., 2017). Therefore, this study aimed to collect and analyzethe data on farming practices in the Sitapur district of Uttar Pradesh. Different factors were recorded and assessed for their role in promoting organic farming. These data are crucial for a compelling study to find the catalyzing factors in promoting organic or traditional farming in different areas of India.

## 2. Materials and Methodology

### 2.1 Study area and data

The study was conducted in the Sitapur district of Uttar Pradeshstate, located at27°34'30.3240" N and 80°39'49.5540" E, with a geographical area of 5,743 square kilometres in the north-central part of India. The study aimed to analyze the district's critical enablers for promoting organic farming. The primary or field data were collected between August 2017 and December 2017 from different district areas (each area = 50 sq. km). A total of 25 areas were marked in this study, and data (Table 1) were recorded in the tenure of 150 days.In this study, multiple regressions analysis is performed between the dependent variable,OFP (%) and a set of independent variables such as Livestock density (n/farmer), Government training centres (n), Non-government training centres (n), and Cost of procuring chemical fertilizers (□). The cost of procuring chemical fertilizers was based on the weight used over a hectare of farm fieldin a year.

**Table 1:**The table showing the recorded, relevantdata of Sitapur District collected between August and December 2017

| Livestock density (n/farmer) | Govt training centres (n) | Non-govt training centres (n) | Cost of procuring chemical fertilizers (□ ) | Organic farmer (%) |
|---|---|---|---|---|
| 2 | 2 | 4 | 31850 | 47 |
| 1 | 1 | 4 | 30215 | 41 |
| 3 | 2 | 3 | 26124 | 51 |
| 5 | 1 | 4 | 24156 | 56 |
| 4 | 1 | 2 | 12549 | 16 |
| 6 | 4 | 4 | 35648 | 86 |
| 2 | 5 | 2 | 15964 | 32 |
| 3 | 2 | 2 | 15478 | 59 |
| 4 | 1 | 3 | 21458 | 41 |
| 4 | 3 | 4 | 32145 | 47 |
| 6 | 2 | 3 | 21456 | 41 |
| 5 | 2 | 4 | 32145 | 51 |
| 5 | 3 | 4 | 32541 | 56 |
| 6 | 1 | 5 | 41235 | 16 |
| 6 | 6 | 2 | 12354 | 94 |
| 2 | 2 | 4 | 32587 | 35 |
| 2 | 3 | 5 | 40002 | 65 |
| 1 | 3 | 2 | 12547 | 45 |
| 7 | 4 | 4 | 35412 | 85 |
| 3 | 3 | 5 | 40012 | 62 |
| 5 | 2 | 4 | 32999 | 25 |
| 6 | 6 | 3 | 34879 | 95 |
| 4 | 6 | 3 | 25461 | 78 |
| 3 | 4 | 4 | 29457 | 74 |
| 3 | 2 | 4 | 34125 | 55 |

*Source: Field Survey in Sitapur District, Uttar Pradesh*

### 2.2 Empirical method

The study employed MS-Excel tool and linear mathematical model to explore the relationship between OFPand different associated factors; the algorithm, thus followed is as follows:

$$Y_{OFP} = \alpha L + \beta G + \gamma N + \delta C + \phi$$

Where $Y_{OFP}$is the dependent variable denoting OFP and $\alpha, \beta, \gamma, and\ \delta$respectively, are the coefficients ofLivestock density, GTCs, NTCs, and CPCF. The constant term or intercept is denoted as$'\phi'$.The multiple regression analysis introduces one independent variable at each stage. The coefficient of correlation (multiple R) and coefficient of determination ($R^2$) is calculated mainly to assess the percentage of explanation provided by each independent variable on the dependent variable.

## 3. Results and Discussion

The descriptors used in the study significantly affect the OFP in the district. These factors were studied in an MLR model to exhibit their role in predicting the increase in the percentage of organic farmers:

### 3.1 Effect of different climatic factors on the BGLW

The factors incorporated in the study to build a relationship with the OFP were found to be either positively or negatively correlated with the latter. All the factors,Livestock density(1.891822713), GTCs(9.990142614), NTCs (2.232011839), and CPCF (0.000136874), were found to be positively correlated with the OFP, which means that increase in any of thesewill increase theOFP, but only 'GTCs'is significant in predicting the OFP as its p-value is smaller than 0.05.The entire output data of multiple linear regression is reflected in Table 2.
The significantOFP-associated factor, 'GTCs,'was also studied for its impact on the dependent variable, where it exhibited a similar trend. The representation of thisrelationshipis shown in Figure 1 with the help of an X-Y plot.It can be inferred that an increase in the number of Government training centres in any area can potentially increase the percentage of farmers engaged in organic farming practices.

**Table 2:**The output summary of the MLR analysis of the OFP-associated factors

**SUMMARY OUTPUT**

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.767701152 |
| R Square | 0.589365059 |
| Adjusted R Square | 0.507238071 |
| Standard Error | 15.47969825 |
| Observations | 25 |

**ANOVA**

| | *Df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 4 | 6878.337171 | 1719.584293 | 7.17626534 | 0.000939741 |
| Residual | 20 | 4792.421159 | 239.6210579 | | |
| Total | 24 | 11670.75833 | | | |

| | *Coefficients* | *P-value* |
|---|---|---|
| Intercept | 6.504891923 | 0.669958368 |
| Livestock density (n/farmer) | 1.891822713 | 0.335250692 |
| Government training centres (n) | 9.990142614 | 0.000144847 |
| Non-government training centres (n) | 2.232011839 | 0.786062564 |
| Cost of procuring chemical fertilizers ( ) | 0.000136874 | 0.883232325 |

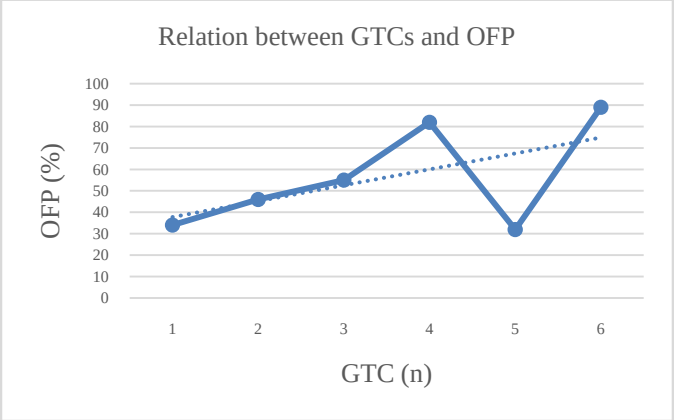


**Figure 1:** Relation between GTCs (n) and OFP (%)

### 3.2 Equation of Prediction

The multiple regression model has provided the coefficient values to each independent variable which can be aggregated to form the Equation of Prediction;

$$Y_{OFP} = 1.891822713L + 1.891822713G + 2.232011839N + 0.000136874C + 6.504891923$$

The factors, Livestock density, NTCs, and CPCF, are not noteworthy in the equation as theydo not hold any significance in the prediction.The coefficient of correlation (multiple R) and coefficient of determination ($R^2$) of the data model is also found to be appropriate, with a value above 0.76 and 0.58, respectively(Table 2). These coefficients are calculated mainly to assess the percentage of explanation provided by each independent variable on the dependent variable.

## 4. Conclusion

The use of organic practices in farming is the need of modern-day context to meet sustainability in the associated spheres. Similar to the study's findings, the literature indicates that government support in resources, financing, markets, and subsidies is vital in encouraging the adoption of organic farming. The government must fund technologies and provide subsidies to farmers who switch to organic agriculture. As a result, this study provides a basis for local database development in India.

## References

1. Carvalho, F. P. (2017). Pesticides, environment, and food safety. *Food and Energy Security*, *6*(2), 48–60. https://doi.org/10.1002/fes3.108
2. Damalas, C., &Koutroubas, S. (2016). Farmers' exposure to pesticides: Toxicity types and ways of prevention. *Toxics*, *4*(1), 1. https://doi.org/10.3390/toxics4010001

3. Danso-Abbeam, G., Bosiako, J. A., Ehiakpor, D. S., & Mabe, F. N. (2017). Adoption of improved maize variety among farm households in the northern region of Ghana. *Cogent Economics & Finance*, *5*(1), 1416896. https://doi.org/10.1080/23322039.2017.1416896
4. Läpple, D., & Van Rensburg, T. (2011). Adoption of organic farming: Are there differences between early and late adoption? *Ecological Economics: The Journal of the International Society for Ecological Economics*, *70*(7), 1406–1414. https://doi.org/10.1016/j.ecolecon.2011.03.002
5. Lee, K. S., Choe, Y. C., & Park, S. H. (2015). Measuring the environmental effects of organic farming: A meta-analysis of structural variables in empirical research. *Journal of Environmental Management*, *162*, 263–274. https://doi.org/10.1016/j.jenvman.2015.07.021
6. Liu, T., Bruins, R., & Heberling, M. (2017). Factors influencing farmers' adoption of best management practices: A review and synthesis. *Sustainability*, *10*(2), 432. https://doi.org/10.3390/su10020432
7. Nicolopoulou-Stamati, P., Maipas, S., Kotampasi, C., Stamatis, P., & Hens, L. (2016). Chemical pesticides and human health: The urgent need for a new concept in agriculture. *Frontiers in Public Health*, *4*, 148. https://doi.org/10.3389/fpubh.2016.00148
8. Rana, S., Parvathi, P., & Waibel, H. (2012). *Factors affecting the adoption of organic pepper farming in India*. Tropentag.de. https://www.tropentag.de/2012/abstracts/full/691.pdf
9. Sethi, V., Tandon, M. S., & Dutta, K. (2017). A path model of antecedents of green purchase behaviour among Indian consumers. *International Journal of Public Sector Performance Management*, *4*(1), 21. https://doi.org/10.1504/ijpspm.2017.088694
10. Shennan, C., Krupnik, T. J., Baird, G., Cohen, H., Forbush, K., Lovell, R. J., &Olimpi, E. M. (2017). Organic and conventional agriculture: A useful framing? *Annual Review of Environment and Resources*, *42*(1), 317–346. https://doi.org/10.1146/annurev-environ-110615-085750
11. Singh, M., Maharjan, K. L., & Maskey, B. (2015). Factors impacting adoption of organic farming in Chitwan district of Nepal. *Asian Journal of Agriculture and Rural Development*, *5*(1), 1–12. https://archive.aessweb.com/index.php/5005/article/view/1372
12. Smith, S., & Paladino, A. (2010). Eating clean and green? Investigating consumer motivations towards the purchase of organic food. *Australasian Marketing Journal (AMJ)*, *18*(2), 93–104. https://doi.org/10.1016/j.ausmj.2010.01.001