P-ISSN: 2618-0723
E-ISSN: 2618-0731

NAAS Rating: 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 3; March 2024; Page No. 594-597

Received: 17-12-2023
Accepted: 28-02-2024

Indexed Journal
Peer Reviewed Journal

Investigating the knowledge levels of trained farmers in natural farming: A study of Tonk district of Rajasthan

[1]Vicky Yadav, [2]MN Ansari and [3]Rishabh Singh Gaur

[1]M.Sc. Research Scholar, Department of Agriculture Extension Education, RPCAU, Pusa Samastipur, Bihar, India

[2]Associate Professor, Department of Agriculture Extension Education, RPCAU, Pusa Samastipur, Bihar, India

[3]Ph.D. Scholar, Dairy Extension Division, ICAR-National Dairy Research Institute, Karnal, Haryana, India

DOI: https://doi.org/10.33545/26180723.2024.v7.i3g.478

Corresponding Author: Vicky Yadav

Abstract

Natural farming is a type of farming that is pain-free, care-free, loan-free, and driven by passion, as described by Palekar, 2010. The study on natural farming in Tonk district, Rajasthan, included 120 trained farmers from three blocks, with an emphasis on pain-free, care-free, loan-free farming motivated by passion. Villages were selected based on preliminary surveys indicating a significant interest in ecological farming. A random sample of responders gave 74.17% with a medium degree of knowledge, with the Jeevamart and Beejamarita components demonstrating the highest understanding. Triangulation maintained validity and dependability, as evidenced by a Cronbach's Alpha of 0.641. According to the Durbin-Watson model, correlation and regression analyses revealed positive relationships between various factors such as education level, land ownership, experience in natural farming, mass media exposure, age, annual income, extension contacts, scientific orientation, and risk orientation.

Keywords: Investigating, levels, farmers, farming, Tonk, Rajasthan

Introduction

Zero budget Natural farming is self-sustaining and symbiotic in nature Palekar (2014) [8] states (Khangarot *et al*., 2022) [3]. It is painless, carefree, loan-free, and passionless farming (Palekar, 2010; Münster, 2018) [9, 6]. According to Padam Shree Shubhash Palekar, this methodology significantly decreases the incentive to borrow, resulting in a drop in farmer suicides across the country. Mr Palekar spent six years on his property, 1989-1995, studying natural systems and verifying natural forest processes. He discovered that around 98-98.5 percent of nutrients are derived from air, water, and sun radiation. The remaining 1.5 percent of nutrients are absorbed from the earth. Mr Palekar has supplied four components: Bijamrita (seed treatment with cow dung and urine), Jeevamrita (catalytic agent that promotes microorganism activity in soil), Mulching (to create a favorable microclimate in the soil), and Waaphasa (soil aeration). According to the economic study, around 1.6 lakh farmers use ZBNF in over 1000 communities with some sort of state assistance (Ministry of Agriculture and Farmers Welfare, 2021) [4].

The Rajasthan government launched a natural farming project in 2019-20. Kheti Mein Jaan toh Sashakt Kisan. Tonk, Sirohi, and Banswada are the three districts in the State where the effort, in the form of a pilot project, originally began. Under the initiative, master-trainers from the department led a two-day session that educated 18,313 farmers. There have been no research on natural farming in Rajasthan as of yet. As a result, assessing farmers' understanding of natural farming has arisen as an important issue worth investigating. As a result, this study endeavour was conducted to assess trained farmers' awareness and grasp of natural farming concepts.

Materials and Methods

The ex-post facto research design was adopted in this study. Tonk area of Rajasthan has been designated as the location of the current research enterprise. A total of 120 respondents were picked from Tonk district's three blocks. Tonk district in Rajasthan consists of seven blocks. Out of these, three blocks (Uniara, Niwai, Deoli) having highest trained natural farming farmers were selected based on data given by District Agriculture Officer, Tonk district. Two villages from each block with a total of six villages were selected randomly based on the assumption that these villages would possess highest number of trained farmers about natural farming. Assumptions for creating a list of villages were based on a pilot survey of the study area done by the researcher. Twenty farmers were randomly picked from each pre-determined hamlet. As a result, the total sample size for the study was 120 respondents. A standardized knowledge exam was devised to assess farmers' understanding of organic farming, taking into account the processes used by Sulaiman (1989) [12], Bonny (1991) [1], and Sushama (1993) [13]. However, the knowledge index was calculated by the formulae.

$$\text{knowledge index} = \frac{Respodents\ total\ Score}{Total\ possible\ Score}\ X\ 100$$

To assess farmers' knowledge level, they were asked to answer several questions concerning the idea of natural farming. The respondents were divided into three categories: those 'with knowledge' and those with 'no knowledge', and were awarded a score of 1 or 0. The marks received under various questions were added up. Respondents were classified into three categories based on their overall score: low, medium, and high level of expertise. The activity-specific knowledge percentage was also determined. To calculate scale reliability and triangulation, a set of 60 statements was delivered to a new group of 30 farmers on a three-point continuum (actual sample size of n=120) from another section of the non-sample area. Todaraisingh block in Rajasthan's Tonk district was chosen at random, along with one hamlet named Baori. Thus, 30 farmers from one designated hamlet were chosen at random for reliability testing.

The Spearman (1910) and Brown (1910) formulas were employed to quantify reliability, together with Cronbach's alpha (α) (Cronbach, 1951).

$$rSB = \frac{2rhh}{1 + rhh}$$

Where, rhh = Pearson correlation between (odd and even)

Cronbach formula
a = $KK-1(1-\Sigma\sigma 2yii=ki=1\sigma 2x)$

Where, K=No. of items in the scale
σ2yi= the variance of item i for the current sample of respondents
σ2x= the variance of the scale

Reliability score for knowledge test

Table 1: Case Processing Summary of model

Case Processing Summary		n	%
Cases (Responses from non-sample farmers)	Valid Responses	60	100.0
	Excludeda Responses	0	000.0
	Total	60	100.0
a. List- wise deletion based on all variables in the procedure; n = no. of respondents			

The coefficient of correlation between forms (odd and even items) was 0.48 and Spearman-Brown Coefficient for both equal length and unequal length were 0.55, thus showing high reliability of the knowledge test.

Table 2: Reliability Statistics

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	.481
		N of Items	30[a]
	Part 2	Value	.528
		N of Items	30[b]
	Total N of Items		60
Correlation Between Forms			.381
Spearman-Brown Coefficient	Equal Length		.552
	Unequal Length		.552
Guttman Split-Half Coefficient			.550
Cronbach's Alpha			.641

To obtain accurate findings from collected data, statistical tools like frequency, percentage, mean, standard deviation, Correlation and Durbin Watson model for regression was employed through MS Excel (version 2011) and IBM SPSS software (version 26).

Results and Discussion

Overall, Knowledge level of trained farmers about Natural farming Practices (N=120)

Table 3: Overall, Knowledge level of trained farmers about Natural farming Practices (N=120)

Category	Frequency (f)	Percentage (%)
Low (up to 24.97)	15	12.50%
Medium (24.98 to 35.1)	89	74.17%
High (>35.1)	16	13.33%

The findings derived from the Table 3 indicate that a significant portion of farmers (74.17%) possess a moderate level of knowledge, while a relatively small number of farmers fall within the high (13.33%) and low (12.50%) knowledge level categories. These observations find validation and alignment within the existing research. Roy *et al.* (2007) [11], Jakkawad *et al.* (2017) [2], and Patel *et al.* (2011) [10] has independently reported similar findings. Therefore, the current study's outcomes are substantiated by these prior research endeavours.

Component wise knowledge level of trained farmers about Natural farming

Table 4: Distribution of respondents based on Component wise knowledge level

Knowledge Level	Major components of natural farming					
	Jeevamart	Beejamarita	Soil mulching	Whapasa	Agniastra	Neemastra
Low Level	17.50%	12.50%	12.50%	34.16%	20.00%	58.33%
Medium Level	64.17%	70.00%	46.66%	20.00%	48.33%	8.33%
High Level	18.33%	17.50%	40.83%	45.83%	31.67%	33.33%

This table indicates that among the various components of natural farming, Whapasa and Soil Mulching have emerged with the highest level of knowledge among farmers, with 45.83 percent and 40.83 percent of farmers, respectively, possessing a high level of understanding. Following closely are Agniastra and Neemastra, with 31.67 percent and 33.33 percent of farmers, respectively, demonstrate a high degree of expertise.

On the other side, Jeevamart and Beejamarita have the largest proportion of farmers with a medium level of understanding, at 64.17 percent and 70%, respectively. When assessing the total knowledge level of all components, Beejamarita and Jeevamart stand out as the most knowledgeable, since they have a large number of farmers who are completely familiar with their manufacturing techniques and ingredients. Following this, Whapasa and Soil Mulching are well understood by a large number of farmers. However, Agniastra and Neemastra seem to have a lower total knowledge level than the other components.

Relationship of socio-economic and personal characteristics of respondents with knowledge level regarding Natural farming

Table 5: Relationship of socio-economic and personal characteristics of respondents with knowledge level regarding Natural farming

S. No.	Characteristic	Correlation Coefficient (r)
1.	Age	.215*
2.	Education	.258**
3.	Caste	-0.10
4.	Land holding	.319**
5.	Area under natural farming	-0.081
6.	Annual income	.189*
7.	Family type	-0.125
8.	Family Size	-0.029
9.	Housing type	-0.152
10.	Experience in natural farming	.540**
11.	Extension contacts	.184*
12.	Mass media exposure	0.256**
13.	Scientific orientation	.218*
14.	Risk orientation	.198*

****** The 0.01 level of significance for correlation. (1%)

*****The 0.05 level of significance for correlation. (5%)

The correlation analysis between the knowledge level of natural farming practices and various characteristics revealed significant factors influencing adoption. Strong positive correlations were found with education (r = 0.258**), land holding (r = 0.319**), experience in natural farming (r = 0.540**), and mass media exposure (r = 0.256**), indicating that higher education, larger land holdings, experience, and media exposure contribute to greater impact on knowledge level. Conversely, caste, family type, family size, and housing type showed weaker negative correlations, suggesting limited impact on knowledge levels. Other characteristics, such as age (r = 0.215*), annual income (r = 0.189*), extension contacts (r = 0.184*), scientific orientation (r = 0.218*), and risk orientation (r = 0.198*), demonstrated relatively weaker positive correlations with knowledge.

Regression analysis between knowledge level of respondents and independent variables

Table 6: Durbin-Watson Model Summary

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.691[a]	.477	.429	4.006	1.818

a. Predictors: (Constant), Scientific Orientation, Age, Land holding, Risk Orientation, Caste, Annual Income, family type, Experience, Education level, Area of Natural Farming

b. Dependent Variable: Knowledge

The correlation coefficient (R) stands at 0.691, suggesting a moderately strong positive relationship between the predictors and knowledge level. About 47.70% of the knowledge variance is explained by the predictors, as denoted by the coefficient of determination (R Square). The adjusted R Square, slightly lower at 0.429, accounts for predictor penalties. The standard error of the estimate stands at 4.006, representing the average deviation between actual and predicted knowledge values. A Durbin-Watson value of 1.818 signifies an absence of significant autocorrelation in the model, confirming its reliability.

Table 7: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1596.272	10	159.627	9.945	.000[b]
	Residual	1749.595	109	16.051		
	Total	3345.867	119			

a. Dependent Variable: Knowledge.

b. Predictors: (Constant), Scientific Orientation, Age, Land holding, Risk Orientation, Caste, Annual Income, family type, Experience, Education level, Area of Natural Farming

The ANOVA table evaluates the overall significance of the regression model. Notably, the Regression Model reveals a substantial F-statistic (F = 9.945) accompanied by an exceedingly low p-value (Sig. = .000). This outcome signifies the statistical significance of the model in effectively explaining the variations in Knowledge.

Table 8: Regression analysis between knowledge and independent variables

Independent Variables	Regression Coefficient	S.E. of Partial Regression Coefficient	t-value
Age	.008*	.035	2.710
Education level	.003**	.474	3.013
Caste	.027	.518	-2.246
Land holding	.015**	.592	2.471
Area of Natural Farming	.214	.753	-1.249
Annual Income	.469	.000	.726
family type	.325	.831	-.989
Experience	.000*	.516	5.504
Risk Orientation	.154	.105	1.434
Scientific Orientation	.083	.138	1.749

Linear regression analysis was carried out to identify the most important variables that affect the knowledge level about organic farming. The results in Table. Reveals that variables, *viz*., Age," "Education level," "Land holding," and "Experience" exhibit statistically significant relationships with Knowledge level of Trained farmers of Natural farming. However, the strength of influence of these variables can be explained as one unit increase in Age, Education level, Land holding, and Experience would result in .008, .003, .015 and .000 units increase in knowledge respectively.

Conclusion

Most of the farmers have medium level of knowledge (74.17%) of natural farming practices. Jeevamart and Beejamarita have more knowledge as compared to other components. Agniastra and Neemastra have the lowest knowledge of Natural farming practices. Factors like Education level, Land holding, Experience in natural farming, and Mass Media Exposure are strongly linked in a positive way. On the other hand, Age, Annual income, Extension contacts, Scientific orientation, and Risk orientation are somewhat linked in a positive way, but not as strongly. To encourage natural farming, it would help to focus on better education, helping people own land, promoting experience, and using media to spread the word. These efforts can make farming eco-friendlier and stronger.

References

1. Bonny BP. Adoption of improved agricultural practices by commercial vegetable growers of Ollukkara blocks in Thrissur district. M.Sc., (Ag.) thesis (unpub.), Department of Agricultural Extension, Kerala Agricultural University, Thrissur; 1991.
2. Jakkawad SR, Sawant RC, Pawar B. Knowledge and adoption of ginger production technology in Aurangabad district. Trends in Bioscience. 2017;10(24):5111-5114.
3. Khangarot AK, Choudhary D, Singh K. Zero Budget Natural Farming (ZBNF)-Need of Sustainable Agriculture. AkiNik Publications, New Delhi; 2022. Pp. 21-33.
4. Ministry of Agriculture & Farmers Welfare. Natural Farming System. Press Information Bureau, Delhi. Stable URL; 2021.
5. Ministry of Agriculture & Farmers Welfare. Zero Budget Natural Farming. Press Information Bureau, Delhi. Stable URL; 2021.
6. Münster D. Performing alternative agriculture: Critique and recuperation in zero budget natural farming, South India. Journal of Political Ecology. 2018;25(1):748-764. Stable URL.
7. Niti Aayog. Natural Farming. Stable URL; 2022.
8. Palekar S. Palekar zero budget spiritual farming.org. Stable URL; c2014.
9. Palekar S. The philosophy of spiritual farming: zero budget natural farming – part 1. 5th revised renewal ed. Amravati: Zero Budget Natural Farming Research, Development and Extension Movement; 2010.
10. Patel S, Patel RC, Patel BM, Badhe DK. Factors affecting technological gap of Cotton growers in recommended cotton production technology. Agriculture Update. 2011;6(3):356-369.
11. Roy S, Bhagat R, Rao DUM. Level of knowledge and extent of adoption of farmers on recommended gladiolus production practices. Research Journal of Extension Education. 2007;7(2&3):69-71.
12. Sulaiman RV. Evaluative perception of appropriateness of the recommended fertilizer management practices. M.Sc., (Ag.) thesis (unpub.), Department of Agricultural Extension, Kerala Agricultural University, Thrissur; 1989.
13. Sushama NPK. Vocational higher secondary education in agriculture in Kerala – A multidimensional analysis. Ph.D. thesis (Unpub.), Department of Agricultural Extension, Kerala Agricultural University, Thrissur; 1993.