

ADOPTION OF NOVEL ORGANIC LIQUID NUTRIENTS AMONG FARMERS

Sabin Santhosh¹, S. D. Kavad² and H. J. Kavad³

1 & 3 P. G. Student, Dept. of Extension & Communication, N. M. College of Agriculture, NAU, Navsari 396450

2 Associate Professor, Directorate of Extension Education, NAU, Navsari 396450

Email: sabinsanthosh149@gmail.com

ABSTRACT

Novel Organic Liquid Nutrients (NOLN) is a product prepared from byproduct obtained from banana sap developed by Navsari agricultural university. The Krishi Vigyan Kendras (KVKs) in Navsari and Surat provided the list of farmers. A sample size of 120 respondents was randomly selected 10 farmers using NOLN from each of the 12 villages that were chosen from the identified talukas. According to the study, the majority of farmers were middle-aged (51.67 %), with primary to higher secondary education (80.84 %), medium-sized families (61.67 %), and medium-sized land holdings (50.84 %). The majority of respondents (54.17 %) had moderate farming experience and belonged to the higher income group above ₹2,00,000 (58.34 %). They also had moderate mass media exposure (72.50 %) and moderate in one or more organizations. Their primary occupation was farming alone and farming + animal husbandry. Their socioeconomic profiles have demonstrated a moderate (50.00 %) scientific orientation and a moderate (57.50 %) economic motivation. Overall, 78.34 per cent of the respondents showed moderate adoption. It was discovered that farmers were able to implement NOLN in recommended crops by adhering to recommended practices, such as timely transplanting in nurseries, application during a specific lifecycle with specified doses covered with recommended mix, and use of equipment that has been instructed. It was observed that NOLN users were reluctant to take precautions and to use NOLN before its expiration date. education, land holding, occupation, farming experience, annual income, mass media exposure, extension contact, social participation, scientific orientation, economic motivation, risk orientation, and management orientation had positive and significant correlations with the extent of adoption of NOLN whereas, age and family size showed non-significant relationship.

Keywords: adoption, organic liquid nutrients, sustainable practices

INTRODUCTION

Organic liquid fertilizers align with sustainable farming principles, emphasizing soil vitality, environmental protection, and ecological balance (Doran and Zeiss, 2000). By employing biodegradable, naturally derived materials, they substantially lessen ecological risks (Pretty, 2005). These products curb contamination of soil, water bodies, and habitats, offsetting the negative impacts of traditional chemical agriculture (Bengtsson et al. 2005). They bolster soil quality and productivity through vital nutrients, organic content, and helpful microbes that enhance soil structure, nutrient levels, and biological activity (Rohan & Vinaya, 2022). Furthermore, they supply plants with easily absorbable nutrients to roots, promoting robust development, higher productivity, and superior produce quality (Magdoff and Weil, 2004; Rohan & Vinaya, 2024). Such improvements create durable, resilient soils that support enduring farming while optimizing root expansion, nutrient absorption, and plant health (Lal, 2004).

The novel organic liquid nutrient represents a groundbreaking,

patented innovation from Navsari Agricultural University, derived from banana pseudostem sap a waste product of fiber processing—and functions as a potent organic fertilizer across diverse crops. Its nutrient makeup encompasses key components such as 0.60% phosphorus (P), 0.180% potassium (K), 0.090 % calcium (Ca), 0.385 % magnesium (Mg), plus micronutrients like 5.73 ppm manganese (Mn), 2.40 ppm zinc (Zn), and 1.09 ppm iron (Fe). On the biochemical side, it contains ureic phenol, gibberellic acid, cytokinin, substantial viable microbe populations, and advantageous organisms like Rhizobium and Azotobacter. Applied via leaves or soil, this blend advances plant development by improving nutrient assimilation and metabolic functions, all without artificial additives.

OBJECTIVES

- (1) To study the profile of farmers
- (2) To measure the extent of adoption of Novel organic liquid nutrients among the farmers
- (3) To study the association between profile of farmers

with adoption about Novel organic liquid nutrients

METHODOLOGY

The Navsari and Surat district has 6 and 10 talukas each, only 3 talukas from each district were selected purposively for the study because extensive users of NOLN farmers found in that talukas. A list of farmers who were extensively applying Novel Organic Liquid Nutrient obtained from Krishi Vigyan Kendra (KVK) of Navsari and Surat. Twelve villages were selected from each 10 farmers using NOLN were randomly chosen, resulting in a total sample size of 120 respondents. This method ensured fair representation through random sampling within a purposively selected framework of active users. The data were systematically organized, analysed, and tabulated to meet the study objectives, with the arbitrary method used for certain variables. Statistical tools such as frequency, percentage, rank, mean, standard deviation, and correlation coefficient (r) were applied to derive the findings.

RESULTS AND DISCUSSIONS

The data presented in the table 1 provides important insights into the socio-economic and communication

characteristics of the respondents. The majority of respondents (51.67 %) belonged to the middle age group (36–60) years they were distributed across different levels of education about 29.17 per cent had primary school education and an equal proportion had higher secondary education around 22.50 per cent studied up to secondary school level, while 19.16 per cent possessed college or above level education. Family size distribution reveals that a majority (61.67 %) belonged to medium-sized families (5–7 members), More than half of the respondents (50.84 %) had medium land holdings (2.01–5.00 ha), Farming alone was the major occupation for 59.17 per cent of respondents. Data indicates that 54.17 per cent of respondents had moderate experience (16–35 years) a majority (58.34 %) earned above ₹2,00,000 annually, indicating relatively better economic status. Most respondents exhibited moderate mass media exposure (72.50 %), moderate extension contact (75.00 %), and active social participation, with 41.67 per cent being members of more than one organization. Overall, the findings suggest that the respondents possess moderate socio-economic resources and communication exposure, which could facilitate better access to agricultural information and innovations. The above socio-economic and communication characteristics are in align with study made by Dhakal *et. al* (2018) & Modi *et. al* (2021).

(n=120)

Table 1: Profile of farmers

Sr. No.	Category	<i>f</i>	%
1	Age		
	Young age (≤ 35 years)	28	23.33
	Middle age (36 to 60 years)	62	51.67
	Old age (≥ 60 years)	30	25.00
2	Education		
	Primary school (Up to 8 th std)	35	29.17
	Secondary school (9 th to 10 th std)	27	22.50
	Higher secondary school (11 th to 12 th std)	35	29.17
	College/ Post graduation (Above 12 th std)	23	19.16
3	Family Size		
	Small family (≤ 4 members)	34	28.33
	Medium family (5 to 7 members)	74	61.67
	Big family (≥ 8 members)	12	10.00
4	Land holding		
	Small land holding (Up to 2.00 ha)	15	12.50
	Medium land holding (2.01 to 5.00 ha)	61	50.84
	Large land holding (Above 5.00 ha)	44	36.66
5	Occupation		
	Farming	71	59.17
	Farming + Animal husbandry	32	26.67
	Farming + Animal husbandry + Horticulture	07	05.83
	Farming + Animal husbandry + Service	07	05.83
	Farming + Animal husbandry + Service + Business	03	02.50

Sr. No.	Category	f	%
6	Farming experience		
	Lower (≤ 15 years)	27	22.50
	Moderate (Between 16 to 35 years)	65	54.17
	Higher (≥ 35 years)	28	23.33
7	Annual income		
	Above ₹ 2,00,000	70	58.34
	₹ 1,50,001 to 2,00,000	11	09.17
	₹ 1,00,001 to 1,50,000	07	05.83
	₹ 50,001 to 1,00,000	19	15.83
	up to ₹ 50,000	13	10.83
8	Mass media exposure		
	Lower (≤ 6 score)	24	20.00
	Moderate (7 to 12 score)	87	72.50
	Higher (≥ 12 score)	09	07.50
9	Extension contact		
	Lower (≤ 8 score)	18	15.00
	Moderate (9 to 16 score)	90	75.00
	Higher (≥ 16 score)	12	10.00
10	Social participation		
	No membership in any organization (0 score)	14	11.66
	Membership in one organization (1 score)	47	39.17
	Membership in more than one organization (2 score)	50	41.67
	Holding position in organization (3 score)	09	07.50
11	Scientific orientation		
	Lower (6 to 10 score)	32	26.67
	Moderate (11 to 14 score)	60	50.00
	Higher (Above 14 score)	28	23.33
12	Economic motivation		
	Lower (8 to 13.33 score)	22	18.34
	Moderate (13.34 to 18.66 score)	69	57.50
	Higher (Above 18.66 score)	29	24.16
13	Risk orientation		
	Lower (6 to 10 score)	30	25.00
	Moderate (11 to 14 score)	76	63.34
	Higher (Above 14 score)	14	11.66
14	Management orientation		
	Lower (18 to 30 score)	14	11.67
	Moderate (31 to 42 score)	86	71.67
	Higher (Above 42 score)	20	16.66

The data of the Table 2 revealed that majority (78.34 %) of the respondents had moderate extent of adoption followed by 13.33 and 8.33 per cent of them had higher and lower extent of adoption about Novel organic liquid nutrients respectively. In general, study shows that majority (78.34 %) of users adopted Novel organic liquid nutrients to a moderate

extent, indicating that promotional strategies by universities and extension agencies have yielded some success, but further efforts are needed to enhance adoption rates and achieve full potential. The above findings are in concurrence with the findings of Chaudhary and Chauhan (2016), Modi *et. al* (2021), Sahoo *et. al* (2021) & Singh and bansal (2022).

Table 2: Distribution of the respondents according to their Extent of adoption about novel organic liquid nutrients (n=120)

Sr. No.	Extent of adoption	f	%
1	Lower (Up to 10 score)	10	08.33
2	Moderate (11 to 20 score)	94	78.34
3	Higher (More than 20 score)	16	13.33

From table 3 regarding extent of adoption of recommended practices of Novel organic liquid nutrients majority of farmers (84.17 %) have fully adopted NOLN for recommended crops, and an even larger majority (92.50 %) were using it as soon as it became available. Specifically, 84.17 per cent followed the recommended timing for transplanting

seedlings or nursery plants after application. Furthermore, high adoption rates were found for proper application and dosing (83.33 %) and (81.67 %), respectively, use of proper equipment (77.50 %), correct application methods (75.83 %), and covering the recommended area with a 100L mix (84.17 %). However, adoption was only partial in other areas 82.50 per cent partially adopted application at specific crop stages, and 64.17 per cent partially followed the recommended intervals between using NOLN and other agrochemicals. Additionally, 89.17 and 78.33 per cent of farmers only partially adhered to proper storage and usage before the expiry date. Notably, there was significant non adoption regarding safety precautions, with a majority (81.67 %) failing to follow the necessary guidelines. Similar supportive research study was done by Modi *et. al* (2021).

Table 3: Extent of adoption of recommended practices of Novel organic liquid nutrients

(n=120)

Sr. no.	Statements	Full Adopted % (f)	Partial Adopted % (f)	Not Adopted % (f)
1	Adopted in recommended crops	84.17 (101)	15.83 (19)	00.00
2	Whether using NOLN at the time of its availability	92.50 (111)	07.50 (9)	00.00
3	Timely transplant the seedlings or nursery after application of NOLN	84.17 (101)	06.67 (8)	09.17 (11)
4	Recommended application during lifecycle	83.33 (100)	11.67 (14)	5.00 (6)
5	Recommended Dose of NOLN	81.67 (98)	8.33 (10)	10 (12)
6	Proper application in Crop stages	13.33 (16)	82.50 (99)	4.17 (5)
7	Used recommended equipment's	77.50 (93)	12.50 (15)	10.00 (12)
8	Proper usage at recommended interval between use of NOLN and other agrochemicals	21.67 (26)	64.17 (77)	14.17 (17)
9	Whether used proper method of application	75.83 (91)	12.50 (15)	11.67 (14)
10	Recommended area covered with 100L mix	84.17 (101)	6.67 (8)	9.17 (11)
11	Improved quality or yield	57.50 (69)	23.33 (28)	19.17 (23)
12	Proper storage practices	2.50 (3)	89.17 (107)	8.33 (10)
13	Precautions followed as per guidelines	5.00 (6)	13.33 (16)	81.67 (98)
14	Observed significant cost saving while using NOLN	11.67 (14)	68.33 (82)	20.00 (24)
15	Usage before expire date	19.17 (23)	78.33 (94)	2.50 (3)

From Table 4 it can be concluded that the independent variables such as education, land holding, occupation, farming experience, annual income, mass media exposure, extension contact, social participation, scientific orientation, economic motivation, risk orientation, and management orientation had positive and significant correlations with the extent of adoption of Novel Organic Liquid Nutrients. Among these, variables like land holding, annual income, management orientation, risk orientation, economic motivation, extension contact, scientific orientation, mass media exposure, education and social participation showed a highly significant relationship. On the other hand, age and family size showed a negative and non-significant correlation, indicating no meaningful association with the extent of adoption among farmers. The study is in line with the findings of Chaudhary and Chauhan (2016) & Pathak and Jahanara (2018); Sharma et al. (2024); Parmar et al., 2024 Desai et al. (2024); Sharma et al. (2024).

Table 4: Relationship between independent variables and adoption of novel organic liquid nutrients

(n=120)

Sr. no.	Independent variables	r value
X ₁	Age	-0.162 ^{NS}
X ₂	Education	0.351 ^{**}
X ₃	Family Size	-0.152 ^{NS}
X ₄	Land holding	0.275 ^{**}
X ₅	Occupation	0.224 [*]
X ₆	Farming experience	0.239 ^{**}
X ₇	Annual income	0.246 ^{**}
X ₈	Mass Media exposure	0.289 ^{**}
X ₉	Extension contact	0.250 ^{**}
X ₁₀	Social participation	0.272 ^{**}
X ₁₁	Scientific orientation	0.331 ^{**}
X ₁₂	Economic motivation	0.358 ^{**}
X ₁₃	Risk orientation	0.330 ^{**}
X ₁₄	Management orientation	0.295 ^{**}

* Significant at 0.05 per cent level of probability

** Significant at 0.01 per cent level of probability

CONCLUSION

The study reveals that Novel Organic Liquid Nutrients (NOLN) are primarily adopted by experienced, older farmers (36+ years) with higher secondary education or above, typically from medium-sized families, possessing medium to large landholdings, and engaged in full-time farming with annual incomes over ₹2,00,000. These farmers show moderate mass media exposure, consistent extension contact, organizational membership, and moderate scientific orientation, economic motivation, risk orientation, and management orientation, leading to moderate adoption of

NOLN. Farmers were found to be capable of applying NOLN effectively in the recommended crops by following the prescribed guidelines. These included timely transplanting in nurseries, application at specific stages of the crop lifecycle using the recommended dosage and mixture, and the use of designated equipment. However, it was also observed that many NOLN users were hesitant to adopt necessary safety precautions and did not consistently ensure its use before the product's expiration date. Significant positive correlations were found between NOLN adoption levels with various socio-economic and behavioural factors, including education, landholding size, occupation, farming experience, annual income, mass media exposure, extension contact, social participation, scientific orientation, economic motivation, risk orientation, management orientation with landholding, annual income, and mass media exposure being particularly strong predictors for adoption; age and family size, however, did not significantly influence either.

POLICY IMPLICATION

Longitudinal studies should be made to track the long-term impact of Novel organic liquid nutrients adoption on soil health, crop yield, farmer income, and environmental sustainability, providing a more comprehensive understanding of its benefits. Researches focus on designing, implementing, and evaluating specific intervention strategies such as advanced training modules, improved supply chain models, demonstration plots.

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CONFLICT OF INTEREST

This is declared that there is "No Conflict of interest" among researcher

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