A COMPREHENSIVE ANALYSIS OF CHEMICAL APPLICATIONS FOR ENHANCED CULTIVATION OF OPTIMIZING BRINJAL CROP

Write down the author's name and affiliation

ABSTRACT

Brinjal (known as Eggplant) is one of the most popular tropical vegetables grown in India. The damage caused by ~~theShoot & Fruit Borer and other major~~ pests is estimated to range between ~~50.00 and 70.00~~ 50-70%~~per cent~~.Out of the sixty-two villages in the Puducherry district, ~~"five significant villages that grow brinjal were chosen for a reason"~~ ~~created~~rephrase~~" a structured interview schedule for the independent factors and an unstructured questionnaire for the dependent variables~~" Unclear statement. Clarify what you intended to convey here.. "Direct, arranged, in-person interviews were used to gather data"simplify the sentence like "We conducted in-person interviews to collect data.". A range of appropriate and standardi~~z~~zed statistical tools were used to evaluate the data. Three dependent variables and fifteen independent factors are present. The evaluation of chemicals utili~~z~~zed in brinjal production, methods for handling chemicals, and effects on human health. Data for the current study were gathered in the study area by a deliberate non-probability sampling strategy, ~~utilising~~ utilizingan Ex-post Facto research design. The farmers in the chosen sample utili~~z~~zed the chemicals as organic manure, fertili~~z~~zers, insecticides, micronutrients, and ~~regulators of~~plant growth regulators. For the grading variable, the coefficient of correlation between the independent variable and Pesticide ($~~Y~~_3Y_3$) was substantial for the farm power variable, it was the most significant. ~~For the variables~~rewrite related to agricultural mechani~~z~~zation and education, the coefficient of correlation between the independent variable and micronutrient ($~~Y~~_4Y_4$) was substantial.

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Keywords: Brinjal cultivation, chemical use, fertilizers, micro-nutrients and pesticides.

1. INTRODUCTION

The purple, green, or white pendulous fruit of the ~~soybean plant~~soybean plant!!!!!!!!!.*Solanum melongena* L., generally known as aubergine, makes it one of the most significant vegetables ~~cultivated~~ worldnationwide. ~~"Appearing closely related to potatoes and tomatoes, it is a member of the Solanaceae family."~~- Rephrase.India is the birthplace of eggplants and they have been grown~~. In~~ insouthern and eastern Asia~~, it has been grown"~~. ~~Now, after potatoes and tomatoes, brinjal aubergine comes in third. Although aubergine, sometimes known as "the king of vegetables," is still considered unusual in Poland and many other Central European nations, it is a rich and vital source of nutrition throughout Asia and the Mediterranean~~"—rephrase and use right form of verbs. Approximately 8 million farmers cultivate brinjal in the nation, meeting the needs of over 160 million individuals (Raza *et al.*, 2018). Globally,b~~B~~rinjal (~~Solanum melongena~~ italic form L.) is grown extensively (1.86 million ha)~~ globally~~, with an annual production of 54.08 million tonnes valued at over US$10 billion. Almost 84~~%per cent~~of Brinjal production is concentrated in China (61%), followed by India (23%). ~~Brinjal cultivation in~~ In India brinjal cultivation covers 711.30 thousand hectares, with an estimated annual production of 13,557.80 thousand metric tonnes and a productivity of 19.10 metric tonnes per hectare. In Chhattisgarh,India, ~~brinjal is~~its grown on 35,173 hectares with an annual output ~~production~~ of 6,42,335 metric tonnes and a productivity of 18.26 metric tonnes of fruits per hectare, which is lower than the national average (Mishra *et al.*, 2023).The nature of vegetables is ~~being~~ a higher productivity nature in a short duration with a valuable source of income sourcegeneration for the improvement of livelihood (Singh *et al.*, 2023)~~. The area under cultivation for vegetables and fruits is estimated at 10.86 million hectares and 09.60 million hectares, respectively (APEDA, 2023~~).

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Harmful synthetic chemical pesticides have been applied extensively in India to ~~lower~~ prevent early brinjal fall~~out~~ and boost yield. ~~Pesticides are frequently administered indiscriminately and at high concentrations without the intended purpose being known.~~ Premature brinjalfall prevention is becoming ~~more and more~~ increasingly dependent on controlling fungus and insect attacks across the ~~entire~~ nation. Insect assaults are a contributing factor to the low yield and subpar quality of brinjal produced. The fruit and shoot borer (FSB), an extremely destructive insect pest that conventional insecticides are unable to successfully control, cause~~dsregular and~~ significant losses to brinjal crops.The Fruit and Shoot Borer (FSB) insect is~~"a fact of life~~"????for brinjal growers in India. Farmers ~~are forced~~??? to apply pesticide~~s~~ 80–100 times during a single planting season ~~in order~~ to protect their brinjal.~~However, farmers are forced to try using insecticides to control infestations when they are severe.~~??The World Health Organization (WHO) report~~s~~ that 20.~~00~~%~~per cent~~ of pesticide use in the world is concentrated in developing countries, posing a ~~danger~~ risk to human health and the environment. Families residing in agricultural areas ~~were found to have~~?Have elevated pesticide levels ~~of pesticides~~ in their bodies (Afari-Sefa*et al*., 2015). This study gives a ~~the~~ clear analysis of organic and inorganic chemica~~ls,~~and their ~~association~~ correlation with the socio-economic profile of brinjal growers.~~which knows the behavioural knowledge of farmers.~~ The main objectives of the study are the chemical use patterns ~~of brinjal farmers and correlation between chemicals usage~~ usage and profile characteristics of brinjal farmers.

2. MATERIALS AND METHODS

2.1 Study Area

Four districts, spread across many Indian states, are situated within ~~of~~Puducherry's union territory i.e.,~~.They are~~ Yanam in Andra Pradesh;~~,~~Mahe in Kerala;~~,~~ Puducherry, and Karaikal

in ~~Tamilnadu~~Tamil Nādu.~~"The purposeful selection of the study location was in the Puducherry district of Puducherry, which has a higher concentration of farmers and a brinjal cultivation region than other districts within the Union Territory of Puducherry~~"-rephrase. Five communities out of 62 that cultivate brinjal ~~have been chosen;~~were selected, with each village ~~has~~ contributingten samples, ~~for a total of~~ total 50 samples. ~~chosen. Koonichampet, Manalipet, Sellipet, Sorapet, and Thirukkanur are the names of them. The union territory of Puducherry contains the latitude and longitude of Koonichampet (11°59'28"N 79°38'18"E), Manalipet (12°01'28"N 79°37'52"E), Sorapet (11°57'21"N 79°39'22"E), Sellipet (11°56'58"N 79°41'50"E), and Thirukkanur (11°59'46"N 79°38'29"E).~~not mandatory

2.2 Research Design

The investigation used an ex-post facto design and purposive sample techniques~~Ex post facto design and purposive sample techniques were used in this investigation~~. Excluding the sample farmers, there were ten participants in the pre-test interviews.~~If the sample farmers are excluded, there were ten samples in all that participated in the pre test interviews~~. ~~Following the pilot study, recommendations and edits were crucial in order to determine whether or not the questions were appropriate.~~-rephrase.~~It~~ The study was helpful, ~~on time~~timely, and had a clear objective. Farmers ~~who grow~~cultivating brinjal provided information through in-person interviews. The schedule includes both ~~There are both~~ closed-ended and open-ended questions ~~on the Schedule that are~~ based on actual needs. To ~~In order to~~ obtain first-hand information for the research study, the data was collected through interpersonal or face-to-face communication. ~~Every~~ Each interview schedule verifies and double-verifies the information provided by brinjal farmers.~~who grow brinjal.~~ ~~"Sample farmers provided the data, which were then analysed using statistical software that can be utilised in Microsoft Excel for data analysis. After that, the data analysis could be developed into an objective~~

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~~oriented form, which was necessary for tabulation, graphic representation, categorization, and quantitative numeric forms.~~"- Transfer to the 2.3

2.3 Statistical analysis

Frequency, Arithmetic Mean, Standard deviation (S.D), Pearson's Correlation Coefficient (r), and 't'– test. Write correctlyalong with the name of the software you used.

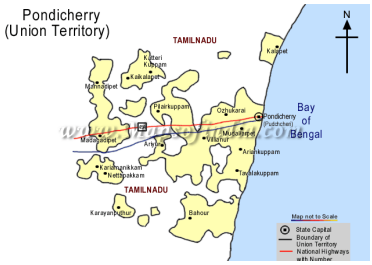

Figure 1: Map of selected districts

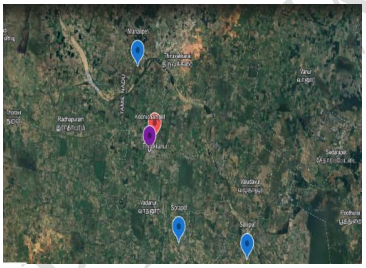

Figure 2: Pinpoint the selected villages using Google Eearth

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3. RESULT AND DISCUSSION

Please follow the Sample table format mentioned in the sample manuscript copy delivered by the journal.

The discussion about the tables and figures should appear in the text before the appearance of the respective tables and figures.

~~The mean, percentage, pearsons' correlation coefficient (rvalue), and "t" test are among the study's findings.~~ The greatest amounts of organic manures should be administered in a smaller quantity than what is advised. more fertili~~z~~zer than is advised being applied. More micronutrients were used than were advised. In the same way, the plant growth regulator was applied in higher amounts than advised. a group of chemicals used as pesticides that are applied in amounts that are either the same or less than those that are advised.

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Table 1: Application of organic and inorganic chemicals ~~used in brinjal crop Cultivation~~ in Puducherry

Sl. No	Application of Chemicals	Doses (Kg / Acre)			
		Recommended	Mean	Max.~~i~~	Min.~~i~~
A.	**Organic Manure**				
1.	Farmyard ~~Yard~~ Manures	1000	345	750	250
2.	Vermi~~-~~compost	500	432	750	300
B.	**Fertilizers**				
1.	Fractomphos (19:19:0:13)	400	777	1250	300
2.	DAP (18:46)	100	154	200	100
3.	Complex (IPL- All -17)	400	184	200	100
C.	**Micronutrient ~~Nutrient~~**				
1.	Sulphur	0.5	1.58	2	1
2.	Boron	0.15	0.34~~1~~	0.5	0.3
D.	**Plant Growth Hormone**				
1.	~~Gibberlic~~Gibberellic Acid – 0.001%	0.1	0.19~~07~~	0.25	0.12~~5~~
E.	**Pesticides**				
	Organophosphate				
1.	Monocrotophos	0.35	0.35~~8~~	0.4	0.3
2.	Choloropyriphos 20% EC	0.25	0.25~~05~~	0.3	0.2
3.	Acephate 75% SP	0.25	0.26~~55~~	0.35	0.2
	Pyrethroids				
4.	Cypermethrin 25% EC	0.25	0.26~~1~~	0.3	0.25

	Benzene Dicarboxiamides				
5.	Flubendamide 20% w/w	0.1	0.1025	0.125	0.1
	Neo-Nicotinoid				
6.	Imidacloprid 17.8Imidacloprid 17.8% SL	0.1	0.1007	0.125	0.05
7.	Acetamiprid 20% SP	0.1	0.1415	0.2	0.1
8.	Thiamethoxam 25Thiamethoxam 25%WG	0.1	0.0995	0.125	0.075
	Avermectin				
9.	Emamectin Benzoate 5%SG	0.1	0.1161	0.175	0.1
10.	Dimethoate 30% EC	0.25	0.2476	0.35	0.2
11.	Profonophos 50% EC	0.25	0.261	0.3	0.25
12.	Flonicamide 50% w/w	0.15	0.13	0.2	0.1
13.	Phenthoate 50% EC	0.25	0.245	0.25	0.2
14.	Chloranthranil 18.5% w/w SC	0.05	0.0516	0.06	0.05
15.	Propargite 57% EG	0.25	0.243	0.25	0.2
	Phenyl pyrazole				
16.	Fipronil 5%SC	0.25	0.239	0.25	0.2
	Fungicides				
17.	Carbendazim 50% WP	0.25	0.249	0.275	0.2
18.	Difenoconozole 25% EC	0.1	0.117	0.8	0.1
19.	Copper Oxy Chloride 50% WP	0.5	0.494	0.5	0.45
20.	Azoxystrobin 8.3%WG+ Mancozeb 66.7% WG	0.25	0.2445	0.25	0.225

(Source: Primary and Secondary data)

Table 2 demonstrated that, ~~at significant 1 percent and 5 percent,~~ there was no positive coefficient of correlation (r-value) between the application of organic manure (~~Y_1~~ Y_1) and the independent variables (X1 to X15). The application of organic manures was positively and non-significantly correlated with the independent variables of age, family size, house type, maternal possession, technology adoption of television, smartphone, and two-wheeler, irrigation, farm mechani~~z~~sation and impersonal cosmopolit~~e~~ate in source of information, and social participation.

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~~*Table 2: Coefficient of correlation (r value) between application of organic manure (Y_1) and independent variables (X_1 to X_{15})* (n = 50~~

*follow the journal instruction*regardings the table and figure title, indication of significant or non-significant,digit number etc.~~)~~

X	Variables	Y_1	
		Pearson's Correlation Coefficient (*r* value)	***p* value**
1.	Age	0.153^{NS}	0.289
2.	Caste	-0.188^{NS}	0.191
3.	Occupation	-0.108^{NS}	0.454
4.	Education	-0.079^{NS}	0.583
5.	Land	-0.21^{NS}	0.143
6.	Family: Type	-0.052^{NS}	0.72
	Family: Size of Family	0.044^{NS}	0.761
7.	House	0.126^{NS}	0.385
8.	Farm Power	-0.034^{NS}	0.814
9.	Maternal possession	0.246^{NS}	0.085

10.	Grading	-0.147 NS	0.307
11.	Technology Adoption:		
	Radio	-0.169 NS	0.242
	Television	0.005 NS	0.971
	Smart Phone	0.078 NS	0.59
	Two-Wheeler	0.002 NS	0.991
	Car	0.00 NS	0.00
12.	Irrigation	0.26 NS	0.068
13.	Farm Mechanization	0.059 NS	0.682
14	Source of Information:		
	a. Impersonal Cosmopolite	0.067 NS	0.643
	b. Personal Cosmopolite	-0.037 NS	0.799
	c. Personal Localite	-0.009 NS	0.951
15.	Social Participation	0.218 NS	0.128

* *p* value less than 0.05 implies that correlation is significant at 5 %
** *p* value less than 0.01 implies that correlation is highly significant at 1 %
~~NS – Non Significant~~no need to mention beside numeric formate on the table

However, there was a negative and non-significant link found betweenthe application of organic manures and caste, occupation, education, land holding, family type, farm power, grading, technology adoption of radio, personal cosmopolite, and personal localityve.

Table 3: Coefficient of correlation (r value) between application of fertilizers (Y_2), Micro-nutrient (Y_3), Pesticides (Y_4), Plant Growth Regulator(Y_5)and independent variables (X_1 to X_{15}) (n = 50)

X	Variables	~~Y2~~Y2		~~Y3~~Y3		~~Y4~~Y4		~~Y5~~Y5	
		Pearson's	***p***	**Pearson's**	***p***	**Pearson's**	***p***	**Pearson's**	

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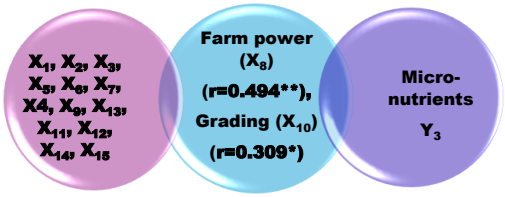
		Correlation Coefficient (*r* value)	value	Correlation Coefficient (*r* Value)	value	Correlation Coefficient (*r* value)	value	Correlation Coefficient (*r* value)	value
1.	Age	0.118 NS	0.414	0.199 NS	0.165	0.019 NS	0.898	-0.185 NS	0.198
2.	Caste	0.128 NS	0.376	-0.05 NS	0.731	0.062 NS	0.669	0.163 NS	0.257
3.	Occupation	0.01 NS	0.945	-0.194 NS	0.177	0.003 NS	0.985	0.325*	0.021
4.	Education	0.063 NS	0.663	-0.146 NS	0.313	-0.299*	0.035	-0.063 NS	0.664
5.	Land	0.091 NS	0.529	0.035 NS	0.81	0.229 NS	0.11	0.264 NS	0.064
6.	Family: Type	0.006 NS	0.968	-0.001 NS	0.993	-0.109 NS	0.452	-0.136 NS	0.348
	Size of Family	0.005 NS	0.972	-0.245 NS	0.087	0.057 NS	0.696	-0.176 NS	0.221
7.	House	-0.008 NS	0.956	0.186 NS	0.196	0.053 NS	0.713	0.001 NS	0.997
8.	Farm Power	-0.267 NS	0.061	0.494**	0	0.025 NS	0.864	0.310*	0.028
9.	Maternal possession	-0.122 NS	0.398	-0.079 NS	0.587	-0.191 NS	0.184	0.104 NS	0.471
10.	Grading	-0.211 NS	0.141	0.309*	0.029	-0.141 NS	0.329	-0.018 NS	0.903
11.	Technology Adoption:								
	Radio	-0.039 NS	0.785	-0.243 NS	0.089	-0.156 NS	0.279	0.001 NS	0.993
	Television	0.143 NS	0.321	-0.21 NS	0.143	0.171 NS	0.235	-0.136 NS	0.347
	Smart Phone	-0.091 NS	0.532	0.073 NS	0.614	0.123 NS	0.394	0.072 NS	0.62
	Two-Wheeler	-0.004 NS	0.981	-0.137 NS	0.342	-0.173 NS	0.229	-0.072 NS	0.618
	Car	0.00	0.00	0.00 NS	0.00	0.00	0.00	0.00	0.00
12.	Irrigation	0.237 NS	0.097	0.057 NS	0.695	-0.058 NS	0.689	0.131 NS	0.363

13.	Farm Mechanization	0.213 NS	0.137	-0.017 NS	0.908	-0.289*	0.042	-0.166 NS	0.25
14.	Source of Information:								
	a. Impersonal Cosmopolite	0.079 NS	0.585	0.17 NS	0.237	0.076 NS	0.599	-0.094 NS	0.518
	b. Personal Cosmopolite	-0.139 NS	0.336	-0.056 NS	0.7	-0.084 NS	0.563	0.105 NS	0.468
	c. Personal Localite	-0.239 NS	0.094	0.16 NS	0.268	-0.068 NS	0.638	0.281*	0.048
15.	Social Participation	0.066 NS	0.647	0.106 NS	0.464	-0.117 NS	0.419	0.067 NS	0.646

* *p* value less than 0.05 implies that correlation is significant at 5 %
** *p* value less than 0.01 implies that correlation is highly significant at 1 %
NS – Non - Significant

Figure– 3: Coefficient of correlation (*r* value) between application of Micro-nutrients (Y_3)

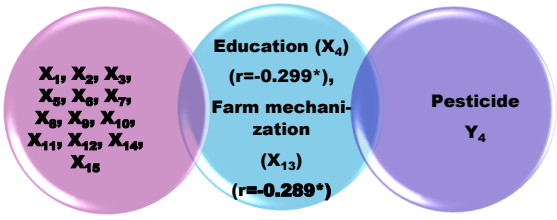


and independent variables (X_1 to X_{15})

It is clear that the application of fertilizsers was positively and non-significantly correlated with age, caste, occupation, education, land, family type, family size, television in the adoption of technology, irrigation, farm mechanizsation, impersonal cosmopolitate in the source of information, and social participation. In contrast, there was a negative and non-significant link between the application of fertilizsers and the following factors: house, farm power, maternal possession, grading, radio, smartphone, two-wheeler in terms of technology adoption, personal cosmopolitate, and personal localitye in terms of information source.

It is clear from Fig. 3 that the application of micronutrients has the most significant correlation coefficient with the independent variable of farm power. Grading's independent variable and the application of micronutrients are significantly correlated. The application of micronutrients was positively and non-significantly correlated with independent variables such as age, land, house, farm power, grading, adoption of smartphones in technology, irrigation, impersonal cosmopolite, personal localite, and social involvement. In contrast, the application of micronutrients was negatively and non-significantly correlated with caste, occupation, education, family type, size, mother possession, radio, television, two-wheeler in technology adoption, agricultural mechanisation, and personal cosmopolitate.

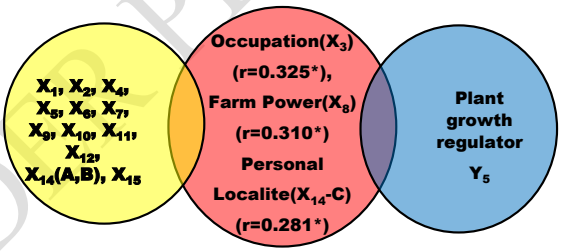
Figure 4: Coefficient of correlation (*r* value) between application of Pesticides (Y_4) and



independent variables (X_1 to X_{15})

Figure 4 It is obvious that the independent variables of farm mechanisation and education have a considerable impact on pesticide use (Y4). The usage of pesticides was positively and non-significantly correlated with independent factors such as age, caste, occupation, land, family size, house, farm power, television, and smart phone in terms of technological adoption and impersonal, cosmopolitan information sources. In contrast, there was a negative and non-significant link found between the use of pesticides and factors such as education, family type, maternal possession, grading, adoption of radio and two-wheelers, irrigation, agricultural mechanisation, personal cosmopolitate, and personal localite as information sources.

Figure 5: Coefficient of correlation (*r* value) between application of Plant growth regulators



(Y_5) and independent variables (X_1 to X_{15})

Figure 5 It is clear from the information source that the independent variables of employment, farm output, and personal location significantly correlate with the use of plant growth regulators ('Y5'). The use of plant growth regulators was positively and non-significantly correlated with independent variables such as caste, occupation, land, house, farm power, maternal possession, irrigation, personal cosmopolitate, personal localite in source of information, and social participation. In contrast, the following independent

variables affect the adoption of technology: television, two-wheelers, age, education, family size, type, and status; agricultural mechanisation; and impersonal, cosmopolitan information sources.

According to this study, brinjal farmers ~~that grow brinjal utilise~~ utilize both inorganic chemicals and organic manures to prevent most pests and diseases. However, ~~T~~he majority of farmers exceed the recommended chemical usage, as indicated in Table 1.~~employed chemicals in excess of what was advised, according to Table 1~~. he study collected data on chemical use patterns from locals and dealers in local input shops. Unfortunately, both acute and long-term human health are impacted by this practice.~~obtaining data on the patterns of chemical use from locals and dealers in local input shops. Both acute and long-term human health are impacted. "The knowledge acquired would offer a broad viewpoint on the steps involved in conducting research. As a result, research can be planned with measured risk, taking future issues into account. A thorough analysis of the literature was done for the current study, and several pertinent concepts were grouped to choose the dimensions."~~ Specify and concise your result from the research.~~The findings of the result of chemical handling practices followed by farmers is similar to (Kumari and Basavaraja, 2018).~~ Replaced on the discussion part.

4. CONCLUSION

Fertilizer consumption is high in the Union Territory of Puducherry, compared to other Indian states and union territories. Chemicals used in agricultural and horticultural crops include fertilizers, pesticides, plant growth regulators, and micronutrients. Most chemicals, including fertilizers, pesticides, plant growth regulators, and micronutrients, are recommended by shopdealers.~~Most chemicals are recommended by shop dealers; however~~However, farmers often lack awareness of the recommended doses and proper chemical handling practices.~~, farmers are unaware of recommended doses and chemical~~

handling practices. The optimization of brinjal crop yield in Puducherry, is based on a balanced chemical application strategy that combines scientific knowledge with practical field management techniques. Continuous research, extension services, and farmers' education are all required to promote sustainable agricultural practices and ensure the long-term viability of brinjal cultivation in the region. Indian vegetable cultivation reflected both a glorious past and a bright future.

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