

## TRAINING NEEDS OF FARMERS FOR IMPROVED MAIZE VARIETIES' CULTIVATION IN NIGER STATE, NIGERIA

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### Abstract

The study examined the training needs of farmers for improved maize varieties' cultivation in Niger State, Nigeria. This will assist extension agencies to develop training for maize cultivation based on the needs and preferences of farmers. A total of 240 respondents were proportionately and randomly selected from three Local Government Areas in the State. Validated interview schedule with reliability coefficient of 0.81 was used for collecting data. Data collected were analysed using percentage, mean and Poisson regression. The result showed that the mean age of the farmers was 38 years, while 73.3% of the respondents had formal education with average farm size of 1.7ha. Educational level (2.18), farming experience (2.29), farm size (3.16), cooperative membership (2.30) and income (1.85) positively and significantly influenced the training needs of the maize farmers. The paper drew attention to the need to consider the educational level, farming experience, farm size, cooperative membership and income of farmers when planning training programmes for maize cultivation. Farmers need training on planting methods, control of weeds, pests, diseases and fertilizer application. Preferably, trainings should be organised during the raining seasons in the villages on quarterly bases for short durations. It was also recommended that priority should be given to methods of planting, weed control, pest control, disease control and fertilizer application when training maize farmers.

### Introduction

Maize (*Zea mays*) is one of the important crops for food and industrial uses which has the highest yield/ha. among the cereal crops. Hence, maize is called Queen of the Cereal Crops. Maize is a leading and important cereal crop used in the human diet in most parts of the world. Also, it is an important feed component in livestock sector. In terms of total world production, maize on average over the last five years ranked higher than paddy rice and wheat (Bushra, Mubashar, Cao and Yang, 2019). For farmers to grow more maize effectively and efficiently, training is required because knowledge gaps lead to yield gaps. Agro-services and quality inputs are vital productivity enhancing tools, but their optimum use requires knowledge through training.

According to Ganapathy and Vetrivelvan (2019), training need to be provided to the farmers to educate them about the improved recommended practices for crop production to help them to gain more profit by improving productivity through extension training. In order to make these training more impactful, effective and efficient, the various training needs and preferences of the farmers have to be determined prior to the training sessions. It is against this background that this study was carried out.

### Methodology

The study was carried out in Niger State, Nigeria. The State is located in Guinea Savanna Ecological zone of Nigeria between Latitudes 8<sup>o</sup> 22<sup>1</sup> and 11<sup>o</sup> 30<sup>1</sup>N and Longitudes 3<sup>o</sup>30<sup>1</sup> and

7<sup>0</sup>20<sup>1</sup>E. Annual rainfall of the State ranged from 1,600mm in the South to 1100mm in the North with average monthly temperature range of about 23<sup>0</sup>C to 29<sup>0</sup>C (Niger State Geographic Information System, 2007). Multi-stage sampling technique was adopted for the study. At the first stage, three Local Government Areas (LGAs) were randomly selected. At the second stage, three villages were randomly selected from each LGA to obtain nine villages. At the third stage, 10% of farmers in each village were randomly selected. In all, a total of 240 respondents were sampled for the study. Content validity of the data collection instrument was ensured through expert consultation. The validated interview schedule which was subjected to Cronbach’s Alpha reliability test ( $r=0.81$ ) was used for data collection. Objectives one, two and three of the study were achieved using descriptive statistics. While objective four was achieved using inferential statistics (Poisson regression).

## Results and discussion

### Socio-economic Characteristics of the Respondents

Table 1 showed that the mean age of the respondents was 38 years. At this prime age, farmers will require training to boost production. Table 1 also indicated that 75.0% of the respondents were married. The mean household size of farmers was four persons, thus the need for more training to produce adequate food for the family. Table 1 further revealed that the mean year for education was 9 years. With this level of literacy, the extension agents can train the farmers with ease. The average farming experience of farmers was 10 years, this will enable them to appreciate training. Table 1 also indicated that 87.5% were members of cooperative societies. This will facilitate training of farmers in groups. Moreso, Table 1 revealed that 63.3% of the farmers were male. Also, result showed that 80.8% did not access credit. Additionally, the mean income realised was ₦189,000. This suggests the need for more training to improve income farmers. The mean farm size of the farmers was 1.7ha; signifying that majority of respondents were into small scale farming.

**Table 1:** Socio-economic characteristics of respondents

Variables	Mean	M/S f(%)	C/M f(%)	Gender f(%)	Credit f(%)
Age	38 years	Widower 12(2.5)	Yes 210(87.5)	Male 152(63.3)	Yes 46(19.2)
Household/s	4 members	Divorced 6(5.0)	No 30(12.5)	Female 88(36.7)	No 194(80.8)
Education	9 years	Single 42(17.5)			
Farming/exp.	10 years	Married 180(75.0)			
Income	₦189,000				
Farm size	1.7 ha.				

Source: Field survey, 2023, M/S= marital status, C/M= Cooperative member, f= frequency, %=percentage

### Training needs of farmer for improved maize cultivation

Areas of training needs were measured using 4-points Likert type rating scale and result in Table 2 revealed that training need was expressed for planting method in the area of plant spacing, sowing method and seed rate. Similarly, training needs were also expressed by the farmers for pre-emergence herbicide application and post-emergence herbicide application to save labour cost and time. Moreso, farmers need training on how to spray insecticides and fumigation. This result concurs with the finding of Umar *et al.* (2013) who reported that majority of farmers were in need of training on application of agro-chemicals.

**Table 2:** Area of training needs of maize farmers

Training need areas	Mean score	Remark
<b>Season</b>		
Raining season	1.51	Minor need
Dry season	1.39	Minor need
<b>Land preparation</b>		
Primary tillage (ploughing)	1.84	Minor need
Secondary tillage (harrowing)	1.87	Minor need
<b>Planting method</b>		
Seed rate	2.51	Major need
Spacing	3.04	Major need
Sowing method	2.62	Major need
<b>Weed Control</b>		
Pre-emergence herbicide application	3.09	Major need
Post-emergence herbicide application	3.06	Major need
Hand weeding	1.09	Minor need
<b>Pest control</b>		
Insecticides spraying	2.75	Major need
Fumigation	2.61	Major need
Cultural control method	1.17	Minor need
<b>Disease Control</b>		
Destroying of affected crop	1.06	Minor need
Use of resistance variety	2.52	Major need
Crop rotation	2.44	Minor need
<b>Manure application</b>		
Farm yard manure	1.84	Minor need
<b>Methods of Fertilizer Application</b>		
Spot application	2.57	Major need
Fertilizer placement	2.65	Major need
Broadcasting	2.28	Minor need
Foliar application	2.52	Major need
Fertilizer Requirement (NPK,Urea/ha)	2.33	Minor need
<b>Harvesting</b>		
Maturity test	2.01	Minor need
Harvesting time	1.62	Minor need
Harvesting method	1.12	Minor need
<b>Shelling</b>		
Method of shelling	1.07	Minor need
<b>Storage</b>		
Crib	1.94	Minor need
Rumbus	1.17	Minor need
Fireplace	1.09	Minor need
Silos	1.03	Minor need
<b>Processing</b>		
Method of processing	1.20	Minor need
<b>Uses</b>		
Corn meal	1.78	Minor need
Beer	1.06	Minor need
Baking flour	1.07	Minor need
Livestock feed	1.08	Minor need

Source: Field survey, 2023, 1-2.49= Minor need, 2.50- 4.00= Major need

Also, Training need was expressed for use of resistance varieties for controlling maize disease. In addition, training was solicited for on fertilizer placement, spot and foliar applications.

### Training Preference of Maize Farmers

Table 3 indicated that majority (64.2%) of the respondents preferred receiving training during the raining season when farming activities are on. The preference for training during raining season by majority of the respondents may be attributed to the fact that farmers would want to get their maize cultivation challenges solved in training through professionals' intervention. The result further revealed that 57.5% and 25.8% of the respondents preferred to receive training in villages and cooperative association offices respectively. This suggests that villages and cooperative association offices are suitable venues for organising trainings. Furthermore, the type of training preferred by majority of the respondents was peripatetic training with 71.7% response rate. Provision of place-to-place training can provide more information and enhanced participation.

**Table 3:** Training preference of maize farmers

Preferences	Frequency	Percentage
<b>Training season</b>		
Dry season	86	35.8
Raining season	154	64.2
<b>Training venue</b>		
Village	138	57.5
Farm centre	6	2.5
Cooperative association office	62	25.8
Research institute	10	4.2
Extension agency	18	7.5
Agricultural institution	6	2.5
<b>Training type</b>		
Institutional training	68	28.3
Peripatetic training	172	71.7
<b>Training frequency</b>		
Monthly	52	21.7
Quarterly	140	58.3
Biannually	36	15.0
Yearly	12	5.0
Once in 2 years	0	0.0
Once in 3 years	0	0.0
<b>Training duration</b>		
One days	30	12.5
Two days	64	26.7
Three days	122	50.8
Four days	24	10.0
Five days	0	0.0
One week	0	0.0

Source: Field survey, 2023

Regarding the frequency of training, 58.3% of the respondents preferred training to be quarterly. On the duration of training, 50.8% preferred three days training. The finding implies that farmers require short time trainings.

### Factors influencing training needs of farmers

Finding in Table 4 revealed that farm size was positively significant at 1%; hence there is likelihood of increase in the training the farmers will demand. Also, the result revealed that education was positively significant at 5%. This points to the fact that educational attainment increases technology adoption and thus the need for more training. Also, farming experience was positively significant at 5%; indicating that the higher the experience, the more training needs of farmers will be. Similarly, result indicated that cooperative membership was positively significant at 5%. This is likely, because farmers can pool their resources together and demand for training. In addition, income was positively significant at 10%. This is expected because farmers with higher incomes can be able to afford training expenses than the low-income farmers.

**Table 4:** Factors influencing training needs of farmers

Variables	Coefficient	Standard error	Z-value	p> T
Age	-0.0059	0.0032	-1.82*	0.069
Gender	-0.4802	0.9854	-0.49	0.627
Level of education	0.2201	0.1010	2.18**	0.031
Farming experience	0.1579	0.0688	2.29**	0.024
Household size	-0.1616	0.2673	-0.60	0.547
Farm size	542.0314	171.6221	3.16***	0.002
Access to credit	7.26e-06	6.39e-06	1.14	0.259
Marital status	0.7129	0.8294	0.86	0.392
Cooperative membership	17468.59	7584.254	2.30**	0.023
Income	22490.52	12179.99	1.85*	0.068
Constant	27.9457	3.9239	7.12***	0.000

Source: Field survey, 2023; Note \*\*\*=1%, \*\*=5%, \*=10% levels of significance

### Conclusion

Farmers need training on different areas of maize cultivation with varied training preferences. Factors that influenced the training needs of farmers were educational level, farming experience, farm size, cooperative membership and income.

### Recommendations

Agronomic practices should be given priority in the formulation of training plans for maize cultivation. Training should be conducted during the raining seasons at the village levels on quarterly bases for short durations. Educational level, farming experience, farm size and cooperation membership should be considered when designing extension programmes for training maize farmers

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