



Farmers' Perception of Disease Management at Irasa Farm Cluster, Ado Ekiti, Nigeria

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Abstract

This study examined the perceptions and practices of disease management among farmers in Irasa Farm Cluster, Ado-Ekiti, Nigeria. The findings revealed a notable demographic trend, with the majority of farmers (82.5%) being male, while a smaller proportion (17.5%) were female. Furthermore, the study highlighted a significant educational disparity, with many farmers lacking a tertiary educational background. Despite these challenges, the study found that a significant proportion of farmers (67.5%) employed integrated pest management (IPM) techniques, and 57.5% of the respondents reported using physical methods to control diseases. The study's findings also highlighted several areas of concern that warrant attention from policymakers, extension agents, and other stakeholders. The reliance on synthetic inputs and the lack of awareness about their long-term impact on soil health are pressing issues that need to be addressed. To address these concerns, the study emphasized the need for increased education and training on sustainable agricultural practices, including disease management, to enhance the resilience and productivity of farming systems in the region. By promoting sustainable agricultural practices and providing targeted support to farmers, it is possible to improve disease management outcomes and contribute to a more sustainable and productive agricultural sector.

Keywords: Farmers' perception, disease management, farm cluster

1.0 INTRODUCTION

Nigeria's agricultural sector contributed significantly to its GDP in the 1960s, accounting for 64% [2]. However, its contribution has declined to around 25% in recent years (Savary *et. al*, 2012). Despite this decline, agriculture remains vital to Nigeria's economy, providing food, raw materials, and foreign exchange, with 70% of the population relying on it for their livelihood [11; 5]. Vegetables are a valuable crop, offering nutritional benefits and income-generating potential, particularly in supplementing carbohydrate-based diets [4]. Nevertheless, vegetable production faces numerous challenges, including high input costs, transportation issues, market accessibility, and pest and disease infestations [12]. Insect pest attacks, in particular, significantly impact vegetable quality and yield, making them a major barrier to increased production. To address these challenges and increase agricultural production, farmers have turned to agrochemicals, using an estimated 125,000-130,000 metric tons of pesticides annually [3].

The global disparity between food demand and production continues to grow, exacerbated by the increasing global population, with sub-Saharan Africa being particularly affected [6; 10]. This widening gap has severe consequences, including food insecurity, malnutrition, famine, hunger, high food costs, and social instability. Several factors contribute to this disparity, such as environmental stresses, poor farming practices, limited arable land, and inadequate financing [9]. Additionally, disease and environmental factors are significant contributors to food waste and losses, with a substantial portion of the already insufficient food produced by farmers being lost due to disease,

which can also lead to reduced crop yields or complete crop failure [9].

Despite the challenges posed by pests, diseases, and weeds, farmers employ diverse strategies to mitigate these issues in their agricultural practices. Gaining insight into farmers' perceptions and approaches is essential for enhancing agricultural productivity and sustainability [1]. This report delves into the pest control methods utilized by farmers, with a focus on biological and organic controls, integrated pest management (IPM) techniques, chemical treatments, and alternative nonchemical methods.

MATERIALS AND METHODS

2.1 Study Site

This research was conducted at the Irasa Farm Cluster in Ado-Ekiti, Nigeria, located within the tropics. The area spans between 40°51' to 50°451' East longitude and 70°151' to 80°51' North latitude. Ekiti State, where the research took place, covers approximately 6,353 square kilometers and comprises 16 local government areas, with a population of around 3,270,798, according to the 2016 census. The state is bordered by Kwara and Kogi states to the north, Osun State to the west, and Ondo State to the south and east. Ekiti State experiences a tropical climate with two distinct seasons: a rainy season from April to October and a dry season from November to March. The temperature ranges from 21° to 28°, with high humidity. The southern part of the state is characterized by tropical forests, where agricultural activities dominate, with arable crop production being the primary source of livelihood.

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Livestock production and artisanship are secondary occupations among the farmers.

2.2 Sampling Technique and Sampling Size

A multi-stage sampling approach was employed to select respondents for this study, targeting cassava, yam, and tomato farmers within the Irasa Farm Cluster. The study population comprised farmers from the local farm community, where approximately 95% of the adult population is actively engaged in cultivating crops such as cassava, yam, tomatoes, and vegetables. A random selection process was used to choose participants from this community.

2.3 Data Collection and Analysis

Data collection was facilitated through the use of meticulously designed questionnaires and interview schedules, aimed at gauging farmers' perceptions and knowledge regarding disease management within the farm community. Respondents were chosen through a random selection process. The collected data underwent transformation and analysis using the IRRI STAR (2014) statistical tool.

RESULTS AND DISCUSSION

3.1 Distribution of the respondents according to their socio-economic characteristics

The socio-economic variables of farmers at Irasa Farm Cluster, Ado Ekiti, Nigeria, provide valuable insights into the demographic characteristics of the farming community. A significant majority of the farmers are male (82.5%), indicating a dominant role of men in farming activities in the region. This high percentage of male farmers may be attributed to cultural and traditional factors, where men are often expected to take on more physically demanding roles such as farming. The age distribution of the farmers reveals a relatively youthful population, with 25% of farmers falling within the 16-25 years age range. This suggests that a significant proportion of farmers are young and potentially more open to adopting new technologies and practices. However, the majority of farmers (42.5%) fall within the 36-56 years age range, indicating a significant level of experience and expertise among the farming community.

The educational background of the farmers reveals a concerning lack of formal education, with 52.5% of farmers having no formal education. This may limit their access to information and knowledge on modern farming practices, including disease management. However, 27.5% and 17.5% of farmers have primary and secondary education, respectively, which may provide a foundation for understanding and adopting new practices. The years of farming experience among the farmers reveal a significant level of expertise, with 45% of farmers having 11-20 years of experience. This suggests that many farmers have developed valuable knowledge and skills through their years of experience. However, 20% of farmers have less than 5 years of experience, which may indicate a need for targeted extension services and training to support these newer farmers.

Finally, the type of cropping system used by the farmers reveals a universal adoption of mixed cropping (100%). This suggests that farmers in the region recognize the benefits of diversifying their crops, which can help to reduce disease pressure and promote more sustainable farming practices. However, it also highlights the need for targeted support and guidance on managing mixed cropping systems to maximize their benefits.

Table 1: Demographics of Respondents in Irasa Farm Cluster, Ado-Ekiti

Variable	Frequency (n= 40)	Percentage (%)
Gender		
Male	33	82.5
Female	7	17.5
Age		
16-25	10	25
26-35	7	17.5
36-45	8	20
46-56	9	22.5
56 Above	6	15
Educational background		
None	21	52.5
Primary	11	27.5
Secondary	7	17.5
Tertiary	1	2.5
Years of Farming Experience		
<5 yrs	8	20
5-10 yrs	14	35
11-20 yrs	18	45
Type of Cropping System		
Mono cropping	0	0
Mixed cropping	40	100

3.2 Distribution of the farmers according to their perception towards Plant Disease in Irasa Farm Cluster

The results of the survey on farmers' perception towards plant disease in Irasa Farm Cluster reveal a profound impact of disease on farmers' livelihoods, with 97.5% of respondents having experienced disease on their farms, likely due to the region's tropical climate and intensive farming practices. The universal concern (100%) expressed by farmers when their plants get diseased underscores the critical importance of disease management for their livelihoods. The majority of farmers (57.5%) consult fellow farmers for advice, while 42.5% rely on agro-input suppliers, indicating a strong reliance on informal networks and input suppliers, likely due to limited access to formal extension services. The dominant attribution of disease spread to supernatural forces (60%) and reliance on spiritual means (70%) for prevention highlight a significant gap in knowledge and practice, while the limited recognition of scientific disease prevention methods, such as farm hygiene (17.5%) and crop rotation (10%), underscores the need for targeted education and training. Furthermore, the varied recognition of visual symptoms, including stunted growth, yellowing of leaves, necrosis, and chlorosis, by 42.5% of farmers, suggests a need for enhanced training on disease diagnosis and management.

Table 2: Farmers Perception towards Plant Disease in Irasa Farm Cluster

Variable	Frequency (n= 40)	Percentage (%)
Have you ever experience disease on your farm?		
Yes	39	97.5
No	1	2.5
How do you feel when your plants get diseased?		
Indifference	0	0
Worrisome	40	100
Whom do you consult when your plant is diseased?		
Agric. Extension officer	0	0
Fellow farmers	23	57.5
Agro input supply	17	42.5
Others: Online	0	0
How do diseases spread?		
Seed/Planting materials	6	15.0
Soil	10	25.0
Water	0	0
Others: Enemies/Satan	24	60.0

How do you prevent disease occurrence.		
Farm hygiene	7	17.5
Crop rotation	4	10.0
Use of resistance varieties	0	0.0
Early planting	1	2.5
Others: Appeasing God/Prayer	28	70
How do you identify plant disease on the field?		
Stunted growth (a)	2	5.0
Yellowish of Leaves (b)	4	10.0
Necrosis and Chlorosis (c)	8	20.0
Leaves defoliation and rot (d)	2	5.0
a-d	17	42.5
Others. Poor yield etc	7	17.5

3.3 Distribution of the farmers according to the disease management practices adopted in the study area

The results of the survey on disease management practices among Irasa cluster farmers reveal a reliance on integrated pest management (IPM) techniques, with 67.5% of farmers adopting this approach, likely due to the effectiveness of IPM in managing disease outbreaks and promoting sustainable agriculture. However, the use of chemical control methods is also prevalent, with 32.5% of farmers employing this method, possibly due to the ease of application and immediate results. Notably, none of

the farmers reported using biological and organic control strategies or cultural control methods, such as crop rotation and deep tillage, suggesting a significant knowledge gap in these areas. When it comes to non-chemical protection measures, 42.5% of farmers utilize biological methods, such as plant extracts, while 57.5% employ physical methods, like uprooting and destroying infected plants, indicating a preference for more tangible and immediate control methods. A significant majority (67.5%) of farmers are familiar with organic farming, but only a minority (27.5%) do not use pesticides in controlling diseases, highlighting the widespread use of chemical pesticides in the region. Among those who use pesticides, 40% base their application on disease severity, while 27.5% rely on personal discretion or recommendations from friends, suggesting a need for more informed decision-making. The selection of pesticides is largely influenced by pesticide advertisement from agro-dealers (52.5%), followed by price (30%), indicating that farmers are often driven by convenience and affordability rather than efficacy or environmental sustainability. These findings highlight the need for targeted education and training on integrated disease management practices, as well as the promotion of organic farming methods and the responsible use of pesticides.

Table 3: Disease management practices among Irasa cluster farmers.

Variable	Frequency (n= 40)	Percentage (%)
How do you manage diseases?		
Biological and organic control strategy	0	0
Chemical Control	13	32.5
Cultural control: Crop rotation, deep tillage	0	0
IPM Techniques	27	67.5
If you use non-chemical protection measure: which of the following do you utilize?		
Biological methods: plant extract	17	42.5
Physical methods (Uproot and destroy)	23	57.5
Other Approaches	0	0
Are you familiar with organic farming?		
Yes	27	67.5
No	13	32.5
Do you use pesticides in controlling diseases?		
Yes	29	72.5
No	11	27.5
If you use pesticides in controlling diseases, how do use it?		
Follow the recommendations on the container	2	5.0
Based on personal distresion	11	27.5
Recommendation from friend	11	27.5
Base on disease severity	16	40.0
What make your choice pesticides selection?		
Price	12	30.0
Any available Pesticide	5	12.5
Mode of application: Foliar or granular	0	0.0
Pesticide advertisement from agro-dealer	21	52.5
Pesticide container colour and design	1	2.5
Pesticide active ingredients	0	0.0
Others:	1	2.5

Conclusion

In conclusion, this study reveals that plant disease has a profound impact on the livelihoods of farmers in Irasa Farm Cluster, with nearly all respondents having experienced disease on their farms. The findings highlight a significant gap in knowledge and practice, with farmers relying heavily on informal networks, spiritual means, and supernatural attributions to manage disease. The limited recognition and adoption of scientific disease prevention methods, such as farm

hygiene and crop rotation, underscore the need for targeted education and training. Furthermore, the varied recognition of visual symptoms suggests a need for enhanced training on disease diagnosis and management. To improve disease management practices and reduce the impact of disease on farmers' livelihoods, it is essential to develop and implement targeted extension services, education, and training programs that address the knowledge gaps and misconceptions identified in this study.

By promoting evidence-based disease management practices, farmers in Irasa Farm Cluster can improve their productivity, reduce crop losses, and enhance their overall well-being.

Recommendations

1. Targeted education and training programs should be implemented to promote evidence-based disease management practices among farmers in Irasa Farm Cluster.
2. Extension services in Irasa Farm Cluster should be strengthened through the deployment of trained extension agents to provide farmers with accurate and timely information on disease management.
3. Integrated disease management practices that combine physical, cultural, and biological controls should be promoted among farmers in Irasa Farm Cluster through training and education programs.
4. Support should be provided for farmer-to-farmer knowledge sharing through the establishment of farmer field schools and other platforms for peer-to-peer learning and knowledge exchange.

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