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ASSESSMENT OF INFORMATION, TRAINING NEEDS AND CHALLENGES OF ONION PRODUCERS IN NORTHWEST NIGERIA

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ABSTRACT
Many development interventions designed for stakeholders in agricultural value chains did not take into consideration information on areas of need of stakeholders. This has led to a reduced impact of intervention in agricultural value chain development. The study was therefore carried out to profile socioeconomics and farm characteristics, identify information and training needs as well as production constraints for Onion producers in Northwest Nigeria. Multistage random sampling technique was used to select 344 respondents from 3 senatorial zones in Kano state and 2 senatorial zones in Kebbi state. Data collected were analysed using descriptive statistics such as frequency counts and percentages. The majority of the farmers were male (99.4%), married (96.5%), had primary education (31.4%), with a mean age of 45.6 years. A sizeable proportion had a farm size of less than 1 ha (53.8%). The prevalent farming system was mixed cropping (50.3%) and the majority harvested onion when fully ripe (55%). The most important information source was the extension agents while the most important information needed was on the storage of seeds and bulbs of Onions. The most important areas of training needs were the safe use of agrochemicals (91.9%), processing (86.9%), and storage of seeds and bulbs (86.6%). The study concluded that safe use of agrochemicals and post-harvest management of the produce are critical areas of need in the study areas. The study recommends adequate capacity building and information dissemination on the identified areas of need to promote the contribution of the commodity to food security, income generation, and economic empowerment.

Keywords: *Onion producers, Stakeholders Analysis, Information needs, Training needs, Kebbi and Kano States*

INTRODUCTION

Onion (*Allium cepa L.*) is a common vegetable crop consumed worldwide (Zhao *et al.*, 2021). It is essentially an out-of-season crop, produced on hydro-agricultural lands (Ibrahim, 2014). In Nigeria, production is concentrated mostly in the dry tropical zone of the north and it is a major source of income for farmers (Tambuwal, 2011). Nigeria ranked 8th position in onion production in the world and has a world share of 4.3%. Nigeria produced 244,866 tons of onions in 2020 (FAO, 2020). Adequate understanding of the different nodes of the onion value chain such as the input supply, production, and marketing systems is imperative for enhancing organized value chain development for the commodity (Kaka *et al*., 2021). However, most of the problems in the agricultural value chain have been solved using a top-down approach and it has not led to improvement in the commodity value chain (NIHORT, 2019). According to Bernard *et al*. (2009), numerous academic on-station and non-participatory research failed to foster desired impacts such as changes in policy and practice, sustained high productivity in farmers' fields, and reduction in poverty due to inadequate information from the stakeholders. Moriarty *et al*. (2005) also noted that efforts to involve farmers in research through action research, farmer field schools, learning alliances, and other interactive methodologies were never taken forward by implementers such as NGOs, donors, and governments. Designing and implementing a sustainable development intervention requires adequate stakeholder analysis in a collaborative participatory process (Brown and Ashman, 1996). The majority of empirical research on onion is on agronomy, the economics of production, storage, and price analysis of the commodity. Examples of such studies include Grema and Gashua, (2014) that analyzed economic returns in onion production along the River Komadugu area of Yobe State, Nigeria, and found that onion production was profitable. Ayinde and Obalola (2017) examined the effect of socioeconomic characteristics and income status on onion farmers' risk attitude in Sokoto state and found that farmers' age, farm size, and access to extension services significantly influenced the farmers' risk attitude. There is little or no empirical research

focusing on evaluating the training and information needs of onion producers in the study area. The present study intends to fill the gap by analysing information and training needs of onion producers to identify adaptable solutions to problems militating against development in the sub-sector.

METHODOLOGY

The study was carried out in Kano and Kebbi states, Northwest Nigeria. The states are reputed for comparative advantage in Onion production. Kano state is one of the major centres for the production of horticultural crops such as tomato, pepper and onion among others. In Kebbi state, agriculture accounts for a substantial part of the state's economy. Kebbi state has an agriculturally viable environment since it is endowed with high soil fertility, vast farmlands and economically viable rivers sheltered by a fine tropical climate. Major horticultural crops in the area are potatoes, onions, and vegetables. Similarly, fruits such as mango, cashew, guava and pawpaw are produced. A multistage sampling technique was used to draw the sample size for the study. In Kano state, producers were selected from the 3 senatorial districts which are Kano Central, Kano South, and Kano North. The first stage involved the selection of one LGA from each of the senatorial zone. Kura LGA was selected form Kano Central, Bebeji LGA (Kano South) and Bagwai LGA (Kano North). The second stage involved the selection of communities from the selected LGAs due to the intensity of onion production. The communities chosen were Gundutse in Kura Local government, Gafan and Wak Dakatsalle in Bebeji Local Government and Bauje sector 5 in Bagwai local government. In the third stage, a total number of 184 producers were selected in the communities surveyed based on probability proportionate to size. Similarly, in Kebbi state, a multistage sampling technique was employed to draw the sample size. Senatorial districts (Kebbi Central and Kebbi South) were selected out of the 3 senatorial districts. Aleiru LGA was selected from Kebbi central senatorial zone while Yauri LGA was chosen from Kebbi South LGA. In the third stage of the selection, Alieru and Yelwa Yauri communities were selected from the 2 selected LGAs. A total number of 203 respondents were selected proportionate to the size in the communities. In all, a total number of 387 producers were interviewed out of which 344 questionnaires were found useable for analysis. Primary data used for the study was collected using semi- structured questionnaire. Information collected included socioeconomic, farm characteristics, information, and training need as well as production constraints. Descriptive statistics such as frequency, means, and percentages were used in the analysis of collected data.

RESULTS AND DISCUSSION

Socioeconomic characteristics of producers: Findings from Table 1 showed that 99.4% of respondents were males while 0.6% were females. This could be associated with the prominent roles men play in horticultural crop production, marketing, processing, transporting, and input supply in the Northern region of the country. This is similar to the findings of Grema and Gashua, (2014) in which 94.0% of the respondents involved in onion production in Yobe state were male. Furthermore, 55.2% had a family size of 1-10, 35.2% (11-20), 9.0% (21-30) and 0.6% had 31-40 family size. This depicts a fairly large family size in the study area. This finding implied that able family size can be a source of family labour. Most of the respondents were within the age group of 40-49 (24.7%) with an average age of 45.6 years. One-third of the respondents had a primary level of education (31.4%), while others had secondary (27.0%), Islamic (11.9%), and tertiary (8.4%) forms of education. This implied that the majority had some level of literacy. This can help their interaction among the stakeholders along the value chain. A sizeable proportion of respondents (89.2%) were involved in the production of onions with more than half (56.8%) having 15 years of experience in onion production. This indicated that the majority of the respondents had been in the onion value chain as actors for over a decade. Most of the farmers (59.9%) belong to one form of association or the other. The main thrust of these associations is farming (74.3%), cooperative society (21.4%), trading (2.9%), and religious group (1.5%). Table 1 further showed that 65.7% of respondents enjoy the services of extension agents while 34.3% had no access to extension agents. The frequency of interaction with extension agents was weekly (23.5%), fortnightly (15.1%), and monthly (23.3%).

Farm Characteristics of Producers: The majority of the producers had less than 1 hectare (53.8%). Others had between 1-5 hectares (43.3%), 6-10 hectares (0.9%), 11-15 hectares

(0.6%), 16-20 (0.9%) and less than 20 hectares (0.6%) respectively. This implied that farmers in the study area were smallholders. The findings are supported by the report of Oyedele *et al*. (2022) who reported that most of the citrus farmers interviewed in Northcentral and Southwest Nigeria were smallholders. Furthermore, the result in table 2 showed that 50.3% of the producers were involved in mixed cropping while 40.1% practiced mixed farming. This is an indication that farmers engaged in different types of farming activities as a means of diversifying their production to guard against risk and other unpredictable natural challenges. The various crops being incorporated into the onion farm were tomato, pepper, maize, and groundnut (46.9%), sorghum, maize, wheat and millet (13.5%), maize, rice, and beans (41.3%). Animals being reared by the respondents include cattle, sheep, and goats (15.4%), cow, ram, and poultry (73.7%), donkey, and birds (0.3%). Harvesting stages vary among the producers, however, most of the respondents harvested onion when it is fully matured (55%), mature ripe (36%), mature unripe (4.7%) while only 4.1 percent harvested unripe onion. Harvesting onion when it is mature and ripe will prolong its shelf life and thus make it less perishable due to reduced water content. The majority (71.2%) of the respondents sell to retailers, 10.8% sells to assemblers and wholesaler, 9.6% sell to retailers and consumers, 7.0% sells to consumers, 0.3% sells to processors and assemblers. The producers engaged in both collective (79.7%) and individual marketing (70.9%) (Table 2).

Information sources and needs of the producer: The result in Table 3 showed that 28.2% of the respondents obtained horticultural information from extension agents, friends (26.7%), and radio/television (23.8%). Other sources of information explored by respondents were relatives (8.4%), Research Institutes (7.0%), the internet (4.1%), and newspapers (1.7%). Extension agents being the commonest source of information may suggest that extension agents are functional in Northern Nigeria. Also, radio/television including friends was a good source of information sharing in the country, especially among farmers. The result in Table 3 showed that the majority of the respondents require information on the storage of onion seeds and fruits (91.6%), weather information (88.1%), and credit/loan sources (87.5%). Other important information needs of the respondents were harvesting and marketing channels (86.6%), land preparation and planting/weed management (86.3%), processing (84.9%), and safe use of agrochemicals (84%) among others. Addressing identified information needs along the production chain may assist in improving the productivity of the onion producers.

Training needs of Producers: Findings from Table 4 showed that 36.6% of respondents had been exposed to training on different aspects of onion production which include production technique (24.8%), disease control, cultivation, and pest and disease (9.8%). This result implies that most of the onion producers were not exposed to training, thus there is a need for training to be organised for these groups of farmers to enhance their productivity. Analysis of the training needs of the respondents revealed that the majority of the producers require training on the safe use of agrochemicals (91.8%), storage of seed/fruits and processing (86.9%), health and nutrition (86.0%), and credit/loan (85.8%). Other crucial areas of training include nursery preparation technique (84%), weed management (82.0%), weather information (81.7%), marketing channels (80.8%), harvesting (78.2%), and land preparation (77.9%). A similar trend was observed by Adebisi-Adelani *et al*. (2020). They found that the most important training needs were on the safe use of agrochemicals and the storage of seeds in tomato production. Thus, building the capacity of the onion producers to improve productivity for increased income and economic empowerment will require training programs specifically designed to address the identified needs (Table 4).

Production challenges: The most important constraint (Table 5) in onion production in the study were the high cost of planting materials (95.1%), pests and diseases (94.5%), high cost of farm chemical procurement (93.9%), high cost of labour (91.3%), inadequate storage facilities (91.0%), adulteration of farm chemicals (90.7%), high cost of transportation (90.1%). Other important constraints are non-availability of improved planting materials (89%), inaccessibility in fertilizer procurement (87.8%), market glut (87.2%), bad road network (84.6%), inadequate post-harvest handling practices (81.7%), and inadequate market information (81.4%). Adebisi-Adelani *et al*. (2020) also observed that the high cost of

planting materials is one of the major constraints in tomato production in Northern Nigeria.

CONCLUSION

The study revealed that extension agents are the most important information source for the producers in the study area while the most important information needs are on storage of seeds and fruits, weather information, credit/loan, and marketing channels. The most important training needs of the stakeholders are on the safe use of agrochemicals and processing, while the least is on land preparation and planting. The study recommends appropriate dissemination of information and capacity development in the identified areas of need.

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Table 1: Socio-Economic Characteristics of Producers

VARIABLE	FREQUENCY	PERCENTAGE
Sex		
Female	2	0.6
Male	342	99.4
Marital Status		
Married	332	96.5
Single	12	3.5
Family Size		
1-10	190	55.2
11-20	121	35.2
21-30	31	9.0
31-40	2	6
Mean	8.6	
Age (years)		
< 20	25	7.3
20-29	41	11.9
30-39	73	21.2
40-49	85	24.7
50-59	81	23.5
60 & Above	39	11.3
Mean	45.6	
Education		
No formal Education	73	21.3
Primary	108	31.4
Secondary	93	27.0
Tertiary	29	8.4
Islamic education	41	11.9
Main Occupation (Farming)		
Yes	307	89.2
No	37	10.8
Farming Experience (years)		
< 1	3	0.9
1-5	32	9.3
6-10	65	18.9
11-15	48	14.0
> 15	196	57.0
Mean	20.7	
Membership of Association		
Yes	206	59.9
No	138	40.1
Years of Association:		
Cooperative society	44	21.4
Farmer association	153	74.3
Religious group	3	1.5
Others (Hunters, traders)	6	2.9
Access to Extension service		
Yes	226	65.7
No	118	34.3
Frequency of Extension Visit		
Weekly	81	23.5
Fortnightly	52	15.1
Monthly	80	23.3
Others	131	38.1

Table 2: Farm Characteristics of Producers

VARIABLE	FREQUENCY	PERCENTAGE
Farm Size (Ha)		
< 1	185	53.8
1-5	149	43.3
6-10	3	0.9
11-15	2	0.6
16-20	3	0.9
> 20	2	0.6
Mean	1.3	
Farming System		
Sole cropping	16	4.7
Mixed cropping	173	50.3
Mixed farming	138	40.1
Intercropping	15	4.4
Integrated farming	2	0.6
Crop mixture		
Tomato, pepper, maize, G/nut	160	46.9
Sorghum, maize, wheat, millet	45	13.5
Maize, rice, beans	139	41.3
Animals reared		
Cattle, goat, sheep	95	15.4
Cow, Ram, Poultry	248	73.7
Donkey birds	1	0.3
Maturity level at harvest		
Mature unripe	16	4.7
Mature ripe	124	36.0
Mature fully ripe	190	55.0
Unripe	14	4.1
HARVESTING		
Assemblers	1	0.3
Assemblers & Wholesaler	37	10.8
Wholesaler	3	0.9
Retailer	245	71.2
Retailer & Consumer	33	9.6
Processors	1	0.3
Consumers	24	7
Collective marketing		
Yes	274	79.7
No	270	20.4
Individual marketing		
Yes	244	70.9
No	96	29
Medium		
Producer association	148	43.0
Friends	196	57
Grading Standard		
Sell at lower price	115	33.4
Household consumption	140	40.7
Feed to animals	17	4.9
Others	72	20.9

Table 3: Information sources and needs of Producers

INFORMATION SOURCES	FREQUENCY	PERCENTAGE
Friends	92	26.7
Relatives	29	8.4
Radio/Television	82	23.8
Newspaper	6	1.7
Extension agents	97	28.2
Internet	14	4.1
Research Institutes	24	7
Information Needs		
VARIABLES	YES	NO
Storage of seeds/fruits	315 (91.6)	29 (8.4)
Nursery preparation techniques	283 (82.3)	61 (17.7)
Land Preparation & planting	297 (86.3)	47 (13.7)
Weed Management	297 (86.3)	47 (13.7)
Weather information	303 (88.1)	41 (11.9)
Safe use of Agrochemicals	289 (84.0)	55 (16.0)
Harvesting	298 (86.6)	46 (13.4)
Processing	292 (84.9)	52 (15.1)
Marketing channels	298 (86.6)	46 (13.4)
Credit/loan	301 (87.5)	43 (12.5)
Health and nutrition	288 (83.7)	56 (16.3)

Note: figure in parentheses are percentage

Table 4: Training modules attended and Needs of Producers

PARTICIPATION IN TRAINING ON ONION PRODUCTION	FREQUENCY	PERCENTAGE
Yes	126	36.6
No	218	63.4
Training modules attended		
Disease control, cultivation, pest & disease	33	9.8
Production Techniques	85	24.8
TRAINING NEEDS	YES	NO
Storage of seeds/fruits	299 (86.9)	45 (13.1)
Nursery preparation techniques	289 (84.0)	55 (16.0)
Land preparation & planting	268 (77.9)	76 (22.1)
Weed Management	282 (82.0)	62 (18.0)
Weather information	281 (81.7)	63 (18.3)
Safe use of agrochemicals	316 (91.9)	28 (8.1)
Harvesting	269 (78.2)	75 (21.8)
Processing	299 (86.9)	45 (86.9)
Marketing channels	278 (80.8)	66 (19.2)
Credit/loan	295 (85.8)	49 (14.2)
Health and nutrition	296 (86.0)	48 (14.0)

Note: figures in parentheses are percentages

Table 5: Production Challenges of Producers

CHALLENGE/PROBLEMS	(YES)	NO
Cost of planting materials	327 (95.1)	17 (4.9)
High transportation cost	310 (90.1)	34 (9.9)
Pest & disease infestation	325 (94.5)	19 (5.5)
Bad road network	300 (87.2)	44 (12.8)
Timely availability of improved suckers	281 (81.7)	63 (18.3)
Non-availability of improved planting materials	306 (89.0)	38 (11.0)
Inadequate postharvest handling practices	300 (87.2)	44 (12.8)
Inadequate storage facilities	313 (91.0)	31 (9.0)
High cost of farm chemical procurement	323 (93.9)	21 (6.1)
Adulteration of farm chemicals	312 (90.7)	32 (9.3)
Inaccessibility in fertilizer procurement	306 (89.0)	38 (11.0)
Inadequate market information	291 (84.6)	53 (15.4)
High labour cost	314 (91.3)	30 (8.7)
Glut	302 (87.8)	42 (12.2)
Limited productive land	280 (81.4)	64 (18.6)
Pilfering	267 (77.6)	77 (22.4)
Extension services	256 (74.4)	88 (25.6)
Harvest failure	276 (80.2)	68 (19.8)
Climate change	259 (75.3)	85 (24.7)