



Empowering Women with the Technical and Entrepreneurial Skills Required for Beniseed (*Sessamum Indicum*) Production in Ebonyi North Agricultural Zone for Nigeria Economic Diversification

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Abstract:

The study focused on identifying the technical and entrepreneurial skills required for the empowerment of women through Beniseed production in Ebonyi North Agricultural Zone. Survey research design was adopted; Five research questions and five hypotheses guided the study. The population of the study was 125 consisting of 120 beniseed farmers and 5 extension agents in the study area. The whole population was used so there was no sampling. Structured questionnaire containing 70 items developed from the literature was used for data collection. The instrument was validated by three experts. The reliability was tested with 20 beniseed farmers in Enugu State, Chronbach alpha was used to obtain a correlation of 0.81. The data collected were analyzed using mean, standard deviation for research questions and t-test for testing the null hypothesis. The result of the findings revealed that 15 pre-planting, 8 planting, 15 post-planting, 12 processing and 17 marketing items were the technical and entrepreneurial skills required by women for beniseed production in the study area. The result also showed that there was no significance difference in all the items. Among the recommendations was that women in beniseed production be empowered with those technical and entrepreneurial skills in the skill acquisition centres.

Keywords: Women, Technical, entrepreneurial, skills, beniseed production and economic diversification.

Introduction

The united nation frame work convention on climate change (2014) explained economic diversification as a process which a range of economic outputs is produced. Economic diversification can also refer to variation of income source or export goods and services. It is a process by which a nation has a number of different revenue streams and provides the nation with the ability for sustainable growth because there is no single reliance on a particular type of revenue. Economic diversification is a sure way of boosting the country's economy to reduce her economic stress. Uzonwanne (2015) asserted that economic diversification strives to smooth out unsystematic risk events in a portfolio so that the positive performance of some investments will balance the negative performance of others. Economic diversification in the context of this study is the process of empowering women through production of beniseed as a business.

The term women are usually referred as a female adult either single or married. Odo (2014) defined women as a female human being who is matured and capable of bearing children. Women in the context of this study refer to females who are matured and capable of going into profitable agricultural production. Women need to be empowered with skill in agricultural



production in order to boast them economically and diversify the nation's economy. Agriculture as the major source of the nation's export power before the discovery of crude oil in 1956 is the sure road map to economic diversification in Nigeria due to its divers sectors among which is beniseed production.

Possession and utilization of technical and entrepreneurial skills in these sectors of agriculture means diversifying the economy. The word technical means possessing a special skill and knowledge about how a kind of practical work is being done. It does with the use of machines or science in industries, medicine etc. while skill is the possession of ability to carry out a task. In the view of Ekele (2013) skill is an inherent habit of carrying out a task which involves acquisition of ability as a result of repetitive performance of an activity or operation. Technical skill in this study therefore means possession of a special and proficient skills and ability in beniseed production acquired through repetitive performance of the activities or operations involved in the practice. Technical skills in beniseed production also refers to the acquisition of knowledge and attitude that facilitates entrepreneurial skills involved in the pre-planting, planting, post planting, processing and marketing of beniseed. Nduma (2004) opined that entrepreneurship is the process by which an individual combine human, material and other resources in order to provide goods and services desired by man to boast his personal and national economy.

In the view of Adetokunbo (1997), entrepreneurship is explained as the willingness and ability of individuals to seek out investment opportunities, establish and run an enterprise successful based on identified opportunities. Entrepreneurship means combing personal characteristics, financial means and resource within one's environment to organize a business for profit (Nelson, Meredith & Neck, 1996). In the context of this study however, entrepreneurship involves the possession of the managerial skill required for beniseed production from pre-planting to marketing of the seed by women farmers in Ebonyi North agricultural zone of Ebonyi state. A farmer in the view of Dyer (2007) is a person engaged in agriculture, raising living organism for food materials. Farmers are those who undertake the purposeful activity of raising and reproducing crops and animals. A farmer in this regard is an owner of a beniseed farm who employs labourer(s) or work alone to produce beniseed. Beniseed is botanically called *sessamum indicum*, and belongs to the family pedaciaceae. In many parts of the world, it is called sesame. Nigeria call it beniseed with some tribes having a specific name for it.

The Hausas call it Ridi, Yorubas call it Ekulu or Eeku, in Tiv, Igala and Idoma of Benue state it is called Ishwa ocha, the Igbos call it Esisa while in Ebonyi state particularly in Ebonyi North, it is called Esho. The varieties currently grown in Nigeria today include NCRIBEN O1M which matures at 102-115 days, NCRIBEN O2M, NCRIBEN 0-31 (Goza-25), Yander 55 and E-8 which is the best variety recommended by the NCRI, this variety matures at 90 days, has light brown colour with 3.6 m diameter and 50 percent oil content. (Onyibe, Tologonshe and Ubi, 2015).

In the study area however, these varieties are identified and classified as late medium and early maturing. It requires little rain with a fertile soil of neutral PH. Onyibe, Tologboushe and Ubi (2015) opined that the potential for beniseed production in Nigeria is very high as an estimated 3.5 million hectares of the country's agricultural land are suitable for the production of beniseed but the average yield of the crop is about 300kg/ha which is four times lower than the average yield of other oil seed crops like groundnut and soyabeans . In Eastern Nigeria however, the crop is of less recognition as it is mainly grown in few parts of Ebonyi state precisely at the Northern agricultural zone of the state especially the Ngbo and Izzi clan where they are grown



for export and food just like the commonly known melon (Egwusi) soup. Among the industrial value that have triggered the demand for its production include according to Onyibe, Tologbonshe and Ubi (2015), utilization of the oil in the production of canned sardines and margarines due to its quality of long shell life. Cosmetics, lubricating, and pharmaceutical industries also uses beniseed oil for production.

Beside the above utilization of beniseed, the cakes are also used for animal feeds when mixed with other food supplements (Brutari et al., 1998). In order to boost the nation economically and diversify the economy, there will be need for women who constitute a greater number of rural farmers to acquire the required entrepreneurial and technical skills in beniseed production owing to its export potentials. Technical and entrepreneurial skills in beniseed production in this study are classified into pre-planting, planting, post planting, processing and marketing.

The pre-planting technical and entrepreneurial skills required for beniseed production in the view of Onyibe, Tologbonshe and Ubi (2015) include site selection, surveying, planning, land preparation. Pre-planting operation in beniseed production involves choosing a suitable and fertile land with a good topography, clearing the land and soil tillage. The crop is better planted on a flat and well tilled level field which could be achieved by either hoeing or the use of tractor. It can also be planted on ridges. The planting date is dependent on the zone but in Ebonyi state, it is planted by August. The spacing when planted on flat or zero tillage field is 60X10 for inter and intra row while on ridges 75 X 15 CM Inter and intra row is ideal (Margaret, 2016). It can be planted by broadcasting or drilling. However, drilling has been recommended by the National Cereal Research Institute NCRI as the best method in order to ease the conduct of other management operations in the farm. Under good soil condition and management or agronomic practices such as fertilizer application, weeding, thinning, disease, pest control etc, beniseed matures for harvest after three month of planting when 50-60% of the capsules have turned yellow (Brutari et al., 1998).

Harvesting is done by cutting the stem with a sickle similar to the manual harvest of rice. The cut stems are tied in bunches or bundles and dried for 3-4 days, The seeds are removed from the capsule by facing the head downward on a tapolene and gently hited with a stick to explode the seeds (Ray 2016). After winnowing, the seeds are further soaked with water to remove the floating seeds and wash the sedimented ones thoroughly for use by utilizing industries or for making traditional soups or bagged and stored for export or local market (Margaret 2016). The demand for beniseed in the local and foreign markets is very high due to the numerous purposes which they are used and for this reason, it therefore calls for adequate technical and entrepreneurial skillfulness such as market intelligent, price fixing etc during marketing in order to make profit (Margaret, 2016).

Beniseed can be sold in retail form where they are measured in an improvised cups and painters or in whole sale to the utilizing industries through exporters. Acquisition of the above technical and entrepreneurial skills in beniseed production by women in Ebonyi north agricultural zone will no doubt diversify the nation's economy owing to the huge industrial and economic potential of the crop especially at this period of Nigeria declining crude oil. The over dependence on the dwindling crude oil has made farmers and other stakeholders in the economic sector abandon production of major cash crops such as beniseed which is among the most economic crop, which when produced in a very large scale is capable of boasting the nation's economy greatly because of the numerous industrial utility. But it is quite unfortunate that



although many Nigerians including farmers of other crops know and consume this crop, they lack the knowledge and skills on how they are been produced.

There seem to be a gap between the farmers of other crops and the technical and entrepreneurial skills required for beniseed production in the study area even as the demand is highly increasing more than other crops in the local and foreign markets. This accounts for the reason why the crop is not widely known and produced despite the fact that the weather and soil condition of many Nigerian lands are suitable for the crop production, hence the need for this study to close the gap by revealing the various technical and entrepreneurial skills required in its production by women. This study therefore specifically tends to:

1. find out the pre-planting technical and entrepreneurial skills required by women for beniseed production in the study area.
2. find out the planting technical and entrepreneurial skills required by women for beniseed production in the area study.
3. find out the post-planting technical and entrepreneurial skills required by women for beniseed production in the study area.
4. find out the processing technical and entrepreneurial skills required by women for beniseed production by farmers in the study area.
5. find out the marketing technical and entrepreneurial skills required by women for beniseed production in the study area.

Research Questions

The following research questions guided the study:-

1. What are the pre-planting technical and entrepreneurial skills required by women for beniseed production in the study area?
2. What are the planting technical and entrepreneurial skills required for beniseed production by women in the study area?
3. What are the post-planting technical and entrepreneurial skills required by women for beniseed production in the study area?
4. What are the processing technical and entrepreneurial skills required by women for beniseed production in the study area?
5. What are the marketing technical and entrepreneurial skills required by women for beniseed production in the study area?

Null Hypothesis

The following hypothesis will be tested at 0.05 level of significance.

1. There are no significant differences between the responses of beniseed farmers and extension agents on the pre-planting technical and entrepreneurial skills required for beniseed production in the study area.
2. There are no significant differences between the responses of beniseed farmers and extension agents on the planting technical and entrepreneurial skills required for beniseed production in the study area.
3. There are no significances difference between the responses of beniseed farmers and extension agents on the post planting technical and entrepreneurial skills required for beniseed production in the study area.



4. There are no significance differences between the responses of beniseed farmers and extension agents on the processing technical and entrepreneurial skills required for beniseed production in the study area.
5. There are no significance differences between the responses of farmers and extension agents on the marketing technical band entrepreneurial skills required for beniseed production in the study area.

Methodology

The study adopted survey research design. This is a design that permits generalization of the result gotten from a representative sample, survey research design therefore becomes useful in this study so that the results of the respondents from a representative sample on the technical skills required by women for beniseed production in Ebonyi North Agricultural Zone can be generalized. The area of the study is Ebonyi North Agricultural Zone comprising of four (4) Local Government Areas (LGAs) which are Ohaukwu, Izzi, Abakaliki and Ebonyi L.G.A. The population of the study is 125 consisting of all the 120 beniseed farmers and 5 extension agents covering the zone. Because the total number was manageable and accessible, there was no sampling. The whole population was used. The instrument used for data collection was structured questionnaires containing seventy (70) item statements. The questionnaire was divided into two parts; first part contains the respondent's personal information while the second part sort the actual answers to the level of agreement or disagreement of the respondents on the questionnaire items. The questionnaire was structured in a four-point scale using highly required (HA) as 4 points, Required (R) as 3 points, not required (NR) as 2 points and highly not required (HNR) as 1 point. The instrument was validated by three (3) lecturers, one in the Department of Technology and Vocational Education TVE (Agric. Unit) of Ebonyi State University, Abakaliki and two from the Department of Agricultural/Home Economics Education of Michael Okpara University of Agriculture Umudike. Chronbach alpha method of reliability estimate was used to obtain a reliability of 0.81 in Enugu State. Four research assistants each from the four Local Governments in the zone were trained and used by the researcher to help administer the questionnaires. At each of the two times of administering the questionnaire, they were collected at the spot therefore all the 125 questionnaires were retrieved. Data collected were analyzed using the mean, standard deviation and t-test to test the null hypothesis. A cut-off of 2.50 was established and any item mean below this cut-off was regarded as 'not-required' (NR) while any item mean above the point was regarded as Required (R). Also, the null hypothesis for any item was rejected if the calculated value is greater than the critical value at 0.05 level of significance.

Results and Findings

Research Question 1: What are the pre-planting technical and entrepreneurial skills required by women for beniseed production in the study area?



Table 1: Mean Rating Scores And t-test Results Of Respondents In The Pre-planting Technical and Entrepreneurial Skills Required by Beniseed Farmers for beniseed Production In Ebonyi North Agricultural Zone.

S/N	Item statement	X_1	SD_1	X_2	SD_2	t-cal.	Decision
1	Source suitable land with fertile soil	3.11	1.15	3.0	1.28	0.19	R, NS
2	Source capital	3.28	1.36	3.1	1.68	0.24	R, NS
3	Source the planting material (seed)	3.08	1.32	3.01	1.25	0.12	R, NS
4	Source other inputs such as fertilizer, herbicides, insecticides,etc	3.67	1.44	3.28	1.52	1.12	R, NS
5	Source planting tools	3.55	1.55	3.09	1.61	0.62	R, NS
6	Decide on the farm size	3.81	1.81	3.56	1.05	0.5	R, NS
7	Survey the land	3.04	1.71	2.86	1.78	0.22	R, NS
8	Manually clear and pack the site	3.09	1.03	3.01	1.33	0.13	R, NS
9	Use of tractors to clear the site	3.26	1.35	3.15	1.36	0.18	R, NS
10	Clear the site with herbicides	3.20	1.40	3.16	1.20	0.07	R, NS
11	Stump and harrow for good root room	3.60	1.82	3.50	1.73	0.13	R, NS
12	Make ridges	3.01	1.32	3.00	1.57	0.01	R, NS
13	Level as in zero tillage	2.09	1.39	2.56	1.29	0.05	R, NS
14	Mark out planting points, furrows, pathways and water ways	3.31	1.66	3.28	1.78	0.04	R, NS
15	Mix organic manure in the soil before spreading	3.21	1.32	3.08	1.43	0.2	R, NS

Key: X_1 = mean of beniseed farmers, X_2 = mean of extension agents, SD_1 = standard deviation of beniseed farmers, SD_2 =standard deviation of extension agents, R=Required, NT=Not Required, NS=No significant, S=significant. D.F=123, t-critical=1.97(two tailed test)

The result of the data in Table 1 above shows that all the items had their mean ranging from 2.56 to 3.86 and standard deviation ranging from 1.03 to 1.78 indicating that their values were greater than the cut off (2.50). This means that the respondents agreed that all the 15 items were the pre-planting technical and entrepreneurial skills required by women for beniseed production in Ebonyi North Agricultural zone. Also the table reveals that the calculated value for all the items were below the critical or table value (1.97) at 0.05 level of significance. This shows that there was no significance difference between the mean responses of the two respondents.

Research Question 2: What are the planting technical and entrepreneurial skills required by women for beniseed production in the study area?

Table 2: Mean Rating Scores And t-test Results Of Respondents On The Planting Technical And Entrepreneurial Skills Required by Beniseed Farmers for beniseed Production in Ebonyi North Agricultural Zone.

S/N	Item Statement	X_1	SD_1	X_2	SD_2	t-calc.	Decision
1	Broadcast of the seeds on the preparation field	3.53	1.81	3.28	1.60	0.34	R, NS
2	Plant by drilling	3.61	1.39	3.50	1.32	0.18	R, NS
3	Plant at spacing of toxic for flat bed and 75x15cm for ridges	3.28	1.83	3.01	1.74	0.28	R, NS



4	Maintain a suitable planting date of July/August for consistence cycling	3.29	1.31	3.26	1.58	0.04	R, NS
5	Sweep top soil lightly over the seeds with broom to avoid pest attack	3.83	1.53	3.69	1.28	0.24	R, NS
6	Maintain a seed rate of 5kg/ha when broadcasted to avoid overpopulation	2.85	1.46	2.68	1.39	0.34	R, NS
7	Maintain a seed rate of 4kg per hectare when planting by drilling	3.26	1.40	2.98	1.52	0.41	R, NS
8	Maintain a seed rate of 3.5kg/ha when the drilling is on ridges	3.01	1.29	2.81	1.32	0.33	R, NS

Key: X₁ = mean of beniseed farmers, X₂ = mean of extension agents, SD₁ = standard deviation of beniseed farmers, SD₂ = standard deviation of extension agents, R = Required, NT = Not Required, NS = No significant, S = significant. D.F = 123, t-critical = 1.97 (two tailed test)

The result of the data in Table 2 above shows that all the items had their mean ranging from 3.01 to 3.83 and standard deviation ranging from 1.28 to 1.83 indicating that their mean values were greater than the cut off (2.50). This means that the respondents agreed that all the 8 items were the planting technical and entrepreneurial skills required by women for beniseed production in Ebonyi North Agricultural zone. Also the table reveals that the calculated value for all the items were below the critical or table value (1.97) at 0.05 level of significance. This shows that there was no significance difference between the mean responses of the two respondents.

Research Question 3: What are the post-planting technical and entrepreneurial skills required by women for beniseed production in the study area?

Table 3: Mean Rating Scores On The t-test Results of Respondents on the Post-planting Technical And Entrepreneurial Skills Required by Beniseed Farmers for beniseed Production in Ebonyi North Agricultural Zone.

S/N	Item Statement	X ₁	SD ₁	X ₂	SD ₂	T-calc.	Decision
1	Selective thinning and replacement after 3 weeks of planting	3.06	1.09	3.00	1.15	0.12	R, NS
2	Manual weeding	3.75	1.36	3.59	1.28	0.27	R, NS
3	Use of herbicides in weeding	2.48	1.56	2.01	1.81	0.57	NR, NS
4	Pest control	3.61	1.63	3.58	1.29	0.05	R, NS
5	Fungal, nematode, bacterial disease control using adequate measure	3.18	1.21	3.02	1.39	0.25	R, NS
6	NPK 15.15.15 fertilizers application when the soil is very poor	3.48	1.63	3.29	1.82	0.23	R, NS
7	Regular inspection by the farmer	3.63	1.78	3.50	1.69	0.17	R, NS
8	Construct bird scarers during ripening and at first four days of planting to reduce pests	3.00	1.58	2.93	1.65	0.09	R, NS
9	Identify a matured and ripe beniseed	3.72	1.28	3.59	1.33	0.22	R, NS
10	Prepare for harvesting after three months	3.46	1.29	3.28	1.18	0.33	R, NS



11	Use monochrotophos, superplus, karate, etc, and other insecticides to control insect attack	2.83	1.35	2.69	1.49	0.21	R, NS
12	Harvest by pulling with hand	2.45	1.36	2.39	1.48	0.89	NR, NS
13	Harvest by cutting with knife or sickle	3.19	1.63	3.00	1.75	0.24	R, NS
14	Cut of the stems	3.02	1.63	3.10	1.41	0.12	R, NS
15	Tie the harvested stems in bunches	3.31	1.29	3.00	1.18	0.57	R, NS
16	Transportation to further processing points	3.39	1.21	3.01	1.33	0.63	R, NS
17	Pack the bunches into barrow, basins, tractors, etc for transport	3.60	1.46	3.46	1.29	0.24	R, NS
18	Use of harvester machine in harvesting	2.48	1.71	2.30	1.63	0.24	NR, NS

Key: X_1 = mean of beniseed farmers, X_2 = mean of extension agents, SD_1 = standard deviation of beniseed farmers, SD_2 = standard deviation of extension agents, R = Required, NT = Not Required, NS = No significant, S = significant. D.F = 123, t-critical = 1.97 (two tailed test)

The result of the data in Table 3 above shows that all the items had their mean ranging from 2.01 to 3.75 and standard deviation ranging from 1.18 to 1.83 among which 15 items had their mean above the cut off (2.50), while 3 items had their mean below the cut off (2.50). This means that the respondents agreed that all the 15 items were the post-planting technical and entrepreneurial skills required by women for beniseed production but disagreed that the three items (3, 12 & 17) were the technical and entrepreneurial skills required by women for beniseed production in Ebonyi North Agricultural zone. Also the table reveals that the calculated value for all the items were below the critical or table value (1.97) at 0.05 level of significance. This shows that there was no significance difference between the mean responses of the two respondents.

Research Question 4: What are the processing technical and entrepreneurial skills required by women for beniseed production in the study area?

Table 4: Mean Rating Scores and t-test Results of Respondents on the Processing and Storage Technical and Entrepreneurial Skills Required by Beniseed Farmers for beniseed Production in Ebonyi North Agricultural Zone.

S/N	Item Statement	X_1	SD_1	X_2	SD_2	t-calc.	Decision
1	Sundry for one week by spraying the bunches on top of a large tapolene	3.53	1.39	3.48	1.43	0.08	R, NS
2	Monitoring it during drying against pest	3.01	1.29	3.00	1.53	0.01	R, NS
3	Hang the bunches on ropes with the capsule faced upward	3.39	1.28	3.30	1.18	0.17	R, NS
4	Beat the capsule gently with a stick after a week to explode the seeds	3.26	1.64	3.16	1.31	0.17	R, NS
5	Sieve with a sieve to remove grasses and leaves	3.03	1.89	2.98	1.65	0.18	R, NS



6	Winnow to remove grasses and bad seeds	3.61	1.36	3.50	1.45	0.17	R, NS
7	Sort out better seeds for further planting	3.48	1.61	3.03	1.46	0.67	R, NS
8	Soak in water to drain off floating and bad seeds	3.06	1.17	3.01	1.30	0.08	R, NS
9	Wash the sedimented seeds thoroughly	3.18	1.11	3.00	1.30	0.31	R, NS
10	Sundry for 3-5 days at 34-37 ⁰ c temperature	3.29	1.29	3.00	1.16	0.38	R, NS
11	Clear and disinfecting storage house	3.61	1.59	3.08	1.39	0.83	R, NS
12	Bagg and packag for sale or storage	3.64	1.39	3.21	1.43	0.66	R, NS

Key: X_1 = mean of beniseed farmers, X_2 = mean of extension agents, SD_1 = standard deviation of beniseed farmers, SD_2 = standard deviation of extension agents, R = Required, NT = Not Required, NS = No significant, S = significant. D.F = 123, t-critical = 1.97 (two tailed test)

The result of the data in Table 4 above shows that all the items had their mean ranging from 2.98 to 3.64 and standard deviation ranging from 1.11 to 1.89 indicating that their mean values were greater than the cut off (2.50). This means that the respondents agreed that all the 12 items were the processing technical and entrepreneurial skills required by women for beniseed production in Ebonyi North Agricultural zone. Also the table reveals that the calculated value for all the items were below the critical or table value (1.97) at 0.05 level of significance. This shows that there was no significance difference between the mean responses of the two respondents.

Research Question 5: What are the marketing technical and entrepreneurial skills required by women for beniseed production in the study area?

Table5: Mean Rating Scores and t-test Results of Respondents on the Marketing Technical and Entrepreneurial Skills Required by Beniseed Farmers for beniseed Production in Ebonyi North Agricultural Zone.

S/N	Item Statement	X_1	SD_1	X_2	SD_2	t-calc.	Decision
1	Transportation to local markets	3.79	1.59	3.00	1.82	0.95	R, NS
2	Contact buyers	3.68	1.36	3.60	1.49	0.12	R, NS
3	Advertisement	3.43	1.12	3.09	1.16	0.64	R, NS
4	Fix price according to quality and variety	3.78	1.32	3.60	1.46	0.27	R, NS
5	Price negotiation	3.09	1.28	3.01	1.39	0.13	R, NS
6	Supply to local restaurants	3.65	1.19	3.02	1.28	1.09	R, NS
7	Finding out the variety customers might need	3.03	1.36	3.00	1.20	0.05	R, NS
8	Identify customers	3.42	1.63	3.15	1.49	0.40	R, NS
9	Market intelligence	3.03	1.48	3.00	1.30	0.05	R, NS



10	Keeping adequate record of sales	3.60	1.65	3.07	1.50	0.77	R, NS
11	Retail selling in cups and painters	3.70	1.11	3.22	1.06	1.00	R, NS
12	On-farm selling	3.29	1.15	3.18	1.10	0.22	R, NS
13	Organize or coordinate sales assistants	3.01	1.29	2.81	1.32	0.33	R, NS
14	Sale to processing industries	3.61	1.59	3.08	1.39	0.83	R, NS
15	Carry out market survey for the prices of beniseed for the season	3.21	1.32	3.08	1.43	0.02	R, NS
16	Wholesale to beniseed exporters	3.60	1.82	3.50	1.73	0.13	R, NS
17	Customer relation	3.39	1.21	3.01	1.33	0.63	R, NS

Key: X1= mean of beniseed farmers, X2= mean of extension agents, SD1= standard deviation of beniseed farmers, SD2= standard deviation of extension agents, R= Required, NT = Not Required, NS= No significant, S= significant. DF =123, t-critical= 1.97 (two tailed test)

The result of the data in Table 5 above shows that all the items had their mean ranging from 3.00 to 3.79 and standard deviation ranging from 1.06 to 1.82 indicating that their mean values were greater than the cut off (2.50). This means that the respondents agreed that all the 17 items were the marketing technical and entrepreneurial skills required by women for beniseed production in Ebonyi North Agricultural zone. Also the table reveals that the calculated value for all the items were below the critical or table value (1.97) at 0.05 level of significance. This shows that there was no significance difference between the mean responses of the two respondents.

Discussion of the Findings

The result of the study in Table 1 revealed that 15 items were the required pre-planting technical and entrepreneurial skills required by women for beniseed production in Ebonyi North agricultural zone. This is in keeping with Onyibe *et al* (2015) who opined that the pre-planting technical and entrepreneurial skills required for beniseed production include site selection, surveying, planning and land preparation. The author went further to assert that the crop is better grown on a well prepared, tilled and leveled flat soil and that could be achieved by either hoe or use of tractor.

Table 2 showed that 8 planting technical and entrepreneurial skills are required for beniseed production in Ebonyi North Agricultural zone. This result is in accordance with NCRI (2000) who recommended the space of 60 X 10cm for flat bed and 75 X 15cm for ridges in planting of beniseed, drilling method in planting and planting on ridges or flat ground. Margareth (2016) opined that the planning date is dependent on area and that planting can also be done by broadcasting.

Table 3 proves that 15 items were the post-planting technical and entrepreneurial skills required by women for beniseed production in Ebonyi North Agricultural Zone. This finding is in keeping with Brutari *et al* (1998) who said that under good soil condition and management or agronomic practices such as fertilizer application, weeding, thinning, disease and pest control etc and that beniseed matures for harvest after three months of planting when 50–60% of the capsules have turned yellow.



Table 4 reveals that 12 items were the processing technical and entrepreneurial skills required for beniseed production in Ebonyi North Agricultural Zone.

This is in keeping with the assertion of Ray (2006) who asserted that when the harvested beniseed dry (after 4 days of intensive sunlight), the seeds are removed from the capsule by facing the head downward on a tapolene and gently hited with a stick to explode the seeds. The finding is also in concurrence with the findings of Margareth (2016) that the seeds are soaked in water to remove the floating seeds and wash the sedimented ones thoroughly for use by the utilizing industries or for making traditional soup and stored for export or local market.

Table 5 showed that 17 items were the marketing technical and entrepreneurial skills required by women for beniseed production in Ebonyi North Agricultural zone. This is in accordance with the view of Margareth (2016) who is of the view that the demand for beniseed in the local and foreign market is very high due to the numerous purposes which they are used and therefore calls for adequate technical and entrepreneurial skillfulness such as market intelligence, price fixing etc during marketing.

Conclusion

The above findings from the pre planting to marketing were the technical and enterprenurial skills in beniseed production that women need to be empowered with in order to boast their economic status and diversify the nation's economy. If the farmers can acquire and utilize these skills, the national economic diversification through beniseed production will be certain.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Government's Ministry of Poverty Alleviation through the extension agents should organize workshops for women on beniseed production technical and entrepreneurial skills to empower them with the skills above.
2. There should be more sensitization of women who constitute greater percentage of rural farmers and indeed the general public by the extension agents on the important and utilization of beniseed so that more people will be aware of the crop and go into the production to boast their financial status and diversify the entire nation's economy.

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