

Identification of Job Skills in Aloevera Production for Income Diversification Among Farmers in Taraba State

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Submitted: 20 July 2018; Accepted: 15 Nov 2018; Published: 04 Jan 2019

Abstract

This study was on identification of job skills in Aloe Vera production for income diversification among farmers in Taraba State. Specific objectives for the study were to: identify the skills in pre-planting operations for Aloe Vera production, determine the skills in planting operations for Aloe Vera production, identify the skills in post-planting operations for Aloe Vera production, determine the skills in harvesting operations for Aloe Vera production in Taraba State. Four research questions were raised and answered; four hypotheses were formulated and tested at $P \leq 0.05$ level of significance. The design for the study was survey research design. The population for the study was 401 respondents consisting of 285 registered farmers in Taraba State and 116 Agricultural Extension Agents in Taraba State. A structured questionnaire titled: Aloe Vera Production Skills Questionnaire (APSQ) was used for data collection. Mean was used to answer the research questions, while t-test was used to test the hypotheses at $P \leq 0.05$ level of significance. The findings of the study revealed that: 15 skills in pre planting of Aloe Vera, seven skills in planting of Aloe Vera, five skills in post planting of Aloe Vera and 6 skills in harvesting operations in Aloe Vera production. It was therefore recommended that the 35 job skills identified by this study be packed into a training manual and used for training farmers for income diversification in Taraba State.

Keywords: Aloe Vera, Job skills, Income diversification, Farmers.

Introduction

Aloe Vera *Aloe spp* is a succulent African plant of the genus *Aloe* and family *Aloaceae* having rosettes of leaves usually with fiber-like hemp and spikes of showy flowers [1]. It is a very short-stemmed plant with thick leaves and soothing mucilaginous juice. Its leaves develop spiny margins with maturity. Aloe Vera is grown widely in tropics and as houseplants.

Aloe Vera contains many minerals vital to the growth process and healthy function of all the body systems [2]. The author maintained that, the constituents in Aloe Vera are Vitamins, Minerals, Sugars, Enzymes, Lignins, Amino Acids, Anthraquinones, Saponins, Fatty Acids, Salicylic Acid. The plant is known to have many uses. The Food and Agriculture Organization put that Aloe Vera is excellent in the treatment of skin conditions such as burns and eczema. It also stimulates the immune response for those with weakened immune systems either from existing conditions or post-illness fatigue. It can also calm the immune response, such as in the case of high fever where less immune reaction is beneficial. For these accrued benefits, the production of Aloe Vera will be a worthwhile venture.

Production in the view of Olukumi in Adaa is transformation of raw materials into finished product through an organized and controlled use of resources [3]. In the submission of Elom, Nongugwa and

Asogwa production is the process of creating an output from combination of various resources and making it get to the final consumer [4]. It is a judicious utilization of the factors of production (capital, land, labour and entrepreneur) to yield an output. Aloe Vera production in this study is the utilization of all the factors of production for successfully raising of Aloe Vera plants. Erebor observed that crop production entails pre-planting, planting, post planting and post harvest operations [5]. All these activities require skill for their execution.

Skills as submitted by Hawkins are specified abilities to do something well [6]. Obunadike explained skills as well established habits of doing things by people [7]. Skills are established ability to execute a task effectively and efficiently. It is also the ability to execute a task in a competent manner. Obunadike further stressed that, acquisition of skills is a strong source of wealth creation that helps to alleviate poverty and provide opportunity for diversification of income [7]. Onu and Ugwuoke state that one who lacks skills may not be useful to him and the society [8]. Job skills in Aloe Vera production are therefore well established habits or abilities by farmers for judicious utilization of the factors of production in raising Aloe Vera plants to maturity. The practice can earn farmers income.

Income in the statement of Mishra, El-Osta, and Johnson is the maximum amount that one can afford to spend on consumption goods or services during a specified period without having to finance

its expenditure by reducing its cash, by disposing of other financial or non-financial assets or by increasing its liabilities [9]. In the same vein, Weale and Sefton defined income as the maximum amount a man can spend and still be as well off (the present discounted value of current and future utility should be unchanged over the interval considered) at the end of the week as at the beginning. Income therefore is the amount that an individual or an enterprise can pay for bills without reducing its cash or increasing its liabilities but rather increasing equity [10]. Income diversification in this study is the ability of farmers to have varying ways of generating money to foot their bills other than from the sales of staple crops proceeds and still have enough to save for future uses.

Farmer according to Taraba State Ministry of Economic Planning (TSMEP) and International Federation of Agricultural Producers (IFAP) in Adaa are people who cultivate crops or rear animals for use by man [3]. Similarly, the Central Bank of Nigeria reported that a farmer is a person who engages in agriculture; raising living organisms for food or raw materials [11]. Asogwa, Nongugwa and Ugwuoke submitted that, a farmer is one who engages in growing crops for human consumption and industrial uses [12]. Most farmers in Taraba State engage in production of staple food crops such as maize, yam, cassava sorghum, mainly for their family consumption and little surplus for sale. The farmers are guided by agricultural extension agents who educate and help them experiment with new technologies (including new technologies) or with new farming systems. Meanwhile, lecturers teach agricultural principles to students in tertiary institutions for improved agricultural production. These two groups (agricultural extension agents and lecturers) are trained, skilled and vast in techniques and principles of improved agricultural production.

Although Aloe Vera and its production are beneficial and lucrative, many farmers in Taraba state do not produce it. The few who do so do not produce it on a commercial basis. Does it mean that farmers do not know/like the crop? Or could it be that there is low demand for the crop in the state? The researchers in an interaction with some farmers in the state established that the farmers do not have the skills required for Aloe Vera production. The concern of the researchers is to identify the skills for Aloe Vera production for farmers to enter into Aloe Vera production and progress in it. The purpose of this study was therefore to identify job skills in Aloe Vera production for income diversification among farmers in Taraba State. Specifically, the study sought to identify the skills in:

1. Pre planting operations for Aloe Vera
2. Planting operations for Aloe Vera
3. Post planting operations for Aloe Vera
4. Harvest operations for Aloe Vera production

Research questions

1. What are the skills required by farmers in pre planting operations for Aloe Vera production in Taraba State?
2. What are the skills required by farmers in planting operations for Aloe Vera production in Taraba State?
3. What are the skills required by farmers in post planting operations for Aloe Vera production in Taraba State?
4. What are the skills required by farmers in harvest operations for Aloe Vera production in Taraba State?

Research hypotheses

1. There is no significant difference in the mean rating of responses of Lecturers and Agricultural Extension Agents on the skills

required by farmers in Pre-planting operations for Aloe Vera for income diversification in Taraba State.

2. There is no significant difference in the mean rating of responses of Lecturers and Agricultural Extension Agents on the skills required by farmers in planting operations for Aloe Vera for income diversification in Taraba State.
3. There is no significant difference in the mean rating of responses of Lecturers and Agricultural Extension Agents on the skills required by farmers in Post-planting operations for Aloe Vera for income diversification in Taraba State.
4. There is no significant difference in the mean rating of responses of Lecturers and Agricultural Extension Agents on the skills required by farmers in harvest operations for Aloe Vera for income diversification in Taraba State.

Methodology

Four research questions guided the study; four hypotheses were formulated and tested at $P \geq 0.05$ level of significance. Survey research design was adopted for the study. Nworgu described survey research design as one in which a group of people or items are studied by collecting data using interview schedule or questionnaire and analyzing them to represent the population [13]. Therefore the study used questionnaire as the instrument. The instrument was titled: Aloe Vera Production Skills Questionnaire (APSQ) developed from literature review and experience of the researchers. It was conducted in Taraba State of Nigeria. The population of the study was 401 made up of 116 extension agents in Taraba State and 285 farmers in Taraba state. The entire population was involved in the study due to its manageable size, hence there was no sampling. Each questionnaire item had four response options of Highly Required (HR), Averagely Required (AR), slightly Required (SR) and Not Required (NR) with a corresponding value of 4, 3, 2 and 1 respectively. Three experts validated the questionnaire items; two from the Department of Crop Production, University of Agriculture, Makurdi and one from the Department of Vocational Agriculture and Technology Education, University of Agriculture Makurdi, Benue State. The corrections and suggestions of the experts were used to produce the final copy of the questionnaire. Cronbch Alpha reliability method was used to determine the internal consistency of the items and a coefficient of 0.81 was obtained. The data were collected by the researchers from the respondents with the help of three research assistants who were familiar with the area of the study. A total of 401 copies of the questionnaire were administered and retrieved within 5 days. Data collected for the study were analyzed using mean to answer the research questions.

A mean of 2.50 was used for decision-making. Any item with a mean rating of 2.50 or above was regarded as accepted. The t-test analysis was used to test the null hypothesis at $P \leq 0.05$ level of significance and at 399 degree of freedom.

Results

The results of this study are based on questions answered and hypotheses tested and are presented in table 1 to 4.

Research Question 1: What are the skills required by farmers in pre planting for Aloe Vera production in Taraba State?

Hypothesis 1: There is no significant difference in the mean rating of responses of farmers and Agricultural Extension Agents on the skills required by farmers in Pre-planting operations for Aloe Vera for income diversification in Taraba State.

Table 1: Mean rating and t-test analysis of the Respondents on skillsrequired by farmers in pre planting of Aloe Vera productionin Taraba State

S/NO	Pre-planting activities	X	SD	t-test	Remark
1	Select suitable site for Aloe Vera production with considering soil fertility, water availability, labour and access road.	3.54	0.89	1.05	NS
2	Purchase farm implements	3.73	0.58	0.72	NS
3	Clear vegetation of the farm land.	3.86	0.35	0.93	NS
4	Cut down trees on the farm land.	3.73	0.58	0.59	NS
5	Remove the branches of the felled trees	3.60	0.49	1.33	NS
6	Stump the stems of the felled trees	3.33	0.60	1.81	NS
7	Gather leaves and branches of the fell trees	3.13	0.88	0.89	NS
8	Burn or pack the cleared vegetation from the farmland.	2.80	1.11	1.00	NS
9	Level the soil surface with rake for easy plotting	3.07	0.93	1.05	NS
10	Partition the land into plots and create walk ways using pegs and tapes.	3.19	1.05	0.55	NS
11	Plough the ground to break the soil pans and incorporate the remains of cleared vegetation.	3.27	1.06	0.79	NS
12	Spread organic matter on the ploughed soil to increase soil nutrients	3.13	0.89	0.84	NS
13	Harrow to pulverize soil to incorporate manure into the soil	3.26	0.85	0.59	NS
14	Make ridges of about 1 metre wide, at least 10 metres long and 4cm high	3.27	0.77	0.61	NS
15	Level the ridges for easy planting of the seedlings	3.40	0.95	0.90	NS

N=196, SD=Standard Deviation, X=Mean, NS=Not Significant

Data in Table 1 revealed that all the 15 items had their mean values ranged from 2.80 to 3.86, indicating that their mean values were above the cut off mark of 2.50. This showed that farmers required all the 15 skills in pre planting of Aloe Vera in Taraba State. The standard deviation of the mean values ranged from 0.35 to 1.11, which indicates that the respondents were not too far from the mean and the opinion of one another in their responses on the skills in pre planting of Aloe Vera in Taraba State. The hypothesis tested revealed further that all the 15 items had their p-values greater than the alpha value. This indicates that there was no significant difference in the mean rating of the two groups of respondents on skillsrequired by farmers in pre-planting operations for Aloe Vera production. Therefore, the null hypothesis of no significant difference was accepted for all the items.

Research Question 2: What are the skillsrequired by farmers in planting for Aloe Vera in Taraba State?

Hypothesis 2: There is no significant difference in the mean rating of responses of farmers and Agricultural Extension Agents on the skills required by farmers in planting operations for Aloe Vera for income diversification in Taraba State.

Table 2: Mean Rating and t-test analysis of the Respondents on skillsrequired by farmers in planting of Aloe Vera in Taraba State

S/NO	Planting activities	X	SD	t-test	Remark
1	Determine the correct time for planting (such as April to August)	3.59	0.89	0.58	NS
2	Source for Aloe Vera suckers (planting materials)	3.66	0.47	0.90	NS
3	Plant the Aloe Vera suckers on the farmland.	3.53	0.81	0.65	NS
4	Measure out spacing of 60cm between rows and 60 cm within rows.	3.46	0.74	0.84	NS
5	Make holes of 3cm deep, 0.5cm wide with stick	3.33	0.79	0.53	NS
6	Place the suckers in the holes made.	3.14	1.02	0.68	NS
7	Mulch the base of the suckers with grasses and leaves.	3.13	0.88	0.93	NS

N=196, SD=Standard Deviation, X=Mean, NS=Not Significant

Data in Table 2 revealed that all the seven items had their mean values ranged from 3.13 to 3.66, indicating that their mean values were above the cut off mark of 2.50. This showed that farmers required all the seven skills in planting of Aloe Vera in Taraba State. The standard deviation of the mean values ranged from 0.47 to 1.02, which indicates that the respondents were not too far from the mean

and the opinion of one another in their responses on the skills in planting of Aloe Vera in Taraba State. The hypothesis tested revealed further that all the 7 items had their p-values greater than the alpha values. This indicates that there was no significant difference in the mean rating of the two groups of respondents on skills required by farmers in planting operations for Aloe Vera production. Therefore,

the null hypothesis of no significant difference was accepted for all the items.

Research Question 3: What are the skills required by farmers in post-planting activities for Aloe Vera production in Taraba State?

Hypothesis 3: There is no significant difference in the mean rating of responses of farmers and Agricultural Extension Agents on the skills required by farmers in post-planting operations for Aloe Vera production for income diversification in Taraba State.

Table 3: Mean rating and t-test analysis of the Respondents on skills required by farmers in post-planting activities for Aloe Vera production in Taraba State

S/NO	post-planting activities	X	SD	t-test	Remark
1	Remove the mulch after four weeks of planting	3.60	0.80	0.79	NS
2	Apply about 500kg of organic manure to the farm after four weeks of planting	3.53	0.63	0.95	NS
3	Weed off grasses on the farm regularly with hoe to avoid competition with the crop	3.73	0.58	1.04	NS
4	Apply water regularly depending on the soil moisture content	3.73	0.44	0.90	NS
5	Spray appropriate pesticides for pest control (using knapsack sprayer).	3.66	0.79	0.66	NS

N=196, SD=Standard Deviation, X=Mean, NS=Not Significant

Data in Table 3 revealed that all the five items had their mean values ranged from 3.53 to 3.73, indicating that their mean values were above the cut off mark of 2.50. This showed that farmers required all the five skills in post planting of Aloe Vera in Taraba State. The standard deviation of the mean values ranged from 0.44 to 0.80, which indicates that the respondents were not too far from the mean and the opinion of one another in their responses on the skills in post planting of Aloe Vera in Taraba State. The hypothesis tested revealed further that all the 5 items had their p-values greater than the alpha value. This indicates that there was no significant difference in the mean rating of the two groups of respondents on skills required by farmers in post-planting operations for Aloe Vera production. Therefore, the null hypothesis of no significant difference was accepted for all the items.

Research Question 4: What are the skills required by farmers in harvest operations for Aloe Vera production in Taraba state?

Hypothesis 4: There is no significant difference in the mean rating of responses of farmers and Agricultural Extension Agents on the skills required by farmers in harvesting operations for Aloe Vera for income diversification in Taraba State.

Table 4: Mean rating and t-test analysis of the Respondents on skills required by farmers in harvesting operations for Aloe Vera production in Taraba state

S/NO	harvesting activities	X	SD	t-test	Remark
1	Observe Aloe Vera leaves for maturity after 8 weeks	3.20	0.65	0.83	NS
2	Cut the leaves of Aloe Vera at the base with knife	3.33	0.87	0.69	NS
3	Put the leaves to drain the juice into pots, tubes or vessels	3.20	0.98	0.54	NS
4	Cut Aloe Vera leaves in the morning and allow it takes 4-5 hours to drain from a pile of leaves	3.01	0.52	1.02	NS
5	Cut only older leaves at the base	3.30	0.75	0.86	NS
6	Harvest Aloe Vera leaves at intervals of 3 months for gel production	3.52	0.63	1.00	NS

N=196, SD=Standard Deviation, X=Mean, NS=Not Significant

Data in Table 4 revealed that all the 6 items had their mean values ranged from 3.01 to 3.81, indicating that their mean values were above the cut off mark of 2.50. This showed that farmers required all the 6 skills in harvest operations in Aloe Vera production in Taraba state. The standard deviation of the mean values ranged from 0.47 to 0.98, which indicates that the respondents were not too far from the mean and the opinion of one another in their responses on the skills required by farmers in harvesting operations for Aloe Vera production in Taraba state. The hypothesis tested revealed further that all the 6 items had their p-values greater than the alpha values. This indicates that there was no significant difference in the mean rating of the two groups of respondents on skills required by farmers in harvest operations for Aloe Vera production. Therefore, the null hypothesis of no significant difference was accepted for all the items.

Results and Discussion

The results of the study found out that 15 skills in pre planting, seven skills in planting, five skills in post planting and eight skills in harvest operations are required by farmers in Aloe Vera production for income diversification in Taraba State.

The findings of the study are in consonance with the findings of Agbe and Eze whose study was on “identification of occupational work skills required in oil palm production for training secondary school graduates in skills acquisition centres in Ebonyi state where it was found that 10 work skills in planning establishment of oil palm enterprise, 10 work skills in managing oil palm enterprise, 11 work skills in processing and marketing of oil palm produce and 10 work skills in taking care of oil palm plantation were required in oil palm production for training secondary school graduates in skills acquisition centres in Ebonyi State [14].

The results also agrees with the findings of Olaitan, Eze and Elom in a study on entrepreneurial competencies required by secondary school graduates for entering into oil palm processing enterprise in south in South Eastern States of Nigeria which revealed that 11 entrepreneurial competencies planning for oil palm processing enterprise, 16 competencies in processing oil palm fruits, and 18 competencies in palm oil marketing were required by secondary school graduates for entering into oil palm processing enterprise [15].

The findings of the study are also in line with the submission of Ugwoke, Onu, Agboeze & Asogwa (2013) on occupational competencies required by retirees in pawpaw production and marketing for sustainable livelihood in Enugu state, Nigeria [12]. Who recommended pest control, weed control among others. The findings of the authors cited above have helped to confirm the results of the study on identification of job skills in Aloe Vera production for income diversification among farmers in Taraba State [16].

The findings on the hypotheses revealed that there was no statistical significant difference in the mean rating of the responses of lecturers and Agricultural Extension agents on the 33 job skills in Aloe Vera production for income diversification among farmers in Taraba State. This means that both groups support the findings since the experience of the respondents in their occupations did not significantly influence their responses on job skills in Aloe Vera production.

Conclusion

Many farmers in Taraba State grow food crops for livelihood, with no other means of sustenance (that is, they put all their eggs in one basket). Yet prices of food products are always affected by market forces (such as excess supply resulting to glut). This limits the farmers' ability to raise funds for their needs thus leaving the poor and needy for most of the times. Therefore, the study was carried out to identify job skills in Aloe Vera production for income diversification among farmers in Taraba State. The study found out that 15 job skills in pre-planting, 7 skills in planting, 5 skills in post-planting and 6 skills in harvesting operations were required by farmers for income diversification in Taraba State.

It was therefore recommended that the 33 job skills identified by this study be packed into a training manual and used for training farmers for income diversification in Taraba State.

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