

Development of a Task Instruction Sheet in Cabbage Production for Youth Engagement and Empowerment in Agribusiness Ventures in Enugu State

By

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Abstract

The study focused on developing a task instruction sheet on cabbage production for youth engagement and empowerment in agribusiness ventures in Enugu State. Four research questions and three null hypotheses guided the study. The study adopted Research and Development (R&D) design. The phases in the R&D were adapted into four phases and used in this study. The study was carried out in Enugu State, Nigeria. The population for the study was 405 participants made up of 291 Agricultural Science teachers in public secondary schools (Enugu State Post Primary School Management Board) and 114 agricultural extension workers in Enugu State. The sample size for the study was 202 made of 145 Agricultural Science teachers in public secondary schools and 57 agricultural extension workers in Enugu State. The sample size was obtained using Taro Yamane formula. A 165 – item structured questionnaire titled “Development of Task Instruction Sheet in Cabbage Production (DOTISCP) was used for data collection. The questionnaire was face-validated by three experts from Department of Agricultural Education, University of Nigeria, Nsukka. To determine the internal consistency of the instrument, the questionnaire was trial tested on twenty-five (25) respondents from Ebonyi State, and the data generated from the pilot testing was analyzed using Cronbach Alpha reliability coefficient which yielded a reliability of coefficient of 0.81 indicating that instrument was reliable. A total of 202 copies of the questionnaires were distributed to 202 respondents made up of 145 Agricultural Science teachers in public secondary schools 57 agricultural extension workers in Enugu State. This was carried out by the researcher and three research assistants. Data collected from the study was analyzed using Mean, Standard Deviation, t-test statistic. Finding identified among others 8 tasks in cabbage production that required instruction, 8 objectives of a task instruction sheet in cabbage production. It was therefore recommended that the agricultural extension agents should utilize the tasks in cabbage production identified in this study to develop training programmes for farmers

Keys: Task instruction sheet, Cabbage production, Employability, Secondary School Graduates**Introduction**

In recent years, the significance of youth engagement in agribusiness has become increasingly recognized as a vital component for sustainable development and food security. With over [1.2](#) billion people aged between 15 and 24 globally, the potential of harnessing their energy and creativity in agriculture is immense (United Nations, [2021](#)). However, the challenges young people face in this sector ranges from limited access to resources and education to unfavorable perceptions of agricultural work. This pose significant barriers that need to be addressed for effective youth involvement.

One of the core reasons youth engagement in agribusiness is critical stems from the demographic shifts occurring worldwide. The global youth population is not only large but also growing faster than the overall population. In many developing countries, this trend is linked to high unemployment rates,

particularly in rural areas where job opportunities are sparse. According to the International Labour Organization (ILO, 2022), youth unemployment rates are disproportionately high in agricultural sectors, often driven by a lack of training and support. Engaging young people in agribusiness not only provides them with employment opportunities but also revitalizes the sector with fresh ideas and innovative practices, thus enhancing productivity and sustainability.

Furthermore, youth engagement can lead to transformative changes in agricultural practices and supply chains. Young people are often more in tune with technological advancements and are eager to adopt innovative solutions that can increase efficiency and sustainability within agribusiness. For example, the use of mobile applications for market access, soil management, and crop disease identification reflects the technological shift towards digital agriculture, which is especially appealing to a tech-savvy younger generation (Food and Agriculture Organization (FAO), 2023). By equipping young individuals with the skills necessary to leverage these technologies, agribusiness can benefit from enhanced productivity while simultaneously addressing the challenges of climate change and food security. Several areas in agribusiness can provide an ample employment opportunity to the youth. Such areas include skills in the area of animal rearing (rabbit, goat, sheep, pigs among others; and crop production such as cereal crops, root and tuber crops, vegetable crops among others. One vital vegetable crop which can be grown by farmers and which knowledge and skills can be acquired by youth for easy engagement and empowerment is cabbage.

Cabbage (*Brassica oleracea var. capitata*) is a vegetable crop that is grown by some farmers and widely consumed across Nigeria. It belongs to the Brassicaceae family and is known for its dense, leafy heads that are commonly used in salads, stir-fries, and soups (Abdullah, 2020). It is a leafy biennial crop which produces a compact globular mass of smooth or crinkled leaves wrapped over each other known as head with varying shape and size with the outer leaves larger than others. The edible part of cabbage is known as the vegetative bud, which includes a dense head of tightly packed leaves (Nora & Amit, 2020), and it can be prepared in many ways for consumption due to its nutritional value.

Due to its economic, nutritional, and medicinal value, cabbage is cultivated globally including Nigeria in varying quantities. In Nigeria, cabbage is grown in different parts of the country, but higher production has been recorded in Jos, Plateau State, which is known as home of exotic vegetables. This could be because of favourable weather conditions in Plateau State, Nigeria, and the skills level of the farmers in cabbage production. The production of cabbage is normally carried out using seeds and requires several highly specialized practices for good yield. The seeds are generally cultivated in the nursery bed and allowed to grow into seedlings before transplanting into the main fields. According to Dennis (2013), growing cabbage seedlings in the nursery before transplanting to the field is ideal to ensure maximum seed germination and good yield. Adequate care and maintenance are needed in the nursery to ensure proper growth of the seedlings and good establishment of the plant in the main field. Germination of cabbage seeds begin about 7 to 10 days from the seeds. Horn et al. (2020) stated that cabbage seeds require good conditions such as moisture, air, light, favorable temperature, substrates for good germination to take place. According to Ogunbanwo and Onasanya (2021), the most used medium for growing cabbage is soil. The soil for cabbage growth should be well-drained with good air, water properties and sufficient nutrient content; and a pH range between 6.0 -7.0 to enhance maximum growth and improved yield (Dennis, 2013).

Most of the cabbages sold in the market in Enugu State and other Southeastern States in Nigeria are produced from the Northern part of the country. With the increase in transportation due to removal of fuel subsidy, the cost of cabbage has risen in southeastern Nigeria. This trend has compelled most farmers in the southeast to venture into cabbage production, but this has not yielded many dividends due to the peculiar environmental conditions, specialized knowledge and practical skills required for its production (Abdullah, 2020). With the advent of controlled agriculture practices, the growth environment can be regulated using different practices such as greenhouse production and related technologies, but the challenge of skills persists. The knowledge and skills in cabbage production could be enhanced when youth are taught cabbage production using a task instruction sheet.

A task instruction sheet is a document that provides detailed step-by-step guidelines on how to perform a specific task or activity (Okorie, 2021). A task instruction sheet is essential in guiding students through practical activities such as cabbage production in secondary schools by providing clear instructions

on each stage of the production process such as site selection, land preparations, nursery and nursery practices, transplanting, watering operation, weeding operations, fertilizer and manure application, pests and diseases prevention and control, harvesting among others. Adekunle (2020) stated that task instruction sheets play a crucial role in enhancing the learning experience of students during hands-on activities like cabbage production, as they break down the process into manageable steps. Task instruction sheets act as a reference point for youth to consult when they encounter difficulties or confusion while carrying out a task.

In Enugu state, most of the youth are found in every street doing little or nothing, while a greater majority may not be able to afford funding for further education. Many of them would need to be engaged in meaningful activities such as crop production, livestock production, and other production activities such as cabbage. This can be achieved by equipping them with vital skills in areas of home economics, businesses, agriculture (such as poultry, snail farming, fishery, beekeeping, crop production) among others to enable them to become gainfully employed either self-employment or employed by others. Youth can develop skills in a particular task if the step-by-step details of the activities involved in the task are well documented in a task instruction sheet. Hence, this study focused on cultivating future generation through development of a task instruction sheet in cabbage production for youth engagement and empowerment in agribusiness in Enugu State.

Statement of the Problem

Agriculture has long been recognized as a cornerstone of economic stability and development, particularly in regions with rich agricultural heritage like Enugu State, Nigeria. However, despite its importance, the agricultural sector faces numerous challenges, particularly in engaging the youth, who represent a critical demographic necessary for sustainable development. The growing trend of urban migration and the allure of non-agricultural employment have resulted in a significant decline in youth participation in agricultural practices. This disengagement poses a dire threat to the future of agriculture in Enugu State, where traditional farming practices are often outdated, and agricultural productivity remains suboptimal. Moreover, the lack of structured training and clear guidance significantly undermines youth interest in agriculture as a viable career option.

One of the primary barriers to youth engagement in agricultural business is the absence of comprehensive and accessible educational resources tailored to their needs. Young individuals may possess the enthusiasm and potential to contribute to the agricultural sector; however, without proper guidance, resources, and practical instructions, their efforts may not translate into successful agricultural ventures. Current approaches to agricultural training often fall short in providing the necessary step-by-step instructions or task outlines needed to effectively cultivate crops, leading to confusion and frustration among aspiring young farmers. In Cabbage production, for instance, an intricate understanding of agronomic practices, pest management strategies, and market trends is essential to ensure productivity and profitability. The lack of structured task instruction sheets exacerbates the challenges faced by the youth, limiting their ability to engage meaningfully in this vital sector. Beyond that it is going to further expose the youth to several crimes in the society. Therefore, the need to develop a task instruction sheet for youth engagement and employability is apt.

Purpose of the Study

The study focused on development of a task instruction sheet in cabbage production for youth engagement and empowerment in agribusiness in Enugu State. Specifically, the answered the following questions study:

Research Questions

The following research questions were answered in the study:

1. What are the tasks involved in cabbage production that requires instruction?
2. What are the objectives of a task instruction sheet in cabbage production for youth engagement and empowerment in agribusiness in Enugu State?

3. What are the materials required for a task instruction sheet in cabbage production for youth engagement and empowerment in agribusiness in Enugu State?
4. What is the task instruction sheet developed in cabbage production for youth engagement and empowerment in agribusiness in Enugu State?

Research Hypothesis

The following null hypotheses were tested at the 0.05 level of significance:

1. There is no significant difference in the mean responses of teachers of agriculture and extension agents in Enugu State on the tasks in cabbage production that requires instruction.
2. There is no significant difference in the mean responses of teachers of agriculture and extension agents in Enugu State on the objectives of a task instruction sheet in cabbage production for youth engagement and empowerment in agribusiness in Enugu State.
3. There is no significant difference in the mean responses of teachers of agriculture and extension agents in Enugu State on the materials required for a task instruction sheet in cabbage production.

Methodology

The study adopted the Research and Development (R&D) design. Four phases were identified in the task involved in cabbage production thus; determination of the objectives of a task instruction sheet; identification of the materials required and Development of a task instruction sheet in cabbage production for secondary school graduates. The study was carried out in Enugu State, Nigeria. The population for the study was 405 participants made up of 291 Agricultural Science teachers in public secondary schools (Enugu State Post Primary School Management Board) and 114 agricultural extension workers in Enugu State (Iwuchukwu et al, 2023). The sample size for the study was 202 made of 145 Agricultural Science teachers in public secondary schools and 57 agricultural extension workers in Enugu State. The sample size was obtained using Taro Yamane formula. A 165 – item structured questionnaire titled “Development of Task Instruction Sheet in Cabbage Production (DOTISCP) was used for data collection. The questionnaire items were structured on four-point response options of Strongly Agree (SA)/Highly required (HR), Agree (A)/Required (R), Disagree (D)/Not required (NR) and Strongly Disagree (SD)/Highly not required (HNR), with corresponding nominal values of 4, 3, 2, and 1 respectively. The data collected from sections A – D of the part 2 of the structured questionnaire were analysed and the findings used to develop the task instruction sheet while research question 6 was achieved through expert review of the developed task instruction sheet. The questionnaire was face-validated by three experts from Department of Agricultural Education, University of Nigeria, Nsukka. To determine the internal consistency of the instrument, the questionnaire was trial tested on twenty-five (25) respondents from Ebonyi State. And the data generated from the pilot testing was analyzed using Cronbach Alpha reliability coefficient which yielded a combined reliability of coefficient of 0.81 for the entire instrument indicating that the instrument was reliable. A total of 202 copies of the questionnaires were distributed to 202 respondents made up of 145 Agricultural Science teachers in public secondary schools 57 agricultural extension workers in Enugu State. This was carried out by the researcher and three research assistants. Data that was collected from the study was analyzed using Mean, Standard Deviation, t-test statistic.

Results

Research Question 1: What are the tasks involved in cabbage production that requires instruction?

Table 1: Mean Ratings and standard deviation of the Responses of Agricultural Science Teachers and Agricultural Extension Workers on the tasks in cabbage production.

N= 202

S/N	Tasks in cabbage production	\bar{X}	SD	Remarks
1	Planning, site selection and preparation	3.72	0.45	A
2	Nursery preparation	3.65	0.49	A
3	Transplanting and irrigation	3.65	0.49	A
4	Weed management	3.67	0.49	A
5	Fertilizer/manure application	3.60	0.56	A
6	Disease and pest t management	2.97	0.84	A
7	Harvesting and processing/packaging	3.40	0.63	A
8	Transportation and marketing	3.38	0.85	A

Key: N= Number of respondents; \bar{X} = Mean; SD₁ = Standard Deviation. A = Agree

Data presented in Table 1 revealed that all the 8 items had mean values that ranged from 2.97 to 3.65 which were above the cut-off point of 2.50 on a four-point rating scale. This showed that all the 8 items were agreed by the respondents as the task in cabbage production that requires instruction. The standard deviation of the 8 items ranged from 0.45 to 0.85 indicating that the respondents were not far from the mean and close to one another in their responses on the task in cabbage production.

Hypothesis 1: There is no significant difference in the mean responses of teachers of agriculture and extension agents in Enugu State on the tasks in cabbage production that requires instruction.

Table 2: t-test Analysis of the Responses of Agricultural Science Teachers and Agricultural Extension Workers on the tasks in cabbage production.

N₁= 145; N₂= 57

S/N	Tasks in cabbage production	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	Sig.	Dec
1	Planning, site selection preparation	3.76	0.43	3.56	0.50	0.02	S
2	Nursery preparation	3.68	0.48	3.53	0.50	0.13	NS
3	Transplanting and irrigation	3.68	0.47	3.53	0.56	0.23	NS
4	Weed management	3.71	0.48	3.50	0.50	0.02	S
5	Fertilizer/manure application	3.63	0.55	3.50	0.56	0.25	NS
6	Disease and pest t management	2.96	0.80	3.00	1.0	0.82	NS
7	Harvesting and processing/packaging	3.41	0.64	3.38	0.55	0.76	NS
8	Transportation and marketing	3.38	0.84	3.41	0.91	0.85	NS

Key: N₁= number of Agricultural Science Teachers, N₂ = Number of Agricultural Extension Agents; \bar{X}_1 = Mean of Agricultural Science Teachers, \bar{X}_2 = Mean of Agricultural Extension Agents, SD₁ = Standard Deviation of Agricultural Science Teachers, SD₂= Standard Deviation of Agricultural Extension Agents, S = Significant, NS = Not Significant

Data presented in Table 2 contains the p-value of the t-test analysis of the mean ratings of respondents on the on the task in cabbage production. The data revealed that items 2 – 3 and 5 – 8 had p-

values ranged from all 0.13 – 0.85 which is greater than the alpha value ($p > 0.05$). The related null hypotheses are therefore upheld meaning that there is no significant in the mean ratings of responses of agricultural science teachers and agricultural extension workers in respect of these items. Items number 1 and 4 have p-values of 0.02 which is less than the 0.05 level of significance, thus the related null hypotheses were not upheld.

Research Question 2: What are the objectives of a task instruction sheet in cabbage production for secondary school graduates?

Table 3: Mean Ratings of the Responses of Agricultural Science Teachers and Agricultural Extension Agents on the objectives of a task instruction sheet in cabbage production for secondary school graduates

N= 202

S/N	Objectives of a task instruction sheet in cabbage production.	\bar{X}	SD	Remarks
1	Select and prepare a site for cabbage production	3.51	0.67	A
2	Prepare nursery for cabbage seedlings	3.52	0.62	A
3	Transplant and irrigate cabbage seedlings when needed	3.40	0.58	A
4	Control and manage weed in the cabbage farm	3.17	0.82	A
5	Select and apply appropriate fertilizer/manure to the cabbage plants	3.32	0.58	A
6	Adequately manage disease and pest in the cabbage farm	3.36	0.66	A
7	Harvest, process and package cabbage fruits	3.55	0.57	A
8	Transport and market cabbage fruits.	3.68	0.49	A

Table 3 presents the results of the analysis on the objectives of a task instruction sheet on cabbage production for secondary school graduates. Table 3 revealed that all the 8 items had mean values that ranged from 3.17 to 3.68 which were above the cut-off point of 2.50 on a four-point rating scale. This showed that all the 8 items were agreed by the respondents as the objectives of a task instruction sheet on cabbage production for secondary school graduates. The standard deviation of the 8 items ranged from 0.49 to 0.82 indicating that the respondents were not far from the mean and close to one another in their responses on the objectives of a task instruction sheet in cabbage production for secondary school graduates.

Hypothesis 2: There is no significant difference in the mean responses of teachers of agriculture and extension agents in Enugu State on the objectives of a task instruction sheet in cabbage production for secondary school graduates.

Table 4: t-test Analysis of the Responses of Agricultural Science Teachers and Agricultural Extension Agents on the objectives of a task instruction sheet in cabbage production for secondary school graduates

N₁= 145; N₂= 57

S/N	Objectives of a task instruction sheet in cabbage production.	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	Sig.	Dec
1	Select and prepare a site for cabbage production	3.51	0.68	3.50	0.62	0.91	NS
2	Prepare nursery for cabbage seedlings	3.52	0.63	3.50	0.56	0.85	NS
3	Transplant and irrigate cabbage seedlings when needed	3.42	0.59	3.31	0.53	0.35	NS
4	Control and manage weed in the cabbage farm	3.11	0.84	3.41	0.71	0.06	NS

5	Select and apply appropriate fertilizer/manure to cabbage plants	3.34	0.59	3.22	0.49	0.29	NS
6	Adequately manage disease and pest in the cabbage farm	3.35	0.67	3.41	0.61	0.68	NS
7	Harvest, process and package cabbage fruits	3.55	0.61	3.56	0.58	0.92	NS
8	Transport and market cabbage fruits.	3.68	0.49	3.69	0.47	0.97	NS

Data presented in Table 4 contains the p-value of the t-test analysis of the mean ratings of respondents on the objectives of a task instruction sheet in cabbage production for secondary school graduates. The data revealed that all the items had p-values ranged from 0.06 – 0.97 which is greater than the alpha value ($p > 0.05$). The related null hypotheses are therefore upheld meaning that there is no significant in the mean ratings of responses of agricultural science teachers and agricultural extension workers in respect of these items.

Research Question 3: What are the materials required for a task instruction sheet in cabbage production?

Hypothesis 3: There is no significant difference in the mean responses of teachers of agriculture and extension agents in Enugu State on the materials required for a task instruction sheet in cabbage production.

Table 5: Mean Ratings of the Responses of Agricultural Science Teachers and Agricultural Extension Agents on the materials required in cabbage production for a task instruction sheet. N= 202

S/N	Materials required in cabbage Production	\bar{X}	SD	Remarks
1	Cabbage seeds	3.60	0.45	A
	Soil test kit	3.47	0.49	A
3	Fertilizer and pest management plans	3.62	0.49	A
4	Irrigation system	3.42	0.49	A
5	Tilling equipment	3.40	0.56	A
6	Cabbage seedlings	3.46	0.84	A
7	Planting trays or beds	3.51	0.63	A
8	Fertilizers/manure	3.36	0.85	A
9	Mulch materials	3.62	0.67	A
10	Watering cans or irrigation system	3.60	0.62	A
11	Pest and diseases management tools (insecticides, traps, fungicides, pruning tools)	3.44	0.58	A
12	Irrigation facilities and equipment	3.42	0.82	A
13	Staking materials and trellises	3.64	0.50	A
14	Cutting tools (e.g., knives, pruning shears)	3.54	0.58	A
15	Containers for harvested cabbage	3.48	0.68	A
16	Handling equipment such as carts, crates	3.60	0.62	A
17	Storage facilities such as coolers, warehouses	3.46	0.56	A
18	Packaging materials such as bags, boxes	3.21	0.83	
19	Transportation equipment such as, trucks, trailers	3.48	0.56	A
20	Personal protective equipment such as gloves, masks	3.50	0.55	A
21	First aid kit	3.58	0.54	A
22	Safety signage	3.07	0.82	
23	Record-keeping materials (e.g., notebooks, spread sheets)	3.57	0.53	A
24	Measuring and monitoring tools such as pH meters, thermometers	3.50	0.59	A

Table 5 presents the results of the analysis on the materials required for a task instruction sheet in cabbage production for secondary school graduates. Table 5 revealed that all the 24 items had mean values that ranged from 3.07 to 3.64 which were above the cut-off point of 2.50 on a four-point rating scale. This

showed that all the 24 items were agreed by the respondents as the materials required for a task instruction sheet on cabbage production for secondary school graduates. The standard deviation of the 24 items ranged from 0.45 to 0.85 indicating that the respondents were not far from the mean and close to one another in their responses on the materials required for a task instruction sheet in cabbage production for secondary school graduates.

Hypothesis 3: There is no significant difference in the mean responses of teachers of agriculture and extension agents in Enugu State on the materials required for a task instruction sheet in cabbage production.

Table 6: *t*-test Analysis of the Responses of Agricultural Science Teachers and Agricultural Extension Agents on the materials required in cabbage production for a task instruction sheet.

N₁= 145; N₂= 57

S/N	Materials required in cabbage Production	\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	Sig.	Dec
1	Cabbage seeds	3.64	0.59	3.41	0.56	0.04	S
2	Soil test kit	3.53	0.57	3.22	0.55	0.00	NS
3	Fertilizer and pest management plans	3.60	0.54	3.69	0.47	0.42	NS
4	Irrigation system	3.40	0.65	3.50	0.71	0.43	NS
5	Tilling equipment	3.42	0.59	3.41	0.53	0.35	NS
6	Cabbage seedlings	3.46	0.55	3.47	0.62	0.91	NS
7	Planting trays or beds	3.53	0.63	3.41	0.61	0.32	NS
8	Fertilizers/manure	3.35	0.68	3.41	0.71	0.65	NS
9	Mulch materials	3.65	0.51	3.50	0.50	0.14	NS
10	Watering cans or irrigation system	3.63	0.50	3.50	0.50	0.21	NS
11	Pest and diseases management tools (insecticides, fungicides, pruning)	3.49	0.58	3.25	0.44	0.03	S
12	Irrigation facilities and equipment	3.43	0.66	3.34	0.60	0.48	NS
13	Staking materials and trellises	3.67	0.50	3.53	0.50	0.16	NS
14	Cutting tools (e.g., knives, pruning shears)	3.54	0.59	3.56	0.50	0.82	NS
15	Containers for harvested cabbage	3.50	0.63	3.38	0.70	0.32	NS
16	Handling equipment such as carts, crates	3.63	0.50	3.50	0.50	0.21	NS
17	Storage facilities such as coolers, warehouses	3.48	0.55	3.41	0.56	0.51	NS
18	Packaging materials such as bags, boxes	3.23	0.75	3.18	0.90	0.59	NS
19	Transportation equipment such as, trucks, trailers	3.51	0.57	3.38	0.49	0.22	NS
20	Personal protective equipment such as gloves, masks	3.53	0.55	3.38	0.49	0.15	NS
21	First aid kit	3.65	0.48	3.31	0.69	0.00	S
22	Safety signage	3.21	0.78	2.90	0.88	0.69	NS
23	Record-keeping materials (e.g., notebooks, spreadsheets	3.57	0.54	3.56	0.50	0.97	NS
24	Measuring and monitoring tools such as pH meters and thermometers	3.57	0.52	3.22	0.79	0.00	S

Data in Table 6 presents the p-value of the t-test analysis of the mean ratings of respondents on the materials required for a task instruction sheet in cabbage production for secondary school graduates. The data revealed that five items (items 1,2,11,21, and 24) had p-values ranged between 0.00 and 0.04 which were less than 0.05 level of significance, thus the related null hypotheses were not upheld indicating that there are significant differences in the opinions of Agricultural Science Teachers and Agricultural Extension workers on the materials required for a task instruction sheet in cabbage production for secondary school graduates. 19 items (items 3-10, 12-20 and 22-23) had p-values ranged from 0.14-0.91 which was greater than the alpha value ($p > 0.05$). The related null hypotheses are therefore upheld meaning that there is no

significant in the mean ratings of responses of agricultural science teachers and agricultural extension workers in respect of these items.

Discussion of Findings

The findings on the task in cabbage production revealed the task to include planning, site selection and preparation; nursery preparation; transplanting and irrigation; weed management; fertilizer/manure application; disease and pest management; harvesting, processing/packaging; and transportation and marketing. These findings align with that of several authors who identified task that are critical in any agricultural production venture. Liu (2020), Zhang (2018) and Harris (2017), in their different studies identified land preparation, soil Testing and fertilization, and seed selection and sowing as task in cabbage production. Land preparation significantly affects cabbage yield and quality (Kumar, 2019). Harris (2017) expressed the need for proper site selection, and land preparation in crop production as these reduce soil erosion and improves water retention. Seed selection and proper sowing is important as suitable cabbage varieties demonstrate improved disease resistance and yield (Singh, 2019) while optimal sowing dates and densities impact cabbage yield and quality (Rai, 2020). The need for irrigation, crop monitoring, pest, and disease management were identified by Sharma (2020), Huang (2019), and Wang (2018) who observed that drip irrigation reduces water waste and promotes healthy cabbage growth, optimizes water use efficiency, while regular monitoring enables early pest and disease detection, reducing yield loss, and informs timely fertilizer and irrigation adjustments. The need for good knowledge of pests and diseases and their management was emphasized by Wang (2018). The identification of the task is cabbage production is important because no agricultural production venture can succeed when the required cultural practices are not adequately and timely carried out.

The findings on the objectives of a task instruction sheet on cabbage production for secondary school graduates revealed the following as the objectives: ability to select and prepare a site for cabbage production; prepare nursery for cabbage seedlings; transplant and irrigate cabbage seedlings when needed; control and manage weed in the cabbage farm; select and apply appropriate fertilizer/manure to the cabbage plants; manage disease and pest in the cabbage farm; harvest, process and package cabbage fruits; and transport and market cabbage fruits. The success of a production venture begins with a specification of the objectives that is intended to be achieved. These findings are in consonance with that of Okorie (2021) who found that a task instruction sheet will be useful to the extent it specified the objectives to guide the users. Also, Khan (2020) found that clear objectives of a task instruction sheet are critical in providing clear directions and ensuring that tasks are carried out accurately and efficiently. Specifying the objectives is crucial in every aspect of human endeavour as it keeps stakeholders focused on the task.

The materials required for a task instruction in cabbage production revealed 24 materials to include the following: cabbage seeds, soil test kit, fertilizer and pest management plans, irrigation system/equipment, tillage equipment, cabbage seedlings, planting trays or beds, and fertilizers/manure, mulch materials, pest and diseases management tools (insecticides, traps, fungicides, pruning), staking materials and trellises, cutting tools (e.g., knives, pruning shears), containers for harvested cabbage, handling equipment such as carts, crates, and storage facilities such as coolers, warehouses among others. The findings on the materials is in consonance with several authors who in their different studies identified the materials such as high-quality cabbage seeds suitable for local climate and soil conditions (Kumar, 2019), well-drained, fertile soil with pH 6.0-7.0 (Liu, 2020), balanced fertilizers (NPK) and organic amendments (compost, manure) (Rai, 2020), drip irrigation or sprinkler systems (Sharma, 2020), and tractors, plows, cultivators, and hand tools (e.g., hoes, rakes) (Singh, 2019) among others. Protective equipment such as gloves, masks, and protective clothing, and storage facilities such as cool, dry storage for harvested cabbage were identified by Wang (2018) and Harris (2017). These materials are essential because they positively impact seed germination rates and crop yield, impacts cabbage growth and nutrient uptake, influences crop growth, yield, and quality, and are critical for optimal water use and crop growth (Sharma, 2020; Liu, 2020; Rai, 2020). The provision of requisite is a requirement for every production and training endeavour as the farmers' success depends on them. Cabbage production is intensive and dwells

much on good quality soil, adequate nutrient supply, and efficient management of pests and diseases, which can only be achieved when the inputs and necessary materials are provided.

Conclusion

Based on the findings of this study, it is concluded that secondary school agricultural graduates will become more proficient in cabbage production if the task instruction sheet is deployed in their training and used as a guide in the production process. With the developed task instruction sheet, the skills challenges faced by secondary school graduates particularly and farmers generally in cabbage production is expected to be addressed. The profitability of cabbage production could be improved through the adoption of the task instruction sheet by teachers of agriculture, agricultural extension workers, the ministries of agriculture among others in organizing training programmes for stakeholders.

Recommendations

Based on the findings and the conclusion of the study, it is recommended that:

1. The agricultural extension agents should utilize the task in cabbage production identified in this study to develop training programmes for farmers.
2. The objectives of a task instruction sheet in cabbage production identified in this study should be used by the curriculum developers as the objectives for teaching cabbage production in secondary schools' agricultural science curriculum.
3. The ministry of agriculture, donor agencies, and agriculture-based nongovernment agencies should provide the materials for cabbage production for secondary school graduates and farmers to enhance cabbage farming.

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