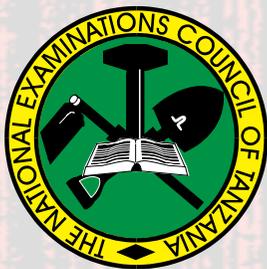


**THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA**



**STUDENTS' ITEM RESPONSE ANALYSIS  
REPORT FOR THE FORM TWO NATIONAL  
ASSESSMENT (FTNA) 2015**

**034 AGRICULTURAL SCIENCE**

**THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA**



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**034 AGRICULTURAL SCIENCE**

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## **FOREWORD**

The Agricultural Science Students' Items Response Analysis Report on the Form Two National Assessment (FTNA), 2015 was written in order to provide feedback to students, teachers, parents, policy makers and other educational stakeholders on the students' responses in this subject.

The Form Two National Assessment is a two years formative evaluation in the secondary education which among other things shows the effectiveness of education system in general and education delivery system in particular. Essentially, students' responses to the assessment questions is a strong indicator of what the education system was able or unable to offer to the students in their two years of secondary education.

The analysis presented in this report is intended to contribute towards the understanding of the reasons behind students not scoring high marks. The report highlights some of the factors that made students fail to score high marks. Such factors include inadequate knowledge of the subject matter, failure to meet demands of the questions, lack of English Language proficiency and inadequate practical skills. The feedback provided will enable the educational administrators, school managers, teachers and students to identify proper measures to be taken in order to improve the students' performance in future assessments administered by the Council.

The National Examinations Council of Tanzania will highly appreciate comments and suggestions from teachers, students and the public in general that can be used for improving future Students' Items Response Analysis Report.

Finally, the Council would like to thank the Assessors and all those who participated in processing the data used in this report.



Dr. Charles E. Msonde  
**EXECUTIVE SECRETARY**

## 1.0 INTRODUCTION

This report is based on the analysis of students' items response on the year 2015 Form Two National Assessment in Agricultural Science subject. The 2015 Agricultural Science assessment was set according to the 1997 Agricultural Science syllabus.

The assessment comprised of one paper which consisted of two sections namely A and B. Section A consisted of three objective questions which were: Multiple-choice, Matching and True/False items. Each question carried 10 marks, making a total of 30 marks. Section B comprised of seven short answer questions. This section carried 70 marks, 10 marks in each question. The students were required to answer all questions.

A total of 17,250 students sat for the 2015 Form Two Agricultural Science Assessment of which 6,073 (35.21%) students passed and the remaining 11,180 (64.79%) failed the assessment, the results which are described as average. However, these results registered a rise of 0.76% pass compared to the year 2014 results.

### Students' Performance in Grades

<b>Grades</b>	<b>A</b>	<b>B<sup>+</sup></b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>Total</b>
<b>Girls</b>	2	34	205	702	1,710	2,765	3,615	9,033
<b>Boys</b>	6	163	490	1,089	1,672	2,133	2,664	8,217
<b>Total</b>	8	197	695	1,791	3,382	4,898	6,279	17,250

This report illustrates the analysis of each question by briefly giving an overview of what the students were required to do, the way they responded, the reasons for their good or poor responses and the clarification of the observed students responses. Extracts of the sample responses showing students responses have been included. In this analysis, a question is graded as poorly performed, averagely performed or well performed when the percentage of students fall under the following score ranges: 0 – 29 (Poor), 30 – 49 (Average) and 50 – 100 (Good).

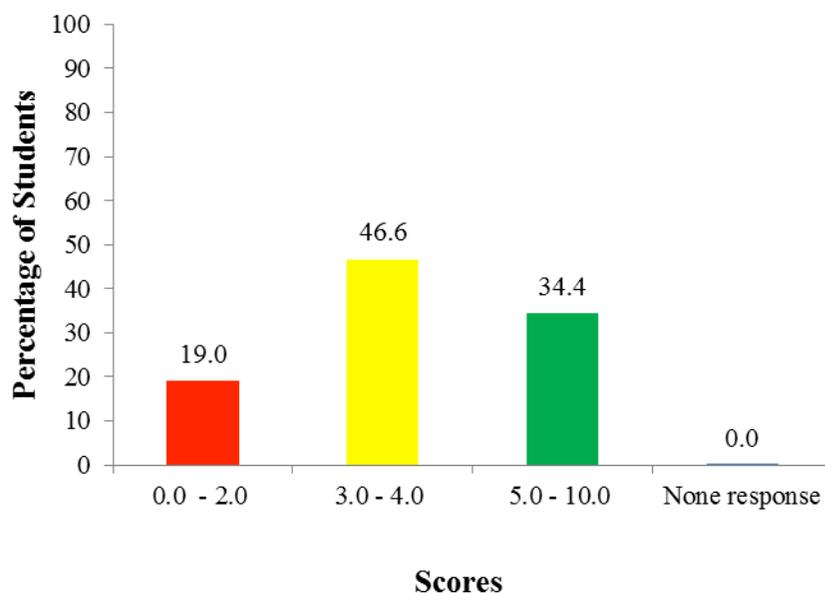
## 2.0 ANALYSIS OF STUDENTS' PERFORMANCE PER QUESTION

### 2.1 SECTION A: OBJECTIVE QUESTIONS

#### 2.1.1 Question 1: Multiple-Choice Items

This question consisted of ten items drawn from various topics in Agricultural Science syllabus. The students were required to choose the correct answer from among the four given alternatives.

The question was attempted by 17, 249 students of which 19 percent scored from 0 to 2 marks, 46.6 percent scored from 3 to 4 marks and 34.4 percent scored from 5 to 10 marks. These statistics signify that the students' general performance in this question was good as depicted in figure 1.



**Figure 1: Students' Performance in Question 1.**

The statistics show that among the 19 percent of students who scored from 0 to 2 marks, 14 percent of them scored 2 marks and 0.6 percent scored zero mark. Moreover, for the students who

performed well, 18.2 percent scored 5 marks and only one student scored ten marks which was the highest.

It is therefore observed that, students who attempted this question performed well in items (iii), (v), (vii), (viii) and (x) and had problems in items (i), (ii), (iv), (vi) and (ix).

The analysis on the items which were done well show that the students had adequate knowledge on the subject matter. In item (iii), the correct response was “A,” traditionalism, as being a social problem facing farmers in Tanzania. Those who chose the other alternatives were wrong since “B,” Scarcity of input, was an institutional problem and not a social problem, “C,” Poor market facility, was institutional problem and not a social problem and “D,” Seasonal rainfall, was on ecological problem and not a social problem.

In item (v) which demanded students to choose an option that determines the price of goods, the correct alternative was “D,” inflation. The distractors provided were “A” Producers’ will, was incorrect since producers have no say in the market; “B,” method of production used, was also incorrect because it just determines efficiency in production and “C,” consumer income, which was incorrect because it has to do with purchasing power and not price determination.

Item (vii) demanded the student to choose the correct answers from the given alternatives, the one which is not a physical procedure of processing agricultural produce. Option “A,” salting, was the correct response since it is the chemical procedure of processing agricultural produce. All other options provided “B,” extraction, “C,” evaporation of water and “D,” grading which, were wrong because they are physical processing procedures.

In item (viii) the correct response was “B,” claw hammer, as an instrument which is used for driving in and removing nails in wood work. The distractors given: “A,” ball-pein hammer, is used for straightening metal sheets and rods and not for driving in and out

nails, “C,” cross-pein hammer, is used for general nailing and not for driving in and out nails, and “D,” metal hammer is used for peening metal and not for driving in and out nails.

In item (x) the quick and immediate attention that one receives after an accident in agricultural laboratory was correctly assigned option “C,” first aid. The incorrect alternatives were “A,” treatment, which was incorrect because it deals with cure, “B,” preventive measure, which was incorrect because it is the one that prevents something to happen and “D,” safety precautions, are rules to be observed to prevent an accident and the quick and immediate attention that one receives after an accident in agricultural laboratory.

In the items in which the students had problems, it has been noted that they lacked mastery of knowledge and practical skills in those areas. In item (i) which demanded the students to choose an option which is not a chemical weathering process, the students were attracted with option "D" (oxidation reduction reactions) while the correct response was "B" (expansion and contraction). The students here failed to distinguish between physical and chemical processes. The other distractors provided “A” (hydrolysis) and “C” (acidification) which were all chemical processes.

In item (ii), students were required to choose among the given alternatives the crops which belong to the spice crops. Students opted for "C" (beans and cow peas) which are leguminous crops instead of "B" (ginger and cloves). This indicates that the students had insufficient knowledge on the major classes of crops which are grown in Tanzania and their uses. The other incorrect options provided were “A” (orange and mango) which are fruit crops and “D” (wheat and barley) which fall under the group of cereal crops.

In item (iv), the students were required to choose an item which represents a statement which is NOT a feature for a good farm workshop. The students were attracted with option "B" (It should be orderly and systematic) instead of "C" (it should be expensive

with modern equipment) which was the correct response. These students lacked relevant knowledge on features of a good farm workshop. In this item “A” (it should contain basic tools) and “D” (it should have ample room for working) were other distractors that represent good features of a farm workshop.

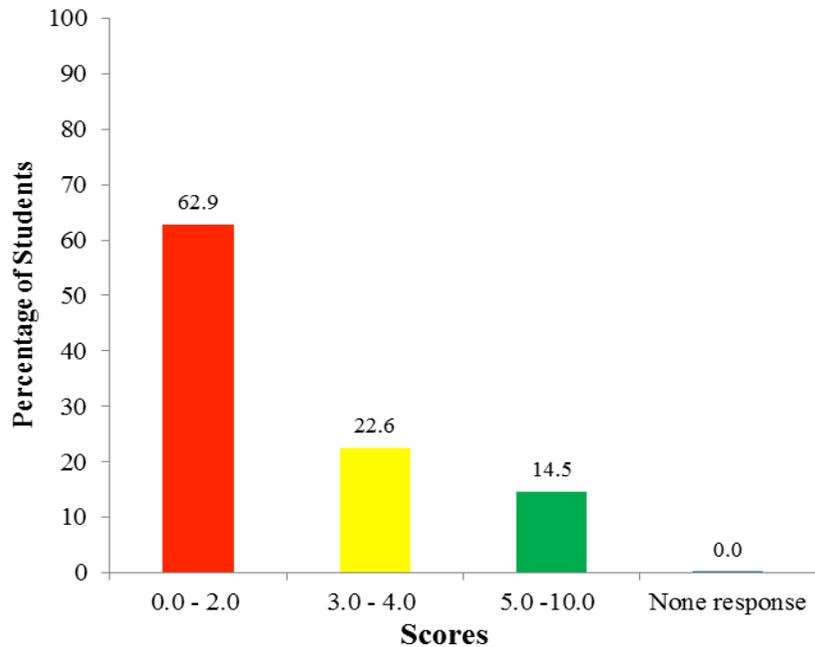
Item (vi) which demanded the students to choose among the given four alternatives, the sign which can be used to identify new castle disease in poultry, the students incorrectly opted for "A" (swollen wattles and combs) which is the symptom for fowl pox and not new castle disease, while the correct response was ‘D’ (birds walk backwards hiding their heads with necks twisted). This indicates that students lacked knowledge and practical skills on poultry diseases. “B” (nasal discharge and swelling of the face) is a symptom of infectious coryza and “C” (blood stained faeces) which is a symptom for coccidiosis and not new castle disease as well.

Item (ix) demanded the students to choose among the alternatives given, the criterion which is used to determine the soil structure. Students opted for "B" (size of the soil particles) which determine soil texture and not soil structure instead of "C" (shape of the soil particles) which was the correct response. This is an indication that the students lacked knowledge and practical skills on the determination of soil structure. The other incorrect options in the item were “A” (colour of the soil) which determine soil fertility and not soil structure and “D” (particle density of the soil) that determine amount of organic matter.

### **2.1.2 Question 2: Matching Items**

This question consisted of ten items from the topic of Farm Workshop in Agro-mechanics. The students were required to match the items in List "A" with the responses in List "B" by writing the letter of the correct response besides each item. List "A" consisted of different functions performed by different carpentry tools whereas List "B" consisted of different carpentry tools which are used to perform woodwork in a farm workshop.

A total of 17, 249 students attempted this question, of which 62.9 percent scored from 0 to 2 marks, 22.5 percent scored from 3 to 4 marks and 14.6 percent scored, from 5 to 10 marks. These statistics signify that students' general performance in this question was poor. Figure 2 shows the distribution of students in categories of performance in the matching items question.



**Figure 2: Students' Performance in Question 2.**

In the group of students who performed poorly, 18.6 percent scored zero mark while only one student scored 10 marks in the group of good performers.

Students who attempted this question failed to match the functions of the carpentry workshop tools due to inadequate knowledge and insufficient practical skills. The students failed to match item (i) the tool that cuts wood grain in any direction with "G" (tenon), (iii) the tool that smoothen surfaces in wood with "H"(jack plane), (iv) the tool that fastens together small pieces of timber with "L"(G-clamp), (v) the tool that drives in wood chisel with "A"(mallet),

(vi) the tool that drives nail into wood and removes nails from wood with “N”(claw hammer), (vii) the tool that drills holes in wood with “D” (brace and bit), (viii) the tool which indicates the parallel lines along the edge of wood for cutting with “C” (marking gauge) and (x) the tool which smoothen round surfaces of wood with “K” (scraper). The students were confused with the homogeneity of the items and ended up guessing the answers. However, students were able to match item (ii) the tool that makes grooves on wood with “M” (wood chisel), and (ix) the tool that drives screws in and out of wood surfaces with “O” (screw driver) due to the tools being common.

### 2.1.3 Question 3: True and False Items

The question required the students to write TRUE for a correct statement and FALSE for an incorrect statement. This question consisted of ten (10) items from different topics in Agricultural Science syllabus.

The question was attempted by 100 percent (17, 250) students whereby only 1.2 percent of them scored from 0 to 2 marks, 13.1 percent scored from 3 to 4 marks and 85.7 percent of the students scored from 5 to 10 marks indicating a good performance as displayed in figure 3.

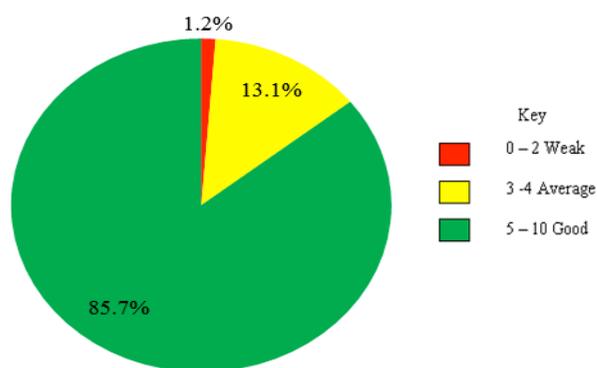


Figure 3: Students' Performance in Question 3.

The students' good performance in this question was attributed to being knowledgeable in the respective topics and other issues of practical use in daily life situations. For example, students performed well in item (vi) weeds have both beneficial and harmful effects to crop plants which was a true statement, and item (ix) one of the objectives of processing agricultural products is to make their handling easier which was also a true statement. Other items which were responded correctly by students were item (i) the non-solid spaces in the soil are called pore spaces (true); (ii) the first step in agricultural investigation procedures is problem identification (false), (v) building suitable housing for livestock is one of the general principles of livestock production as (true), (vii) capital is a factor of production which results from accumulation of assets (true) and (viii) concentrates are indigestible feeds with high nutritive value as false statement.

Moreover, students provided incorrect responses in item (iii) agricultural economics is the study of the economy as a whole which is a false statement, (iv) in welding, metal parts are joined by means of a fusible alloy which is a false statement and (x) soil formation is the evolution of the soil from the consolidated bedrock which was also a false statement; thus showing inadequate knowledge on the subject matter in those areas.

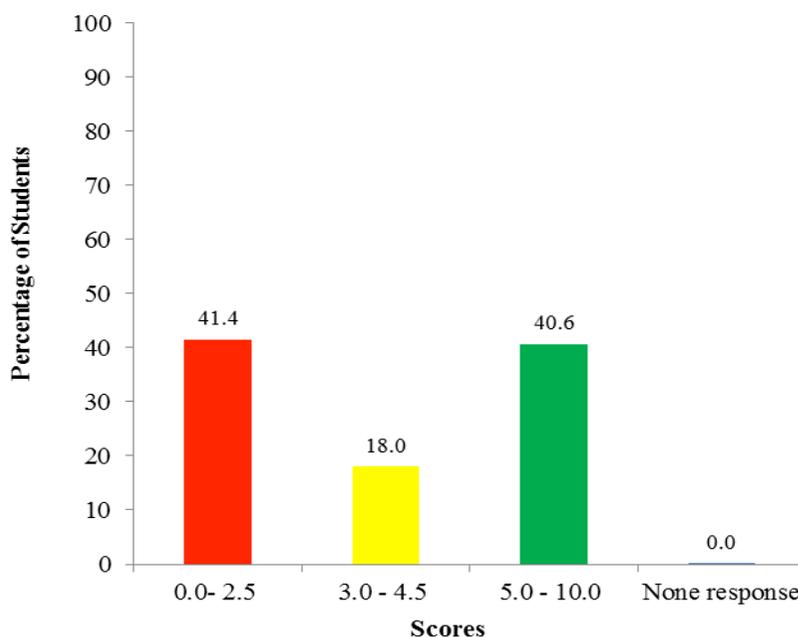
## **2.2 SECTION B: SHORT ANSWER QUESTIONS**

### **2.2.1 Question 4: Fundamentals of Agriculture**

This question consisted of two parts, (a) and (b). The students were required to: (a) (i) define the term 'agriculture', (ii) give out the reason why agriculture is considered to be a science and (b) outline six roles of agriculture in the economy of Tanzania.

The question was attempted by 17,246 students, of which 41.4 percent scored from 0 to 2.5 marks, 18 percent scored from 3 to 4.5 marks and 40.6 percent scored from 5 to 10 marks. These statistics signify that the students' general performance in this

question was good. Figure 4 shows the distribution of students' scores.



**Figure 4: Students' Performance in Question 4.**

Majority of the students who attempted this question did well in parts (a) (i) and (b) in which they were able to define the term 'agriculture' and outlining its role in the national economy. The good performance in these parts of the question was due to the mastery of the basics of the subject matter.

Further analysis of the students' responses revealed that most of the students failed in part (a) (ii) which required the students to give out the reasons of considering agriculture as a science. The students were not able to define the phenomenon of agricultural science, but some repeatedly termed agriculture as '*a science of crop and livestock production*'. Extract 4.1 illustrates the response of a student who performed well.

#### Extract 4.1

4. (a) (i) Define the term 'agriculture'.

Agriculture is an art and science that deals with crop cultivation and keeping of animals.

(ii) Why is agriculture considered to be a science?

Because it involves scientific procedures and experiments such as soil analysis and Diseases and pests in plants and animals.

(b) Outline six roles of agriculture in the economy of Tanzania.

- Provides food for the country. Example Maize, beans, potatoes and rice (paddy).
- Provides employment.
- Provides raw-materials for manufacturing industries. Example Sisal and Tobacco.
- Source of income.
- Source of foreign exchange (forex).
- Raises capital for national development. Example Constructions of infrastructures like roads.

Extract 4.1 shows a sample of good response presented by student in question 4. The student provided correct responses in all parts of the question except in part (a) (ii) where the student omitted observation and experimentation as features making Agriculture a science.

However, the students who performed poorly in this question failed to answer the whole question correctly. For example, one student defined agriculture as *the study of the economy as whole*. In part (a) (i) and (ii) he /she failed to give the correct reason as to why agriculture is considered to be a science. He/she wrote *is the economic science in livestock*. The majority of those who performed poorly in part (b) of the question, simply outlined different types of crops grown in Tanzania instead of outlining the role of agriculture in the national economy. Extract 4.2 illustrates a response by a student who performed poorly.

## Extract 4.2

4. (a) (i) Define the term 'agriculture'.  
~~is economics~~  
is the study of the economy as whole.

(ii) Why is agriculture considered to be a science?  
is the economic science in live stock keeping.

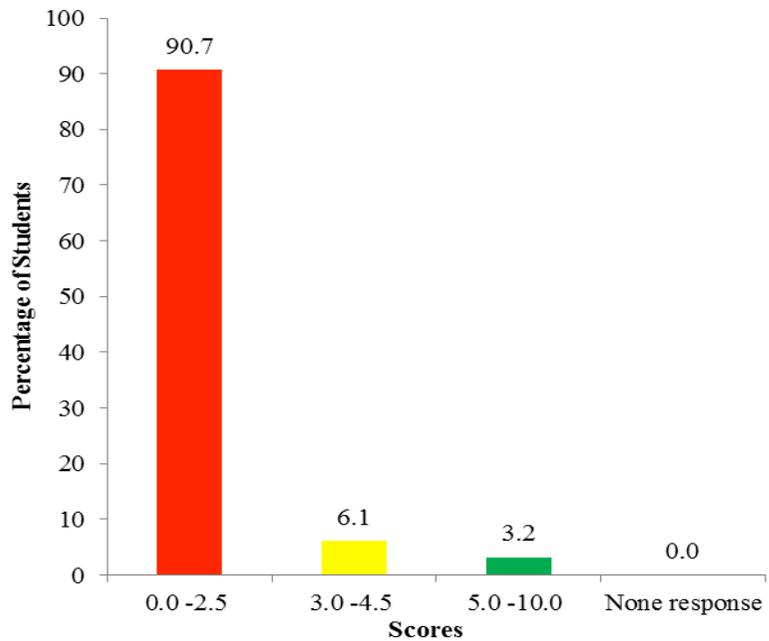
(b) Outline six roles of agriculture in the economy of Tanzania.  
is the study of human economy  
agriculture production  
capital is a factor of production  
agriculture economic  
agriculture science  
cropping of agriculture

Extract 4.2 shows a sample of a student's poor response in the question. The student provided incorrect responses in all parts of the question showing lack of knowledge on the basic subject matter.

### 2.2.2 Question 5: Farm Workshop

The question comprised two parts (a) and (b), and the students were required to: (a) state the importance of safety precautions in the farm workshop and, (b) state three safety precautions in the areas of: (i) house keeping; (ii) personal protection against injury and (iii) protection against fire hazards.

The question was attempted by 17,447 students, of which 90.7 percent scored from 0 to 2.5 marks, 6.1 percent scored from 3 to 4.5 marks and only 3.2 percent scored from 5 to 10 marks. This trend of statistics signifies that the general students' performance in this question was very poor. Figure 5 indicates the trend of students' performance in the question.



**Figure 5: Students' Performance in Question 5.**

The analysis on the responses presented by the students' shows that the majority of students (69%) who scored a zero mark had inadequate practical skills on the subject matter of farm workshop and safety precautions in the workshop. These students provided incorrect answers in all parts of the question as they completely failed to comprehend the demand of the question. As a result they provided responses which were out of content and hence were not correct. For example, one student outlined the importance of safety precautions in the farm workshop as *'it is crop safety precaution in the farmer, it control safety precautions in the farm workshop, it control law material'*. In part (a) and in part (b) the student stated *'keeping in Uganda, safety precautions, it supply law material'* as safety precautions regarding house keeping. Extract 5.1 illustrates a sample response by a student who performed poorly in question 5.

## Extract 5.1

5. (a) What is the importance of safety precautions in the farm workshop?

It is crop safety precaution in the farmer  
It control safety precautions in the farm workshop  
It control low Material

(b) State three safety precautions in each of the following areas:

(i) House keeping.  
~~House~~ keeping in uganda  
Safety precautions  
It supply low Material

(ii) Personal protection against injury.  
It provide introduced against injury  
It is control cropping  
It provide enough

(iii) Protection against fire hazards.  
Protection against fire hazards  
It promote and hazards  
It promote controlling hazards

Extract 5.1 shows responses of a student who performed poorly. The student provided incorrect responses in all parts of the question by writing sentences which do not relate to the requirements of the question.

Few students (0.2%) who performed well in this question demonstrated that they had the knowledge and practical skills of the subject as they were able to provide correct responses in line with the demand of the question. However, a number of them were not able to state the safety precautions regarding house keeping. Extract 5.2 illustrates a response by a student who performed well in this question.

## Extract 5.2

5. (a) What is the importance of safety precautions in the farm workshop?  
It help  
.....  
.....  
.....

(b) State three safety precautions in each of the following areas:

(i) House keeping

- Working place should be kept free obstruction
- Floor should be kept clean by wiping spilled grease and oil
- Benches and tools should be cleaned and properly arranged

(ii) Personal protection against injury.

- All tools should be kept in good condition
- It is necessary to wear goggles and use of shield when grinding or welding in order to protect against rays and sparks
- Care should be taken when using power saws and other sharp equipment that might cause injury

(iii) Protection against fire hazards.

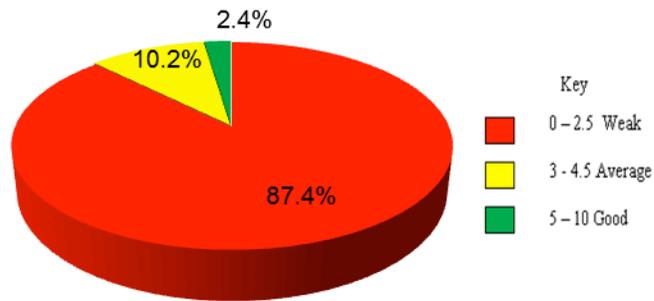
- All flammable liquids should be stored in approved containers
- It is important to make partitions using metal sheet
- Fire extinguishers should be easily accessible

Extract 5.2 shows responses of a student who scored high marks in the question. Despite the good responses the student faced difficulties in giving the importance of safety precautions in the farm workshop in part (a).

### 2.2.3 Question 6: Horticultural Production

This question had two parts (a) and (b). The students were required to: (a) (i) define the term ‘horticulture’, (ii) give the importance of horticultural products in the diet of human beings and (b) briefly explain the six cultural practices to be observed when growing vegetables in the garden.

The question was attempted by 100 percent of the students of which 87.4 percent scored from 0 to 2.5 marks, 10.2 percent scored from 3 to 4.5 marks and 2.4 percent scored from 5 to 9.5 marks. These statistical data signifies that the general students’ performance in this question was very poor as depicted in figure 6.



**Figure 6: Students' Performance in Question 6.**

Students who performed poorly in this question failed to explain the cultural practices required to be observed when growing vegetables in the garden. For example, most of the students described factors to consider when planning for a garden such as availability of capital, weather condition, availability of water and transportation. This shows that students lacked practices in horticultural production since the demand of the question focused on practices which are normally looked at during horticultural crops production in the garden.

The students who performed moderately in this question were able to define the term 'horticulture' in part (a) (i) and in (a) (ii). These students were also able to identify two horticultural products (fruits and vegetables) but failed to give their importance in the diet of human beings. Students did not note the fibres to be other horticultural product with others trying to explain the importance of horticulture instead of horticultural products. Provision of incorrect responses in this part was due to inadequate knowledge on the subject matter and failure to meet demands of the question. Extract 6.1 illustrates a response of a student who performed poorly.

## Extract 6.1

6. (a) (i) What is meant by horticulture?  
is the importance of horticultural products in the diet of human being.

(ii) Give the importance of horticultural products in the diet of human beings.  
horticulture  
cultural

(b) Briefly explain six cultural practices to be observed when growing vegetables in the garden.  
sweets, is the vegetable in the sweets

Extract 6.1 shows responses of a student who performed poorly. The student seemed not to understand the demands of the questions and then provided incorrect responses in all parts of the question. The student lacked practical knowledge of the subject matter content.

Those who performed well in this question showed a good command of the topic and managed to provide correct responses in all parts except that they did not exhaust all the cultural practices in part (b). Extract 6.2 illustrates a response of a student who performed well and scored high marks.

## Extract 6.2

6. (a) (i) What is meant by horticulture?  
Horticulture is an art and science of production of fruits, vegetables, and flowers.

(ii) Give the importance of horticultural products in the diet of human beings.  
it provides fibre, vitamin and different minerals  
it protects our body by eating fruits and vegetable from diseases

(b) Briefly explain six cultural practices to be observed when growing vegetables in the garden.

(i) Application of manure in garden: it help to make a plant good healthy

(ii) Mulching = it help to conserve water moisture

(iii) To make drip system area = it help to preserve dead organ water

(iv) Misting of weeds = it help to avoid nutrient compete

(v) watering by hands = it help to conserve soil moisture

(vi) To cover the grasses on special house of seedlings eg. eat the seedlings their house are in that farm

Extract 6.2 shows a sample of correct responses provided by good performers in almost all parts of the question with the exception of part (b) where they missed two cultural practices. This shows that the students had enough knowledge and skills in horticultural crops production.

#### 2.2.4 Question 7: Animal Feeds and Feeding

The question comprised of parts (a) and (b). The students were required to: (a) define the terms (i) ration, (ii) balanced ration, (iii) production ration, (iv) maintenance ration, (b) (i) differentiate between hay and silage, (ii) outline four steps in making hay and (iii) explain briefly the importance of conserving fodder.

A total of 17,244 students attempted this question, of which 90.3 percent scored from 0 to 2.7 marks, 6.4 percent scored from 3 to 4.5 marks and only 3.3 percent scored from 5 to 10 marks. These statistical data signifies that the students' general performance in this question was very poor. Figure 7 illustrates the students' performance in the question.

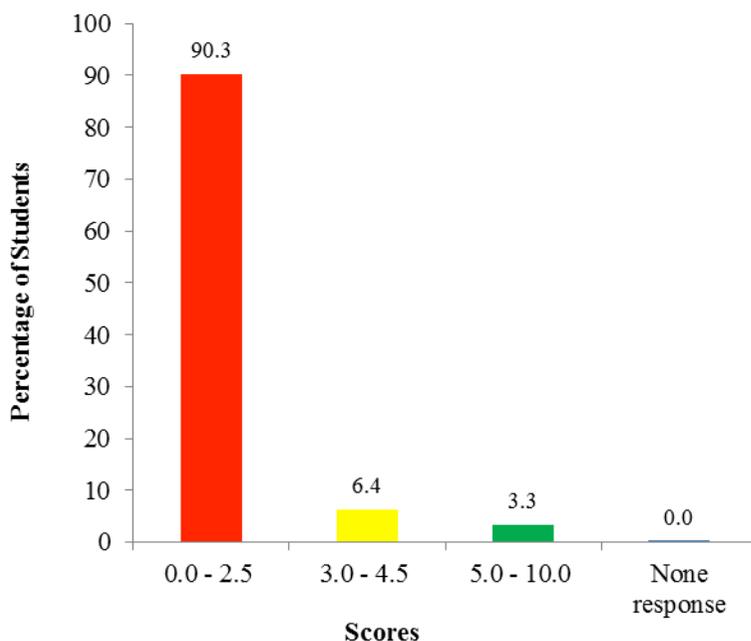


Figure 7: Students' Performance in Question 7.

Most of the students who attempted this question performed poorly in both parts of the question by providing incorrect responses, thus showing inadequate knowledge of the subject matter. These students wrote irrelevant things contrary to the demands of the questions. For instance, most of them outlined the process of silage making instead

of the process of making hay in part (b). Extract 7.1 illustrates a response of a student who performed poorly and did not get a single mark.

### Extract 7.1

7. (a) Define the following terms:

(i) Ration  
is the rotation which concept for  
rigidity where period for balance

(ii) Balanced ration  
is the balance ration that into  
less which deals at size

(iii) Production ration  
is the production ration what are  
consider to Ration for agriculture

(iv) Maintenance ration  
is the maintenance ration where to  
particular in ratio of exchange for  
limited in agriculture soil.

(b) (i) Differentiate between hay and silage.  
it provide limited for the hay.  
it provide Compestible to the silage  
it provide water for the hay

(ii) Outline four steps in making hay.  
silage steps  
bigger steps  
easier steps  
right steps

(iii) Briefly explain the importance of conserving fodder.  
it provide conserving fodder to agriculture  
it provide maintenance fodder to agriculture  
type

Extract 7.1 shows a response of a student who failed to provide the correct answers in all parts of the question signifying lack of knowledge in the topic tested.

Few students who performed well in sub-items of part (b) of the question managed to differentiate between hay and silage and outlined properly the four steps in making hay, hence showing good mastery of the subject content in the topic. On the other hand students' in this category showed weaknesses in responding to part

(a) regarding terminologies used in animal feeds and feeding. Extract 7.2 illustrates a response of a student who performed well.

### Extract 7.2

7. (a) Define the following terms:

(i) Ration  
Is the amount of feed required by a animal to fed in order to meet their body requirement in 24 hours.

(ii) Balanced ration  
Is the feed that has all nutritional component in a good proportional.

(iii) Production ration  
Is the amount of feed required by a animal to fed in order to meet their body requirement of production of milk, meat or eggs.

(iv) Maintenance ration  
Is the amount of feed required by animal to fed in order to meet their body requirement for maintenance without gaining or losing weight.

(b) (i) Differentiate between hay and silage.  
Hay is herbage such as legume or grass that is cut and left to dried while silage is the grass that is cut and store in a silo with the green moisture state.

(ii) Outline four steps in making hay.  
- Cut the mature grass  
- Left to dried  
- Do not dried in directly in sun light.  
- Store hay for use in another time

(iii) Briefly explain the importance of conserving fodder.  
It is important because when the grass is absent, the farmer tend to use hay or silage to give animal as food.

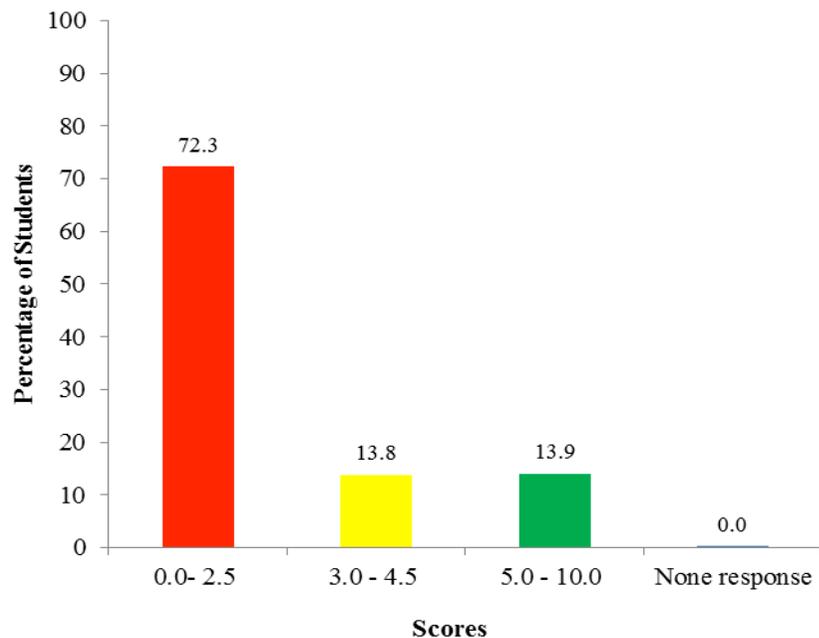
Extract 7.2 shows responses of a student who scored high marks in the question except in part (b) (ii) where the student missed two steps in making hay. He/she provided correct responses in all other parts showing good mastery of the subject matter.

### 2.2.5 Question 8: Price and its Determinants

This question comprised of two parts (a) and (b), where the students were required to: (a) give the meaning of the terms (i) price, (ii) supply, (iii) demand, (b) (i) briefly explain how taxation determines

the price of an agricultural good and, (ii) name the five factors affecting the demand of an agricultural good.

The question was attempted by 17,244 students, of which 72.3 percent scored from 0 to 2.6 marks, 13.8 percent scored from 3 to 4.5 marks and 13.9 percent scored, from 5 to 10 marks. These statistical data signifies that the students' general performance in this question was poor. Figure 8 indicates the students' performance in categories of 'Weak', 'Average' and 'Good'.



**Figure 8: Students' Performance in Question 8.**

The analysis on the responses of the students shows that most of them lacked competence in areas of price and its determinants. They provided incorrect answers in almost all parts of the question except part (a) where the majority were able to explain the meaning of the terms price, supply and demand.

Most of the students failed to explain how taxation determines price of an agricultural good and naming the factors affecting the demand of an agricultural good in (b) (i) and (ii) respectively. In part (b) (i)

the students tried to outline functions of price and in (b) (ii) they named many of the factors affecting supply of an agricultural good. Extract 8.1 is a sample answer from one of the students illustrating how they failed to answer question 8.

### Extract 8.1

8. (a) Give the meaning of the following:

(i) Price  
This is theory that can be able to the  
save people.

(ii) Supply  
This is sector of farm workshop that has  
produce supply.

(iii) Demand  
This is the system that has bridge the  
Unit & farm, or price of agricultural

(b) (i) Briefly explain how taxation determines price of an agricultural good.  
.....  
.....  
.....

(ii) Name five factors affecting the demand of an agricultural good.  
It should contain basic tool  
It should be orderly and systematic  
It should be expensive with modern equipment  
It should have ample room of working.

Extract 8.1, the student failed to attempt part (b) (i) of the question and provided incorrect responses in all other parts of the question due to lack of knowledge on the topic.

Students who performed well in this question had competence in part (a) whereby they were able to give the meaning of the terms and in part (b) (ii) they were also able to name some factors affecting the demand of an agricultural good. However, in part (b) (i), some of them faced difficulties in explaining how taxation determines price of an agricultural good and instead they explained importance of taxation in the national economy. Extract 8.2 illustrates a sample response of a student who performed well.

## Extract 8.2

8. (a) Give the meaning of the following:

(i) Price <sup>condition</sup> is the a value of goods or services given by a market  
~~is the quantity of the commodities or services that are offered for sell at different price~~

(ii) Supply  
Is the quantity of the commodities or services that are offered for sell at different price

(iii) Demand  
Is the a quantity of a good or service that is bought at a particular price

(b) (i) Briefly explain how taxation determines price of an agricultural good.  
When the tax is high the price is high and when the price tax is low the farmer produce more goods and then price of good should be also low.

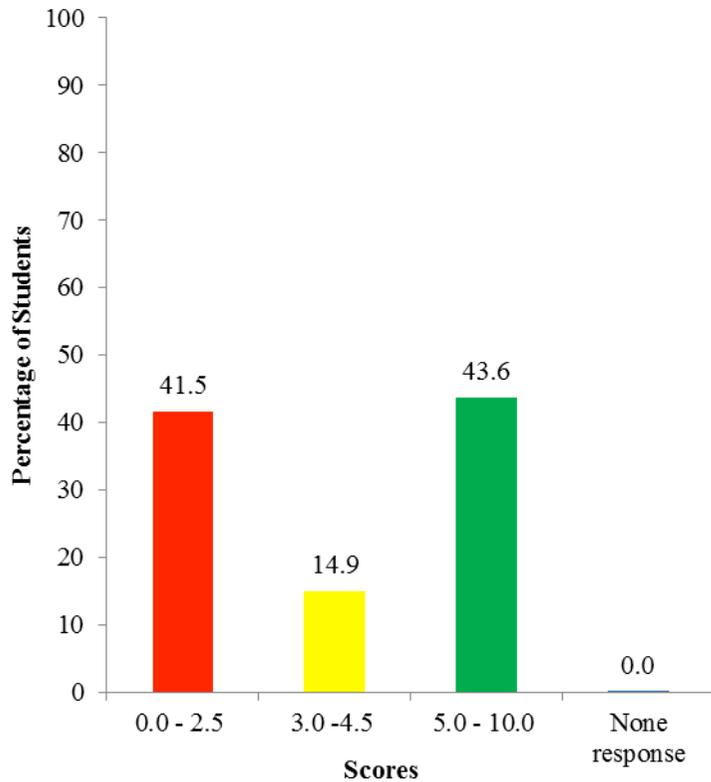
(ii) Name five factors affecting the demand of an agricultural good.  
(i) Change in the taste and habits of consumer  
(ii) Change in the price of goods in question  
(iii) Change in the price of other goods  
(iv) Change the cost of production  
(v) Change in population

Extract 8.2 show responses of a student with good answers. The student managed to provide the correct responses in almost all parts of the question except in part (b) (ii) where the student missed only one point thus signifying mastery of the subject matter on the topic tested.

### 2.2.6 Question 9: Soil and its Agricultural Utilization

The question had two parts (a) and (b). The students were required to: (a) (i) define the term soil, (ii) show the distribution of soil components by volume and (b) state the five factors that influence soil formation.

The question was attempted by 17,248 students, of which 41.5 percent scored from 0 to 2.5 marks, 14.9 percent scored from 3 to 4.5 marks and 43.6 percent scored from 5 to 10 marks. These data show that the students' general performance in this question was good. Figure 9 indicates the trend of students' performance in the question.



**Figure 9: Students' Performance in Question 9.**

Majority of the students who attempted this question performed well. The students had mastery of the subject matter content in parts (a) (i) and (ii) except part (b) where they either completely failed to state the factors influencing soil formation or did not exhaust all the factors due to inadequate knowledge and skills. Extract 9.1 illustrates a sample of a student's good responses in the question.

### Extract 9.1

9. (a) (i) What is soil?  
 It is the thin upper layer/part of earth crust in which living organism like plant and animal live.

(ii) Show the distribution of soil components by volume.

Component	Percentage
Soil air	45%
Organic matter	25%
Soil water	25%

(b) State five factors that influence soil formation.

- i. Climate
- ii. Relief
- iii. Living organism
- iv. Parent rock

In extract 9.1, the student was able to define soil and show the soil distribution by volume. In part (b) he/she managed to state the five factors that influence soil formation.

Further analysis on the students' responses in this question shows that the students who did not perform well faced difficulties in parts (a) (ii) and (b). The students failed to show the distribution of soil components by volume in sub-items (a) (ii) and (b). They also wrongly stated the physical properties of soil such as soil structure, soil texture and soil colour as factors influencing soil formation. Extract 9.2 illustrates a response of a student who performed poorly.

### Extract 9.2

9. (a) (i) What is soil?  
 Is the thin

(ii) Show the distribution of soil components by volume.

Soil formation  
 Soil particles  
 particle density of the soil  
 size of the soil colour of the soil

(b) State five factors that influence soil formation.

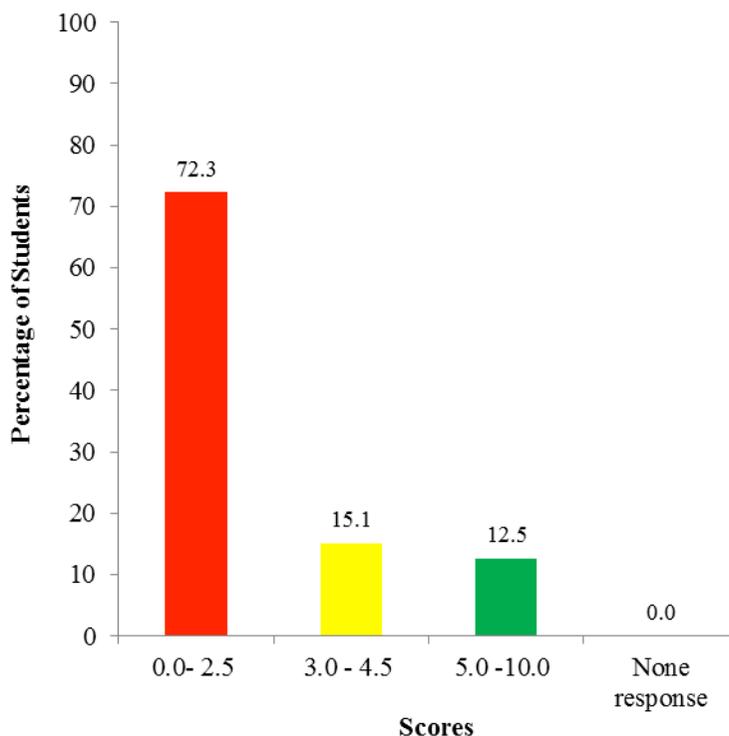
Is the evolution of the soil from the consolidated  
 It Drive screws in and out of wood surfaces  
 It smoothen's round surfaces of production  
 cuts wood grains in any direction

Extract 9.2, provides a sample of a response of a student who failed to attempt part (a) (i) of the question and provided incorrect responses in all other parts.

### 2.2.7 Question 10: Cropping Systems and Planting Patterns

The question comprised of two parts (a) and (b). The students were required to: (a) differentiate the terms (i) interplanting and monocropping, (ii) mixed cropping and intercropping, (b) (i) define the term crop rotation and (ii) enumerate five advantages of crop rotation.

This question was attempted by 17,243 students, of which 72.3 percent scored from 0 to 2.5 marks, 15.1 percent scored from 3 to 4.5 marks and 12.6 percent scored from 5 to 10 marks. These data shows that the students' general performance in this question was poor. Figure 10 is a bar chart which indicates the distribution of students' performance in the question.



**Figure 10: Students' Performance in Question 10.**

The analysis of students' responses show that the majority of the students who attempted this question faced difficulties in differentiating the cropping

systems and planting patterns in part (a). Most of the students provided incorrect responses in this part, thus showing incompetence in the mastery of the subject matter whereby the majority named different crops that are grown in Tanzania.

In part (b), the majority of the students were able to give the meaning of crop rotation as asked in sub-item (i). In the sub-item (ii), most of the students did not exhaust all the points in explaining the advantages of crop rotation like the advantages of utilizing the nutrients effectively and control of weeds, and diseases and pests being left out at different times. This signifies that the students had inadequate knowledge in some topics of the subject. Extract 10.1 is a sample answer showing how these students failed to answer this question.

### Extract 10.1

10. (a) Differentiate the following:
(i) Interplanting and monocropping.
is used for driving in and removing nails in wood works.
is known as:
.....
.....
(ii) Mixed cropping and intercropping.
immediate attention that one receives after an accident
.....
.....
(b) (i) What is meant by crop rotation?
is used for driving in and removing nails in wood wo
rk is known as:
.....
.....
(ii) Enumerate five advantages of crop rotation.
1) ball-pein hammer
2) claw hammer
3) cross-pein hammer
4) metal hammer.

Extract 10.1, provides a sample of a response of a student who failed completely to provide any correct response in the question showing high degree of incompetence in the mastery of the subject matter.

Students who performed well in the question were able to give the correct meaning of crop rotation in part (b) (i) and enumerated five advantages of

crop rotation as demanded in part (b) (ii) of the question. However, a number of these students did not manage to differentiate the terms in part (a), an indicator that they were not knowledgeable enough. Extract 10.2 illustrates a response by the student who performed well.

### Extract 10.2

10. (a) Differentiate the following:

(i) Interplanting and monocropping.  
Interplanting is the process of growing more than one crops in a field same field while monocropping the process of growing one crop in a field in a particular season.

(ii) Mixed cropping and intercropping.  
Mixed cropping is the type of interplanting whereby two or more crops are grown in randomly interval while intercropping is the type of interplanting where by two or more crops are grown in arrangement of regular interval.

(b) (i) What is meant by crop rotation?  
Crop rotation is the farming system whereby different types of crops are grown in successive years. For example, when beans are planted in this year, maize will be planted in the following year.

(ii) Enumerate five advantages of crop rotation.

- i) It help in control of weeds.
- ii) It help to control pests and diseases.
- iii) It improve soil fertility
- iv) It prevent soil erosion

Extract 10.2 shows responses of a student who scored high marks by giving correct responses in all parts of the question.

### 3.0 PERFORMANCE OF STUDENTS IN EACH TOPIC

The analysis of the students' performance in each topic depicts that, the True and False question in various topics had good performance whereby 98.8 percent of the students performed well. Likewise, the Multiple-Choice

question which was composed from various topics was also performed well by 81 percent of the students. The topics on Fundamentals of Agriculture and Soil and its Agricultural Utilization were also among the topics in which students performed well with 58.6 percent and 58.5 percent of them having done well respectively.

The topics which had poor performance, and their pass rate in percentage were The Farm Workshop with (23.2%), Price and its Determinants (27.7%), Cropping Systems and Planting Patterns (27.7%) and Horticultural Production (12.6%). However, the topic which was performed most poorly was Animal Feeds and Feeding with only 9.7 percent of the students having done well on the topic.

Details in the appendix show the performance of students in different topics in the questions where the red shade shows topics with poor performance, and green shade topics with good performance in the respective questions.

## **4.0 CONCLUSION AND RECOMMENDATIONS**

### **4.1 Conclusion**

The general performance in Agricultural Science subject for FTNA 2015 was average with 6,073 (35.21%) students having passed the assessment.

Factors that contributed to students not scoring high marks in the assessment were as follows:

Inadequate subject matter knowledge for the students caused them to either provide incorrect responses or writing things which did not relate to the questions asked. Examples of the questions that students showed inadequate knowledge on the topics tested were questions 5 and 7.

Inadequate English Language proficiency caused the students to fail to explain clearly their points especially in the questions that demanded explanations for example question 8.

Failure of the students to understand the demands of the questions contributed to students' providing responses that were not demanded in the question as it can be exemplified in question 6.

Majority of the students lacked practical skills on the subject hence failed to provide correct responses. Other questions asked for, besides classroom knowledge, students practical skills were needed which could translate that knowledge into the classroom situation to respond.

It is expected that the feedback given in this report will enable the stakeholders to take immediate and appropriate measures to enhance students' mastery of the subject and ultimately improve the response of students in FTNA 2016 for Agricultural Science subject.

#### **4.2 Recommendations**

In order to enhance students' mastery of the subject and improve their performance in the subject, the following are recommended:

- (a) Recommendations to Subject Teachers:
  - (i) To make sure that they cover thoroughly well the syllabus package and give ample time for students to do revisions.
  - (ii) Subject Teachers should regularly assess their students and help the weak and slow learners to improve their understanding.
  - (iii) Teachers should use participatory approach in teaching to actively involve students in learning.
  - (iv) Teachers should help their students to improve English Language proficiency.
  - (v) Subject Teachers should make sure that they put emphasis on both theoretical and practical aspects of the subject.

- (b) Recommendations to Students:
- (i) Should spare an ample time for reading and doing revision of what they have learnt.
  - (ii) Should take deliberate efforts to improve both their spoken and written English.
  - (iii) Should put more efforts on the subject including attending all the sessions.
- (c) Recommendation to School Administrators and Managers:
- Should cooperate with the Subject Teachers to facilitate study tours and establish enabling infrastructures (demonstration farms, farm workshops) as part of learning activities to broaden students' understanding.
- (d) Recommendation to Parents/Guardians:
- Should make close follow-up of the academic progress of their children.

## Students' Performance Questionwise

S/N	Topic/Sub-topic	Question Number	Percentage of Students who scored the average of 30% or above	Comments
1.	Scientific Procedures in Agricultural Science, The Farm Workshop, Handling and Processing of Crop Products, Crop Protection, Principles of livestock Production, The Concept of Farming Business Economics, Soil Constituents, Livestock Feeds and Feeding, Price and its Determinants, Factors of Production, Soil Formation	3	98.8	Good
2.	Agricultural Development in Tanzania, Weathering, Handling and Processing of Crop Products, Poultry Diseases and Parasites, Classification of Crop Plants Grown in Tanzania, Price and its Determinants, Physical Properties of Soil, The Agricultural Science Laboratory, The Farm Workshop	1	81	Good
3.	Fundamentals of Agriculture	4	58.6	Good
4.	Soil and its Agricultural Utilization	9	58.5	Good
5.	The Farm Workshop	2&5	23.2	Poor
6.	Price and its Determinants	8	27.7	Poor
7.	Cropping Systems and Planting Patterns	10	27.7	Poor
8.	Horticultural Production	6	12.6	Poor
9.	Animal Feeds and Feeding	7	9.7	Poor

