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COLLEGE OF DEVELOPMENT STUDIES
CENTER FOR FOOD SECURITY STUDIES
MSC PROGRAM IN FOOD SECURITY & DEVELOPMENT
STUDIES
SEMINAR PAPER

COURSE TITLE : SEMINAR ON CONTEMPORARY FOOD SECURITY
ISSUES (FSDS-526)

• **REVIEW ON THE ROLE OF
SCIENCE, TECHNOLOGY &
INNOVATION IN ENSURING
FOOD SECURITY IN ETHIOPIA**

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AUGUST 2019
AAU

Outlines

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- **4. CONCLUSION AND RECOMMENDATION**

Introduction

- About 795 million people, or every ninth person, are undernourished, with the majority living in developing countries and rural areas.
- Ethiopia is one of the world's poorest countries with indicators suggesting low levels of development.
- Many Ethiopians live in conditions of chronic hunger with both a low average daily energy supply (FDRE, 2002).

Introduction

Cont,,,

- There is no problem of underdevelopment that can be more serious than food insecurity (World Bank, 1986).
- One stark indicator of the precariousness of food security in Ethiopia is the rising dependence on foreign food aid (Berhanu, 2004).
- New, existing, and emerging technologies can address the four dimensions of food security & Improved food safety along the food chain to reduce food losses, resulting in increased food availability, stability, and utilization.

Problem statement of the seminar

- Endowed with considerable agricultural potential, Ethiopia had been self-sufficient in staple food and was classified as a net exporter of food grains till the late 1950.
- However, since early 1960s, the country's domestic food supply situation has been declining and failed to meet the food requirements of the people
- The inadequate growth in production has led to increasing food insecurity in many parts of Ethiopia

Problem statement of the seminar Cont,,,

- The country is also known to possess the largest livestock population in Africa. However, poverty and food insecurity remain as the major challenges to achieve economic development.
- This is due to the subsistence nature of Ethiopian agriculture, its mere dependence on rainfall and the existing backward technologies, has made peasants highly vulnerable to famine and food insecurity (Alem, 1999).

Objectives of the seminar

- **General objective**

- To review the role of STI in ensuring food security in Ethiopia.

- **Specific objectives**

- To review how new, existing, and emerging STI can address the four dimensions of food security.
- To highlight key challenges in achieving FS.
- To review coping mechanism and Policy options to minimize food insecurity in Ethiopia.

Significance of the seminar

- It provides with information that will enable effective measures to be undertaken so as to improve food security status and bring the success of food security development programs.
- It will also enable development practitioners and policy makers to have better knowledge.

MATERIALS AND METHODS

- This seminar paper is exclusively a review paper so that all of the information has been collected from the secondary sources. So, no specific methods of studies are involved to prepare this paper.
- It has been prepared by comprehensive studies of various articles published in different journals, books, reports, publications, magazines, website etc. with the help of library facilities of Addis Ababa University.

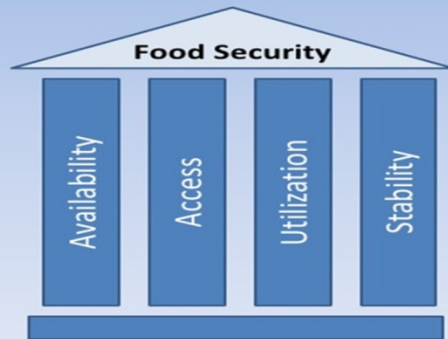
REVIEW ON THE ROLE OF SCIENCE, TECHNOLOGY & INNOVATION IN ENSURING FOOD SECURITY

- **Concepts and Definitions of Food Security**



Pillars of food security

Four Pillars of Food Security



- *availability* (adequate supply of food);

- *access* through home production, purchase;
- *stability*, availability and access are guaranteed at all times;
- *utilization* - appropriate biophysical condition (good health) required to adequately utilize food

Science & technology for food security

- SDG & other international efforts to achieve food security involve new technologies as an indispensable tool for eradicating hunger.
- Scientific and technical applications can address the four dimensions of food security, namely availability, access, use/utilization and stability.

Application of S & T to address the 4 dimensions of food security

- Genetic modification, methods for improving soil fertility, irrigation technologies



• **Food availability**

- Post-harvest technologies, agro-processing technologies



• **Food accessibility**

- Bio-fortification



• **Food use &**

- Climate-smart solutions anchored in STI



• **Food sustainability**

Food availability: S & T to improve agricultural productivity

- Science, technology, and innovation can play a critical role in producing more food by creating plant varieties with improved traits, as well as optimizing the inputs needed to make agriculture more productive.
- ✓ Conventional crossbreeding and transgenic modification
 - Genetic improvements of crops & livestock
- ✓ Soil management and irrigation → for increased agricultural productivity →

Food access: Technologies for food accessibility

- A key aspect of accessing food is minimizing food losses from farm to fork (P-PHC), since farmers lack access to ready markets
- Lack of affordable refrigeration and of electricity limits the production, preservation, and sale of high value perishables such as vegetables, fruits, dairy, and meat.
- A significant number of smallholder farmers do not have access to affordable harvest equipment. The cost, size, energy needs and maintenance requirements of imported threshers can create a burden for smallholder farmers. In such cases, investing in the creation of local talent to fabricate and repair small to medium sized threshers can address the affordability and availability of such technologies.

Food use and utilization: Science for nutrition

- Malnutrition is both a driver and an outcome of poverty and inequality.
- Undernutrition can also lead to hidden hunger, wasting and stunting, which causes irreversible damage to people and society.
- Bio-fortification – or the breeding of critical micronutrients and vitamins into staple crops, its effective approach for combating malnutrition

Orange-fleshed sweet potato

➡ Vitamin A-enriched cassava, maize



Food stability: New ways to combat acute and chronic food insecurity

- Sustainable food systems deliver food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.
- The effects of climate change will require sustainable and climate-compatible agriculture practices, including diversifying production.
- Early warning systems & convergence of new emerging technologies are tools for stability of SFS

Developing innovative food systems

- To harness science and technology for the various dimensions of food security, it is necessary to make the food system itself more innovative. This includes,
 - ✓ defining a research agenda that focuses on farmers,
 - ✓ investing in human capacity,
 - ✓ enabling infrastructure for food systems,
 - ✓ putting appropriate structures for agricultural innovation and knowledge flows between farmers and scientists.

CONCLUSION

- Food security is a relative concept defined as the access to food by all people at all time to enough food for an active, productive and healthy life.
- Like many developing countries, Ethiopian farmers in the highlands predominantly practice subsistence farming and are often subject to food insecurity.
- Science, technology, and innovation can play a critical role in producing more food by creating plant varieties with improved traits, as well as optimizing the inputs needed to make agriculture more productive.
- STI applications can address the four dimensions of food security & Improved food safety along the food chain reduces food losses, resulting in increased food availability, stability, and utilization .

RECOMMENDATIONS

- **Government and NGO,s should Improve & address;**
 - ✓ Interactions among food systems
 - ✓ Food security improved safety and quality of food
 - ✓ The dimension of food security using different food security measurement
 - ✓ Boost domestic food production,
 - ✓ Efficient food-marketing system at all levels,
 - ✓ Promoting good postharvest technologies are necessary,
 - ✓ Sustainable food systems through STI, since can play a critical role in producing more food.



**Thank
you!**