

**PERCEPTIONS OF AGRICULTURE TEACHERS TOWARDS
INTEGRATION OF ADAPTATIONS, MITIGATIONS, AND
COST-REDUCTION AND SUSTAINABILITY TOPICS
ON CLIMATE CHANGE IN SECONDARY SCHOOL
AGRICULTURE SYLLABUS IN MACHAKOS
COUNTY, KENYA**

**A Conference Paper Presentation at
Kabarak University July, 2015.**

BY

Stephen Kyalo Mutiso, Prof. J.K.Kibett & Dr. J. Obara

***Department of Agricultural Education &
Extention, Egerton University, Kenya***

INTRODUCTION

Background of the Study

- Secondary school agriculture education is focused on provision of education to cater for basic principles on farming.
- This concurs with the premise that investment in agricultural education is a form of capital that translate to agricultural development.
- Therefore to redeem the agriculture sector, agricultural education has to be redeemed as well, to acclimatize it to the emerging issues.
- Agriculture syllabus review in response to climate change draws in agriculture teachers for they are key implementers of the curriculum.
- The syllabus therefore, should adopt strategies for change in line with the content, teaching resources and delivery methods.
- The concept of climate change is simple if explained well, even though the science is very complex.

INTRODUCTION cont.....

- Climate change in simple language is any change of climate overtime.
- It is triggered by human induced GHGs emissions which absorbs and re-emits infrared radiations.
- When pollutants adds these gases to the earth's atmosphere, they trap more solar energy in our planet (like green house) warming the earth's surface and contributing to climate unpredictability.
- Research on secondary school agriculture syllabus has fallen short in addressing climate change and variability.
- Much work has concentrated on variables like: teaching methodologies, content reshuffling and or annexing, and subject popularization.
- This research therefore, sought to integrate adaptations, mitigations and cost-reduction and sustainability topics of climate change concepts into the agriculture syllabus.

INTRODUCTION cont.....

-The key objective of the survey was to investigate the perceptions of agriculture teachers towards integration of adaptations, mitigations and cost-reduction and sustainability topics on climate change into secondary school agriculture syllabus.

-The research question formulated from the objective was, “What are the perceptions of agriculture teachers towards integration of adaptations, mitigations and cost-reduction and sustainability topics on climate change into secondary school agriculture syllabus”?

LITERATURE REVIEW

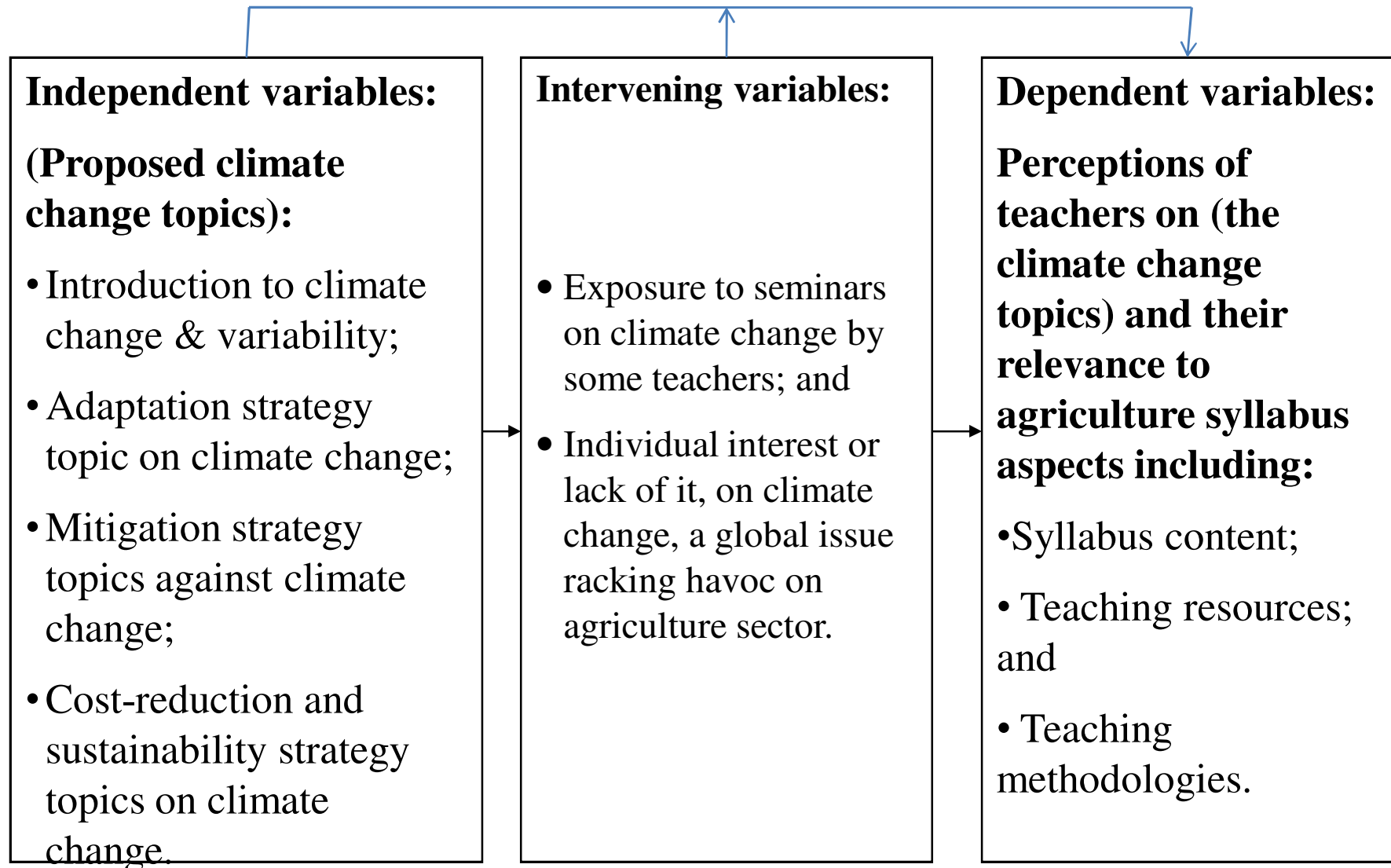
- **Explored the:**

- The global overview of climate change & agriculture sector;
- Overview on climate change and agriculture in Sub-Sahara Africa;
- Adjusting agricultural education to climate change: Adaptations, mitigations, and use of opportunities arising from it, among others.

- **Theoretical framework of the study**

- The functionalist theory by Emile Durkheim guided the study.
- The theory regard education as the transition of the society's norms, values and skills to schooling generation.
- The theory was further reinforced by John Dewey's pragmatist theory on vocationalizing education.
- Both theories were based on the hypothesis that, the school should endeavor to meet societal needs.
- The study adopted the two theories for their practical nature as also held by the agricultural education goals in Kenya.

• Summary of Conceptual Framework



RESEARCH METHODOLOGY

- **Research Design** - A cross-sectional descriptive survey research design was used for the study.
- **Location of the Study** - The study was carried out among secondary school agriculture teachers in Machakos County.
- **Target Population** - The target population comprised of the 350 agriculture teachers in the County.
- **Sampling Procedures and Sample Size** - Proportionate stratified sampling technique was used to select a sample of 105 respondents. Details are on table 1. in the text.
- **Instrumentation** - A Likert's score scale rating questionnaire was used to collect data from the respondents
- **Validity** - To validate the instrument, two supervisors and other professionals and peers in the AGED/AGEX Department, Egerton University were adversely consulted.

RESEARCH METHODOLOGY cont.....

- **Reliability** - To ensure the instrument was reliable, it was subjected to a pre-test in Makueni County which neighbour Machakos County.
 - **Data Collection Procedures** - Data were collected using a Likert's score scale rating questionnaire from secondary school agriculture teachers sampled from schools within Machakos County.
 - **Data Analysis** - Data analysis involved coding the data and classifying it into numerical values in accordance with the scales of measurements, before keying it into a computer master data sheet for analysis using statistical Package for Social Sciences (SPSS) program.
- Finally descriptive statistics were used to analyze the objectives via frequencies and percentages before inferring the findings to the entire target population.

Table 1: Summary of Data Analysis

| Research question: | Independent Variable: | Dependent Variable: | Data Analysis: |
|---|---|--|-------------------------------|
| <p>What are the perceptions of agriculture teachers towards the integration of adaptations, mitigations and cost-reduction and sustainability topics on climate change into secondary school agriculture syllabus in Machakos County?</p> | <p>Integration of the adaptations, mitigations, & cost-reduction & sustainability topics on C.C. into agriculture syllabus.</p> | <p>Perceptions of agric. teachers on integrating climate change topics into agric. syllabus.</p> | <p>Descriptive statistics</p> |

RESULTS, PRESENTATIONS AND INTERPRETATIONS

-The climate change topics anticipated to be incorporated in the secondary school agriculture syllabus per form included:

- Introduction to climate change (Form 1);
- Adaptations to climate change (Form 2);
- Mitigations against climate change (Form 3); &
- Cost-reduction & sustainability from climate change (Form 4).

-The projected amendments are that; some units like soil fertility and water supply, irrigation and drainage both covered in form one and two; and soil and water conservation, and agro-forestry both taught in form three and four respectively, will form integral parts of the main climate change unit.

RESULTS, PRESENTATIONS AND INTERPRETATIONS cont.....

- Data were collected from the agriculture teachers using a Likert's score scale of rating questionnaire which required them to tick (✓) their answers in the spaces provided.
- The degree of rating against, or for each sub-topic, where presented in the following key:
 - 1=S.D (Strongly Disagree);
 - 2=D (Disagree);
 - 3=U (Undecided);
 - 4=A (Agree); and
 - 5=S.A (Strongly Agree).
- After scoring, data were aggregated and the results presented in Table 3, followed by brief discussions.

RESULTS, PRESENTATIONS AND INTERPRETATIONS cont.....

- The findings on integration of adaptation strategy sub-topics on climate change in relation to the agriculture:
 - syllabus content revealed that, on average, 81.2% of the respondents either agreed or strongly agreed, 9.3% disagreed or strongly disagreed, while 9.5% remained undecided on the suggestion.
 - teaching resources illustrated that, on average, 82.3% of the respondents either agreed or strongly agreed, 6.7% disagreed or strongly disagreed, while 11.0% remained undecided on the idea.
 - content revealed that, on average, 80.0% of the respondents either agreed or strongly agreed, 6.4% disagreed or strongly disagreed, while 13.6% returned undecided verdict on the suggestion.

Details era on tables 3,4 &5 in the text.

RESULTS, PRESENTATIONS AND INTERPRETATIONS cont.....

- Results on integration of mitigation strategy sub-topics on climate change in relation to the agriculture:
 - syllabus content revealed that, on average, 78.8% of the respondents either agreed or strongly agreed, 11.6% disagreed or strongly disagreed, while 9.6% remained undecided on the idea
 - teaching resources revealed that, on average 77.4% of the respondents either agreed or strongly agreed, 10.2% disagreed or strongly disagreed, while 12.4% returned undecided verdict on the suggestion.
 - teaching methods indicated that, on average 77.5% of the respondents either agreed or strongly agreed, 10.1% disagreed or strongly disagreed, while 12.4% remained undecided on the suggestion.
 - Details are in tables 7,8 & 9 in the text.

RESULTS, PRESENTATIONS AND INTERPRETATIONS cont.....

- Logistics on integration of cost-reduction and sustainability strategy sub-topics on climate change in relation to the agriculture:

-syllabus content revealed that, on average 80.1% of the respondents either agreed or strongly agreed, 8.8% disagreed or strongly disagreed, while 11.1% returned undecided verdict on the suggestion.

-teaching resources confirmed that, on average 75.2% of the respondents either agreed or strongly agreed, 11.9% disagreed or strongly disagreed, while 12.9% returned undecided verdict on the suggestion.

-teaching methods showed that, on average 88.9% of the respondents either agreed or strongly agreed, 9.5% disagreed or strongly disagreed, while 1.6% returned undecided verdict on the suggestion.

Details are in tables 9, 10 & 11 in the text

RESULTS, PRESENTATIONS AND INTERPRETATIONS cont.....

When the Findings were finally aggregated, to establish the overall perceptions of agriculture teachers on integration of adaptation, mitigation and cost-reduction and sustainability strategies on climate change in relation to the agriculture syllabus content, teaching resources & methodologies, it was confirmed that:

- Majority of the teacher's perceptions were categorized as high (87%) compared to only 13% whose perceptions were moderate.
- None of their perceptions were categorized as 0%.
- Therefore, their verdicts confirmed the three suggested concepts on climate change as relevant and valid be taught using the conventional agriculture teaching resources and methods.

SUMMARY, CONCLUSIONS & RECOMMENDATIONS

-The major findings, drawn from the survey confirmed the agriculture teachers strongly agreed to the suggestion of integrating the three concepts/topics on climate change into secondary school agriculture syllabus.

-The main conclusion drawn from the findings of the survey confirmed the relevance of climate change concepts to agriculture syllabus content, teaching resources and methods.

-The major recommendation drawn from the conclusion is that, the KICD and the MOE should plan to induct the practicing agriculture teachers, and the teacher students in colleges with climate change ideas in order to revitalize and sustain the agriculture sector.

-END OF PRESENTATION-