



**INTEGRATION OF INDIGENOUS KNOWLEDGE
WITH MODERN ICTs IN COPING WITH
EFFECTS OF CLIMATE CHANGE AND
VARIABILITY ON AGRICULTURE.**

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DEFINITION OF TERMS

- **Climate change**-is a significant and lasting change in the statistical distribution of weather patterns over long periods, ranging from decades to millions of years.
- **Climate variability** refers to the climatic parameter of a region varying from its long-term mean.
- **Indigenous knowledge (IK)** is the local knowledge which is unique to a given culture or society, conveyed with speech from generation to generation through songs or tales and also through actions and observations.



INTRODUCTION

- Causes of climate change-

The natural causes -include continental drift, mountain building, variation in solar radiation, changes in green houses gases and deviations in the earth's orbit.

The anthropogenic causes- human activities that affect the climate. E.g. increase in carbon dioxide levels due to emissions from fossil fuel combustion, followed by aerosols and cement manufacture.

other factors- land use, ozone depletion, animal agriculture and deforestation.



CONT'

- Climate change threatens production's stability and productivity. In many areas of the world where agricultural productivity is already low and the means of coping with adverse events are limited, climate change is expected to reduce productivity to even lower levels and make production more erratic.
- The anticipated impacts of climate change will manifest in the form of; floods, storms, prolonged droughts and increased atmospheric temperature .



CONT'

- The basic component of any country's knowledge system is its indigenous knowledge. It encompasses the skills, experiences and insights of people, applied to maintain or improve their livelihood.
- To help cope with the negative impacts of anthropogenic climate change, local people employ traditional indigenous-knowledge based practices.
- ICTs have the potential to foster inclusiveness and participation in the design and implementation of adaptation processes through accessing relevant information & social networking.



PROBLEM STATEMENT

- It is projected that under a range of climatic scenarios, there will be an increase of 5-8 percent of arid and semiarid land in Africa.
- Africa will be more vulnerable in terms of mitigation and adaptation to climate change because of;
 - relatively warmer climate ,
 - low per capita incomes,
 - inadequate preparedness by most African governments , poor current information, slow technology change ,widespread poverty, recurrent droughts,
 - inequitable land distribution and over dependence on rain-fed agriculture



CONT'

- Long term changes in the patterns of temperature and precipitation are expected;
 - to shift production seasons,
 - increase pest and disease patterns,
 - modify the set of feasible crops affecting production, prices, incomes and ultimately, livelihoods and lives.
- Indigenous knowledge systems were altered and disrupted in Africa during the colonial period.
- Moreover, indigenous knowledge systems (IKS) content and development in Africa are not adequately researched and documented .



CONT'

- Currently, many indigenous knowledge systems are at risk of becoming extinct because of rapidly changing natural environments and cultural changes on a global scale.
- Indigenous knowledge has often been dismissed as unsystematic and incapable of meeting rapid economic growth needs of modern world.



JUSTIFICATION

- Indigenous knowledge systems have not to a very long extent been captured and stored in a systematic way and are therefore endangered with extinction.
 - The main reason for IK not been captured and stored in a systematic way is that it is handed down orally from generation to generation
 - In the current world, oral paths are being blocked and people are no longer staying in homogenous community blocks.
 - Indigenous knowledge forms part of the global knowledge. In this context, it has a value and relevance in itself. Indigenous knowledge can be preserved, transferred, or adopted and adapted elsewhere.
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CONT'

- In addition to preservation, documentation and dissemination of agricultural indigenous practices provides an effective tool for research and innovation.
- There is an important body of traditional knowledge and emerging adaptation and mitigation experiences that developing countries communities can share and disseminate with the help of ICT tools.



RESEARCH OBJECTIVES

1. Evaluate farmer perception on the effects of climate change and variability on agriculture in Kajiado County.
 2. Determine the existing agricultural production related Indigenous Knowledge used to cope with and adapt to climate change and variability.
 3. Evaluate the level of application of ICTs in agricultural information use and dissemination.
 4. Establish farmers' perception on most effective pathways to disseminate agricultural production related Indigenous Knowledge.
 5. Evaluate the most appropriate ICT and Non-ICT pathways to communicate climate change impacts and adaptation strategies on agriculture.
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METHODOLOGY

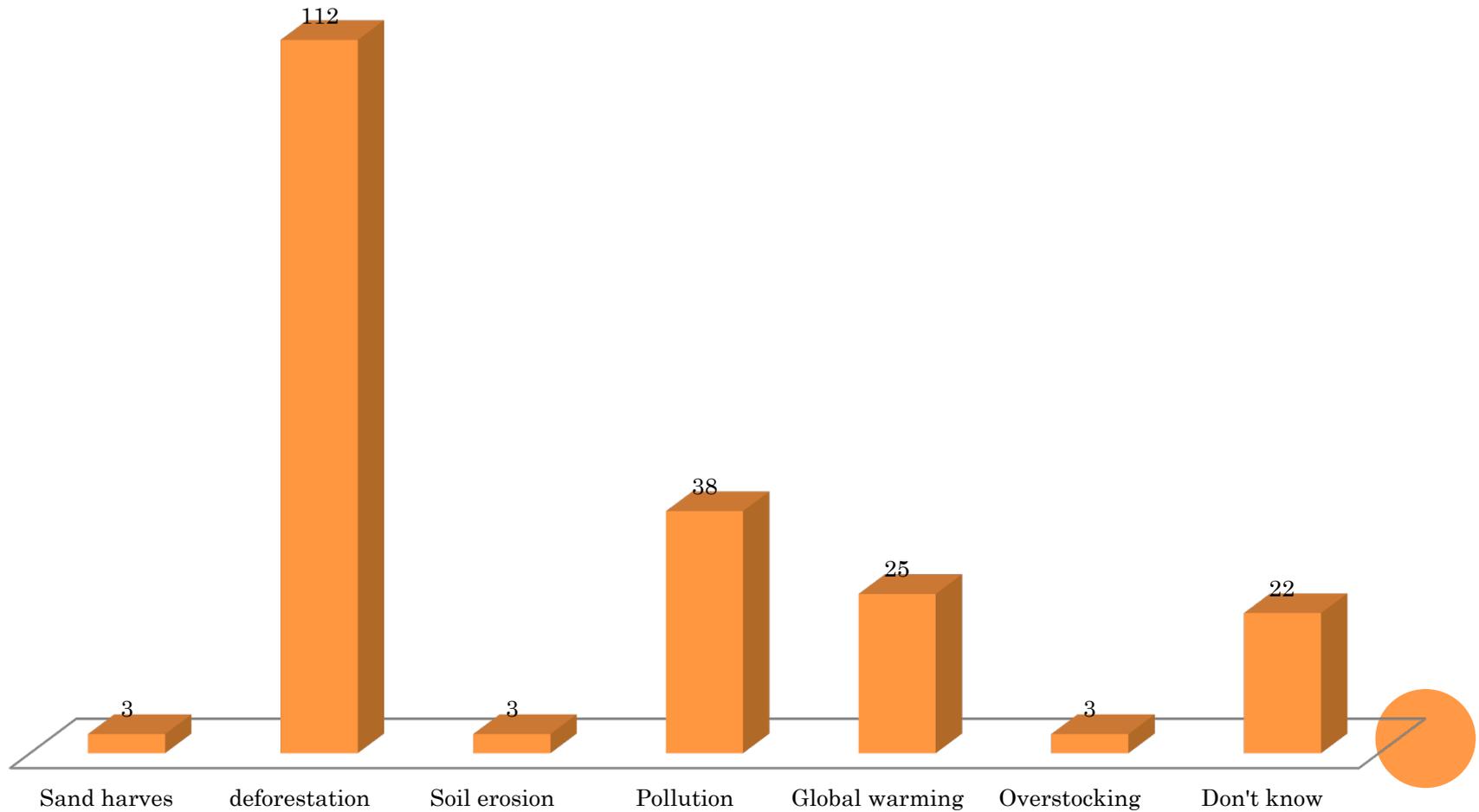
- The research was undertaken in Kajiado county in Kenya.
- Kajiado central and Kajiado south districts were the areas where data was collected.
- Sources of data- questionnaires, FGDs, Key informants interview.
- Data entry and analysis- analysis using Statistical Package for Social Sciences (SPSS) and then subjected to descriptive analysis.
- Results were subjected to descriptive analysis and summarised in form of tables, figures and charts.



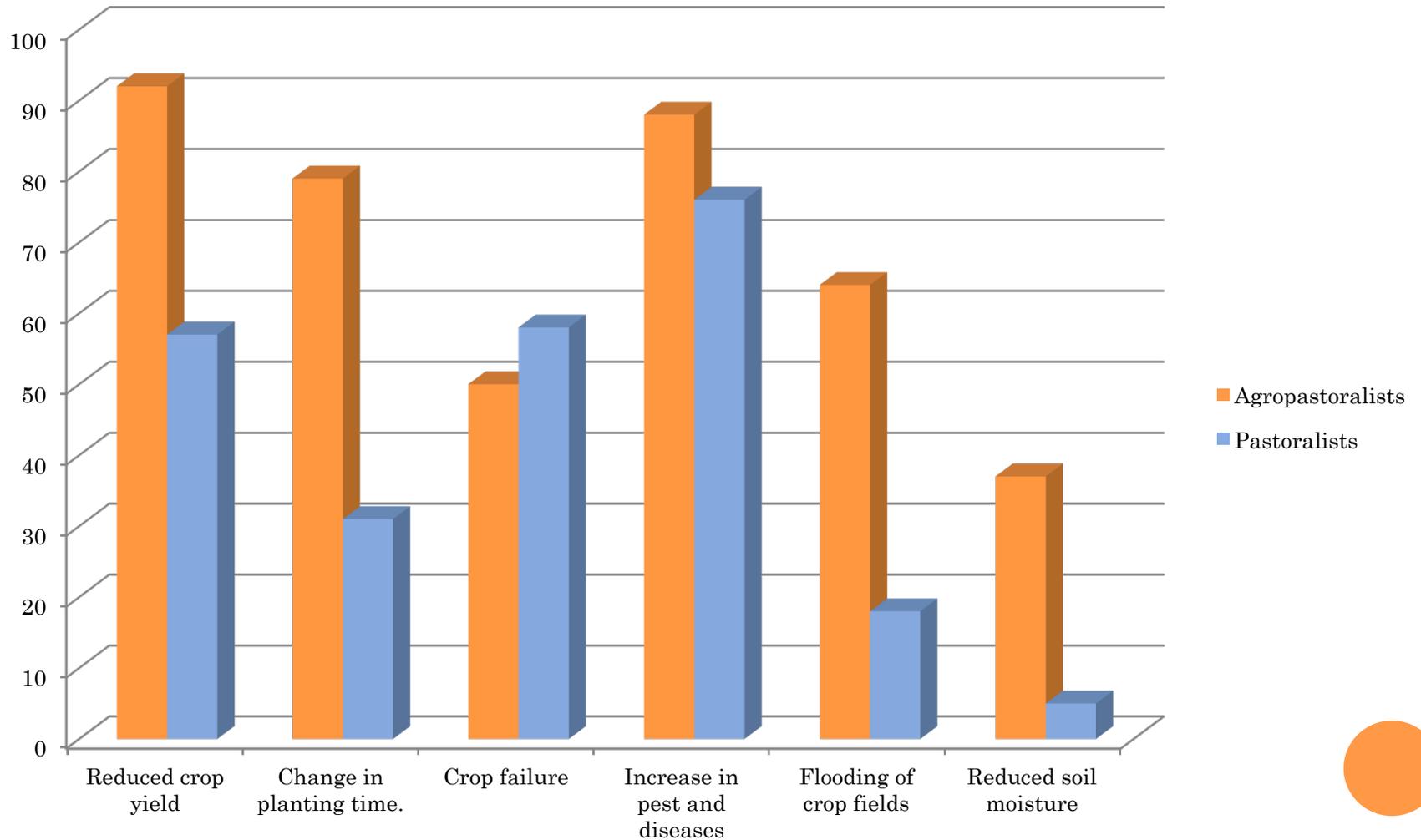
RESULTS AND DISCUSSIONS

Perceived causes of climate change

causes of climate change

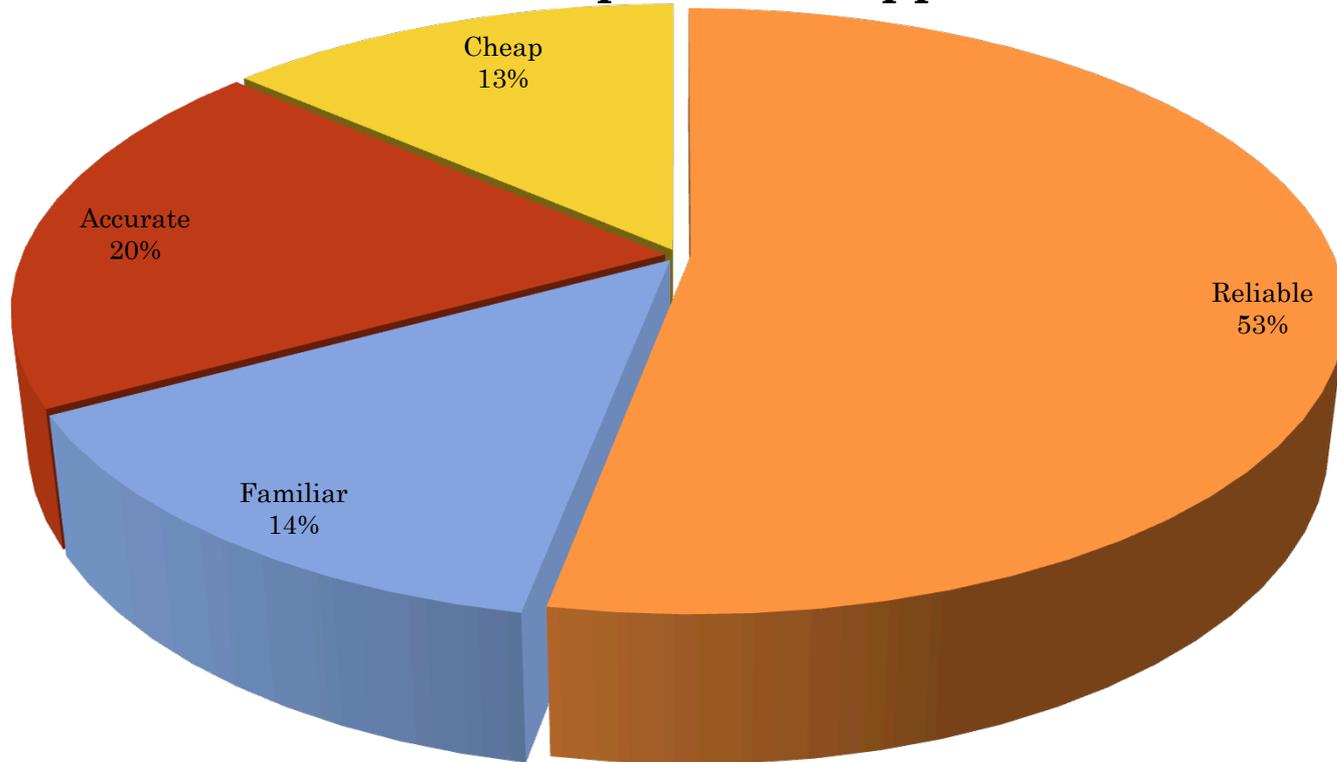


EFFECTS OF CLIMATE CHANGE AT THE FARM LEVEL.



REASONS FOR FARMERS PREFERRING INDIGENOUS METHOD OF WEATHER FORECASTING OVER SCIENTIFIC APPROACH.

Reasons for the preferred approach



INDIGENOUS STRATEGIES USED BY FARMERS TO COPE WITH CLIMATE CHANGE AND VARIABILITY

- Planting of drought tolerant crops
- Rain water harvesting
- Drought resistant animals
- Management of pests & diseases using certain traditional herbs.
- Use of organic manure.
- Crop rotation.
- Migration of livestock and people
- Preservation of pastures (traditional paddocks to control grazing).
- Indigenous food preservation techniques.



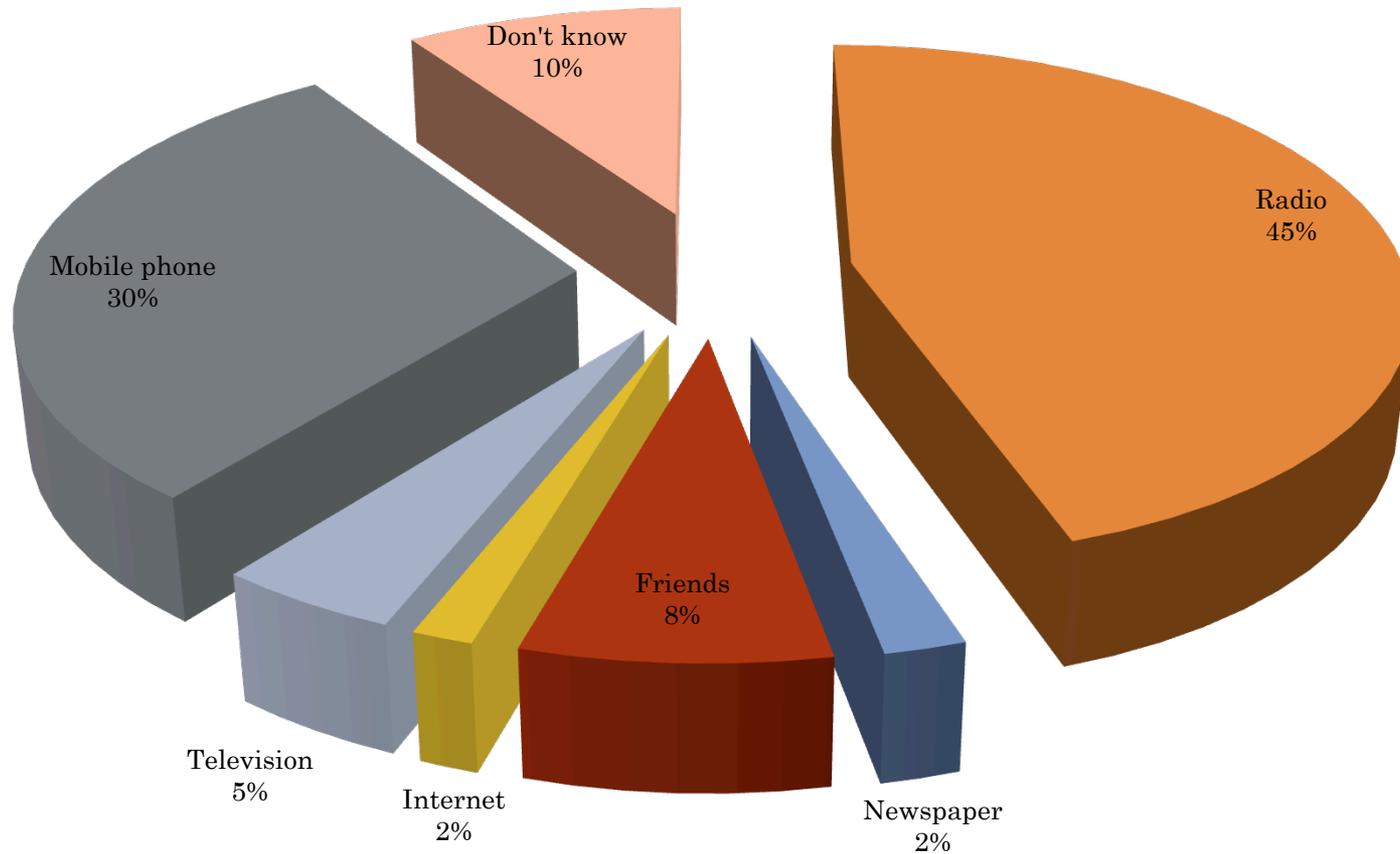
SOME OF INDIGENOUS SIGNS OF PREDICTING DIFFERENT WEATHER PATTERNS

- When a set of 3 stars known as *Inkokua* come together in the evening at 7.00 pm and are seen the next day in the morning at 5.00 am and no rain has been experienced, then there shall be a drought, If the stars *Inkokua* is kind of pushed down by rain in the evening, then there shall be good rains.
- Sudden flowering of a thorny shrub known as *empere epapa* with its sweet smelling white flowers disappearing 2-3 days after appearing. This is repeated 3 times within an interval of 3 weeks, this indicates good rains.
- If the *Olmunguk'* a black bird which has a red beak cries *mm mm mm*, it indicates there shall be good rains,

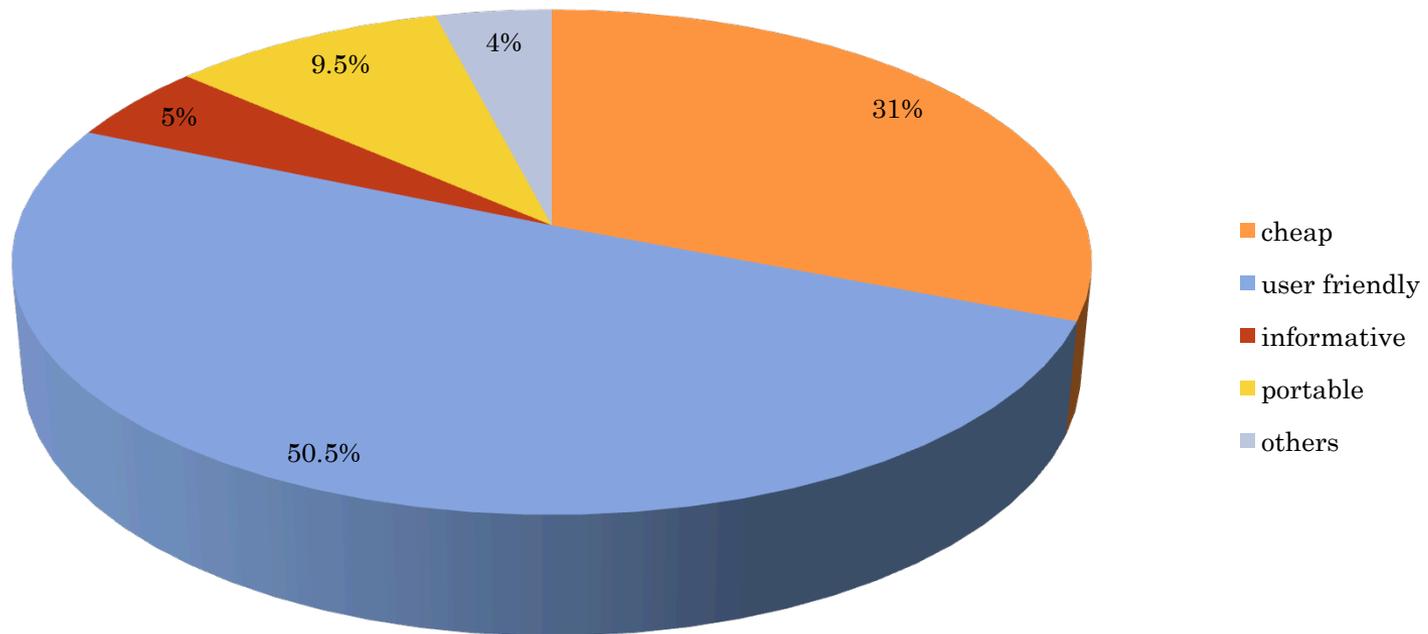


ICT MATERIALS USED BY FARMERS AS SOURCES OF INFORMATION FOR THE MANAGEMENT OF THEIR FARMS

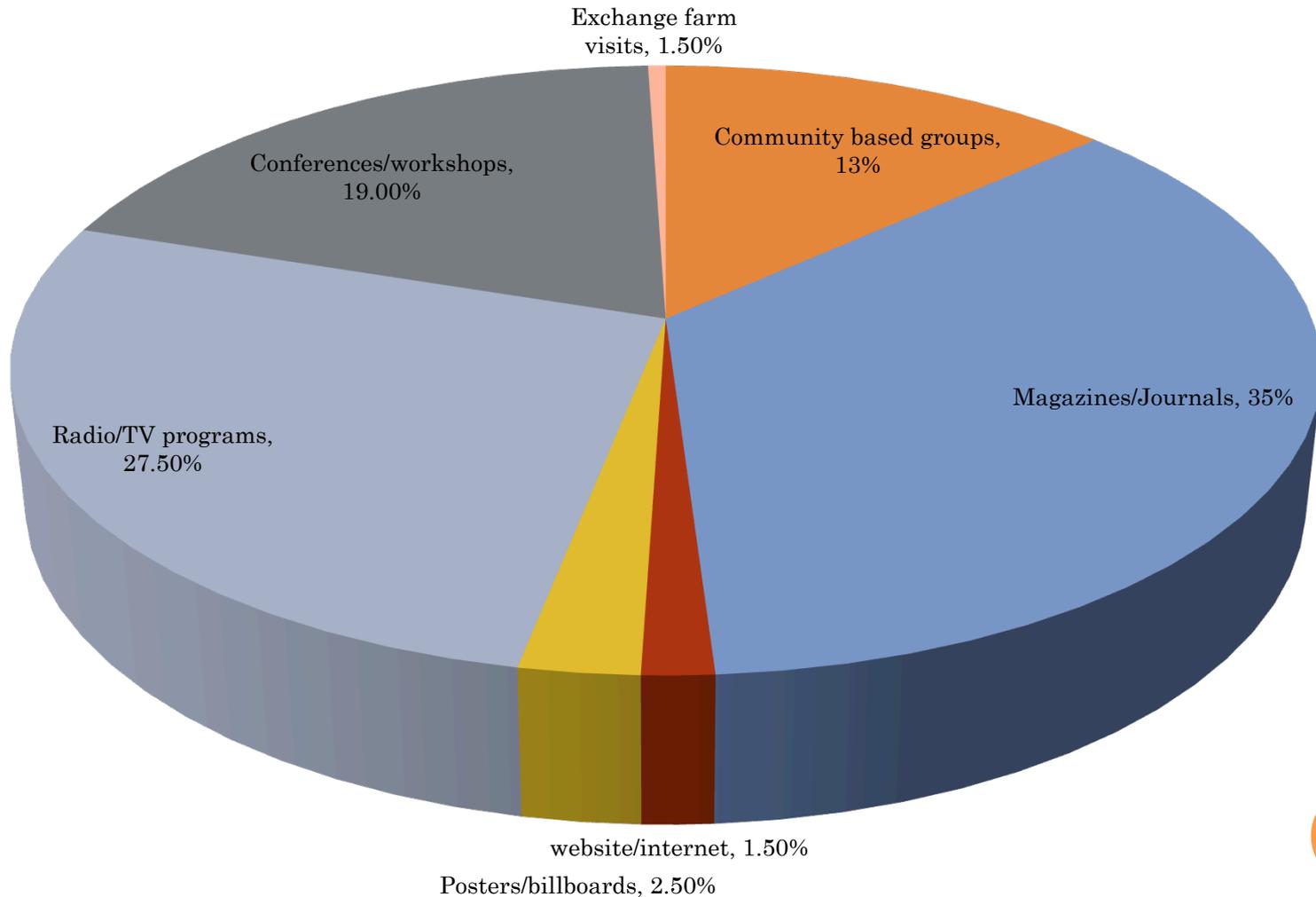
ICT type



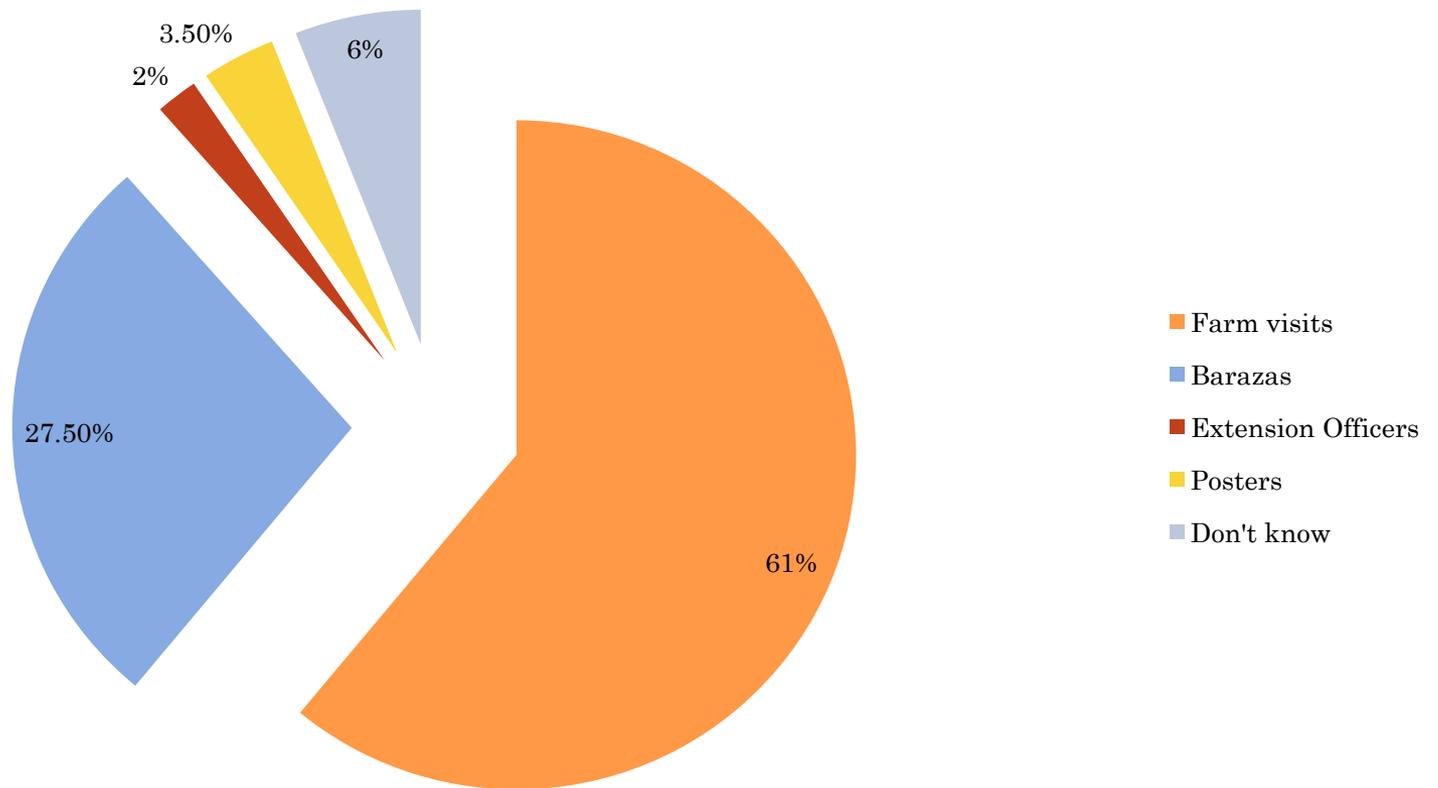
REASONS FOR PREFERRING RADIO



ESTABLISH FARMERS' PERCEPTION ON MOST EFFECTIVE PATHWAYS TO DISSEMINATE AGRICULTURAL PRODUCTION RELATED INDIGENOUS KNOWLEDGE.



NON ICT MODES PREFERRED BY FARMERS FOR DISSEMINATION OF INFORMATION



CONCLUSIONS AND RECOMMENDATIONS

- Climate change impacts have already been experienced by farmers and more profound changes are still expected. To reduce these impacts, farmers need to be taught mitigation, coping and adaptation strategies.
- For the indigenous knowledge to be useful in future generations, a way of communicating, disseminating, storing and retrieving using Information and communication technologies should be devised.
- However, it should be noted that Indigenous knowledge should not be documented to compete with scientific knowledge but rather should be used to compliment the modern/formal knowledge.



RECOMMENDATIONS

- An alternative business or source of fuel should be devised for farmers so as to reduce the rate of deforestation for fuel and charcoal business purposes which is highly practiced as a source of income more so in pastoral areas.
 - Researchers should be able to document all indigenous strategies useful for adaptation of climate change as well as disseminate the information using the new emerging ICTs.
 - Agricultural related information should be integrated in Radios in form of local programmes through the local radio stations to have a wide coverage.
 - Farmers should be taught on usage of the new emerging ICTs to disseminate information, treatment of different pests and diseases, credit facilities available for farmers, preservation of pastures/hay especially in worst hit drought areas.
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