

**FINAL REPORT OF PROJECT ON SEASONAL CLIMATE FORECAST**

**MANAGEMENT FOR THE ALLEVIATION OF FOOD INSECURITY**

**KWALE DISTRICT**

**WORKSHOP HELD AT MATUGA DISTRICT TRAINING AND  
CONFERENCE CENTRE**

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## **PROJECT FINAL REPORT**

**TITLE: SEASONAL CLIMATE FORECAST MANAGEMENT FOR THE ALLEVIATION OF FOOD INSECURITY – KWALE DISTRICT**

### **SUMMARY OF BACKGROUND AND OBJECTIVES OF PROJECT**

#### **1.0 BACKGROUND**

Most farmers in Kwale district are small scale depending on rain-fed subsistence farming for their livelihood. The crops mainly grown include Maize, Cassava, Cowpeas, Tomatoes, Brinjals, Beans, Okra, Sweet pepper, Groundnuts, Sweet potatoes, Pigeon peas, Kales, Pumpkins, Rice, Simsim and Sorghum.

Crops like Millet, Sorghum, Pigeon peas and Sweet potatoes are draught resistant while the rest depend on normal to above normal rainfall patterns.

The district depends so much on the good performance of seasonal rainfall that a slight negative deviation to the normal rainfall patterns is inadvertently translated into food insecurity in the region normally accompanied by the attendant malnutritious diseases and the general economic retardation.

About fifty percent of the district falls in the arid to semi-arid region necessitating the farmers to rely heavily on the climate forecast, which should be given within the appropriate time.

Previous research undertaken in the district has shown that there is a strong belief in traditional forecasts, which are not very reliable but help to fill the gap in the absence of the more conventional forecasts. Research has also shown that there are often some mid-season dry spells especially in the month of July. This is usually not highlighted in the first seasonal forecast of the year but comes out during the weekly bulletins, which sometimes take too long to reach the farmers. This same research has revealed that the community in Kwale has a problem in accessing, interpreting and putting into effective use the seasonal forecasts.

The need therefore arises for this agro-community who include crop, fishing and livestock farmers to be sensitized in the availability, accessibility and proper management of the forecast for maximum utilization of these products.

This project proposal therefore seeks to address these problems by mobilizing, sensitizing and training the community in the acquisition and making effective use of the forecast. Above all the project seeks to establish strong links through networking of the service providers i.e. the Draught Monitoring Centre and the Kenya Meteorological Department, and the user community in the region.

#### **2.0.OBJECTIVES**

The main objective of the project is to reduce the effects of extreme climate on the community by:

- i. Enhancing usage of forecast information for better decision-making amongst the different stakeholders.
- ii. Developing a network for accessing seasonal forecast by the different stakeholders.

- iii. Improving communication between stakeholders and service providers.
- iv. Improving awareness on the source and timing of the forecast amongst users.
- v. Reducing difficulty in forecast language.
- vi. Developing and sustaining interest and motivation in accessing and utilization of forecast information amongst the stakeholders.

### 3.0 WORKPLAN AND TIMETABLE OF THE PROJECT.

The Project is envisaged to take eight (8) months as shown below

NO.	ACTIVITY	RESPONSIBILITY	TIMING (DAYS)
1	Identification of Participants, Venue and Workshop facilities.	Principal Investigator + Project team.	4 days (one day for each division)
2	Holding of Workshop.	Principal Investigator + Project team.	2 days after the climate forecast for the long rains.
3	Site visits in the 4 divisions.	Principal Investigator + Project team.	2 days (one day for each two divisions)
4	Continuous Monitoring and receiving of reports from the group leaders and Ag. Extension Officers in the divisions.	Principal Investigator + Project team.	6 months (April to September)
5	Follow-up workshop and evaluation.	Principal Investigator + Project team.	1 day after the season.

### 4.0 PROJECT REPORT

#### 4.1 ACTIVITY 1: PARTICIPANTS IDENTIFICATION AND MOBILIZATION

The project research composed of an Agricultural officer at the Kwale District offices Juma A. Gaffa and a Meteorologist at the District Meteorologist's office Ali J. Mafimbo were involved in the identification of the participants for the Workshop with assistance from the local Agricultural Extension officers and the Provincial Administration.

The participants were identified from the catchments areas of Kubo, Kinango, Matuga and Msamweni which are the four targeted divisions of the district and represent the regions involved in a previous survey on "the influence of weather forecast on farming activities in Kwale" the results of which forms the basis of this follow up project.

In each division the workshop participants were proposed by members themselves in a meeting of those who had participated in the earlier survey mentioned above, in the presence of the research team and local Agricultural Officers and the Provincial Administration, using guidelines given below.

### **CRITERIA USED IN IDENTIFYING THE PARTICIPANTS**

In order to come up with participants who were keen and dedicated the research team looked for certain qualifications, which included, but were not limited to the following:

- a) The participant should have been involved in the previous survey on the influence of weather forecast on farming activities in Kwale.
- b) They had to be a practicing farmer.
- c) They should have attained a level of education not below form four.
- d) They had to possess at least a Television set and a Radio

This was easily achieved by using the previous records of the survey.

Besides these conditions the proposed participants had also to fulfill the following:

- a) They had to possess leadership qualities.
- b) Had to be involved in community participation.
- c) Had to be role models within the community.
- d) Had to have the willingness to learn, practice and share knowledge.

The assistance of the Provincial Administration and the local Agricultural Extension officers was very crucial and handy in identifying those qualities. Finally twenty four (24) participants, six (6) from each division, were identified to attend the workshop.

## **4.2 ACTIVITY II: WORKSHOP**

The identified participants then attended a two (2) day workshop to sensitize and train them in the acquisition, understanding and making effective use of the climate forecast. At the end of the workshop the current seasonal climate forecast for the year 2003 long rains was given out, discussed and interpreted to suit local dialects of the various communities represented by the respective participants. Participants are therefore expected to pass over the knowledge so gained to a sample of farmers, who will adopt the forecast and put it into use.

### **4.2.1 AIM AND OBJECTIVES OF THE WORKSHOP**

#### **4.2.1.1 AIM**

The aim of the workshop was to sensitize and train the participants so as to equip them with enough knowledge to enable them to acquire, understand and interpret the seasonal climate forecast so that they can pass this knowledge to their respective communities and influence their attitude towards the forecasts and make effective use of it in their farming activities.

#### **4.2.1.2 OBJECTIVES OF THE WORKSHOP.**

By the end of the training participants were expected to be able to:

1. Acquire, understand and interpret the seasonal climate forecast so that they can pass this knowledge to their respective communities.
2. Incorporate forecast information for better decision-making in their agricultural activities.
3. Improve communication between their respective farming communities climate forecast service providers.
4. Improving awareness on the source and timing of the forecast amongst their communities.
5. Assist their communities in reducing difficulty in forecast language.
6. Develop and sustain interest and motivation in accessing and utilization of forecast information amongst their communities.

#### **4.2.2 COURSE CONTENT**

The Course structures was formulated and designed, handouts and flip charts were prepared to address the following.

- Introduction to the Climatology of Kenya and Kwale District.
- Introduction to Agricultural Ecological zones and rainfall patterns.
- Introduction to weather and climate forecast techniques.
- Media used for the dissemination of weather and climate forecast.
- Communication skills.
- Introduction to Teamwork and Group dynamics.
- Ranet Project Preview.

#### **4.2.3 METHOD OF TRAINING**

Training was done in a form of workshop planned and organized by the Principal Investigator, the research team and the resource persons.

The training was structured in a way that involved a combination of involvement; coaching, counseling and role-play exercises.

#### **4.2.4 DURATION AND PLACE**

The workshop lasted for two (2) days at the well equipped Matuga District Development Training and Conference Center. This strategically centered Institute with its good training facilities and infrastructure assisted in:

- Emphasizing the importance of the workshop to the participants.
- Enhancing the motivation of the participants.
- Providing good training environment.
- Providing good time management away from place of work.
- Enhancing concentration of participants.

#### **4.2.5 WORKING HOURS**

The working hours were from 0900 – 1800hrs each day for the two days with two coffee and one lunch breaks each day.

#### **4.2.6 RESOURCE PERSONNEL**

Resource people were knowledgeable staff from various disciplines. Specifically these included among others: -

- Ali J Mafimbo – KMD Mombasa
- Salem Mbete – Communication Consultant
- Juma A. Gafa – Agriculturalist.
- Josephine Mwinamo – Principal Investigator
- Mwongera Thurania – KARI (Ranet Project)

#### **4.2.7 EVALUATION AND KEY RESULTS OF WORKSHOP**

This session was intended to look at the objectives of the workshop and the expectations of the participants and find out if the workshop achieved its expectations.

#### **4.2.8 EXPECTATIONS OF THE PARTICIPANTS.**

By the end of the Workshop the participants expected to:

- Come out a good trainer.
- Have learnt more about forecasts.
- Have a better understanding of the rain seasons and their times of occurrence.
- Have a better understanding of the relationship between forecasts and farming
- Have a better understanding of the different levels of rain patterns and how to make effective use them.
- Have a certificate of attendance.

#### **4.2.9 KEY RESULTS**

The overall results are that all the workshop objectives and the participant's expectations were met.

- Ninety one per cent (91%) of the expected participants attended the workshop and participated fully.
- All facilitators attended and participated fully.
- All identified divisions within the district were represented.
- All ecological zones within the district were represented.
- Participants committed themselves towards the implementation of the overall project activities.
- Choice of venue was appropriate to all participants.
- Participants were sensitized on the Ranet Project and shown a lot of interest in its implementation.
- Participants were exposed to elementary weather and climate forecasting techniques and forecasting language.
- Gender balance was achieved in the identification and overall attendance of the participants.

#### **4.2.10 WORKSHOP LIMITATIONS.**

There was limited time leading to:

- Shortening of topics by facilitators.
- Less group work and role-playing activities.
- No fieldwork activities.

#### **4.2.11 PARTICIPANTS' PRIORITISED RECOMMENDATIONS.**

The participants gave their recommendations as follows;

- Kenya Meteorological Department (KMD) to introduce Extension Officers as in the Agricultural sector.
- KMD to introduce Radio/TV Meteorological programmes in the various local stations apart from the daily TV forecasts.
- Introduce frequent weather analysis articles in local dailies
- Hold several seminars to sensitize farmers using the integrated approach with other MIN/Depts.
- Use provincial Administration.

#### **4.3 ACTIVITY III – SITE VISITS**

The site visits formed an important component of the whole project. The objective of these visits was to get advance reports on the performance of the forecast as given to farmers for the outset, cessation and the general performance as contained in the press release of 13<sup>th</sup> March 2003 where the coastal districts were expected to receive their rains in the fourth week of March to first week of April and were expected to continue into June and July.

It had been proposed in the revised work plan, due to budgetary constraints, that the project team visits the four divisions in two days. However this was found impracticable due to the overwhelming enthusiasm from the participants.

The programme was therefore revised to allocate a full day for each division as follows:

Saturday 26/04/03 ----- Matuga division.

Sunday 27/04/03 ----- Kinango division

Saturday 03/05/03 ----- Kubo division.

Sunday 04/05/03 ----- Msambweni division

During these site visits the Principal Investigator and the rest of the project team were able to meet other farmers, five (5) from each division, who had been identified by those who had earlier attended the workshop.

Most of the farmers visited were generally happy with the information they had received. In particular they said the information about the onset was very accurate. However they complained on the lack of information about the spread over the season. They observed that after the onset the Rainfall drastically decreased in the first decade of April up to the first decade of May, seriously affecting the maize crop they had planted.

#### **4.4 ACTIVITY IV – CONTINUOUS MONITORING.**

The objective of this activity was to get field reports on the performance of the forecast, assess the impact and give prompt advice to the farmers. The Agricultural extension officer played an important role in this activity.

Towards the last decade of April and first decade of May report from the field was that the rains had decreased and the maize crop was getting retarded.

After an assessment of the situation the project team through the Agricultural officer advised the farmers to intercrop the Maize with other draught resistant crops like pigeon peas, millet, cow peas etc, depending on the preference of the individual farmer.

#### **4.5 ACTIVITY V – FOLLOW UP WORKSHOP AND EVALUATION.**

The twenty- four (24) participants who attended the initial workshop eventually regrouped with the project team at the same venue at Matuga DDI for a one day follow up and evaluation workshop. The objectives of this workshop were to;

- I. Recap the expectations and recommendations of the first workshop and on the field experiences.
- II. Build up a consensus from the experiences and;
- III. Come up with a way forward.

The workshop was conducted in a form of a plenary session with each group giving their experiences from their respective divisions.

#### **4.6 PROJECT LIMITATIONS**

The limitations of this project included;

- (a) Limited time for the project leading to poor monitoring and impact assessment in the short breaks of rainfall.
- (b) Limited funding leading to shortening of duration of project, workshop and monitoring exercise.
- (c) Poor cooperation from the Provincial Administration with the participating farmers.
- (d) Expectations of financial gains by participating farmers.

#### **Recap of expectations and recommendations**

The participants were expected by the end of the project to have:

- a) Acquired skills in, understanding and interpreting the seasonal climate forecast and to have passed the same skills to their respective communities.
- b) Ability to incorporate forecast information for better decision-making in their agricultural activities
- c) Gained improved communication between their respective farming communities and climate forecast service providers.
- d) Improved awareness on the source and timing of the forecast amongst their communities.
- e) Gained skills to assist their communities in reducing difficulty in forecast language.
- f) Developed a sustained interest and motivation in accessing and utilization of forecast information amongst their communities.

The fundamental experience from the farmers was that the climate forecast information forms an integral part of the farming activities and hence its availability is inevitable.

### **Consensus building**

In this plenary session a consensus was developed from the discussions and experiences of the individual groups. The overarching issues that came out included.

- a) Forecast information is necessary for better farming management.
- b) Good forecast information assist farmers to maximize crop yield through appropriate land use practices.
- c) The forecast information used was moderately accurate but lacked in detailed information on its spread throughout the season.
- d) The Project has highlighted the importance of the farming fraternity in the rural areas where the peasants are more vulnerable to food insecurity (users) and the Kenya Meteorological Department/Draught Monitoring Center Nairobi (information providers) to be constantly in touch.

### **Conclusion and Way forward**

This workshop has highlighted the fact that the peasant farmers rely more on the climatological patterns of their respective regions than the current forecasts and therefore raises the need for the information providers to reach out to the farmers and conduct training with a view to impact knowledge on specific issues like;

- a) The difference between these climatological patterns and the forecasts.
- b) Better understanding of the different levels of rain patterns and how to make effective use of them.
- c) Better understanding of the forecast terminology and its application.
- d) Better understanding of the climate forecast especially the spread of the expected rains and how to manage the information.

### **4.7 RECOMMENDATIONS**

In order to achieve maximum utilization of the climate forecasts by the users the project participants highly recommends the following to be adopted by the information providers;

- Kenya Meteorological Department (KMD) to introduce Extension Officers as in the Agricultural sector.
- KMD to introduce Radio/TV Meteorological programmes in the various local stations apart from the daily TV forecasts.
- Introduce frequent weather analysis articles in local dailies
- Hold several seminars to sensitize farmers using the integrated approach with other Ministries/Departments.

=====

**Annex I Workshop Participants**

<b>NAME</b>	<b>DIVISION/LOCATION</b>	<b>ADDRESS</b>
Christopher Ngure	Kubo/Majimboni	Box 44 Shimba Hills
Juma M. Chambaza	Matuga/Waa	Box 2 Kwale
Nathan N. Lungusu	Kinango/Puma	Box 16 Kinango
Mariam M. Mulwa	Kinango/Puma	Box 144 Kinango
Margaret W. Mwangi	Msambweni/Kidimu	Box 29 Shimoni
Ann G. Vugusa	Matuga/Waa	Box 38 Matuga
Mbui S. Mkusi	Kinango/Gandini	Box 16 Kinango
Peter Njuguna	Kubo/Majimboni	Box 57 Shimba Hills
Mohamed Feisal	Msambweni/Pongwe	Box Msambweni
Benjamin Kanyamaso	Msambweni/Mwaembe	Box Msambweni
Mohamed K. Chama	Msambweni/Vungujini	Box Msambweni
Shee S. Pole	Kubo/Mwaluvanga	Box Kubo
Hassan H. Sopai	Kubo/Mkongani	Box Kubo
Jackson K. Musyimi	Kubo/Lukore	Box Kubo
Salim H. Bambaulo	Kubo/Majimboni	Box Kubo
Masumbuko S Kazungu	Kinango/Ndzovuni	Box 70 Kinango
Jacob M. Mangale	Kinango/Gandini	Box 87 Kinango
Bakari Mgandi	Kinango/Gandini	Box 70 Kinango
Mohamed M. Ndaro	Matuga/Tiwi	Box 30 Matuga
Salim K. Mwata	Masambweni/Kikoneni	Box 36 Kikoneni
Mohamed J. Mafimbo	Matuga/Waa	Box 30 Matuga
Yusuf A Mwawendo	Msambweni/Kikoneni	Box 36 Kikoneni
Samini M. Chayu	Matuga/Waa	Box 31 Matuga

## Annex II **Workshop Programme**

### SEASONAL CLIMATE FORECAST MANAGEMENT WORKSHOP – KWALE DISTRICT

**Dates:** 4<sup>th</sup> – 5<sup>th</sup> April 2003

**Venue:** Matuga District Development Institute, Kwale

#### **Friday April 4, 2003**

##### **Session 1 Opening session**

- |                  |  |
|------------------|--|
| 08.30 – 09.00 AM | Arrival and Registration   |
| 09.00 – 10.00 AM | Opening Ceremony<br><b>Chief Guest: V. M. Kega – Center Director KARI /Matuga.</b> |
| 10.00 – 10.30 AM | Coffee/Tea Break   |

##### **Session 2 Meteorology and Agriculture**

**Chairperson – Salim Mbeté**

*Rapporteur – A. Mafimbo/J. Gaffa*

- |                  |  |
|------------------|--|
| 10.30 – 11.00 AM | Expectations and Objectives<br><i>by A. J. Mafimbo</i>                                       |
| 11.00 – 11.30 AM | Climatology of Kwale<br><i>by A. J. Mafimbo</i>  |
| 11.30 – 12.00 AM | Agriculture Ecological Zones<br><b>By J. Gaffa</b>   |
| 12.00 – 12.30 PM | Seasonal Cropping Calender.<br><b>By J. Gaffa</b>  |
| 12.30 – 2.00 PM  | Lunch  |
| 2.00 – 4.00 PM   | Weather and Climate Forecast Techniques<br><i>by A. J. Mafimbo</i>                           |
| 4.00 – 4.30 PM   | Coffee/Tea Break   |
| 4.30 – 5.30 PM   | Media used for the Dissemination of Weather and Climate Forecasts<br><i>By J. M. Mafimbo</i> |

END OF DAY ONE

**Saturday April 5, 2003**

**Chairperson – A. Mafimbo**

*Rapporteur – S. Gafa.*

**Session 2 communication skills**

08.30 – 10.00 AM                      Communication Skills and Recap of Main events  
**By Salim Mbete**

10.00 – 10.30 AM                      Coffee/Tea Break

**Session 2 RANET Project and Visit to a Meteorological Station**

**Chairperson – A. Mafimbo**

*Rapporteur – S. Mbete*

10.30 – 12. 00 AM                      RANET Project Preview and Visit to KARI Station  
*By Mwongera Thurania & Rindano Maingu*

12.00 – 1.00 PM                      LUNCH

1.00 – 3.00 PM                      **PLENARY SESSION**

3.00 – 4.00 PM                      **CLOSING CEREMONY**

END OF WORKSHOP

## **Annex III: PRESENTATIONS**

### **Communication Skills By Salim Mbet**

The members were introduced to basic skills that are used in communication. They were informed that they might be used by K.M.D. to pass on seasonal forecast information to farmers and also explain to them how a particular forecast should be mitigated.

It was therefore important that they get the communication skills that will assist them to get the information to the farmers easily.

He informed them that the best way to communicate is to catch the interest of the farmers. This should be done by making sure that they interpret the forecast in the best way possible so that it turns out to be just as they say.

### **Expectations and objectives By A. J. Mafimbo**

The presenter started by highlighting the fact that a previous survey had been done in which the participants had been interviewed. The result showed;

- The farmers do not always get the seasonal forecast from K.M.D.
- The few who get the forecast hardly understand and therefore are unable to use it to make decisions for best results in yields

The presenter added that as a result of this, it was found extremely important that these issues be addressed. Thus this workshop has been organized to iron out some of the issues, and there will be subsequent follow-ups in the field to see what the farmers are doing.

The presenter gave the main objectives of this workshop as;

- To enhance usage of forecast information for better decision making amongst the farmers
- Develop a network for assessing seasonal forecast by the farmers
- Improve communication between the farmers and the service providers
- Improve awareness on the source of timing of the forecast amongst farmers
- Reduce difficulty in forecast language
- Develop and sustain interest and motivation in assessing and utilizing of forecast information amongst the stakeholders

The presenter informed the participants that they should participate fully to make workshop achieve the above objectives.

### **Climatology of Kwale By A.J. Mafimbo**

The presenter informed the participants that Kwale district has two rain seasons and one dry season.

He explained that there are some parts of the district, which do not receive much rain and are classified as Asal/ semi-arid. Otherwise the long rain season will normally run from May to July and the short rain run from October to December.

The presenter also informed the participants that the rain the district gets is not much and thus proper timing of the season is paramount if one has to get a good forecast. The correct choice of the variety that suits a given forecast is also very important.

### **Media Used for Dissemination of Weather and Climate Forecasts**

**By J.M. Mwinamo**

The presenter informed the participants that there are several methods used to disseminate the weather and climate forecasts. These include;

- Radio
- Television (K.B.C.)
- Daily newspapers
- E-Mail (Where applicable)
- Mail (Ordinary)

The farmers were informed that there is also a channel of dissemination that targets them directly and that is the Ministry of Agriculture.

Normally the minister receives the forecast from K.M.D. through a press statement. The ministry is advised to tailor the K.M.D. forecast to suit the farmers and also tag it with necessary advice on what precautions to take, and what to plant most. This information is passed to the Provincial Agricultural Officer (P.A.O.) to the District Agricultural Officer (D.A.O.) and finally to Division Extension Officers.

### **Weather and Climate Forecasting Techniques**

**By Ali J. Mafimbo**

**Definition:** weather is the day-to-day conditions of the atmosphere while climate is the long term averages of these conditions.

#### **Weather Forecasting**

##### **Systems Controlling the weather in Kenya**

- The dynamic troughs i.e. the Meridional and zonal Inter-Tropical Convergence Zones – ITCZ.
- The high pressure centers on the Indian Ocean, Atlantic Ocean, along the Mediterranean
- The Arabian Ridge.

Weather forecasting therefore, basically involves the daily monitoring of these systems to observe their movements and how they will affect the movement of the ITCZ, which is the rain bearing system.

#### **Climate Forecasting**

Climate forecasting is achieved by monitoring the sea surface temperatures (SST) and performing lag correlations with rainfall. Onset and subsequent performance of the seasonal rainfall is then accomplished by use of analogue years. Other indications such as tropical cyclone activity and temperature gradients are also employed.

#### **ANNEX IV: RANET PROJECT AND VISIT TO A METEOROLOGICAL STATION**

The whole Workshop team visited the KARI center at Matuga. They were received and shown round the center and also given a brief on the objectives of the center.

The members also had a chance to view the RANET PROJECT INSTALLATION, which is underway.

They were informed RANET is one way K.M.D. has identified to help some of the problems farmers encounter in assessing climate seasonal forecasts.

#### **ANNEX V: CLIMATIC ZONES IN KWALE DISTRICT**

