GEAVET TRAINING PROGRAMME FOR CSA

CLIMATE-SMART AND SUSTAINABLE AGRICULTURE, POST-HARVEST MANAGEMENT AND RENEWABLE ENERGY:

MOZAMBIQUE

UNIT 2.I USE OF CLIMATE DATA FOR FARM DECISION-MAKING

ENGLISH VERSION

GEAVET Project n° 101129027

PART I – LEARNING MATERIAL

Image 7. Intelligent weather station (CSM, 2025)

1. Introduction

Weather describes day-to-day conditions, whereas climate is the long-term pattern. Climate data combines historical records and forecasts (rainfall, temperature, wind, humidity) and underpins risk-aware planning. Reliable sources include national meteorological services, mobile apps, radio/extension bulletins, community stations, and complementary indigenous indicators.

2. Local Adaptation Highlights

Figure 4. Climate Smart Technologies (CSM, 2025)

Weather and climate information can help farmers decide what to do, and when to do it. Instead of guessing, we use simple rules based on rainfall, temperature, wind and storm forecasts.

This section explains a few basic tools—like an agro-climatic calendar, onset rules, and heat/irrigation thresholds—in simple language, with ideas for example videos or graphics to support complete beginners.

- **Agro-climatic calendar (what happens when during the year):** Make a simple "year map" that shows when the rainy season usually starts and ends, and when the dry season starts and ends in your area. Use many years of rain data (multi-year median) and then look carefully at the last 3–5 years to see if things are shifting. Mark:
  - The start of rains,
  - The peak rain period,
  - Common dry spells inside the rainy season (often 2–3 weeks without rain),
  - the end of rains.

- **Field operations (planting, spraying)**
  Avoid sowing or spraying when:

- Wind speed is more than 25–30 km/h (spray drift, risk of lodging), or

- The probability of precipitation (PoP) is ≥60% and more than 10 mm of rain is expected in the next 12 hours (risk of washed-off pesticides, waterlogging).

➢ **Irrigation decisions (when to water)**
Plan to irrigate when the water used by the crop (evapotranspiration) minus the rain that fell is greater than the weekly water need of your crop.
For many cereals in the vegetative stage this is roughly 25–35 mm per week.
- If "water used − rainfall" is less than 25 mm → no irrigation needed yet.
- If it is more than 25–35 mm → irrigate to top up.

➢ **Heat stress (protecting people and crops)**
If the maximum temperature (Tmax) is 35 °C or more for more than 2 days:
- move field work to cooler hours (early morning/late afternoon),
- make sure people and animals have shade and drinking water,
- expect higher water demand from crops and a possible increase in pests (e.g., aphids, mites).

➢ **Stocking:** De-rate stocking density ahead of forecast heatwaves; aim for dawn DO >5 mg/L; schedule aeration during nights following very hot days.

➢ **Storms & floods:** Lower water levels by 10–20 cm before strong squalls; secure nets; pre-position backup pumps; salinity checks for brackish sites after heavy rain.

Source triangulation: Compare national met service output with one secondary source (app/radio/extension). If they diverge, adopt no-regret actions and the more conservative plan. Keep a source reliability log (who was closer last month/season).

Communication & inclusivity: Establish a briefing routine (e.g., Mon/Thu 08:00). Share plain-language advisories via WhatsApp/SMS and a notice board. Include heat-health guidance (water, shade, rest), and storm safety (lightning, equipment).

Local indicators: Where used (e.g., insect emergence, wind shifts, moon phases), document them and cross-check against data; keep what proves predictive.

Contingency bundles: Pre-define actions by hazard:

- Drought: mulch + deficit irrigation + early variety + staggered planting.
- Excess rain: drainage maintenance + raised beds + flexible harvest crews + tarps.
- Heatwave: shade nets for nurseries, reschedule labour, monitor aphids/mites.

Monitoring & learning: Maintain a weekly log (screenshots, rainfall totals, actions taken, results). Update trigger values after each season based on performance.

More practical examples
https://www.youtube.com/watch?v=_HkHlBiA7p4
https://www.youtube.com/watch?v=PWmXpXAvklo
https://www.youtube.com/watch?v=GUp2AmE4twc

3. References/Sources

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United Nations Framework Convention on Climate Change. (2013). *Best practices and available tools for the use of indigenous and traditional knowledge and practices for adaptation, and the application of gender-sensitive approaches and tools for understanding and assessing impacts, vulnerability and adaptation to climate change* (Technical Paper FCCC/TP/2013/11). UNFCCC.

PART 2 – CURRICULUM

Learning Objectives:

KNOWLEDGE	SKILLS	ATTITUDES
Students will know: ● Definitions of weather, climate, climate data; key variables (rain, temperature, wind, humidity). ● Main climate information sources and how to judge basic reliability. ● Typical farm impacts of rainfall amount/timing, temperature trends, drought/flood risk, and wind patterns.	*Student will be able to:* ● Access forecasts (app, met service, radio) and interpret rainfall totals/probabilities and temperature ranges. ● Translate data into weekly actions (plant/delay, irrigate/withhold, harvest/dry/store) and seasonal plans (variety choice, stocking, drainage). ● Build a decision table and risk calendar; present a short advisory briefing. ● Log data/decisions digitally (photos/screenshots, shared sheets) and reflect on outcomes.	*Student will develop the following mindset:* ● Evidence-based decision-making; ● Openness to new tools ● Respect for local knowledge ● Teamwork and safety.
TRANSVERSAL SKILLS INTEGRATED: ● **Critical Thinking** ● **Problem Solving** ● **Collaboration** ● **Communication** ● **Adaptability** ● **Time & Project Management**		

- **Leadership**
- **Negotiation & Conflict Resolution**
- **Entrepreneurship orientation.**

DIGITAL SKILLS INTEGRATED:

- **Digital Literacy**
- **ICT for Agriculture**
- **Data Management**
- **Geospatial awareness**
- **Digital Communication**
- **Mobile-based advisory tools**
- **Cybersecurity awareness**
- **Digital financial tools**: For budgeting/contingency planning

GREEN SKILLS INTEGRATED:

- **Climate Resilience**
- **Water Resource Management**
- **Sustainable Land Management**
- **Agroecology**
- **Climate Risk Assessment**
- **Environmental Stewardship**
- **Energy Efficiency awareness**
- **Nature-based Solutions**
- **Sustainable Pest Management.**

Implementation plan of pedagogical activities - Scheme of work

Duration: 4 hours				
Target: TVET learners in agriculture/aquaculture/environment (beginner-intermediate)				
No. of Activity	**Duration**	**Training Methods / Activity**	**What the trainers do**	**What the participants do**
1.	60 min	Interactive theory + demo (weather vs climate; sources reliability)	• Present key concepts • Compare	• Discuss • Take notes • Explore an app/radio bulletin

			forecast sources ● Show reading probabilities and totals	● Identify local data sources
2.	120 min	Practical: 7-day forecast into weekly plan	● Facilitate data extraction and interpretation ● Coach decision table creation	● Build a weekly plan for crops/aquaculture ● Justify actions ● Log screenshots/photos
3.	60 min	Practical: Seasonal outlook & risk calendar	● Provide seasonal outlook example ● Guide risk calendar and variety/stocking choices	● Draft risk calendar and seasonal plan ● Present a short advisory ● Peer feedback
Materials (What trainers need to have prepared): ● Smartphones or printed forecasts ● Access to a trusted forecast source ● Flipcharts/markers ● Simple decision table and risk calendar templates ● PPE for any field checks.				
Other notes: ● Encourage low-bandwidth/offline options ● Integrate indigenous signs carefully ● Emphasise safety during extreme weather events.				

PART 3 – ACTIVITY GUIDE

DESCRIPTION OF THE ACTIVITIES

1. Using a 7-Day Weather Forecast for Farm Planning

Learners obtain a 7-day forecast (rainfall totals/probabilities, temperatures, wind) from a trusted source and practise interpreting it for immediate farm actions. The trainer demonstrates reading rainfall charts (mm/day and probability of precipitation) and temperature ranges. In small groups, learners fill a weekly decision table covering sowing/irrigation/fertiliser timing, pest/disease risk notes, and harvest/post-harvest tasks (e.g., drying). Groups annotate uncertainties and specify trigger thresholds (e.g., "≥15 mm in 48 h → sow maize; <5 mm → delay"). Each group prepares a short oral advisory for a target farmer.

1. **Aim of the activity:** Convert forecast data into clear, actionable weekly plans and communicate them effectively.
2. **Duration**: 1 hour
3. **Material required:**

- Smartphones/printed bulletins
- Decision table template
- Markers.

4. **Step-by-step instruction of the task/practical exercise/case study:**

➢ Source and read forecast
➢ Interpret rain/temp/wind
➢ Draft decision table with triggers
➢ Prepare advisory
➢ Peer review and refine.

References/Sources/Further materials:
No further references

2. Seasonal Outlook & Risk Calendar

This activity introduces seasonal outlooks and historical climate tendencies to guide strategic choices. The trainer provides an example outlook and historic rainfall/temperature summaries. Teams sketch a risk calendar for the next 3–6 months, noting high-risk periods for drought, flood, or heat stress, and align operations: crop/variety selection (for example: early-maturing in below-normal

rainfall), aquaculture stocking density and water management, drainage works, and labour/input scheduling. Teams identify no-regret actions (mulch, drainage maintenance, seed drying/storage). They present seasonal plans and receive structured feedback using a rubric (clarity, feasibility, risk coverage).

1. **Aim of the activity:** Use seasonal information to shape crop and aquaculture strategy and preparedness.
2. **Duration:** 2 hours
3. **Material required:**

- Seasonal outlook example
- Risk calendar template
- Markers/Flipcharts.

4. **Step-by-step instruction of the task/practical exercise/case study:**

➢ Review outlook and historic data;
➢ Draft risk calendar;
➢ Define strategy and no-regret actions;
➢ Present and peer review.

References/Sources/Further materials:
No further references

3. Post-Harvest Planning with Humidity/Storm Alerts

Learners examine humidity and storm alerts to plan harvest and drying/storage logistics. The trainer demonstrates interpreting high humidity forecasts and convective storm risk. Teams decide whether to advance/delay harvest, use solar dryers or airtight containers, and plan covered storage or tarping. They map responsibilities (who monitors forecasts, who mobilises labour/transport) and create a checklist to reduce post-harvest loss.

1. **Aim of the activity:** Reduce post-harvest losses by aligning operations with humidity and storm forecasts.

2. **Duration**: 1(–1.5) hours

3. **Material required:**

- Forecast bulletins
- Post-harvest checklist template.

4. **Step-by-step instruction of the task/practical exercise/case study:**

➢ Read humidity/storm indicators;

➢ Decide on harvest and drying approach;

➢ Assign roles;

➢ Finalise checklist.

References/Sources/Further materials:

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