

Domain**FARM PRODUCTION PLANNING****Title:****Demonstrate knowledge of Climate-Smart Agriculture****Level: 5****Credits: 10****Purpose**

This unit standard is intended for people who demonstrate an understanding of Climate-Smart Agriculture. People credited with this unit standard are able to demonstrate understanding of three pillars of Climate Smart Agriculture; demonstrate knowledge of the principle of productivity; demonstrate knowledge of the principles of adaptation; demonstrate knowledge of the principle of mitigation.

This unit standard is intended for people who manage agricultural enterprises as well as people in other occupations that work in managerial positions in agricultural institutions.

Special Notes

1. Entry information

Prerequisites:

- *Unit 1310 - Demonstrate knowledge of soil and water conservation and appropriate relevant technology*

2. This unit standard is to be delivered and assessed in the context of agricultural operations and can be assessed in conjunction with other relevant unit standards.

3. Assessment evidence may be collected from a real workplace or a simulated work environment in which agricultural operations are carried out.

4. Demonstration of competence, at a minimum, requires evidence in compiling two proposals demonstrating the implementation of climate smart agriculture principles on two different farming enterprises through a portfolio of evidence.

5. Glossary of terms

- *“Climate change, also called global warming”,* refers to the rise in average surface temperatures on Earth. An overwhelming scientific consensus maintains that climate change is due primarily to the human use of fossil fuels, which releases carbon dioxide and other greenhouse gases into the air. The gases trap heat within the atmosphere, which can have a range of effects on ecosystems, including rising sea levels, severe weather events, and droughts that render landscapes more susceptible to wildfires.
- *“Climate-smart agriculture (CSA)”* is an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate. CSA aims to tackle three main objectives: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate

change; and reducing and/or removing greenhouse gas emissions, where possible.

6. Regulations and legislation relevant to this unit standard include the following:

- National development Plan (NDP 5)
- Namibia Agriculture Policy, 2015
- Biosafety Act, No. 7, 2006
- Water Resources Management Act, No. 24, 2004
- Environmental Management Act, No. 7, 2007
- Pollution Control and Waste Management Bill, 2003
- National Policy on Human and Wildlife Conflict Management, 2009
- Agronomic Industry Act, 20, 1992
- Communal Land Reform Act, No. 5, 2002
- Environmental Management and Assessment Bill, 2004
- Desertification and Biodiversity Policy, 2005
- Climate Change Policy, 2011
- Nature Conservation Ordinance, No. 4 of 1975
- CITES 1 and 2
- Standards Act, 2005, Standards Regulations: Standards Act, 2005 and relevant Namibian Standards as established

And all subsequent amendments to any of the above

- All current sets of *Good Agricultural Practices* to which Namibia subscribes and that regulate agricultural products entering a country to which Namibian producers may export.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority on www.namqa.org and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Demonstrate understanding of three pillars of Climate Smart Agriculture

Performance criteria

- 1.1 The Principle of Climate-Smart Agriculture is defined.
- 1.2 The Productivity pillar of Climate-Smart Agriculture is defined in simple terms.
- 1.3 The Adaptation pillar of Climate-Smart Agriculture is defined in simple terms.
- 1.4 The Mitigation pillar of Climate-Smart Agriculture is defined in simple terms.

Element 2: Demonstrate knowledge of the principle of productivity

Range

Productivity: CSA aims to sustainably increase agricultural productivity and incomes from crops, livestock and fish, without having a negative impact on the environment. This, in turn, will raise food and nutritional security.

Performance criteria

- 2.1 Sustainable intensification of agricultural production is explained.
- 2.2 Methods to sustainably increase agricultural productivity are described.

Element 3: Demonstrate knowledge of the principles of adaptation

Range

Adaptation: CSA aims to reduce the exposure of farmers to short-term risks, while also strengthening their resilience by building their capacity to adapt and prosper in the face of shocks and longer-term stresses. Particular attention is given to protecting the ecosystem services which ecosystems provide to farmers and others. These services are essential for maintaining productivity and our ability to adapt to climate changes.

Performance criteria

- 3.1 Methods to protect the ecosystem are described.
- 3.2 Methods to reduce the exposure of farmers to short term risks are explained.

Element 4: Demonstrate knowledge of the principle of mitigation

Range

- **Mitigation:** Wherever and whenever possible, CSA should help to reduce and/or remove greenhouse gas (GHG) emissions. This implies that we reduce emissions for each calorie or kilogram of food, fibre and fuel that we produce. That we avoid deforestation from agriculture. And that we manage soils and trees in ways that maximizes their potential to acts as carbon sinks and absorb CO₂ from the atmosphere.
- **Agricultural approaches and practices that contribute to climate change mitigation** includes but not limited to conservation agriculture; soil compaction management; improved farming systems with several crop rotations; crop diversification; promotion of legumes in crop rotations; growing cover crops; mulch cropping; restoration of cultivated peaty soils and degraded lands; soil management practices that reduce fertilizer use (e.g. urea deep placement); integrated nutrient management; growing nutrient-use efficient crop varieties; integrated crop and livestock systems; dedicated energy crops to replace fossil fuel use; emission control and reduction (combustion engines, animal waste); improved rice cultivation techniques; water management/conservation, irrigation, water table management; and agroforestry. Agriculture practices such as intercropping with legumes, greater crop diversity and improving storage and processing, and improved feeding strategies, rotational grazing, grassland restoration, and manure management have significant benefits to sustainable agriculture and help reduce heat and water stress on crops and livestock.

Performance criteria

- 4.1 Methods to conserve soil resources for sustainable crop and livestock production systems are described.
- 4.3 Methods to conserve water resources for sustainable crop and livestock production systems are described.
- 4.4 Soil and water conservation techniques are described.
- 4.5 Principles of conservation agriculture are explained.
- 4.6 Improvement of soil quality and soil resilience against impacts of climate change and variability is explained.
- 4.7 Ways of reducing and removing greenhouse gas emissions and increase soil carbon sequestration in both productive and marginal lands are described.
- 4.8 Agricultural approaches and practices that contribute to climate change mitigation are described.
- 4.9 Knowledge of Crop and Livestock systems is demonstrated.
- 4.10 The relevance of Agro-forestry in CSA is explained.
- 4.11 The relevance of Post-harvest Management in CSA is explained.
- 4.12 The relevance of Renewable Energy Management Systems within agricultural production are explained.

Registration Data

Subfield:	Farm Management
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