Kingdom of Eswatini

AGRICULTURE PRE-HARVEST ASSESSMENT REPORT

MARCH 2022

I. Key Highlights:

- The observed rainfall amount for the 2021/22 season was **significantly above the long-term average** for the period October 2021 to March 2022. This was in line with the projected Above-Normal rains for the season.
- Water availability for human consumption and agricultural purposes greatly improved this season as a result of the above normal rains.
- The estimated maize production stands at **127,315.43 MT**, an increase of **27%** from the 2020/2021 season. Average national yield is at 1**.7 MT/Ha**.
- There is an observed increase in the production of other crops as Sweet Potatoes by 450%; Sorghum by 60%; Legumes/pulses beans increased by 225%; Groundnuts by 68% and Cowpeas by 2,028%.
- The impact of pests and diseases was minimal in all the regions, where the ***Fall Armyworm*** remains a pest of concern in the country as it was reported in areas visited, however, farmers are now able to control it.
- The above normal rainfall experienced had a negative impact on soil fertility as **nutrient leaching high** in most areas, especially the highveld.
- Generally, livestock condition is good in most parts of the country. Disease incidents and mortality are at acceptable levels. A rise in pest and disease incidents given the increased amount of rainfall. However, farmers were able to control them on their own.
- Developments in the international arena (**Russia/Ukraine conflict**) have had a negative impact on overall seasonal performance as the country experienced significant increases and shortages in Agricultural inputs, especially fertilizer chemicals and seeds. This came in the backdrop of already high prices brought about by the impact of the COVID-19 pandemic. Current support programmes by the government and partners provided the needed relief for farmers.

II. Acknowledgements:

The Ministry of Agriculture would like to send its utmost gratitude to its partners namely the Deputy Prime Minister's Office (Disaster Management Department), Ministry of Tourism and Environmental Affairs - Department of Meteorology (MET), National Disaster Management Agency (NDMA), Eswatini Water and Agricultural Development Agency (ESWADE) Food and Agriculture Organization (FAO), World Food Programme (WFP), Baphalali Eswatini Red Cross Society (BERCS), World Vision Eswatini (WVE); for the provision of resources in conducting this exercise which included finance, vehicles and human resource.

Appreciation goes to the team that worked in drafting this eloquent report namely, Thulani Owen Sibiya, Daniel Luthini Dladla, Thaphelo Hlatjwako and Nkhosinathi Nkwanyana (MoA); Melusi Simelane (CSO) Simangele Mahlinza (Department of Meteorology); Sibusiso Ginindza (NDMA), Sandile Thwala and Bheki Ginindza (WFP).

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BERCS	Baphalali Eswatini Red Cross Society
CA	Conservation Agriculture
CBT	Cash Based Transfers
CDI	Combined Drought Index
CHIRPS	Climate Hazards InfraRed Precipitation Station
CSO	Central Statistics Office
DPMO	Deputy Prime Minister's Office
DMD	Disaster Management Department
FAO	Food Agriculture Organization
FAW	Fall Army Worm
FEWS NET	Famine Early Warning Systems Network
FFPI	FAO Food Price Index
GAP	Good Agricultural Practices
HIV	Human Immunodeficiency Virus
IPC	Integrated Phase Classification
IPM	Integrated Pest Management
JFM	January February March
LAN	Limestone Ammonium Nitrate
LST	Land Surface Temperature
MET	Meteorology
MoA	Ministry of Agriculture
MODIS	Moderate Resolution Imaging Spectroradiometer
NCP	Neighbourhood Care Point
NDMA	National Disaster Management Agency
NDVI	Normalised Difference Vegetation Index
NEWU	National Early Warning Unit
NGO	Non-governmental Organization
NMC	National Maize Corporation
NPK	Nitrogen, Phosphorus and Potassium
OND	October November December
RDA	Rural Development Area
SDG	Sustainable Development Goals
SNL	Swazi Nation Land
TAVI	Traditional vegetable production Initiative
TDL	Tittle Deed Land
UN	United Nations
WFP	World Ford programme
WVE	World Vision Eswatini

1. Introduction

1.1 Background

The food and agriculture sector in the Kingdom of Eswatini is faced with an array of challenges and increased pressures to meet the needs of the population. Over the years, the Government of Eswatini with support from development partners made concerted efforts to meet national food requirements. Even with increased investments into the sector, the country still fails to stimulate much needed local production. Climate-related shocks such as heat waves, flooding, prolonged dry spells, increased incidences of pests & disease, high cost of inputs, and poor adoption of Good Agricultural Practices (GAP); have led to consistently low production and productivity. Food insecurity in the country still remains high.

According to the Eswatini Vulnerability Assessment Committee Report of February 2022, 28 per cent (340,000 people) of the 1.2 million people are at risk of facing Crisis (IPC Phase 3) and Emergency (IPC Phase 4) acute food insecurity, due to prolonged effects of COVID-19, civil unrest, and localized poor seasonal performance. The current humanitarian response to address the food and nutrition insecurity in Eswatini is undermined by underlying factors such as high poverty levels, high inequality, high cost of living, high unemployment levels and the scourge of the Human Immunodeficiency Virus (HIV). Some localities have higher vulnerabilities that exacerbate food insecurity than others. As a result, they prolong the need for food assistance and prompt adequate resource mobilisation to which preparedness, in advance, is essential for success.

1.2 Rationale

The severity of food insecurity depends largely on the seasonal performance of national production initiatives and the effectiveness of relief efforts. While the majority of the Eswatini population depended on markets, local production especially in vulnerable areas can reduce the burden on national food systems and positively influence the import bill. The pre-harvest crop and livestock production assessment help to indicate the likelihood that the country will face food gaps in the current season, especially among vulnerable populations. The assessment is necessary to inform policy, preparedness efforts and contingency planning to respond to crises and save the lives of vulnerable people in Eswatini.

1.3 Objectives

The primary objective of the 2021/2022 pre-harvest assessment was to inform the food and nutrition security early warning and preparedness actions by the Ministry of Agriculture (MoA), led by the National Early Warning Unit (NEWU) with collaborative partners. To project the food security status of the country at harvest, the assessment team sought to understand the overall seasonal performance in Eswatini focusing on the following:

i. Determine the effect of weather performance on potential food production in different agro-ecological zones.

ii. Estimate total production based on area under cultivation and projected yields of the country's food crop and livestock by Livelihood zones.
iii. Inform policymakers of the projected national and household food security situation by constituency.
iv. Support early preparedness actions, activate detailed vulnerability assessment and initiate contingency plans to address potential food insecurity.

2. METHODOLOGY

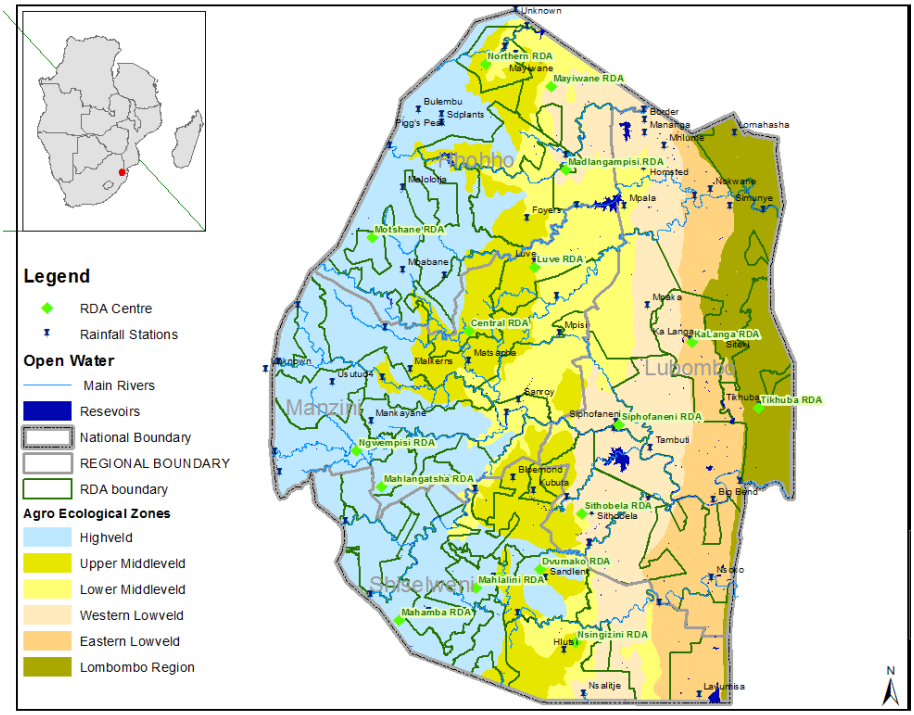
2.1 Approach

Supported by The MoA-NEWU with collaborative partners namely: Deputy Prime Minister's Office, Disaster Management Department, Department of Meteorology (MET), National Disaster Management Agency (NDMA), Food and Agriculture Organization (FAO), World Food Programme (WFP), Baphalali Eswatini Red Cross Society (BERCS), World Vision Eswatini (WVE); conducted a pre-harvest assessment for the season 2021/2022 season.

The approach adopted was the use of both primary and secondary data covering all the regions of Eswatini. Data collection was undertaken by a team comprised of officers from the MoA, DPMO, MET, NDMA, FAO and WFP.

2.2 Primary data

Primary data collection was undertaken through key informants and group discussion interviews in all the 17 Regional Development Areas (RDAs), where 70% of households/subsistence smallholder farmers derive their livelihood support and advisory services. Area covered under RDAs excludes Sugar Plantations, Forestry, Protected Areas (such as game reserves/parks), Urban Municipality and Large Private Farms. Primary data was collected on the following issues: rainfall performance (rainfall onset, rainfall amounts), minimum and maximum temperatures; total land under cultivation/ploughed, agricultural performance, pasture and livestock conditions including water availability. Participants for key informants and group discussion included Agriculture Extension officers, NMC officers, Vet assistants, and Horticulture specialists. Site verifications were done in RDA nearby crop and vegetable fields, and livestock water sources. The assessment was conducted on the 7th of April 2022 to the 14th of April 2022.



Map 1: Map of Eswatini with RDAs visited

2.3 Secondary data

A review of secondary data was undertaken to build the context and inform key programmes being initiated having a bearing on the performance of agriculture and food systems. Secondary data included Global, Regional and Local issues as drivers of inflation, food commodity prices and utility prices, access to markets, and farming inputs prices.

2.4 Data and Sources

The daily Rainfall records from the Department of Meteorological Services from September to March were used, obtained from 23 weather stations distributed throughout the country. This also included minimum and maximum temperatures for the period. The area planted was derived from records of tractor hours used by smallholder farmer land preparation for various crops managed by the National Maize Corporation in collaboration with the Ministry of Agriculture Department of Extension. This also took into consideration areas covered by private tractor service providers.
Ground situational field notes from physical observations and field visits conducted by different partners - MoA, DPMO-DMD, NDMA, NEWU, FAO and WFP, BERCS, and WVE provided evidence on the overall performance of crops and livestock.

2.5 Data Analysis

Analysis involved:

1. Weather (Rainfall and Temperature) data from the various Meteorological weather stations were summarized as a key indicator for seasonal performance.
2. RDA data on area cultivated by type of crop and agro-ecological zone was summarized to establish the economic area affected.
3. Satellite imageries were used to calculate the Composite Drought Index (CDI) which determined the quality and status of grazing lands and pastures, as a proxy for livestock conditions.

3. CURRENT CONTEXT

Global and domestic developments have had a negative impact on the overall economic development, compromising people's livelihoods and limiting access to food and productive access.

3.1 Global Context

3.1.1 Climate change and Seasonal weather

The climate Change phenomenon has continued to affect global weather partners for the 2021/22 season. As a result, there have been increased incidents of extreme weather patterns due to the negative impacts of climate change impacting livelihood and loss of life. The World Meteorological Organization has indicated that Green House Gases have increased to extreme levels which have influenced how global weather patterns evolve. World temperatures have increased to unsustainable levels where the global temperature is now 1.09^{o}C above the long-term average. Sea levels as a result of accelerated melting of glaciers and ice sheets have increased. Extreme weather patterns for the season included:

i. Extreme heatwaves with temperatures reaching 55^{o}C in some places leading to heat-related deaths.
ii. Abnormally cold conditions, where some areas recorded the lowest temperatures in history.
iii. Increased incidents of wildfires causing irreversible environmental destructions.
iv. Above normal rains leading to flooding
v. Increased incidents of cyclones, storms and tornadoes in many parts of the world, wherein the southern African region 6 cyclones developed in a space of a month with detrimental consequences.
vi. Increased drought conditions leading to significant agricultural losses and power generation in some areas due to lower river flows.

The socio-economic and environmental impact of such can never the underestimated. Due to weather-related impacts, economic shocks have increased in frequency and intensity worldwide. The compounded effects of these challenges, further exacerbated by the COVID-19 pandemic have led to a rise in hunger and malnutrition which has eroded the progress attained towards improving food security (SDG 2).

3.1.2 COVID-19 Pandemic

COVID-19 pandemic since 2020, continued to negatively affect people's livelihood and coupled with other social challenges, albeit at a far reduced level. The surge of the pandemic in the kingdom gave rise to food insecurity due to the implementation measures aimed at curbing the virus's spread. This affected livelihoods drastically as it limited the mobility of people, productive assets, and the circulation of financial resources. As of the 31st of March 2022, the country had a total cumulative case of 69,771 and 1,394 reported deaths (Figure 1).

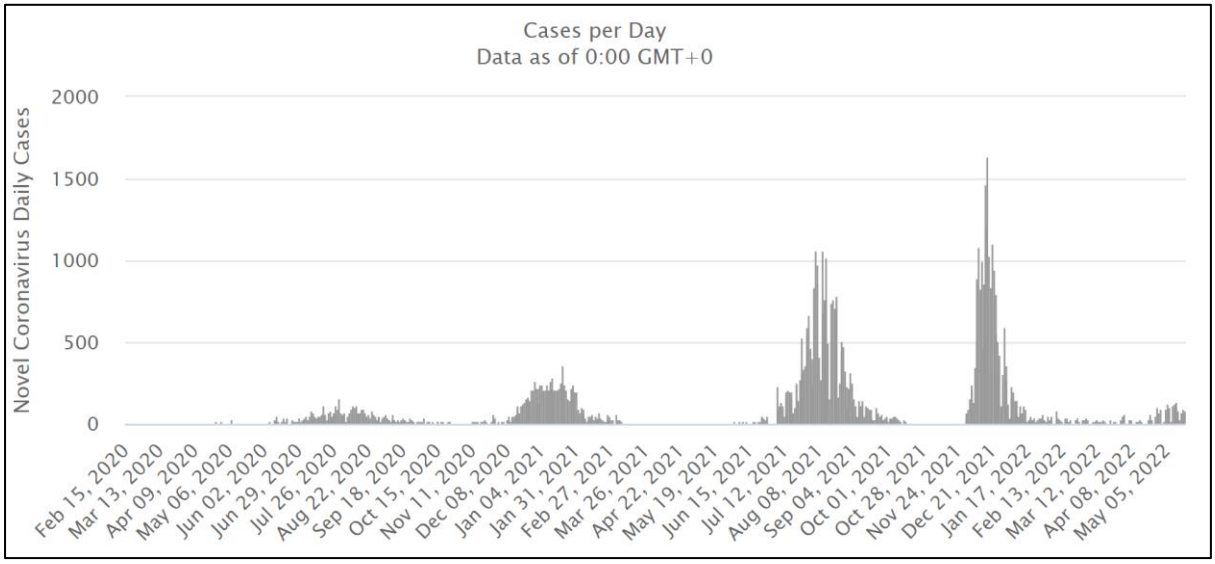


Figure 1: Eswatini COVID-19 Cases
Source: Ministry of Health, 2022

3.1.3 International Conflicts

The war between Russia and Ukraine has led to drastic increases in crude oil prices globally (source). As of the end of March 2022, fuel prices were at SZL 17.15 (petrol) and 17.00 Diesel). In April prices are projected to further by 2.7 per cent with a litre of petrol costing **SZL 19.05** from SZL 18.55. Diesel increased by 5.38% to **SZL 19.50 per litre** and Paraffin a source of fuel for most of the vulnerable people increased in Eswatini by 6.3 per cent to **SZL 14.35/litre** from SZL 13.50. The observed increases in fuel prices have had a ripple effect on prices for basic commodities and will likely influence the direction of the inflation rate in the country.

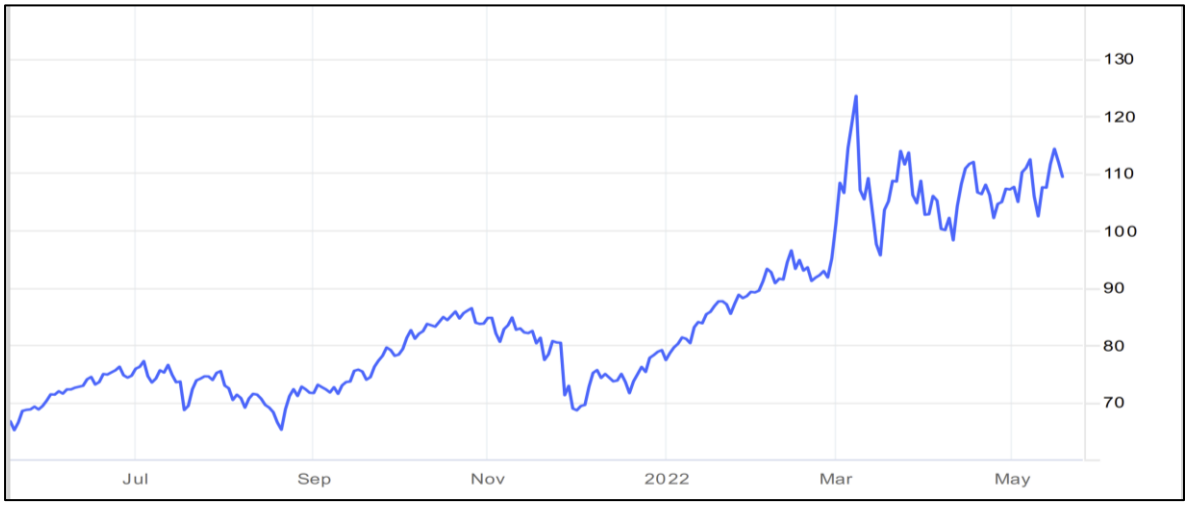


Figure 2: Brent Oil Prices - May 2021 - May 2022
Source: *Brent crude oil - 2022 Data - 1970-2021 Historical - 2023 Forecast - Price - Quote (tradingeconomics.com)*

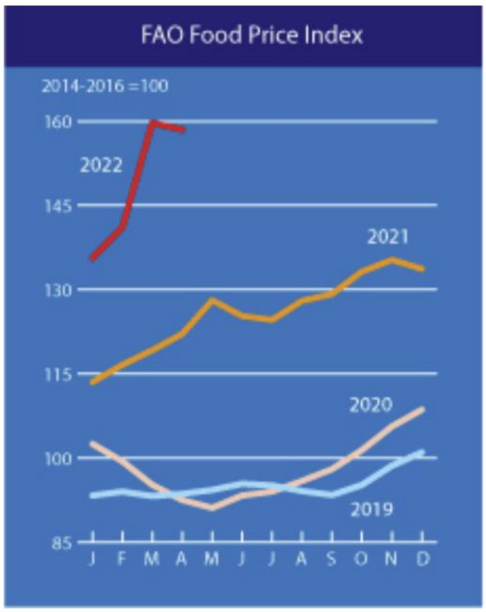


Figure 3: FAO Food Price Index - April 2022

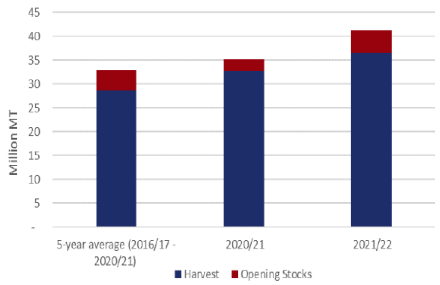
According to the FAO Food price index, current prices are far higher than values observed same period last year, this also includes corresponding years in the past. The FFPI averaged at 158.5 points in April 2022, 0.8 per cent lower than levels reported in March 2022. The drop was attributed to decreases in the vegetable oil index and cereals, however sugar meat and dairy experienced moderate increases. Overall commodity prices have remained high which will likely push inflation in most countries. The price of vegetable oil, rice and wheat have reached extremely high levels during this period, which have influenced increases in the prices of these commodities globally.

3.2 Regional Context

3.2.1 Protests in the Republic of South Africa

Devastating protests in SA affected food security, especially the supply chain of most commodities. As a direct result, drastic increases in commodity and agricultural inputs prices caused deterioration of livelihood activities of most people, and higher rates of unemployment in areas already experiencing food shortages. Affecting the primary economy especially the manufacturing and production of basic commodities.

3.2.2 Regional Production and Drought impact



Note: Figures presented in this chart include Botswana, DRC, Lesotho, Malawi, Mozambique, Namibia, South Africa, Eswatini, Tanzania, Zambia, and Zimbabwe.

Figure 4: Regional maize supply estimates - 2021/22 season

According to a Market Outlook Update from FEWS NET, the Regional Maize Supply[1] even though the region was faced with poor season performance due to delays in planting which might create setbacks in the supply of maize during this consumption period, overall production and supply of maize will be higher than the 5-year average and the 2020/21 production period. Maize prices are expected to peak until March 2022 (height of the lean season). The anticipated high stock levels will ease pressure on domestic prices during this period, however rising production costs, fertilizer and labour coupled with the weak exchange rates and low global inventories will likely keep prices high. The high maize prices will likely benefit the

[1] Southern Africa - Supply and Market Outlook: Thu, 2022-04-28 | Famine Early Warning Systems Network (fews.net)

region's high exporters i.e., Zambia, South Africa, and Tanzania and this will be felt mostly by consumers increasing overall vulnerability in the region.

Given the ongoing Ukraine crisis, its impact on local prices and availability of some key commodities is of major concern as the region is a net importer of wheat and vegetable oil including fertilizer and fuel.

3.3 National Context

The agricultural production of Eswatini comes from two distinct production systems - Swazi Nation Land (SNL) and Tittle Deed Land (TDL). According to MoA reports for 2021, 45 per cent of active agricultural land is under TDL and accounts for 80 per cent of the national agricultural production[2]. The SNL is composed of smallholder farmers mainly producing for consumption, producing on average of 1 ha with yield averaging at 1.2 MT/ha. The SNL is characterised by low investment, dependent on rainfall and poor adherence to Good Agricultural Practises (GAP). Agricultural production in the country is highly dependent on TDL which is unfortunately unable to meet the national requirement, thus the country is highly dependent on imports.

3.3.1 Climate and Seasonal Forecast

The 2021/2022 seasonal forecast, according to the Meteorological Services there was a high probability of good rainfall throughout the season during October 2021 – March 2022 period was predicted. The increased rainfall would have a positive impact on water availability for potable supply, crop, and livestock production. Pasture, water reservoirs and river flows were above average capacity. In the midst of the observed good season, some areas experienced prolonged dry spells with extreme temperatures negatively affecting overall crop production.

3.3.2 Civil unrest in Eswatini

The civil unrest has affected food security, the education sector, health sector and increased protection concerns among children and women. As a direct result of the unrest, there have been drastic increases in commodity and agricultural inputs prices causing deterioration of livelihood activities of most people, and higher rates of unemployment in areas already experiencing food shortages due to drought. Affected communities, therefore, live below the poverty line and rely on negative coping strategies for daily survival. Following the loss of income in some families, the family members have now reduced their daily food intake, others are skipping meals for the younger ones to feed[3].

3.3.3 Economic Indicators

Poor performance of the local currency is also another contributing factor. According to the Central Bank of Eswatini, the inflation rate remained low in the country at 3.4% for March 2022. Notable increases in fuel prices and poor performance of the local currency have

[2] Swaziland National Agricultural Investment Plan, 2014
[3] UN Unrest Impact Assessment Report, 2022

influenced the upward trend in food and commodity prices contrary to the reported low inflation rates.

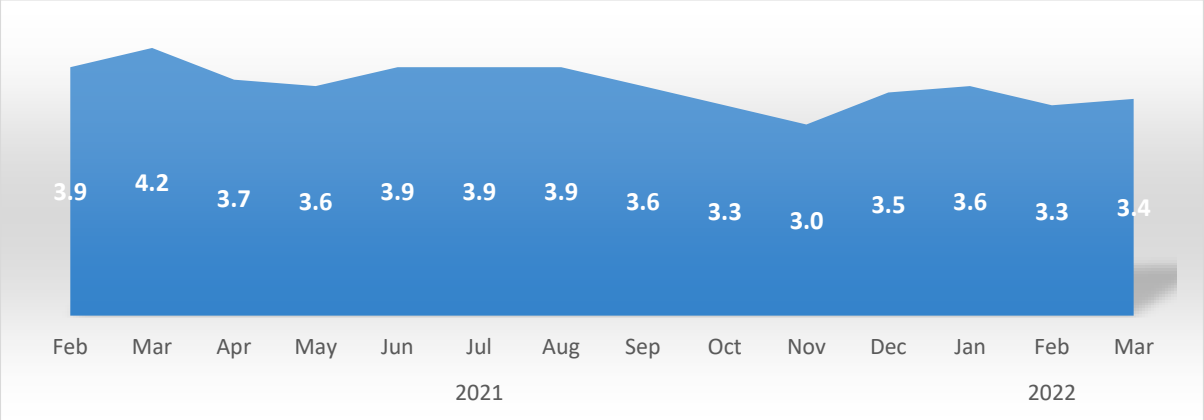


Figure 5: Annual Inflation (2021-2022)
Source: Central Statistics Office, 2022

3.3.4 Policy Interventions

A sharp increase in the cost of agricultural inputs (fertilizer, seeds, pesticides, herbicides farming implements) has significantly increased the cost of farming the country. This resulted in a number of households not engaging in farming, reducing the overall land under cultivation. The availability of seeds and fertilizer also delayed the planting. The Government of Eswatini has continued the Input subsidy programme to support farmers with optimal inputs for higher production to increase food security and availability at household and national levels. The Government of Eswatini also supports the mechanization of smallholder farmers through the subsidy for mechanization.

The National Maize Cooperation has increased the selling price of White Maize grain by 25 per cent from April 2022. This follows a 7 per cent increase that was implemented in January 2022. Current prices are 38 per cent above the 5-year average (**SZL 5,543.00/MT** from SZL 4,430). This will likely lead to further increases in the price of Maize Meal in the country. In an effort to stimulate local production, NMC has increased the buying price for maize for local farmers by 21 per cent (from SZL 3,650 to **SZL 4,420.00**).

3.3.5 Humanitarian Response

Humanitarian actors were called into play to try and cushion the impacts of the pandemic. These impacts included poor access to inputs for especial smallholder farmers, this had an impact on potential yields and area planted food availability.

4. FINDINGS

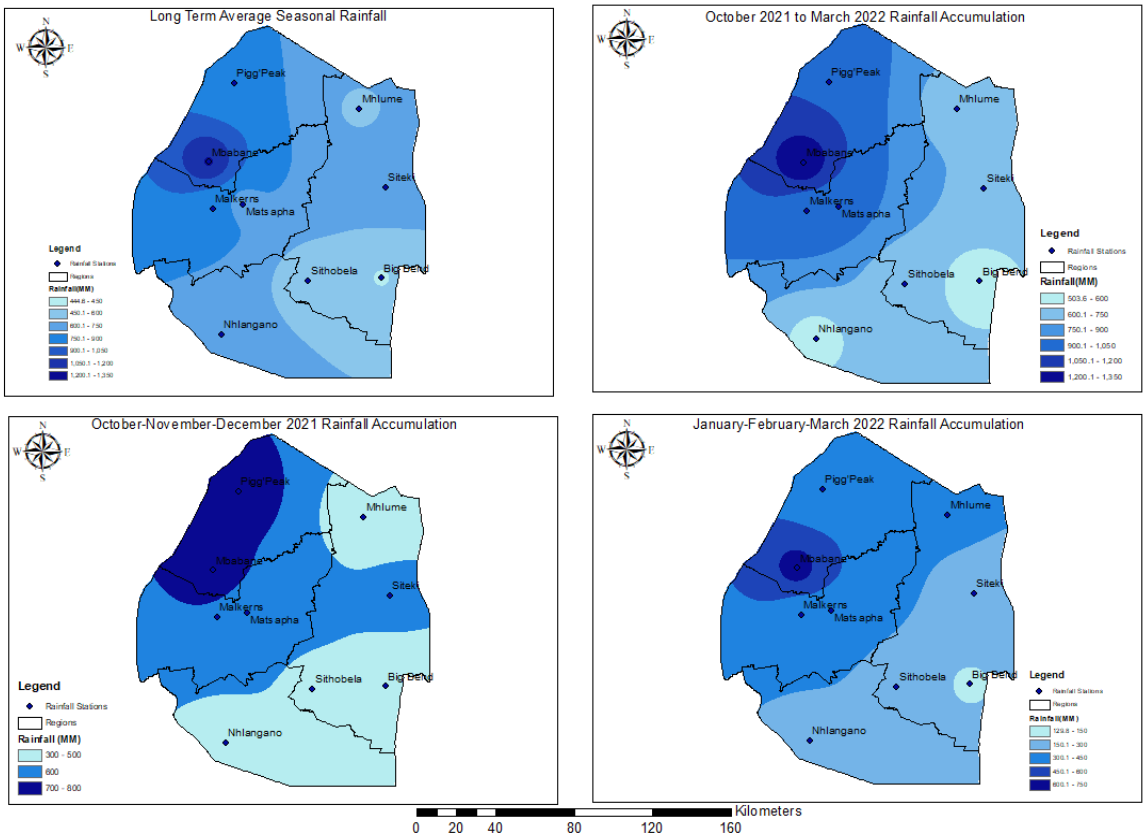
4.1 Seasonal Weather Performance

Agricultural production is mainly dependent on rainfall and temperature conditions. Therefore, the monitoring of rainfall and temperature performance is of utmost importance for informed decision making of agricultural activities and better preparedness in cases of adverse conditions and for disaster risk reduction.

4.1.1 Spatial Rainfall Distribution

The observed rainfall amount for the 2021/22 season was significantly above the long-term average for the period October 2021 to March 2022. Traditionally, low rainfall areas in the Southern Lowveld normally receive rainfall in the ranges of 400-500mm per season, however, in the reporting period they received a total accumulation of rainfall in the ranges of 500-700mm. A large proportion of this rainfall was recorded in the first half of the rainfall season. The Highveld received rainfall in the ranges of Normal to slightly Above Normal (900-1350mm). Map 1 shows the spatial distribution of rainfall countrywide.

In terms of how the rainfall compared to the long term mean (Map 2), the Annual seasonal accumulation was above Normal in the ranges of 110-135% of normal. This was slightly lower than the previous season where the ranges were between 100 and 170 %. The Highveld and portion of the Middleveld received the most rainfall compared to their Normal with some areas receiving up to 140% of their normal rainfall. For the first half of the season, the southern Lowveld which traditionally receives the lowest rainfall reported significantly higher amounts of rainfall when compared to its long-term mean with some areas reporting as high as 170% of their normal. However, this was not the case in the second half of the season as most areas in the region received Below Normal rainfall (60-80%) of their normal



Map 2: Map Comparison of Long-Term Mean (top left), 2021/22 (top right) Rainfall distribution, (below left) OND rainfall accumulation and (below right) JFM rainfall accumulation in the ONDJFM Period

Source: Meteorology Department, 2022

4.1.2 Temporal Rainfall Distribution

The 2021/22 rainfall season effectively started in October 2021 with continuous temporal distribution until December 2021 (Figure 6). Good rains were observed during the start of the season with Above-Normal rains recorded from late October 2021 to early November 2021 in all the regions. Rainfall received in December was above the long-term average countrywide. Significant adverse effects such as severe heavy rains, and hailstorms were recorded countrywide. Severe hailstorms caused havoc mostly in all the regions and continuous rains caused delays in planting and this then affected maize at the tasselling stage. A significant deficit was observed in February 2022 where dry spells were reported in all the agro-ecological zones, however, there was a surplus observed in mid-March 2022.

Overall rain averaged above the Long-Term Average which is an indication of good rains received over this season with intermitted dry spells observed in October 2021 and February 2022.

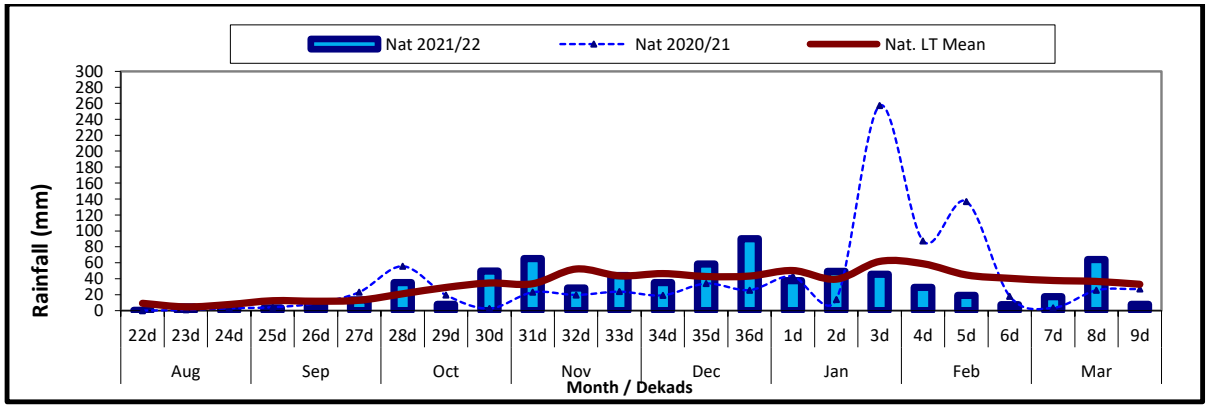


Figure 6: Temporal Distribution of rainfall during the 2021/2022 season
Source: Meteorology Department

4.1.3 Temperature Distribution

Below average temperatures were observed in the Highveld, ranging between 12-15°C minimum and 23-25°C maximum. Near normal temperatures were observed in the Middleveld, Lowveld and Lubombo Plateau, ranging between 17-19°C minimum and 27-30°C maximum. February recorded the highest average temperature (28.3°C), while the lowest average temperature (13.6°C) was recorded in October 2021.

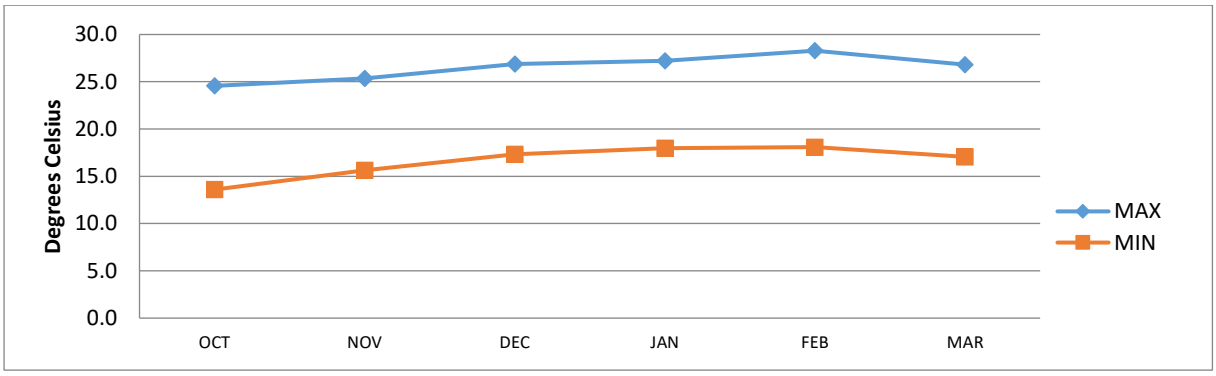


Figure 7: Temperature during the 2021/2022 in rainfed crop season
Source: Meteorology Department

1.1 Water Availability

The good rains received throughout the season and lower temperatures have greatly improved water availability for both human consumption and agricultural purposes especially livestock. In most of the areas, livestock does not travel long distances looking for water. Perennial rivers and streams are above average in terms of water levels, especially in all the Agro-Ecological Zones. Current levels are expected to sustain demand throughout the dry season. However, some areas mostly in the Lowveld and Lower Middleveld are likely to experience water challenges due to siltation, which significantly will reduce water volumes in a number of earth dams.

Through observation, communal surface water source levels were obtained to ascertain their availability to support livelihoods (irrigation, livestock and domestic consumption). Major water

reservoirs in the country have been at full capacity for a better part of the season with some overflowing in some instances (Figure 13). The above average level is indicative of a good supply of water for the dry season for both agricultural and domestic use. This adequacy of surface water has also been reported with earth dams and river flows, where supply is expected to last throughout the dry season. The drier regions of the country are expected to be faced with water stress early during the year such special attention will be required.

Figure 8: Major dam levels - March 2022

Source: Eswatini Water Services Cooperation[4]

1.2 Crop Production

1.2.1 Production and Productivity

Natural hazards such as hail, water logging, thunderstorms, heat waves and prolonged dry spells were experienced in parts of the Shiselweni region (Mahamba-Zombodze RDA). The onset of rains in most parts of the country started in the second and third dekad of October 2021. The estimated maize production stands at 127,315.43 MT (Table 4) which is 27% more than last season's production, with an increase in yield up to 1.7 MT/Ha nationally (Figure 7). The increase in production is attributed to an increase in the amount of rainfall received, which was well distributed through the season.

Sweet potatoes production is expected to be 19,098.6 MT which is 449.89% more than 3,473.15 MT obtained during the 2020/2021 season. Sorghum is expected to stand at 146.38 MT which is 60% more than last season's production. In terms of legumes and pulses beans is expected to be at 2,179.56 MT which is 225% more compared to last season's production. Groundnuts stand at 419.62 MT which is 68% more than 249.12 MT produced in 2020/2021. Cow peas stand at 67.69 MT which is 2,028% more than last season produced. The overall percentage increase of the six most grown crops is 42% more than last season's production.

[4] https://www.swsc.co.sz/

Table 1: Food Crop Production Estimates (MT)

Crop	2021/2022 (MT)	2020/2021 (MT)	Percentage Increase
Maize	127315.43	100041.6	27.26
Sweet potatoes	19098.6	3473.15	449.89
Sorghum	146.38	90.96	60.93
Beans	2179.56	670	225.31
Ground nuts	419.62	249.12	68.44
Cowpeas	67.69	3.18	2,028.62
Total	**149,227.28**	**104,528.01**	**42.76**

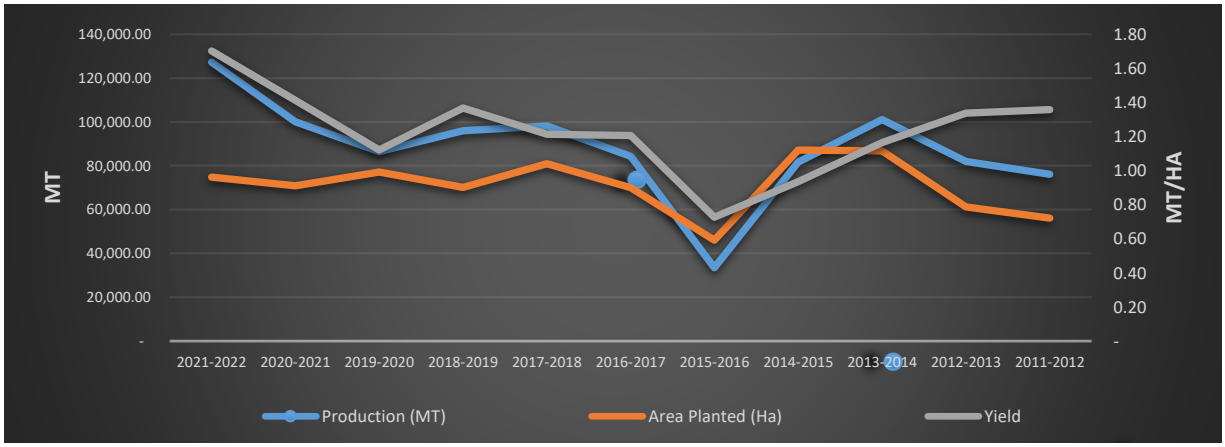


Figure 9: Maize Production (Area planted, MT Produced and Yield) 2012 - 2022
Source Ministry of Agriculture, 2022

1.2.2 Crop Pest and Disease

The findings show that in all the RDAs that were visited there was a problem with Fall-army worm (FAW) which mainly affected the farmers who planted from November 2021 onwards. Some farmers have the knowledge of how to control the pest.

On the diseases northern leaf blight was reported at Ngwempisi RDA, it affects maize in wet humid areas and can be controlled by planting tolerant varieties. Other diseases which include rust, bacterial wilt and leaf curl which affect cereals and legumes were reported and were controlled by using bravo. The FAW was experienced but farmers have been capacitated and they can control it by recommended application of Masta 900, Limestone Ammonium Nitrate (LAN) and the integrated pest management system (IPM). Another pest is the fungus that causes bacterial wilt, leaf curl and sucking insects such as aphids which were effectively controlled. The spread of *Tuta absoluta* is of great concern and the lack of regulations for nurseries is aggravating the situation.

Striga (witchweed) weeds have affected maize production in Shewula. On tomatoes, *tuta absoluta* was a problem at Mayiwane RDA on vegetable farmers. At Shewula Sona or Witch weed was found to be a problem mostly on the red soil rather than black soil. CMR Beatle is

another pest observed in legumes crops and controlled by using bravo together with Decis fort or Fastac as a preventative spray.

1.2.3 Soils Suitability and Conservation

The above normal rainfall experienced resulted in nutrient leaching and due to the lack of resources, farmers could not replace the lost nutrients. It is recommended that for early planting of maize and sorghum need to test soils and analyse before the planting season to improve the application of lime before the planting season. Climate-smart initiatives like CA Agroforestry and soils test summary results (Acidity and Carbon content from Soil testing Unit)

1.2.4 Access to Input

1.2.4.1 Government Input Subsidy

The season experienced a delayed input supply by agro-dealers which compromised the optimal planting time for the maize crop coupled with the composition of the package that could not meet specifications due to unavailability/ low and volatile supply of selected fertilizers. The Cost pushed inflation on input prices which distracted the farming operations of a majority of smallholder farmers. Input distribution and access for the input subsidy project experienced challenges such as a lack of inputs due to low supply and escalating prices by agro-dealers contracted to the NMC. This affected optimal planting and the lack of appropriate fertilizers affected the productivity of the crops.

Input subsidies project, which is currently implemented under NMC, see table 2 for package selection. A total of 15279 farmers (15049 for maize, 196 for beans and 34 for sorghum) have been enrolled in this current season. The input subsidy project had distributed 75,506 bags of 2:3:2 (37) (50kg) NPK fertiliser, 50,360 bags of 50kg LAN, whilst seeds were distributed as follows: 311,875 kg of maize, 13720 kg of bean and 340 kg of sorghum. For chemicals farmers choose either a herbicide or insecticide (bladex or masta 900).

Table 2: Input Subsidy Packages

Crop	Seed	Fertilizer	LAN	Chemicals: Herbicide/pesticide
Maize	25kg	300kg	200kg	5L Bladex plus/Masta 900 or Cypermethrin
Beans	70kg	150	100kg	Malathion 2.5 kg/Bravo 1L
Sorghum	10kg	100kg	100kg	5L Bladex plus/Masta 900 or Cypermetrine

1.2.4.2 TAVI (Traditional vegetable production Initiative)

A total of 4,620 seed kits were distributed to deserving and interested farmers through NGOs and Government Extension officers. About 30 demonstration gardens were established in the different RDAs and agro-ecological zones with a target of 51 (3 per RDA). This has leveraged the project in conducting more training (production & utilisation of indigenous vegetables for

micronutrient supply). The project is working with 39 NCPs under the Umdoni farms, with an average of about 40 beneficiaries per NCP located in the Shiselweni, Manzini and Lubombo regions.

1.2.4.3 Winter Maize Production

The winter production initiative was implemented through the support from FAO Eswatini to stimulate the production of maize and beans in winter to increase the availability of the basic food commodities supplied by domestic producers. The support facilitated the procurement of inputs for the production of maize and beans in winter and the table below shows the amount and value of inputs. Most parts of the country experienced wet spells in December and January resulting in nutrient leaching in most crops. The unavailability of LAN from suppliers affected the farmers such that some withdrew from the project due to the unavailability of critical inputs from the local suppliers. The project is still ongoing as maize is currently drying on maize cribs. Some beans were harvested in December and a small portion is yet to be harvested.

Table 3: Total inputs distributed under the winter production support

Commodity	Quantity (Kg)	Amount (SZL)	Production (Ha)	No. of farmers
Maize	3,550	833,254.00	143.2	9
Beans	5,180		74	21

1.2.5 Access to Equipment and Mechanization

The mechanisation is a critical component for reaching higher productivity through improved tillage by using tractors and tractor-drawn implements when inputs have been optimised, the NMC had been tasked to engage these assets for higher efficiencies and increased farmer outreach. Table 3 summarises the performance of the mechanisation section. For the current season, the mechanisation efficiency was at 97.5%, indicating that most farmers who requested the services were covered.

Table 4: Mechanisation Performance by NMC 2021/2022

Region	Total Area Ploughed (Ha)		Variance (%)
	2020/21	2021/22	
Hhohho	5,615.60	8,797.20	56.66
Manzini	6,704.40	12,890.00	92.26
Shiselweni	3,410.00	5,432.80	59.32
Lubombo	2,770.40	4,382.80	58.2
Total	**18,500.40**	**31,502.80**	**66.61**

Crop production was affected by the delayed mechanization services due to above normal rainfall which constrained access by the tractors due to wet conditions. The higher precipitation during the drying period of maize has compromised the potential yields and the quality of harvest and farmers should improve their storage facilities for the reduction in post-harvest losses.

1.3 Livestock Production

Livestock still maintains greater economic and livelihood importance for the rural population and the country at large. Building from the devastating impact of the 2016 drought which saw the country losing over 80,000 cattle, households' herds have increased over the years (Figure 7). Even though increases in the herd sizes, levels still run short of the numbers pre-the 2016 drought. Poor calving rates and reduction of pastures are some of the limiting factors reported to be affecting livestock production in the country. Cattle, goats, and indigenous chickens are the most common types of livestock reared by the households in Eswatini. Sheep and goats are mainly kept for food and socio-cultural needs, however, an increase in the commercial production of small ruminants in the country has been observed.

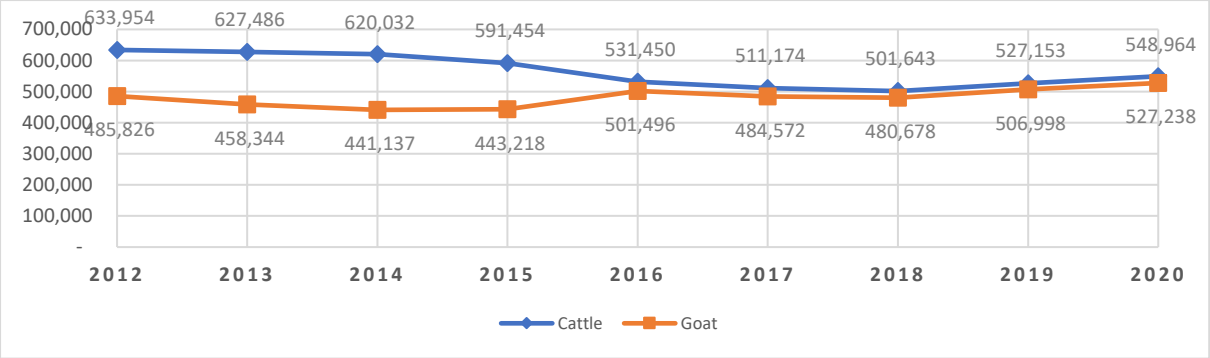


Figure 10: Eswatini Cattle and Goat Numbers
Source: *Ministry of Agriculture, Department of Livestock Service*

The major challenges faced by livestock farmers include dwindling of rangelands due to the violation of Settlement order of 1954 in which local authorities continue to settle people in rangelands, rangeland degradation that affects grazing potential of rangelands and siltation of earth dams, which affects water availability for livestock. Expensive livestock feeds and vaccines is an additional barrier to livestock production in Eswatini.

Table 5: Livestock Census

	Hhohho	Lubombo	Manzini	Shiselweni	Total
Beef cattle	122860	131956	161181	129169	**545166**
Dairy cattle	1025	268	2034	471	**3798**
Sheep	4654	3012	4595	4855	**17116**
Goats	96622	168289	137194	126133	**528238**
Indigenous pigs	7138	3405	4931	7041	**22515**
Exotic pigs	6053	6436	10922	7623	**31034**
Indigenous chickens	215,396	219,010	298,999	241,535	**974,940**

Source: Ministry of Agriculture, Department of Livestock Service

1.3.1 Livestock condition

The Normal-Above-Normal rainfall had a positive impact on pasture availability and water for livestock. Generally, livestock condition is good in most parts of the country. Disease incidents and mortality are at acceptable levels. Pest and disease incidents have increased as a result of increased amount of rainfall, however, farmers were able to control them on their own. Enhanced vaccination programmes and disease control programmes have contributed to the improved herd health for cattle and other small stock. Calving rates have been above average in most areas

1.3.2 Rangeland availability and condition

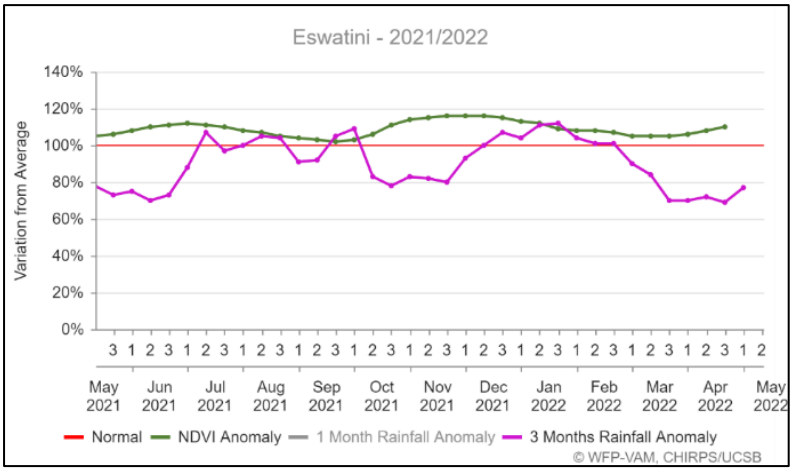


Figure 11: NDVI and Rainfall Anomalies for the 2021/22 Season

Grazing resources have improved in the country given the good rains received over the 2021/22 season. Most areas had a good standing of grasses to support livestock. This can be attributed to the reported good conditions in most areas. Rangelands in the Highveld and Upper Middleveld are fair in condition though they constitute low palatable grass species. Rangeland degradation is increasingly high under these agro-ecological zones due to poor rangeland management, climate change and the continual settlement of homesteads in these grazing resources. Veld condition in the Lowveld and Lower Middle veld ranges from fair to good and rangeland degradation in form of bush encroachment, soil erosion, poor grass species richness and ground cover is imminent. The outbreak of Invasive and Aliens Species being experienced in many parts of the country still poses a major challenge in rangelands.

Available grazing is expected to sustain the livestock throughout the dry season in most areas. Outbreak of wildfires and the increasing encroachment and convention of grazing lands for human settlement will result in the reduction of grazing land leading to overgrazing and land degradation. In the Lowveld large portions of rangelands have been converted to sugarcane plantations, forestry and other land uses without relevant mitigation plans thus resulting in overgrazing and consequently rangeland degradation. Given the increasing herd size and the reduction of the grazing land pressure on grazing, resources will be experienced in many areas.

1.3.3 Livestock feed and vaccines access and availability

Availability of vaccines and feed for livestock is acceptable in farming inputs outlets nationwide, however, the current cost is very expensive for the individual farmer limiting overall access. Poor use of vaccines and medication exposes livestock to increased disease incidents as farmers, especially smallholders would not afford to purchase relevant livestock drugs. Vaccines have no smaller packaging, so they become extremely expensive and significantly increase production costs for individual subsistence farmers. The high cost of production has led to the observed increase in livestock products which makes it non-accessible for vulnerable households.

1.4 Foods Access

1.4.1 Food insecure population response

While production conditions were favourable for most crops and livestock, the external factors exerted extra pressure on food availability and access. The National Disaster Management agency, with support from government partners and various Non-governmental organisations (NGOs) extended relief to vulnerable households through Cash based Transfer (CBT) initiatives and food assistance within the reporting period January to March 2022. These measures were put in place to discourage premature harvesting due to adoption of negative coping strategies, as well as to ensure food access to the most vulnerable populations.

Total in kind food distribution to vulnerable populations amounted to 1,299.27 MT. This included a combination of Cereal (1,040 MT), Pulses (208 MT) and Vegetable Oil (52 MT). This intervention benefitted 9,296 households which had a total of 34,605 beneficiaries across all four regions of the country (Table 4).

Table 6: Food and Cash Based Transfers Distributed

Type of Intervention	Household	Beneficiaries	Total
Food Parcels	9,296	34605	1299,27 (MT)
Cash Based Transfer	26,074	127,558	SZL 26,397,316.00

Cash Based Transfers and *Food parcels distributed* were conducted for beneficiaries across all Tinkhundla in the country. More than 26,000 households benefitted from this intervention which were made up of 127558 beneficiaries. A total amount of E26 397 316 million was disbursed by government and partners in the reporting period.

The government through the NDMA and partners will continue to support vulnerable households through Cash based Transfers in a bid to minimize post-harvest effects anticipated due to heavy rains experienced by the country. This is expected to span over the months April 2022 to July 2022. This exercise combined with other efforts from other partner organisations is expected to benefit more than 18000 households. These households will also benefit from a 1250 MT in kind food donation received by the agency and its partners through Food distributions that are scheduled to begin after July 2022.

1.4.2 Home-grown School feeding Project

The aim of this project is to improve smallholder farmer linkages to sustainable markets to maximize revenues generated from their produce. The initiative also seeks to support diverse nutritional foods to consume by pupils for improved diet diversity. Farmer organizations that were successfully linked to markets were 19 (Hhohho 7, Manzini 6, Lubombo 3, and Shiselweni 1). The commodities that were produced by the farmers include maize (705MT), beans (81MT), cabbages (10MT), spinach (1.8MT), tomatoes (1.5MT) and onion (0.98MT).

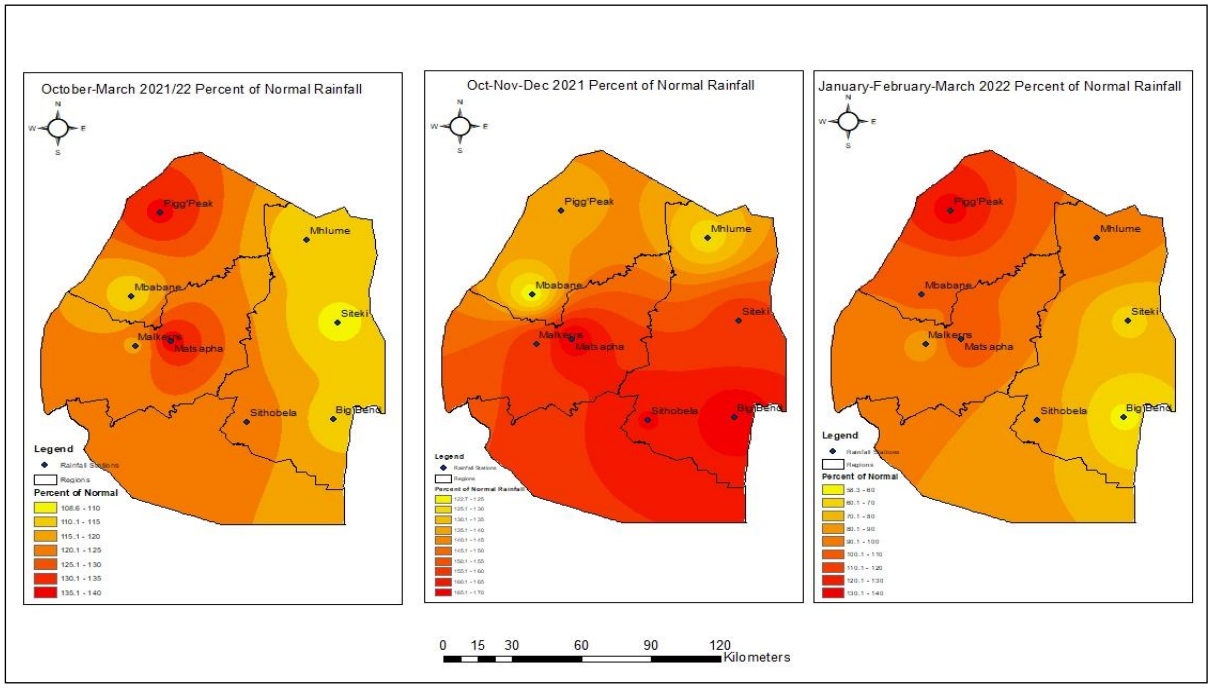
1.4.3 Asidlekwetfu Initiative

The project aims to support and encourage households to engage in diverse food production for own consumption and income generation purposes. This project had been done in collaboration with FAO, WFP and other partners where household were provided with inputs such as vegetable seedlings and small stocks such as rabbits and chickens to ensure that they meet domestic protein requirements and support healthy balanced diet. There has been an effective distribution of 96,160 seedlings of cabbage, spinach, tomato, onion and beetroot and a total of 2,768 nutrition gardens have been established.

2. ANALYSIS

2.1 Rainfall

Rainfall data from the various RDAs records and Meteorological weather stations were summarized as a key indicator for seasonal performance. The rainfall received provided the optimum conditions for effective crop production as distribution was good with rainfall received every dekadl. Areas in the North and Central part of the country received more rains during the season, however it should be noted that areas that normally receive less rain had more than normal rainfall over the season. Even though above normal rains recede throughout the country, the Lubombo plateau recorded less rains when compared to other parts of the country.



Map 3: Rainfall performance in percentages of normal for the 2021/2022 Rainfall Season
Source: Meteorology Department

2.2 Temperature

Below average temperatures were observed in the Highveld, ranging between 12-15°C minimum and 23-25°C maximum. Near normal temperatures were observed in the Middleveld, Lowveld and Lubombo Plateau, ranging between 17-19°C minimum and 27-30°C maximum. February recorded the highest average temperature (28.3°C), while the lowest average temperature (13.6°C) was recorded in October 2021.

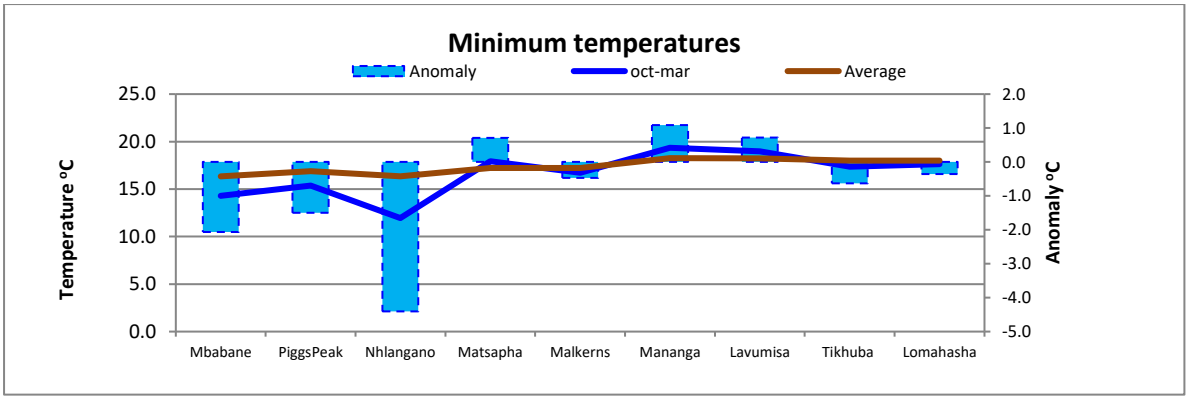


Figure 12: Minimum temperatures for the 2021/22 Season
Source: Meteorology Department

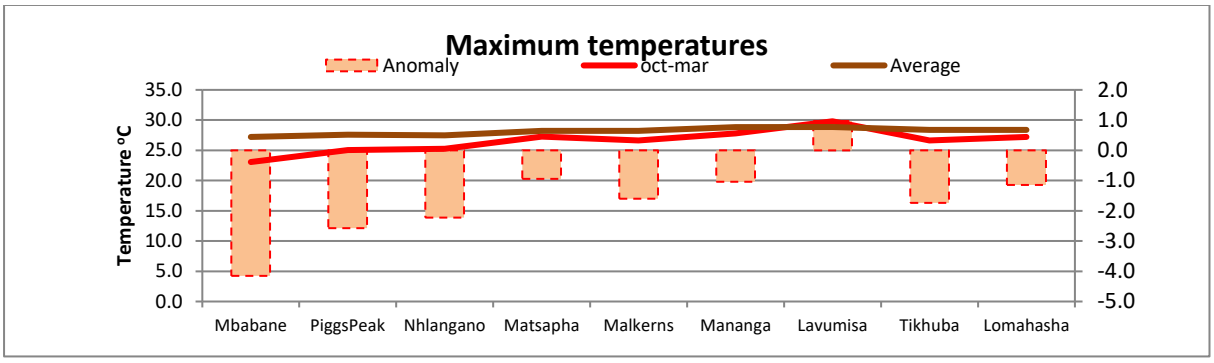
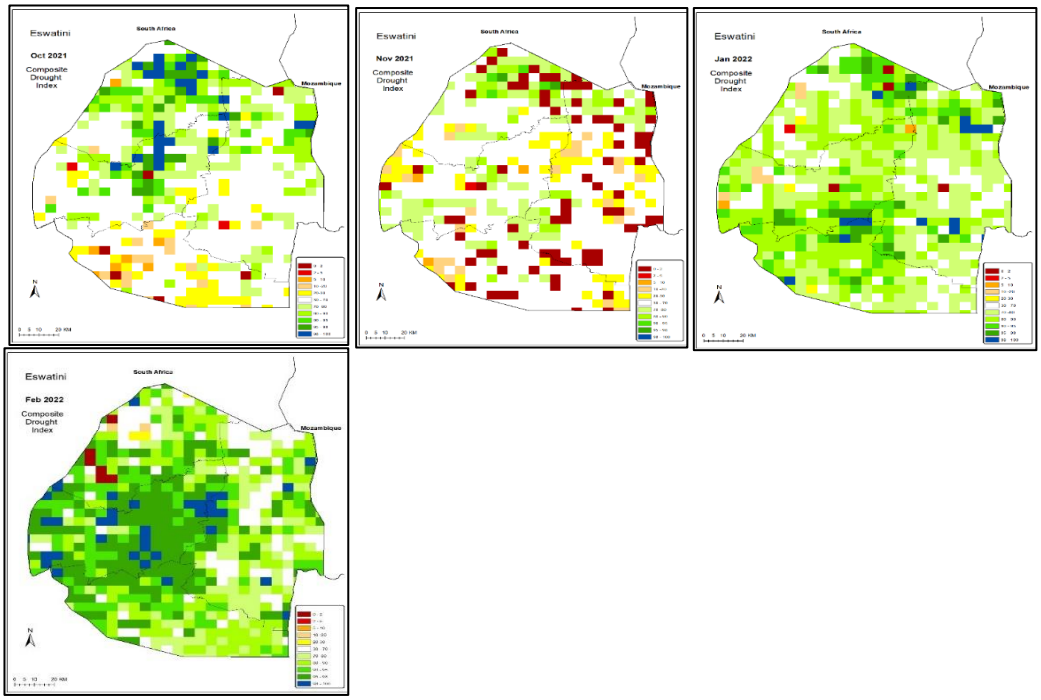


Figure 13: Maximum Temperature for the 2021/22 Season
Source: Meteorology Department

2.3 Composite Drought Index (eCDI)

In a bid to increase the understanding of early warning information, the Kingdom through the NDMA has implemented the use of the eCDI. This is a satellite- and model-based drought early warning system, which is built around an enhanced Composite Drought Index (eCDI).

Map 3 is a detailed expression of CDI maps in use. These show a generally wet planting season that included lots of precipitation at the beginning and at the end of the season which is information that helps forecasters deduce crop yield and health throughout the season. A generally wet beginning to the season meant that farmers experienced late land preparatory stages compared to previous years as it was either too wet to prepare the land or areas were inaccessible due to high rainfall and muddy roads. As the season progressed, steadier rains were experienced but the bulk of rain came towards the end of the season.



Map 4: CDI Maps generated for the planting season October 2021 – February 2022.

Source: National Disaster Management Agency

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2.4 Maize Production

Overall production varied within the regions and livelihood zones in the country. Figure 14 presents production gaps for maize in the four regions of the country. Manzini has realised a surplus of 15,700 MT and Shiselweni with a marginal surplus of 797 MT. Hhohho has a deficit of 6348 MT and Lubombo with the largest deficit of 20,400 MT. This creates the need to strengthen post-harvest management to ensure that available produce is not lost through the value chain. Strengthening of supply chains also needs to be done, where food should be moved from areas of surplus to where it will be needed.

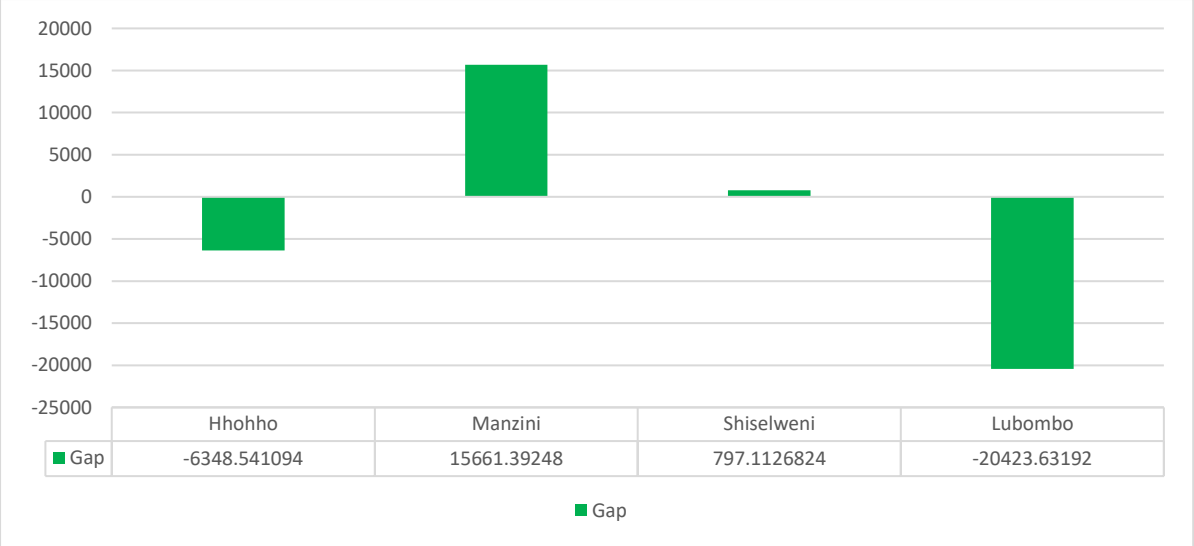

Figure 14: Regional Production Gaps 2021/22 season

3. CONCLUSIONS

i. The seasonal weather performance had a positive effect on potential projected food production in all agro-ecological zones. Rainfall was above average throughout the season. The temperature was optimal for all crops' growth throughout the season.

ii. Estimated area under maize cultivation is 75,000 ha: Manzini 30,300 ha; Shiselweni 18,800 ha; Lubombo 6,460 ha; Hhohho 19,000 ha. The rest of the crops contribute insignificant land under cultivation (8%), indicative of their importance to meet the national food requirements. Therefore, the country is highly reliant on imports to meet national requirements.

iii. Overall production has increased in the country, however available production is less than the National Requirement where the realised gap will be met through imports and Food Aid. Compared to last year maize production has increased by 27 per cent.

iv. Estimated **Maize production** is 127,000 MT: Manzini is 60,900 MT; Shiselweni 25,500 MT; Lubombo 6,600 MT and Hhohho 34,000 MT.

v. The Manzini region is projected to have a surplus of 15,000 MT, indicative that the region will be a source of maize for other regions. More attention should be given to the Lubombo and Hhohho regions as the regions are projected to be faced with a deficit of 20,400 MT and 6,300 MT respectively, largely influenced by poor productive conditions and urban livelihoods.

vi. Hhohho is projected to be faced with a deficit, indicating a need for further analysis on areas affected and the contributing factors to the shortfall. The lower lying/dry areas of the region are mostly affected.

vii. The country will require early preparedness actions to address food gaps in the lower lying/dry areas of the Lubombo and Hhohho regions which are projected to be faced with food gaps. Small pockets of areas under Shiselweni i.e., Matsanjeni South and Somntongo will require support.

viii. Livestock productivity is expected to be optimal given the favourable rainfall received over the season.

4. RECOMMENDATIONS

4.1 Crop production

i. An indepht study is required to have a full understanding of the current state of post-harvest handling facilities at the household level to inform the availability of increased production.

ii. Early planning by NMC and contracted Agro-dealers on the procurement and supply of selected farming inputs, and the window of the subsidy registration should open early before the planting season begins.

iii. Soil testing and analysis of field crops suitable for specific Agro-Ecological Zones. Build farmer's capacity on diseases tolerant varieties to ensure resilience in increased disease incidents. The promotion of the use of open-pollinated varieties should be prioritized.

iv. Training of small-holder farmers on the knowledge and effective use of pesticides and herbicides, early procurement and distribution of farmers inputs, winter and early ploughing of farmer's field and encourage farmers to pay early for the mechanization service (tractor hours).

v. Additional analysis needs to be undertaken under the Annual Vulnerability Assessment and Analysis to help inform programmes addressing food insecurity in the targeted areas.

4.2 Livestock

- Communities should utilize available funding from Regional Development Fund and other non-governmental agencies to fence their rangelands to inhibit illegitimate settlements in rangelands. This should include subdividing the rangelands into camps to ensure sustainable utilization of the grazing resources.
- Livestock farmers should collaborate when purchasing livestock drugs and feeds since they are cheaper when purchased in bulk.
- Farmers should also conserve hay while it is in abundance to avail forage to their livestock, especially during prolonged dry spells and dry seasons
- It is of essence for farmers to monitor the health of their livestock so to make swift and relevant actions if disease threats are identified.
- The control of Invasive Alien Species should be undertaken in areas mostly affected. Programmes should be developed with community to ensure ownership and accountability.

5. APPENDIX

5.1 APPEDIX 1: The eSwatini Composite Drought Index (eCDI)

The indices utilized for the eCDI are explained below:

a) **Standardized Precipitation Index (SPI) – across a three-month accumulation period.** *Data source:* Climate Hazards group Infrared Precipitation with Stations (CHIRPS). The SPI is used for detecting and characterizing meteorological droughts. Measuring the SPI across a relatively short time period of three months can help indicate immediate effects, such as reduced soil moisture and diminished flow in smaller waterways.

b) **Normalized Difference Vegetation Index (NDVI)**.
Data source: NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) mission (250 m resolution; every five days). NDVI is used to estimate the coverage of live, green vegetation across an area of land to indicate crop health. It works by calculating light reflected by plants. Healthy biomass reflects more near-infrared light, while stressed (important for drought detection) or sparse vegetation reflects more visible light.

c) **Day/night Land Surface Temperature (LST) amplitude anomaly.**
Data source: The Land Surface Temperature (LST) and Emissivity daily data (MODIS) are retrieved at 1km pixels by the generalized split-window algorithm and at 6km grids by the day/night algorithm. LST can be used as a proxy for evapotranspiration and soil moisture.

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