



agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

National Agro-meteorological Committee (NAC) Advisory on the 2023/24 summer season Statement from Climate Change and Disaster Risk Reduction 02 DALRRD 2023

02 November 2023

Considering the seasonal climate watch as produced by the South African Weather Service (SAWS), the following advisory guidelines are suggested. It is emphasized that these advisories are broad guidelines and should be interpreted considering the local aspects of the region such as soil types, cultural preferences, and farming systems. Depending on the region, the prioritization of the guidelines will differ. The basic strategy to follow would be to minimize and diversify risk, optimize soil water availability and to manage the renewable resources (rainwater and grazing) to uphold sound farming objectives. Long-term mitigation strategies should be considered by implementing techniques to enhance in-field water harvesting by reducing run-off and improving infiltration. Reduced tillage methods are very important in this regard, as is basin tillage, to capture rainwater in the drier areas. **The provinces should further simplify, downscale and package the information according to their language preference and if possible, use local media and farmers' days to disseminate the information. Users are advised to be on the look-out and act on the daily extreme weather warnings as well as the monthly advisory.**

I. CURRENT CONDITIONS

Figure 1

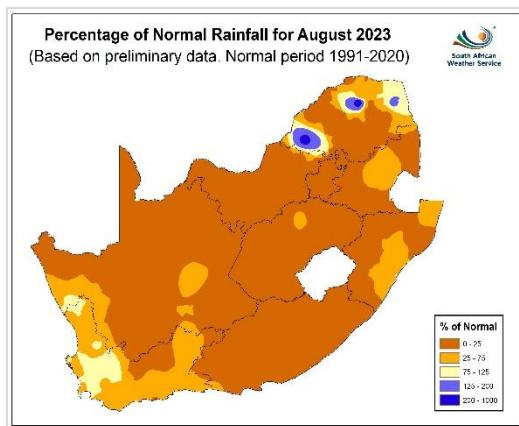


Figure 2

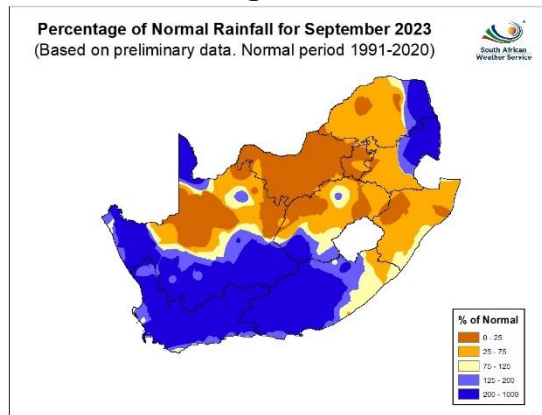


Figure 3

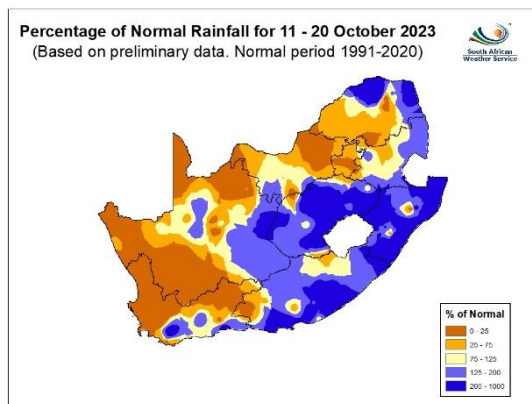
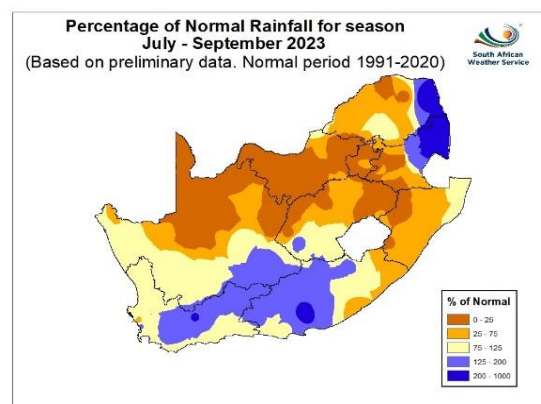
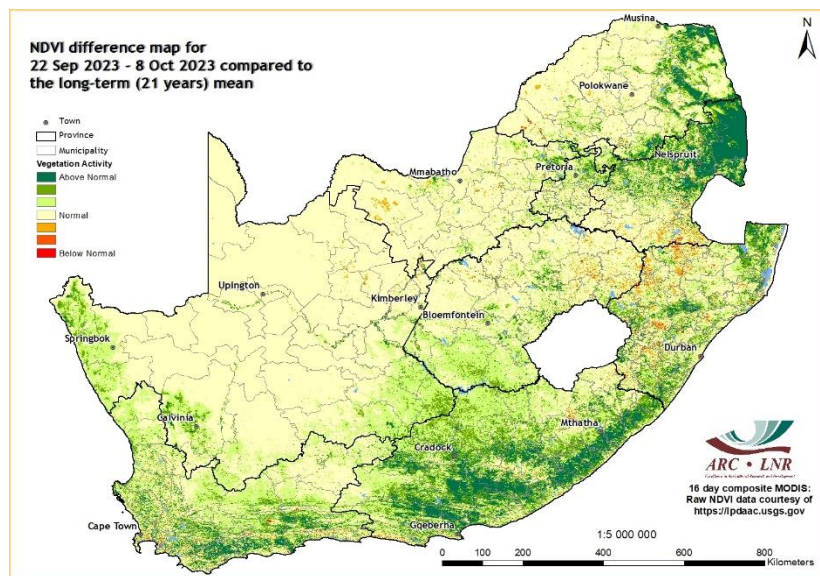


Figure 4



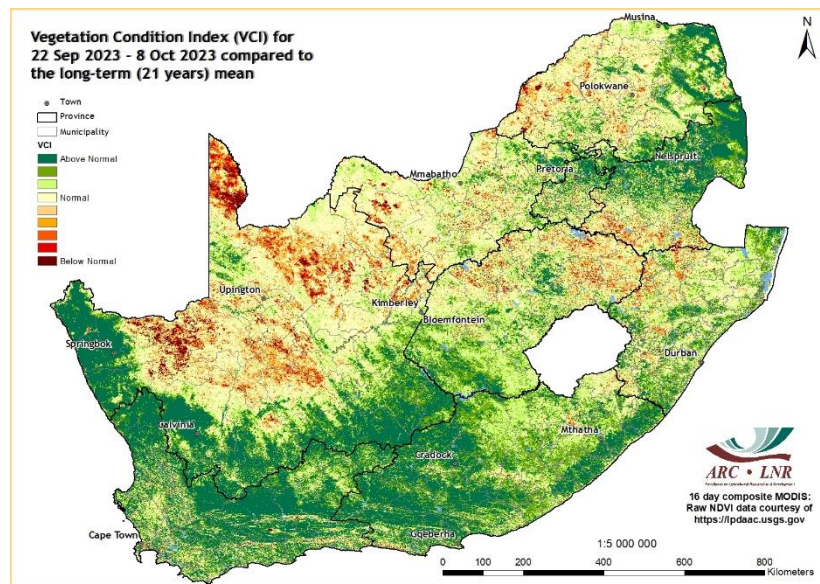
In August, rainfall was below normal over most areas with patches of above normal rainfall only evident in Limpopo Province (**Figure 1**). In September, above normal rainfall was received in the south-western regions of the country and the eastern parts of Limpopo and Mpumalanga (**Figure 2**). The remainder of the country received below normal rainfall. During mid-October above normal rainfall was received in the central and south-eastern part of the country and in the eastern parts of Limpopo and Mpumalanga (**Figure 3**). The remainder of the country received below normal rainfall. For the season July to September, normal to above normal rainfall was received in the south-western half of the country (**Figure 4**). The eastern parts of Limpopo and Mpumalanga received above normal rainfall. The rest of the country received below normal rainfall.

NDVI map: 22 September – 8 October 2023 compared to the long-term mean



Compared to the historical averaged vegetation conditions, the 16-day NDVI map shows that many parts of the country continue to experience normal to above normal vegetation activity.

VCI map: 22 September – 8 October 2023 compared to the long-term mean



The 16-day VCI map indicates that the central and northern parts of the Northern Cape experienced below normal vegetation conditions. Parts of the Free State, North West, Limpopo, KwaZulu-Natal, and southern areas of Mpumalanga also experienced below normal vegetation conditions. Above normal vegetation conditions were observed in other areas of the country.

II. CONDITIONS IN THE PROVINCES DURING SEPTEMBER/OCTOBER

Eastern Cape

The province received normal rainfall and farmers have prepared land for the planting season. The conditions of pasture range from reasonable to good but poor in some areas. The condition of livestock is fair to good. Rangeland status ranges from good to poor. Incidences of rabies have become a concern in Mngquma where new cases are reported weekly, and awareness campaigns are being conducted by officials to the community. The average level of major dams was at 88% in 2023, as compared to 74% of 2022.

Free State

Below normal rainfall was received in September but above normal in mid-October. Soil preparation for summer crops and fodder has started. The veld condition is slowly improving. Summer pastures are in good condition, especially those that are under irrigation. Livestock condition is in fair condition in most areas. Farmers are advised to continue with supplementary feeding, especially calcium for pregnant breeding stock. Veld fires were reported in Clarens, Harrismith, Winburg, Theunissen, Verkeerdevlei, Koffiefontein, and Tweespruit. Strong winds with hail damaged houses in Ficksburg, Harrismith and QwaQwa. There were snowfalls in October in the eastern Free State. Assessments are being conducted for all these incidents to determine the damages incurred. The average level of major dams has decreased as compared to previous year (89% in 2023; 94% in 2022).

Gauteng

Most parts received below normal rainfall, however, in some areas farmers are planting and transplanting crops. The livestock condition is fair to good especially in areas where livestock is provided with supplementary feed. In other areas the livestock condition is poor. Grazing is still in poor condition. Strong winds damaged infrastructure in Winterveld and Rooiwal. Assessments are being conducted. There were avian influenza cases in West Rand and Tshwane regions and many birds were culled. The average level of major dams has decreased to 92% as compared to 96% of 2022.

KwaZulu-Natal

The province received below normal rainfall in September but near normal along the coast. However, in mid-October rainfall was above normal. Farmers are repairing contours and preparing land. Livestock condition is fair to good, with conditions being poorer in the northern interior. Dipping and deworming schedules should be adjusted according to sound veterinary and/or Extension Officials advice. The veld and vegetation conditions across the province are good due to the extended rains and warm temperatures. The average level of major dams has decreased (81% in 2023; 85% in 2022).

Limpopo

The province received below normal rainfall, except for some parts of Vhembe district where above normal rainfall was received. Dry land and irrigation farmers have harvested cash crops and left their cropping lands to rest in preparation for the summer season. The grazing conditions range from reasonable to poor. The condition of livestock is good, especially in areas where grazing had greatly improved. Farmers have been advised to buy feed to supplement and to destock older animals to prevent mortalities and production loss. All the districts of the province have reported some infrastructure loss due to veldfire incidences except for Sekhukhune district. Assessments are being conducted to verify the extent of damages. The average level of major dams is 82%, the same as the previous year.

Mpumalanga

Below normal rainfall was received during the month of September but above normal in the east. Crops are in good condition. Livestock condition differs in different municipalities ranging from good

to fair while the veld condition is improving from the dry winter season. The average level of major dams has increased to 91% compared to 88% in the previous year.

Northern Cape

Above normal rainfall was received in the southern and western parts of the province in September. The central regions remain dry. Some areas continue to experience drought. Land preparation and planting commenced following rains received. Lucerne is also being harvested. The condition of sheep and goats is reasonable, and farmers have been advised to continue with supplementary feeding especially calcium for pregnant cattle where necessary. Rabies vaccination campaign was conducted in Upington. The veld is in reasonable to poor condition, and there were veld fires in John Taolo Gaetsewe, ZF Mgcawu and parts of Frances Baard district municipalities. Assessments are being conducted and awareness campaigns conducted in communities. The average level of major dams is lower at 82% as compared to 96% of 2022 during the same period.

North West

Below normal rainfall was received in September. Farmers have prepared land for planting. The veld and livestock are in reasonable to poor condition. The average level of major dams has increased to 80% when compared to 70% of 2022.

Western Cape

The province experienced above normal rainfall in September, leading to widespread flooding that caused extensive damage to agricultural production, affecting both crops and livestock. The Cape Winelands, Overberg, and West Coast Districts were particularly impacted. Temperatures remained within the normal range, with several cold fronts accompanying in cooler weather. High level snowfall was observed in various mountain ranges. The citrus harvesting season has been progressing well, and winter crops are in excellent condition. Both natural veld and planted pasture conditions are notably favourable, contributing to the overall health of livestock. The average water level in major storage dams has risen substantially to 94%, a significant increase from the previous year's 70%.

Information on level of dams is obtained from the Department of Water and Sanitation

Available: <https://www.dwa.gov.za/Hydrology/Weekly/Province.aspx>

Dam levels as at 2023/10/30

III. AGRICULTURAL MARKETS

Major grain commodities

According to ABSA, local maize prices trended lower for October compared to a month ago, this was supported by good production prospects on the back of good rains at the start of the production season as well as the slight appreciation of the Rand against the dollar. SAFEX wheat prices decreased by 6% compared to a month ago. SAFEX Soybean prices followed opposite price trends with soybean prices decreasing by 6% month on month.

Commodity	Future Prices ((2023/10/24) R/ton				
	Oct-23	Dec-23	Mar-24	May-24	Jul-24
White maize	4 132.00	4 093.00	4 146.00	4 130.00	4 130.00
Yellow maize	3 895.00	3 956.00	4 028.00	3 994.00	4 006.00
Wheat	6 192.00	6 106.00	6 251.00	6 320.00	6 380.00
Sunflower	8 840.00	8 927.00	8 870.00	8 553.00	8 664.00
Soybeans	9 259.00	9 320.00	9 280.00	8 620.00	8 790.00

SAGIS: 2023/10/26

IV. SADC REGION

The September Famine Early Warning Systems Network (FEWS NET) reported that in the recently concluded main season harvest is supporting Minimal (IPC Phase 1) outcomes in northern surplus-producing areas of Zimbabwe, central and northern areas of Mozambique, Madagascar, and Malawi, and the northern province of DRC as households access food from their 2023 harvested stocks and income from crop sales. However, Stressed (IPC Phase 2) outcomes are widespread in areas where poor household food stocks are gradually depleting, and households increasingly depend on market purchases where food prices remain largely higher than the five-year average. However, Crisis IPC (Phase 3) outcomes are present in parts of the region that recorded poor harvests following the impact of Tropical Cyclone Freddy and prolonged dry spells, particularly in southern Malawi, central and southern Mozambique, and parts of southern Zimbabwe, and conflict in eastern DRC.

[The Integrated Food Security Phase Classification (IPC) is a set of standardized tools that aims at providing a "common currency" for classifying the severity and magnitude of food insecurity.]

Source: <http://www.fews.net/southern-africa>

Summary of the reports

Land preparations for summer crops have been completed in most areas. The veld and livestock are in reasonable to poor condition in general. Strong winds damaged infrastructure in Gauteng. There were veld fires in the Northern Cape, Limpopo and Free State. Flooding in the Western Cape resulted in damages to agricultural production, affecting both crops and livestock. Assessments are being conducted to verify the extent of damages of the veld fires and floods. Avian flu continues to impact the sector negatively. The average level of major dams is above 80% in all provinces.

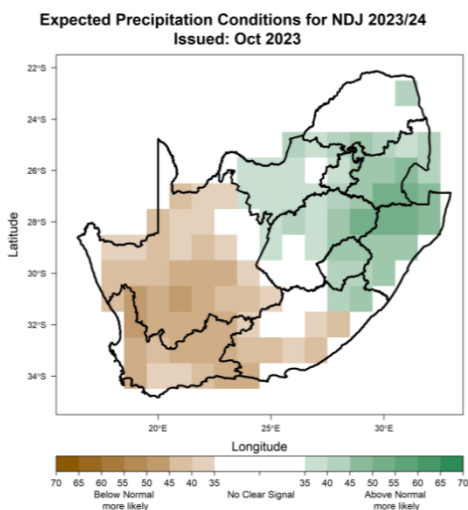
V. MONTHLY CLIMATE OUTLOOK

Seasonal Climate Watch: November 2023 to March 2024

State of Climate Drivers

The El Niño-Southern Oscillation (ENSO) is currently in an El Niño state and according to the latest predictions is expected to persist through most of the summer months. ENSO's typical impact on Southern Africa is in favour for generally drier and warmer conditions during the summer seasons from October to March. However, current global forecasts indicate a great deal of uncertainty for the typical drier conditions that South Africa experiences during typical El Niño seasons, in particular over the eastern parts of the country.

Figure 1 – Rainfall



The South African Weather Service (SAWS) multi-model rainfall forecast indicates abovenormal rainfall for the north-east of the country during Nov-Dec-Jan (NDJ), Dec-Jan-Feb (DJF) and Jan-Feb-Mar (JFM) with below normal rainfall predicted for the central and south-western parts of the country. Predictions still favour above normal rainfall conditions over the north-eastern parts of the country, even with an El Niño in place. For most of the areas where above

normal rainfall is predicted, these probabilities are low. Caution is advised at this point as the El Niño effect might still manifest its influence in the next few months and change the outlook of the rainfall forecast for mid- and late-summer.

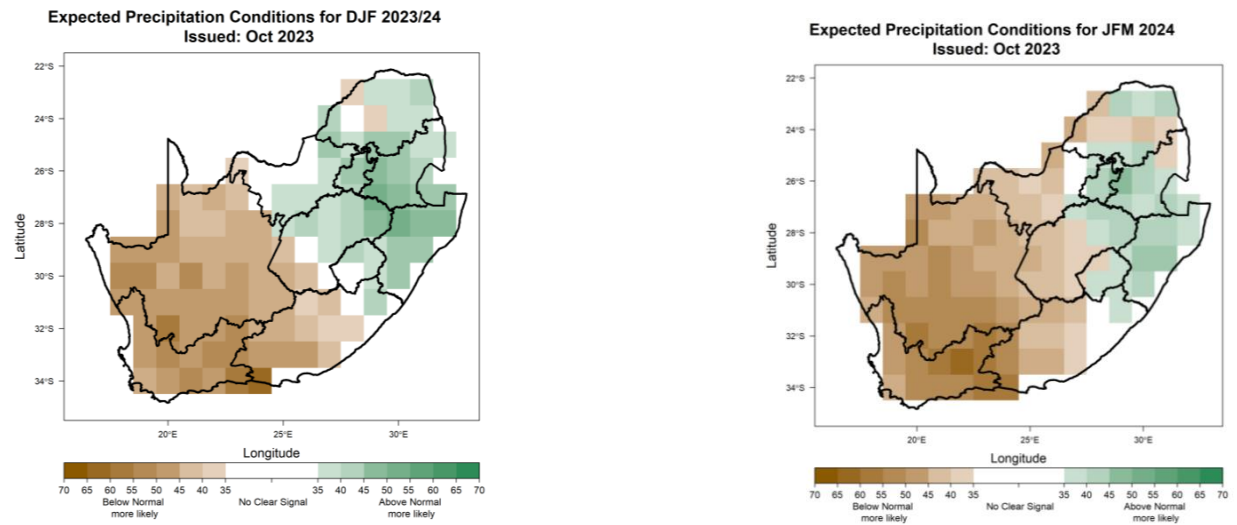
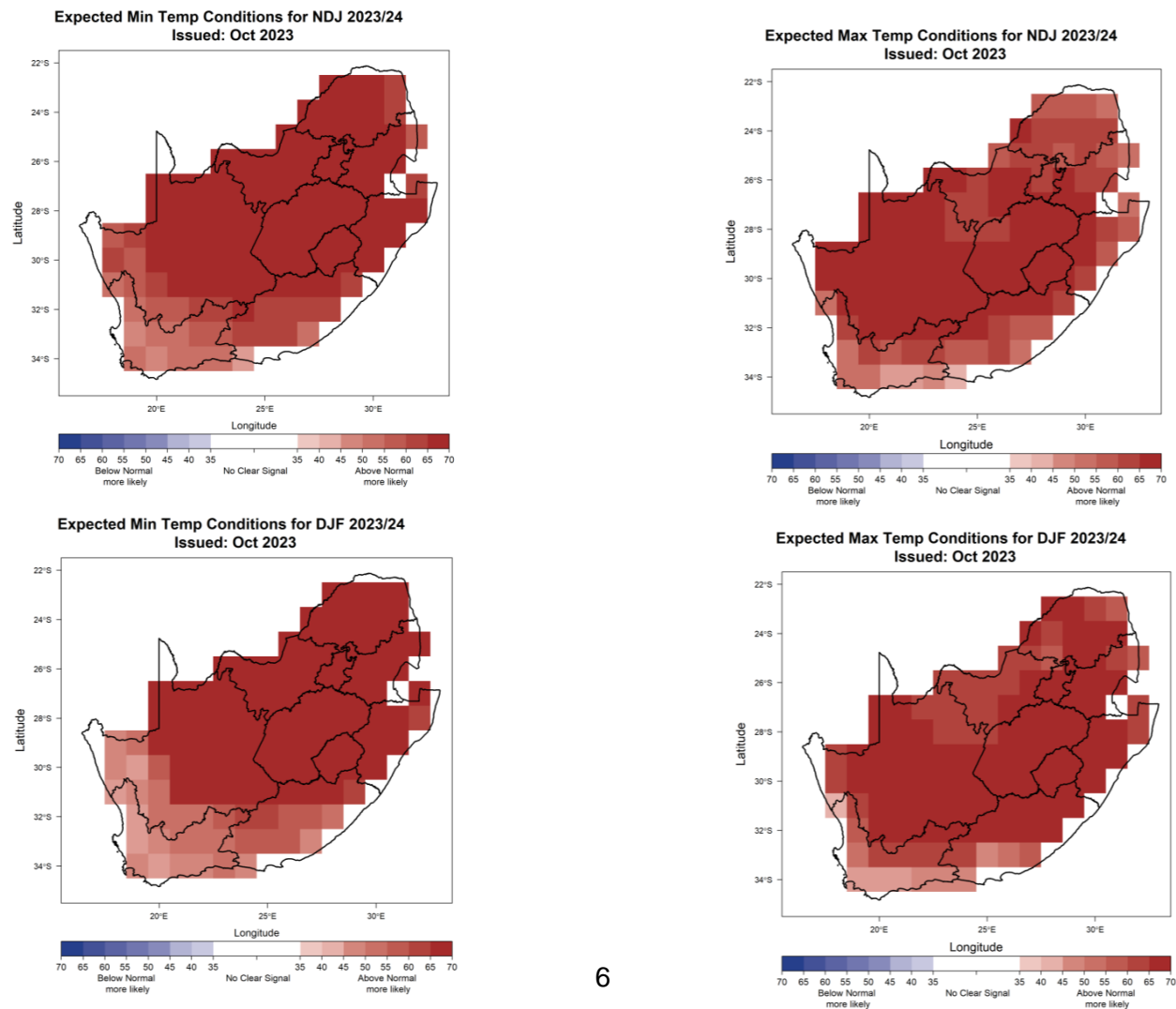
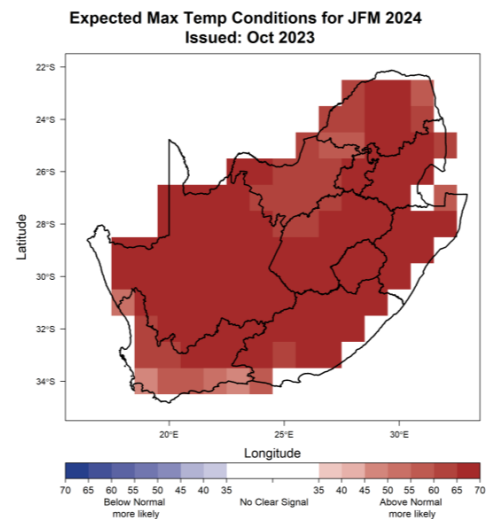
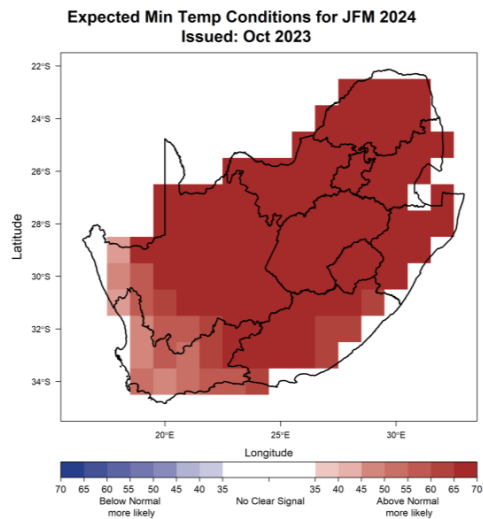


Figure 2 – Minimum and Maximum temperatures





Minimum and maximum temperatures are expected to be mostly above normal countrywide for the forecast period.

In summary, above normal rainfall is expected for the north-eastern part of the country during summer although these probabilities are low. The remainder of the country can anticipate below normal rainfall. Both minimum and maximum temperatures are expected to be above normal. Farmers are encouraged to continually check updates i.e., seasonal forecasts and utilize 7-day weather forecasts for short term planning.

With the above forecast in mind, the following strategies are recommended:

VI. SUGGESTED STRATEGIES

A. Rain-fed crop production

Soil choice:

- Choose suitable soil type.
 - ✓ Suitable soil and land use management practices that would control wind and water erosion in cultivated lands are suggested.
- Roughen the soil surface to enhance rain water penetration and reduce runoff.
- Minimise compaction by reducing the passing of heavy machinery in the field.

Land preparation:

- Avoid where possible soils with pronounced plough pans.
- For sequestration of atmospheric carbon in the soil, for increased biological activity, and to better conservation of water, zero or minimum tillage is advised were possible.
- Do not expand land under crop production unnecessarily.
- Prioritise fallow land.

Crop choice and planting:

- Choose short season, locally adapted cultivars as a precautionary measure.

- Provide flexibility and diversification.
- Stick to normal planting dates if appropriate and follow the weather and climate forecast regularly.
- Consider staggered planting-spreading over weeks.
- Do not experiment with new and unknown cultivars and also avoid unnecessary capital investments.
- Always practice crop rotation.
- Consider intercropping for improved soil structure and pest/diseases control.
- Planting in a controlled environment (e.g. green house) is advisable where possible.

Crop management:

- Adjust planting density accordingly.
- Consider mulching to minimise evaporation.
- Control weeds regularly.
- Consider a conservative fertilizing strategy during dry conditions.
- Consider organic fertilization.
- Scout for pests and diseases regularly and control where necessary.
- Wheat: The strategy proposed is to scout the plants regularly, correctly identify any pests or diseases and make informed decisions regarding reaction.

B. Irrigation farming

- Remove all weeds containing seeds but keep other vegetative rests on the land because that will reduce evaporation.
- Check and repair all tools and machinery especially where there are water leaks.
- Be aware of the state of regional water resources and whether it will be adequate for irrigation.
- Timing of irrigation - rather late afternoon or early evening to reduce evaporation.
- Manage irrigation so that the plant receives water only when needed.
- Consider using drip irrigation as it saves water by allowing it to drip slowly straight to the roots.
- Avoid over irrigation because that can create problems e.g., water logging and diseases.
- Adhere to water restrictions when issued.

C. Domestic and home garden water use

- Conserve existing water supplies.
- Eradicate water weeds.
- Limit water waste and losses.
- Repair leaking pipes.
- Re-use water and retain high quality.
- Harvest water during rainy days.

D. Stock farming

- Keep stocking rates conservative and even lower to protect grazing.
- Never exceed carrying capacity of plant associations.
- Provide lots of drinking points where possible.
- Provide additional fodder and enhance nutritional value of dry grazing/feed with licks:

- Phosphorous deficiency is a major problem.
- Licks should (in most cases) provide:
 - Phosphorous.
 - Urea (to help with the break-down of dry vegetation).
 - Salt.
 - Molasses.
- Deficiencies differ according to vegetation composition/soil properties/climate.
- Analysis of vegetation/soil samples can benefit the decision for supplement composition.
- Sell mature, marketable animals (to help prevent overstocking/ overgrazing).
- If grazing is in danger, herd animals into pens where different animals can be segregated and fed separately.

E. Grazing

- Subdivide your grazing area into camps of homogeneous units (in terms of species composition, slope, aspect, rainfall, temperature, soil and other factors) to minimise area selective grazing as well as to provide for the application of animal management and veld management practises such as resting and burning.
- Determine the carrying capacity of different plant associations.
- Calculate the stocking rate of each, and then decide the best ratios of large and small animals, and of grazers or browsers.
- Provide periodic full growing-season rests (in certain grazing areas) to allow veld vigour recovery to maintain veld productivity at a high level as well as to maintain the vigour of the preferred species.
- Do not overstock at any time to avoid overgrazing.
- Eradicate invader plants.
- Periodically reassess the grazing and feed available for the next few months and start planning.
- Spread water points evenly.

F. Pests and diseases

Crops

- Fruit crop farmers should regularly scout for pests and diseases and contact the local agricultural office for advice on best control measures. Farmers should further implement phytosanitary measures.

Livestock

- Follow the vaccine routine and consult with the local veterinarian.

G. Veld fires

Provinces and farmers are advised to maintain firebreaks in all areas. An owner of the land who is obliged to prepare and maintain a firebreak must ensure that, with due regard to the weather, climate, terrain and vegetation of the area, the following is taken care of in terms of installing firebreaks (Chapter 4 of the National Veld and Forest Fire Act No. 101 of 1998):

- It must be wide enough and long enough to have a reasonable chance of preventing a veld fire from spreading to or from neighbouring land.
- It does not cause soil erosion and

- It is reasonably free of flammable material capable of carrying a veld fire across it.
- Firebreaks may be temporary or permanent.
- Firebreaks should consist of fire-resistant vegetation, non-flammable materials, bare ground or a combination of these.
- Firebreaks must be in such a way as to minimize risk to the resources being protected.
- Erosion control measures must be installed at the firebreak.

Firebreaks can be made through the following methods:

- Mineral earth firebreak:
 - Through ploughing, grading, other earth movement.
- Use of herbicides.
- Use animals to overgraze specifically to minimise fuel.
- Strategic placement of burned areas,
 - Not to be done on days with fire hazard (windy and dry/hot).
- Plant fire resistant plants.
- Plant species selected for vegetated firebreaks must be non-invasive and capable of retarding the spread of fire.

Maintaining firebreaks:

- Mow, disk, or graze vegetative firebreaks to avoid a build-up of excess litter and to control weeds.
- Inspect all firebreaks for woody materials.
- Inspect firebreaks at least annually and rework bare ground firebreaks as necessary.
- Repair erosion control measures as necessary.
- Access by vehicles or people must also be controlled.
- Bare ground firebreaks, which are no longer needed must be stabilized i.e.
 - Sow grass.
 - Mulch.

What to do when conditions favorable for veld fire are forecast:

- Prohibit fires in the open-air during periods of high fire hazard and establish a fire control committee.
- To control fires, an alarm system, firefighting teams, and beaters must be organized in advance and plans prepared.
- Livestock should be moved out of grazing land to a safe place.

What to do during a veld fire:

- Water is generally not available in sufficient quantities or at adequate pressure for the control of major fires; however, sand, or other loose mineral soil material can be an effective method of control.
- Tree branches can be used to beat fire.

H. Flooding

Heavy rainfall raises the water level. When the water level is higher than the riverbanks or the dams, water flows out from the river and flooding occurs.

Preventive measures:

- Construction of proper drainage systems. Drains must be cleaned constantly as they ensure proper water irrigation.

- Mechanical land treatment of slopes such as contour ploughing or terracing to reduce the runoff coefficient.
- Construction of small water and sediment holding areas.
- Construction of floodways (man-made channels to divert floodwater).
- Terracing hillsides to slow flow downhill.
- Water pumps in rivers likely to be affected should be lifted from the riverbanks when a warning for heavy rain has been issued.

What to do when flooding is forecasted:

Avoid:

- Cutting grass in the rainy season as this can result in nutrient depletion.
- Applying fungicides and pesticide (plants and animals).
- Applying Nitrogen fertilizer as this can burn plants. Dumping fertilizer in one spot can cause the roots below the fertilizer to be burnt and die.
- Irrigation, this can result in waterlogging leading to nutrient depletion.

Other measures to implement:

- Cover Urea licks to prevent them from becoming toxic.
- Provide shelter for animals (young ones can die easily).
- Leave cultivated areas coarse.
- Relocate/ move animals to a safe place.
- Be extra cautious for pest and diseases after rain has fallen, as high moisture content and high temperatures may trigger these.
- Assume that flood water contains sewage and might be harmful for human and livestock consumption.
- Before leading livestock across a river, check whether the water level is rising. This is especially necessary if it is already raining.

Erosion

Erosion is the wearing away of soil and rocks by the action of natural forces, for example, water and wind. The loose and dissolved materials move from one location to another. Erosion therefore may reduce agricultural production potential.

Preventative measures for erosion:

- Do not burn vegetation.
- Keep vegetation cover – e.g., shrubs, grass, small trees; a cover crop may be used to increase organic material and increase soil structure.
- Plant permanent vegetation e.g., perennial grasses where possible.
- Maintain any remaining vegetative cover, e.g. maize stubble during winter wheat sowing, as it acts as a blanket, traps eroded particles and reduces the wind speed at ground level.
- Plant evergreen trees growing densely and perpendicular to the typical wind direction during winter and spring as wind breaks.
- Increase water infiltration by correct management of soil e.g. reduce frequency of plough and use minimum tillage.
- Mulch: to increase infiltration, reduce evaporation, and reduce raindrop impact as well as wind erosion.

- Construct retaining walls around gardens.
- Avoid soil compaction by roughening the soil surface,
 - Furrows and tillage ridges can trap loose soil.
- Farm along contours as this reduces slope lengths.
- Prevent overgrazing.
- Practice conservation farming
 - Maximize retention of crop residues.

I. Heat stress – bad for productivity

- Signs of heat stress:
Bunching in shade, high respiratory rates, open mouth breathing.
- What to do:
 - Offer shade.
 - Offer water- keep good quality water in front of animals.
 - Wet with sprinklers/fire hose.
 - Water ground.
 - Avoid overworking animals.
 - Control insects. Biting insects, such as flies can further stress livestock and interrupt their cooling. If pastures or buildings draw insects to livestock during times of extreme heat, provide proper insecticides or considering relocating your livestock.

Poultry

- Provide cool, clean, quality drinking water to your poultry. Water will help keep your birds cool.
- Always make sure your poultry is in a well-ventilated area in which there is nothing to obstruct the airflow.
- Provide feed during the coolest part of the day.
- Supplement drinking water with electrolytes.
- Reduce the number of birds kept in a house or in an area.
- Avoid excessive activity during the hottest part of the day.

J. Severe thunderstorms/flash floods

Building resilience:

- Identify resources/facilities within 50 km that can be utilized and can be of help during emergencies.
- Be sure to have legal and adequate markings to identify your livestock.
- Stay well informed about livestock in your possession and conduct an inventory after the event.
- Monitor television and local radio stations for information regarding severe storms/flash floods in your region.
- Identify natural or built areas/shelters where animals can be kept during such conditions:
 - Sufficient height to be above water level,
 - Sheltered from strong winds and wetness,
- Restrict access to high-risk areas such as low-lying fields close to streams.
- Store food in safe areas sheltered from wetness to be used after storms/flash floods.
- Keep pesticides and other chemicals in areas where water will not be contaminated during extreme rainfall/storm events.

- Inspect/repair farm dams before rainy season, and after each event.

The veld and livestock are in reasonable to poor condition in most areas. Land preparations have been concluded for summer crops in most areas. Above normal rainfall is anticipated during summer in the north-eastern parts of the country, although these probabilities are low. The central and south-western parts of the country can expect below normal rainfall. Temperatures are expected to be above normal countrywide. **However, the seasonal forecast emphasizes caution as the El Niño effect might still influence the weather patterns thereby change the seasonal outlook for the mid and late summer. Farmers are encouraged to continually monitor these conditions through the extended weather forecast for short-term to medium-term planning.**

Considering the seasonal forecast and accompanying caution, farmers are advised to approach the season with vigilance. Dryland farmers should wait for sufficient moisture before planting. Areas that have been constantly experiencing dry conditions should prioritise drought tolerant cultivars. In regions that are in reasonable condition, farmers are advised to prepare in line with the expected conditions i.e., in line with the seasonal forecast. However, they should not expand planting land unnecessarily. Moreover, farmers should consider short season cultivars. Farmers should also note that rainfall distribution continues to remain a challenge, therefore not all areas might receive the anticipated above normal rainfall that is well distributed.

Farmers are also advised to put measures in place for pests and diseases associated with wet and hot conditions as above normal rainfall and high temperatures are anticipated, especially in the north-eastern parts of the country. Farmers using irrigation should comply with water restrictions in their areas. Farmers must continually conserve resources in accordance with the Conservation of Agricultural Resources Act 1983, (Act No. 43 of 1983). Re-emphasizing the cautionary statement concerning the possible influence of the El Nino later in the season, it is critical that all farmers follow the weather forecast regularly to make informed decisions.

Livestock should be kept in balance with carrying capacity of the veld and provided with additional feed such as relevant licks. Also, livestock should be provided with enough water points on the farm as well as shelter during bad weather conditions. The winter rainfall areas will begin drying out; therefore, the construction and maintenance of fire belts should be prioritized as well as adherence to veld fire warnings. Episodes of flooding resulting from rain bearing weather systems are likely and preventative measures should be in place. Farmers are encouraged to implement strategies provided in the early warning information issued.

The users are urged to continuously monitor, evaluate, report, and attend to current Disaster Risk Reduction issues. It is very important and mandatory for farming communities to always implement disaster risk measures and maintain good farming practices.

The climate advisory should be disseminated widely. Users are advised to be on the look-out and act on the daily extreme weather warnings as well as the monthly advisory. Information sharing groups are encouraged especially among farming communities for sustainable development. In general, effective communication among all stakeholders in the sector will enhance effective implementation of risk reduction measures/early warning services. It is the responsibility of farmers to implement disaster risk measures.

The Disaster Management Act 2002, (Act No. 57 of 2002) urges Provinces, individuals, and farmers, to assess and prevent or reduce the risk of disasters using early warning information. The current advisory can be accessed from the following websites: <https://www.dalrrd.gov.za/>.

For more information contact:-

<p>DALRRD, Directorate: Climate Change and Disaster Risk Reduction Private Bag X250 Pretoria 0001 Tel: 012 319 6775/ 6794 Email: MittaA@Dalrrd.gov.za</p> 	<p>SAWS: Private Bag X097 Pretoria 0001 Tel: 012 367 6000 Fax: 012 367 6200 http://www.weathersa.co.za</p> 	<p>ARC: Institute for Soil, Climate and Water Private Bag X79 Pretoria 0001 Tel: 012 310 2500 Fax: 012 323 1157 Email: iscwinfo@arc.agric.za, http://www.arc.agric.za</p> 
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