



## 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 winter season Statement from Climate Change and Disaster Risk Reduction 11 DALRRD 2022

02 August 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

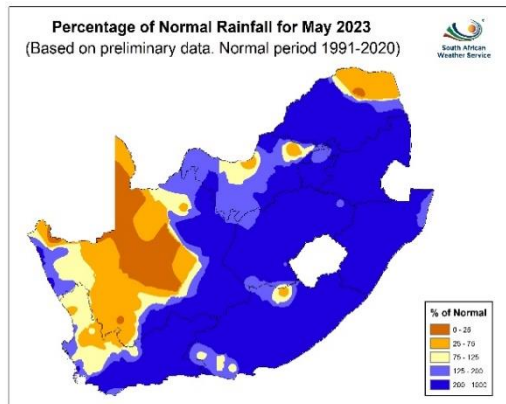


Figure 2

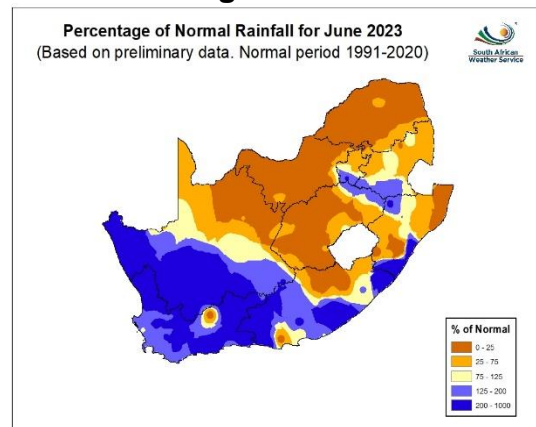


Figure 3

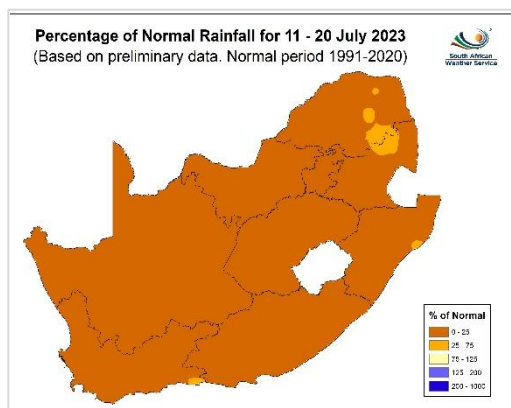
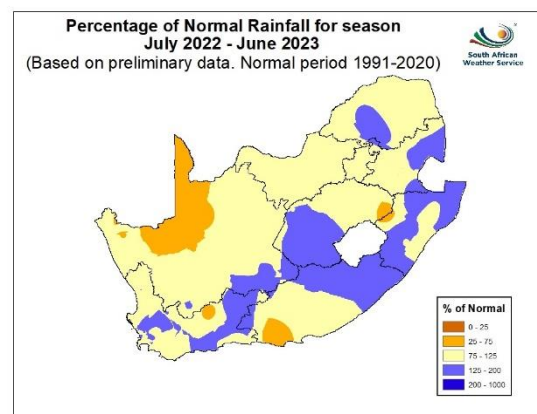
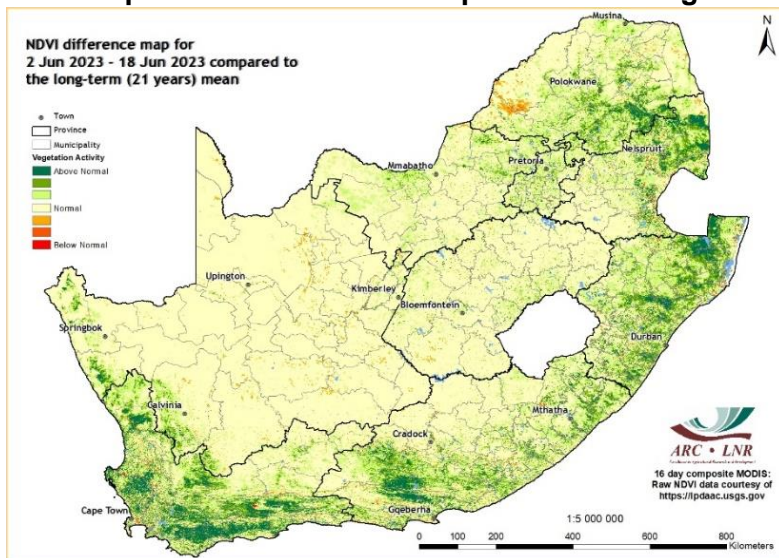


Figure 4



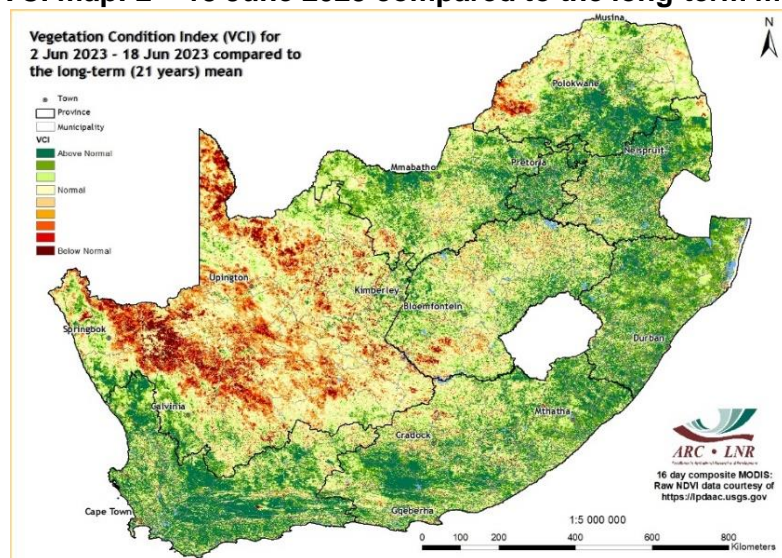
During May, above normal rainfall was received over most parts of the country except for the western parts that received below normal rainfall (**Figure 1**). In June, rainfall decreased resulting in the south and south-western areas of the country receiving above normal rainfall while most of the central and northern regions received near normal to below normal rainfall (**Figure 2**). Mid-July received below normal rainfall countrywide (**Figure 3**). For the season July 2022 – June 2023, near normal rainfall was received over the much of the country with above normal rainfall only over the southern parts of Free State, eastern parts of Eastern Cape as well as parts of Western Cape, KwaZulu Natal, Mpumalanga and Limpopo Provinces (**Figure 4**). ZF Mgcawu District Municipality of the Northern Cape received below normal rainfall.

#### NDVI map: 2 – 18 June 2023 compared to the long-term mean



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

#### VCI map: 2 – 18 June 2023 compared to the long-term mean



The 16-day VCI map for June indicates that most parts of the Northern Cape and the western parts of Limpopo experienced below normal vegetation conditions. The remainder of the country experienced mainly above normal vegetation conditions.

## **II. CONDITIONS IN THE PROVINCES DURING JUNE/JULY**

### **Eastern Cape**

The province received above normal rainfall but below normal in the northern parts in June which improved the Kouga dam in the Sarah Baartman District after years of being critically low. Vegetables and citrus fruit are in very good condition in the Sundays River Valley Local Municipality and farmers were harvesting citrus. In the Blue Crane Local Municipality (Sarah Baartman District) soya plantings were harvested in the Cookhouse and Klipfontein area and farmers have begun to plant wheat. The conditions of livestock range from fair to good due to improved veld. The pasture, rangeland and grazing veld are in good condition. Very cold conditions and heavy snow occurred along the Drakensberg mountains in the Joe Gqabi District. The average level of major dams has increased to 81% in 2023, as compared to 70% of 2022.

### **Free State**

Very cold and wet conditions were experienced in most parts of the province. The veld and livestock are in fair condition. Farmers are advised to continue with supplementary feeding, especially calcium for pregnant cattle and dosing against internal parasites. Winter pastures are in good condition, especially those that are under irrigation. Winter pruning is underway especially in the eastern Free State. It is anticipated that yield of apples will be higher due to cold units being experienced. Veld fires have been reported in Zastron, Wepener, Dewetsdorp, Bloemfontein, Botshabelo, Viljoenskroon, Thaba Nchu, Ladybrand, Clocolan, Winburg, Senekal, Bethlehem, Steynsrus and Reitz. There were also reports of cattle mortalities as a result. The average level of dams has decreased as compared to previous year (98% in 2023; 100% in 2022).

### **Gauteng**

Below normal rainfall was received but above normal in the south. Some winter vegetables have been impacted by frost and farmers have been advised to cover their crops as a strategy. All maize is in the final stage of growth. The veld and livestock are in reasonable condition and farmers have been advised to provide supplementary feed. There were veld fires in the Germiston region. African horse sickness, brucellosis, African swine fever, Highly Pathogenic Avian Influenza, Newcastle disease and sheep scab cases were reported. They have all been attended to. The average level of major dams has decreased to 97% as compared to 101% of 2022.

### **KwaZulu-Natal**

Weather conditions typical of mid-winter prevailed, with winter rains received over most of the interior of the province. The vegetation conditions have improved compared to the same period during the previous year. Farmers are establishing winter pastures. Due to winter rains the moisture content of the soil is high; and many farmers have made bales and hailage. At various locations across the province crops have been affected by waterlogging. Summer crops have already been harvested. The winter rains did not result in any losses during the harvesting process. Land preparations had taken place for winter crops. The area that was to be planted with wheat is less because of the continued wet conditions that will impact on quality. Livestock conditions are fair to good across the province. Farmers have been advised to continue with winter feeding schedules. Heavy rains were reported in some parts of the province which resulted in damages to infrastructure and assessments have been conducted. The average level of major dams remained the same as the previous year at 90%.

### **Limpopo**

The province received below normal rainfall. Farmers under irrigation are harvesting their cash crops, while dry land farmers have planted winter crops, and others have not cultivated land to allow it to rest in preparation for the summer season. The conditions of livestock have improved due to improved grazing lands. Farmers are advised to buy feeds to supplement and to destock older animals to

prevent mortalities and production loss, especially in areas where the veld condition has not improved. Veld and grazing conditions were reported to be fair within the province. An incident of veldfire was reported in Vhembe District and assessments are underway. The average level of major dams is at 88%, remaining at the same level as the previous year during the same period.

### **Mpumalanga**

Below normal rainfall was received. Planted crops and grains are in good condition, while grain farmers are harvesting. Livestock is in good to fair condition while the condition of the veld has deteriorated due to winter conditions. The average level of major dams has increased to 98% 2023 compared to 95% in 2022.

### **Northern Cape**

**NIL REPORT.**

### **North West**

Rainfall received was below normal. The veld and livestock are in reasonable to good condition. Veld fires were reported in Dr Kenneth Kaunda District. The average level of major dams has increased to 89% when compared to 81% of 2022.

### **Western Cape**

Above normal rainfall was received across the entire province during June. Heavy rainfall caused flood damage to crops and agricultural infrastructure in the West Coast, Cape Winelands, and Overberg Districts. Assessments have been conducted. Temperatures were normal for June. The floods hit the citrus harvesting season very hard and delayed harvesting. Winter crops are in good condition. However, water-logged fields due to the heavy rains prevented farmers from applying fertilizers and spray fungicides. Veld and planted pasture conditions is good. The livestock condition is good. An outbreak of high pathogenicity avian influenza occurred. The average level of major storage dams has increased to 91% in 2023 as compared to 63% in 2022 during the same period.

**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 2023/07/31**

## **III. AGRICULTURAL MARKETS**

### **Livestock domestic markets**

ABSA stated that Class A carcass prices continue to remain under pressure. Over the past months, load shedding and higher interest rates were key factors that impacted retail demand negatively. Lamb carcass prices continue to be under pressure whilst mutton prices showed notable price recovery over the past month. Pork local prices recorded different trends, there have however been double-digit increases from the lows experienced during the winter months last year. Poultry local prices have traded sideways over the last weeks. IQF prices did however record a modest decline over the past month on the back of a firmer Rand.

<b>Producer prices for selected livestock commodities</b>	<b>Beef</b>	<b>Mutton</b>	<b>Pork</b>	<b>Poultry</b>
Open market: Class A / Porker / Fresh whole birds (R/kg)	45.60	-	29.90	35.47
Open market: Class C / Baconer / Frozen whole birds (R/kg)	46.4	65.78	29.04	35.20
Contract: A2/A3* / IQF (*includes fifth quarter) (R/kg)	48.06	88.10	-	33.62
Import parity price (R/kg)	-	-	-	-
Weaner Calves / Feeder Lambs (R/kg)	33.37	43.19	-	-

**ABSA: 27/07/2023**

### **Major grain commodities**

According to ABSA, SAFEX maize prices showed a reduced-price trend, falling by 0.3% for yellow maize and white maize respectively. Wheat prices followed the global increasing price trend while Soybean prices followed a decreasing price trend.

	<b>Future Prices (2023/07/25) R/ton</b>				
<b>Commodity</b>	<b>Aug-23</b>	<b>Sep-23</b>	<b>Dec-23</b>	<b>Mar-24</b>	<b>May-24</b>
White maize	3 792.00	3 837.00	3 951. 00	4 006.00	4 011.00
Yellow maize	3 828.00	3 886.00	4 006.00	4 056.00	4 050.00
Wheat	6 848.00	6 780.00	6 467.00	6 625.00	n/a
Sunflower	9 450.00	9 605.00	9 790.00	9 380.00	n/a
Soybeans	8 777.00	8 879.00	9 078.00	9 007.00	8 300.00

**SAGIS:27/07/2023**

## **IV. SADC REGION**

The July Famine Early Warning Systems Network (FEWS NET) reported that most poor households in Mozambique continue to rely on food stocks from the main 2023 harvest, harvests from the second season, and horticultural production. However, Stressed (IPC Phase 2) outcomes are present in areas where the 2023 harvest was below average and poor household purchasing power is limited by the high cost of living. Area-level Crisis (IPC Phase 3) outcomes are present in Cyclone Freddy-affected areas in central Mozambique as poor households are likely engaging in coping strategies indicative of Crisis (IPC Phase 3) to minimize food consumption gaps following a poor to failed harvest and limited access to income as livelihoods recover. In Cabo Delgado, Crisis (IPC Phase 3) outcomes are present in conflict-affected areas, with Stressed (IPC Phase 2) outcomes in areas receiving humanitarian assistance. In Cabo Delgado, Niassa, and Nampula, around 672,150 people received humanitarian food assistance (HFA) from the Food Security Cluster (FSC) partners during the May/June cycle. However, distributions in Muidumbe were affected by security restrictions in some locations.

FEWS NET further reported that maize grain prices remain largely above average, likely reflecting the slow entry and availability of maize grain in local markets following delayed harvests and crop losses during the 2022/2023 agricultural season. From May to June, maize grain prices decreased by 17 to 25 percent in Maputo, Lichinga, and Montepuez, remained stable in Xai-Xai and Maxixe, and increased by 6 to 14 percent in Mocuba, Chókwe, Mutarara, and Angónia. Compared to last year, maize grain prices are 12 to 84 percent higher than in June last year, except in Maputo and Maxixe markets, where maize grain prices remain stable. Relatedly, maize grain prices are 20 to 66 percent

higher than the five-year average. The high maize prices are keeping poor household purchasing power lower than normal, particularly households that remain dependent on market purchases in urban and peri-urban areas and where households had a limited harvest.

[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

Winter crops have been planted and are in reasonable to good condition. The veld and livestock are in reasonable condition in most areas. Heavy rains resulted in damages to infrastructure in KwaZulu-Natal and the Western Cape provinces, and assessments were conducted. There were veld fires in Free State, Limpopo, Gauteng, and North West Provinces. The average level of major dams has drastically improved in the Western Cape.

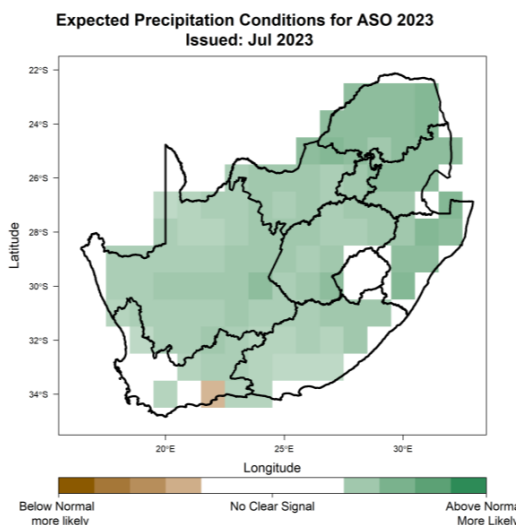
## IV. MONTHLY CLIMATE OUTLOOK

### Seasonal Climate Watch: August to December 2023

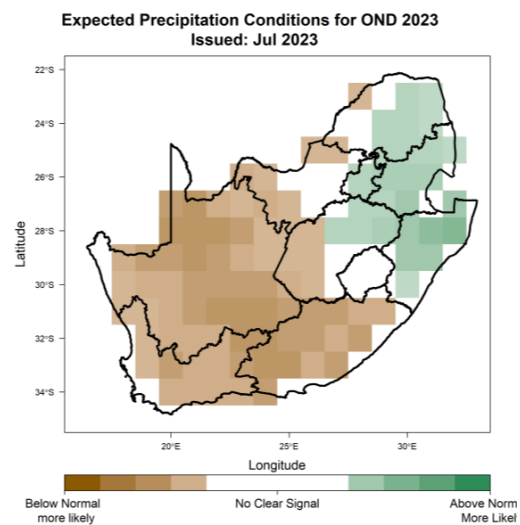
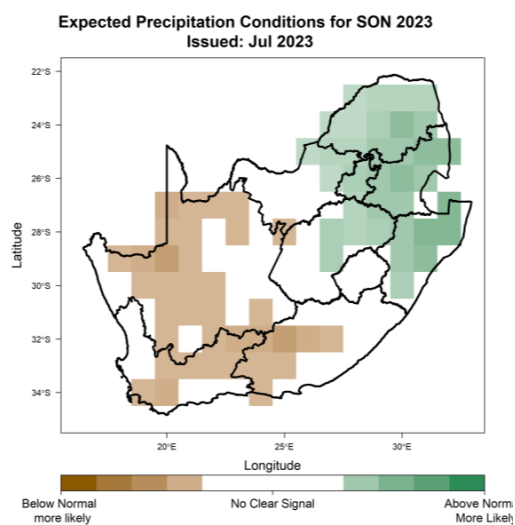
#### State of Climate Drivers

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 impact is still limited for the initial forecast period, with early summer forecasts indicating to manifest its impact during the summer period.

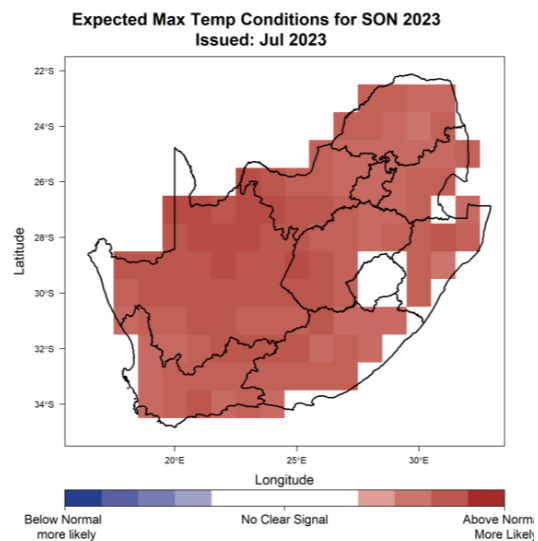
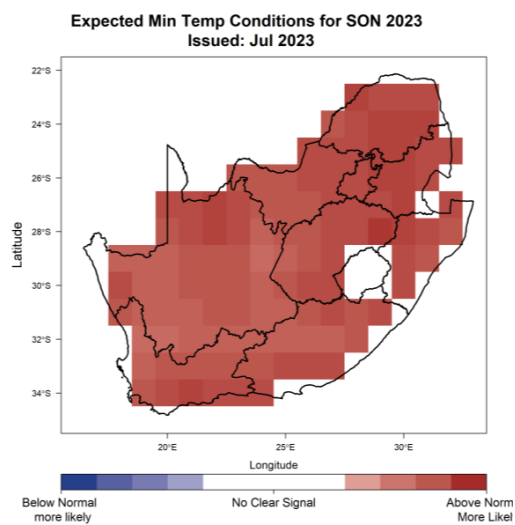
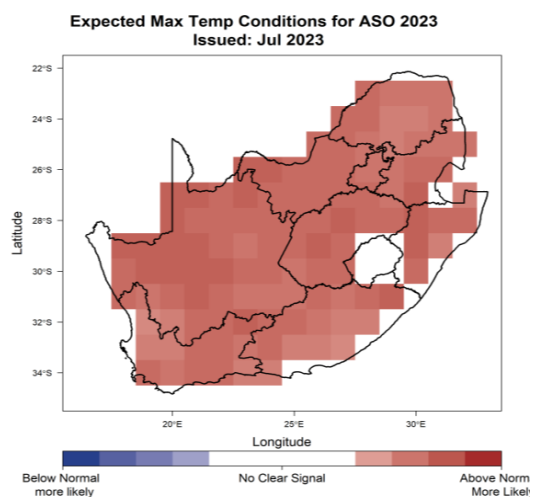
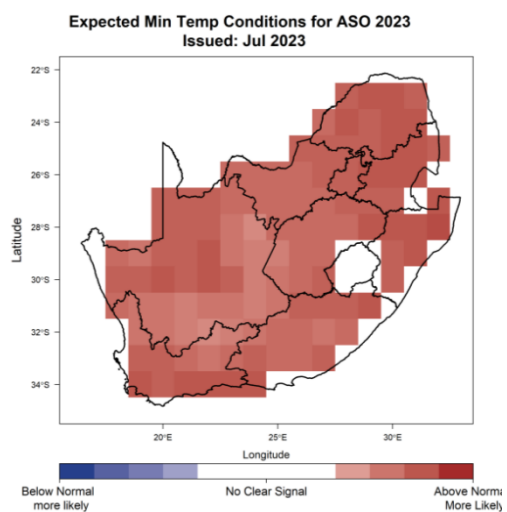
**Figure 1 – Rainfall**

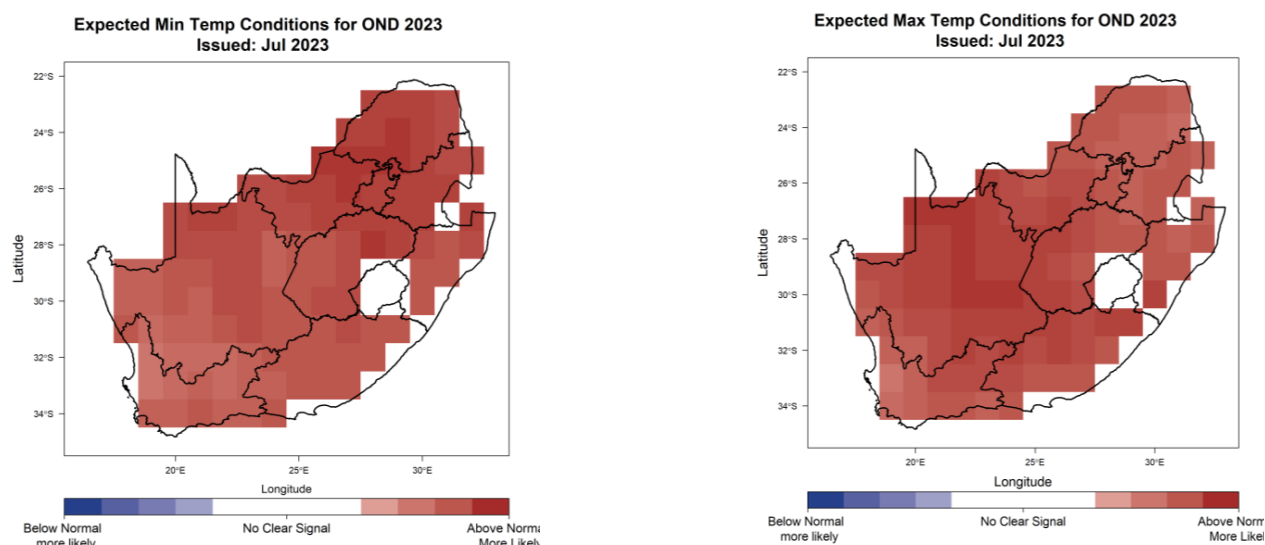


The multi-model rainfall forecast indicates above-normal rainfall for most of the country during early-spring (Aug-Sep-Oct) with below-normal rainfall predicted over the western parts during mid-spring (Sep-Oct-Nov) and late-spring (Oct-Nov-Dec).



**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 towards early spring but below normal in the western parts of the country during mid-spring. 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:

## V. SUGGESTED STRATEGIES

### A. Winter crops: rain-fed crop production

Crop management:

- Adjust planting density accordingly.
- Consider mulching to minimise evaporation.
- Always eradicate weeds.
- Consider a conservative fertilizing strategy during dry conditions.
- Consider organic fertilization.
- Wheat: The strategy proposed is to scout the plants regularly, correctly identify any pests or diseases and make informed decisions regarding reaction.
- Prune trees properly to avoid blocking air movement. The removal of low hanging, dense branches is a must.
- Using white paint on trunks of fruits tree reduces winter trunk damage.
- Use overhead sprinkler irrigation.

### 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. Cold spells (snowfall and frost)**

When temperatures plunge below zero, livestock and crops need to be given extra attention. Prevention is key in dealing with hypothermia, and other cold weather injuries in livestock and crops. Following are several concerns and recommendations:

### **Livestock:**

- Hypothermia and dehydration are a serious concern in animals during cold and wet conditions. Wind-chill also adds greatly to the cold stress for animals.
- Livestock should be provided with windbreak, roof shelter and monitored for signs of discomfort (extensive shivering, weakness, lethargy, etc.)
- It is very important that livestock be provided with extra hay/forage/feed to double the calories for normal body heat maintenance during extremely cold conditions.
- It is critical that livestock have access to drinking water. Usual water sources may freeze in low temperatures and dehydration becomes a life-threatening factor. In general, livestock tend to drink less water in extremely cold conditions.

- Special attention should be paid to very young and old animals because they may be less able to tolerate temperature extremes.
- Do not shear Angora goats. Also, take extra time to observe livestock, looking for early sign of diseases and injuries.
- Severe cold-weather injuries or death primarily occur in the very young or in animals that are already debilitated.
- Cases of cold weather-related sudden death in calves often result when cattle are suffering from undetected infection, particularly pneumonia.
- Livestock suffering from frostbite don't exhibit pain. It may be up to two weeks before the injury becomes evident as freeze-damaged tissue starts to slough away. At that point, the injury should be treated as an open wound and a veterinarian should be consulted.

#### Crops:

- Prune out the lower portions of windbreaks to allow air to pass through to avoid the formation of a frost pocket.
- Wrapping the trunks with materials such as newspaper, cardboard, aluminium foil will prevent much of frost damage.
- With more severe frosts, canopy death can occur and trunk coverings need to extend up beyond the graft union, so the tree can reshoot from undamaged buds above the graft once the wraps are removed.
- Use heating devices such as orchard heaters to raise temperatures in plantings.

Winter crops that have been planted are in reasonable condition, however others were negatively impacted by flooding. The veld and livestock are in reasonable condition in most areas. Above normal rainfall is anticipated in early spring across the country becoming below normal in mid-spring over the western parts of the country. Temperatures are expected to be above normal countrywide.

Farmers are advised to follow the weather and climate forecasts regularly to make informed decisions, and continually conserve resources in accordance with the Conservation of Agricultural Resources Act 1983, (Act No. 43 of 1983).

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 including during very cold conditions. Veld fires have been reported in several provinces and the risk of veld fires remains, especially in summer rainfall areas. Therefore, the creation and maintenance of fire belts should be prioritized as well as adherence to veld fire warnings. Episodes of cold spells and localized flooding resulting from frontal systems are likely and 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: <a href="mailto:MittaA@Dalrrd.gov.za">MittaA@Dalrrd.gov.za</a></p>  <p>agriculture, land reform &amp; rural development Department: Agriculture, Land Reform and Rural Development REPUBLIC OF SOUTH AFRICA</p>	<p>SAWS: Private Bag X097 Pretoria 0001 Tel: 012 367 6000 Fax: 012 367 6200 <a href="http://www.weathersa.co.za">http://www.weathersa.co.za</a></p>  <p>South African Weather Service ISO 9001 Certified Organisation</p>	<p>ARC: Institute for Soil, Climate and Water Private Bag X79 Pretoria 0001 Tel: 012 310 2500 Fax: 012 323 1157 Email: <a href="mailto:iscwinfo@arc.agric.za">iscwinfo@arc.agric.za</a>, <a href="http://www.arc.agric.za">http://www.arc.agric.za</a></p>  <p>ARC • LNR Excellence in Research and Development</p>
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