

# Potential fodder shortages? How well are you prepared this year?

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## 1. Introduction

The 2016/17 rainfall year was generally much better than the previous season, although in some areas farmers are still in danger of experiencing major fodder shortages during the ensuing dry season.

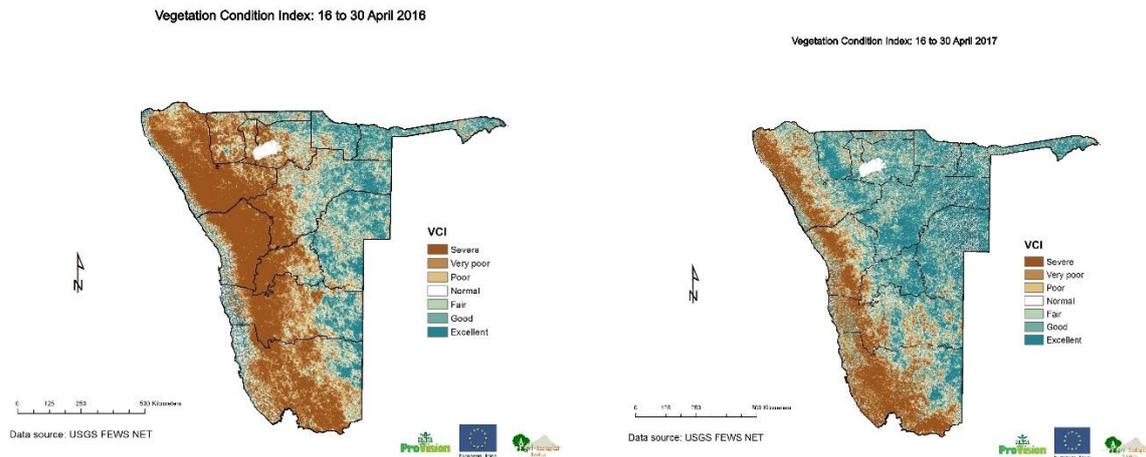


Figure 1: Comparison of Vegetation Condition Index between 30 April 2016 and 30 April 2017 (source: Namibiarangelands.com)

Figure 1 reflects a significant improvement in vegetation condition index (VCI) from 30 April 2016 compared to 30 April 2017. VCI is an indicator of the current activity of the vegetation relative to the historical range (maximum and minimum NDVI vales) calculated for the corresponding time using archive data (2000 to date).

## 2. Variability of Namibia's rangelands

Namibia's rangeland condition is very variable, not only between seasons, but also within a season. Figure 2 reflects the general dynamics of variation within a specific season.

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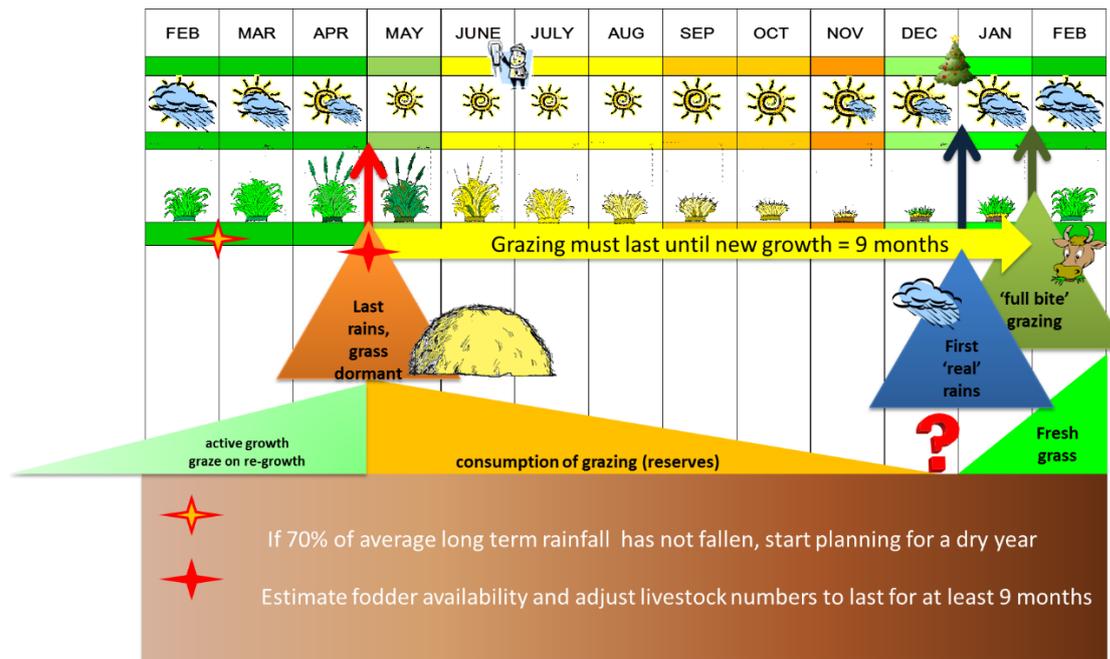


Figure 2: Variation of Namibia's rangelands within a specific season

Most of Namibia's rangelands experience two very distinctive seasons, namely a growing (wet) season and a long dry season. Although some temporal and spatial variation occurs, farmers can in general expect to have a dry season of around 9 months and an active growing season of around 3 months. It is impossible to predict when the first effective rains for the season will fall, but in general it will be towards the end of December (western areas may even be later), although with the availability of soil moisture from the previous season, a rise in temperature and an increase in daylight length, perennial grasses and many edible bushes may leaf out earlier. Farmers also know that it "does not rain grass" and that in most cases the first "full bite" of an animal can only be expected approximately one month after the first effective rains. January to March are the main rainfall months where perennial grass will grow as long as sufficient soil moisture is available. This is known as the "active" growth stage and will start slowing down as perennial grasses reach the reproductive stage (seed production). At this time of the year daylight length is already decreasing and the last rains of the season fall and the photosynthetic rate of grasses declines. With the start of the dry season, generally towards the end of April, grasses enter the dormant stage where no or very little additional fodder is produced. The fodder reserve at this time of the year will then systematically be consumed by livestock and needs to last for at least 9 months (or even longer in the most arid parts), before the next growing phase would start.

### 3. Estimating fodder availability and adjust fodder needs

This is again the time of the year that livestock farmers should ask a number of important questions, namely:

- How much fodder do I have available on my farm?
- What are the current fodder requirements of my livestock herd?
- How long will the current available fodder last?

In order to answer the first important question (how much fodder do I have?), several techniques and possibilities exist. The first one is to physically go and cut a number of representative quadrats distributed evenly over the farm, dry the grass for 14 days and weigh it. This is currently still the

most reliable method, but unfortunately very labour intensive and in our experience, few farmers find the time to do this.

A second possibility is to use a reference photo-guide of different fodder availability scenarios and, by relating a specific piece of land to a specific photo, fodder availability can be estimated. Agra ProVision and Agri-Ecological Services are in the process of developing photo guides for a number of areas in the country.

The third possibility, which is currently still under development, is to directly read it from a herbaceous production (kg Dry Matter/ha) map that is generated at the end of the growing season from calibrated satellite derived data. These satellite products are currently tested with several farmers and also in two communal grazing systems. So far the results are promising and further validation is under way.

It does not matter which method is used, as long as it produces a reliable estimate of fodder availability. In terms of the second and third questions, a stocking rate calculator (SRC) has been developed. This tool intends to assist land users (livestock and game) to plan their dry season fodder flow.

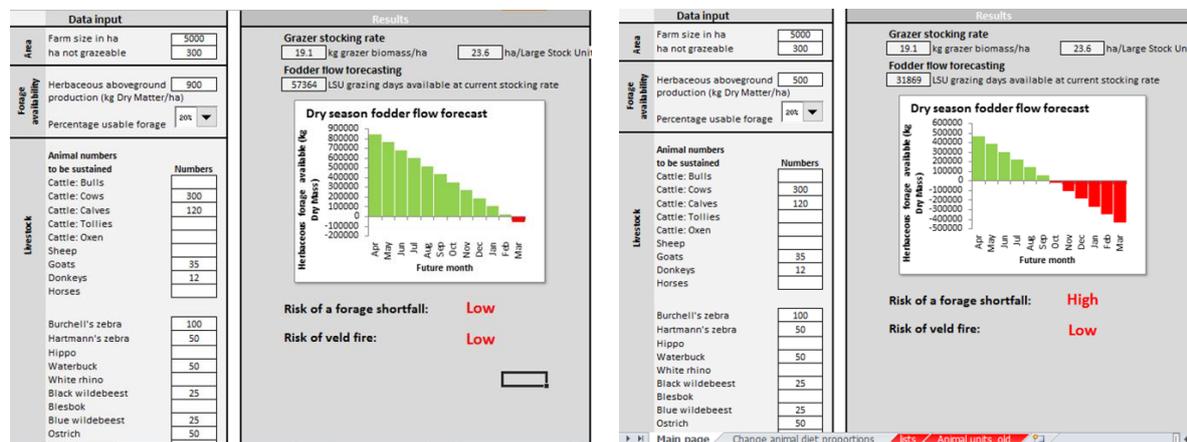


Figure 3: Outputs from the Stocking Rate Calculator

Figure 3 reflects outputs from the SRC under two different scenarios. The one on the left is where fodder availability on the farm is 900 kg/ha and the one on the right is where it is only 500 kg/ha. All the other variables are the same for both scenarios.

The scenario on the left indicates that, with the current livestock and game numbers on the farm, available fodder will last until end of February, while in the scenario on the right it will only last until the end of September. This information is crucial to the farmer because the first scenario implies that the existing herd will have enough to eat until it rains again, whilst in the second scenario, fodder shortages will be experienced after 6 months into the dry season with at least 3 months to go before the next rainy season is likely to start. This can mean a difference between a “normal” season and a “drought”, which could have been avoided. The calculator still requires further fine-tuning, for example how the percent fodder that can really be used by animals differ between regions. Several factors, including trampling by animals, termites and so on, determine that only a fraction of the initially available biomass should be considered when planning fodder flows. Another area that requires further research is how the browse percentage differ between herbivore species and regions. For example, cattle in the broad leaf savannas are known to browse substantially, but how

much is still debated. In the SRC both the utilization factor and browse: graze ratio can be adjusted, although some default values are suggested.

#### 4. In conclusion

Even if the rangeland situation this year is much better than last year, it is still important for each farmer to determine if there is sufficient fodder available for the current livestock herd on the farm. Remember this available fodder should last for at least 9 months until the next “full” grass bite will be possible. This time of the year is the right time to estimate fodder availability and several methods exist or are currently being developed to do so. The stocking rate calculator can be used to make this calculation.

If you have any questions and need further support in this very important activity, please feel free to contact Bertus Kruger at Agra Provision (081 1204 0124) or [bertusk@agra.com.na](mailto:bertusk@agra.com.na) or Dr Cornelis van der Waal of Agri-Ecological Services at 081 604 5878 or [corwaal@gmail.com](mailto:corwaal@gmail.com)