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Veld fires – Friend or Foe?

By Paul Avenant



It is that time of the year again – winter time – and black columns of smoke rises up into the air as valuable veld fodder banks are burnt to ashes. But veld fires are not always bad, and in some cases forms part of an inevitable tool for proper veld management, as long as it is used responsibly, in the correct manner and on the right time.

When a land user wants to burn natural veld, he needs to apply for permission to burn, with the Department of Agriculture, Forestry and Fisheries (DAFF). Applications must be submitted at least a month before the intended date of burn. A Resource Auditor will then visit the site to determine if such a request can be granted. In this article, we will focus on a few guidelines to help the official make a responsible and informed decision.

Why is veld burned?

There are only two reasons why one should burn veld, (1) to remove accumulated plant material that have become moribund (dead, unproductive and unpalatable) and (2) to combat or prevent bush encroachment. To get nice-looking, soft green grass for grazing out of season should NEVER be the reason for burning! One must also keep in mind that the primary function of grasses is to cover, protect and stabilize the valuable layer of top-soil and its moisture content. In general, it will take about two growing seasons for any piece of burnt veld to restore the loss of basal cover.

Is there an alternative to remove moribund plant material?

To burn veld is not always the only solution to remove moribund material. The use of animals provides a safer and more environmental friendly option. Animals can be forced to utilize unpalatable material through the placement of licks and increasing animal numbers. The benefit of this practice is the added organic material to the system in terms of animal dung and urine as well as the fact that the layer of litter that covers the soil is not removed. The hoof action of the animals breaking the surface crust and trampled organic material and seeds into the ground promotes soil health. Compared to burning, that will take organic material out of the system, leaving the soil unprotected and contribute to the emission of greenhouse gasses into the atmosphere, it is surely an option to consider.

To burn or not to burn?

To sustain a veld fire, enough combustible material must be available. This is why there is a very good relationship between the practice of veld burning and the average rainfall of an area. In areas that have a rainfall of less than ± 400 mm per annum, there is just not enough biomass generated throughout the season to sustain a proper burn. These areas should preferably not be burned, because veld will take a very long time to recover, leaving the soil unprotected against water and wind erosion. Kalahari-grassveld, for example, will take up to ten years or more to recover from a veld burn.

On the other hand, in areas with very high rainfall, biomass accumulates to such an extent during one growing season that the grass sward started to smother itself, become unpalatable and unproductive. In most cases, animals cannot utilize all the produced plant material during a single season and grasses become unpalatable in late summer due to the high rainfall and low fertility soils. In the sourveld areas, as a rule of thumb, a camp requires burning if more than half of the previous season's growth remains after winter. In such areas, veld may be burned when biomass exceeds 1.5 tons of combustible material per hectare. When very hot fires are needed to control bush encroachment, a biomass of 3 tons or more, directly beneath the shrubs canopy, will be preferable.

It is also important to note that one should never attempt to burn veld that is in a poor condition. This veld is already under stress and will only deteriorate further after a burn. In many cases poor veld consist of pioneer grass species that, in any case, will not produce enough combustible material to sustain a burn.

When is the best time of the year to burn?

The best time of the year to burn is as close as possible to the first spring rains. Burning during autumn or mid-winter will leave the veld exposed to cold and late winter winds, which can remove valuable nutrients in the form of ash. If the spring rains are late, or drought conditions prevail, soil will be unprotected and vulnerable to erosion, loss of soil moisture and surface crusting. Grasses will also have to rely on their root reserves to initiate and sustain new growth and to survive without water for long periods. This will lead to weakened and less vigorous tufts.

In addition to the permission for burning of veld, which will be issued by a Resource Auditor from DAFF, a land user will also have to comply with the guidelines from the local Fire Protection Agency (FPA). The FPA will adhere to the regulations of the National Veld and Forest Fire Act (Act 101 of 1998). The FPA will only allow burning of veld between the determined fire-season dates. The FPA will also take into account the prevailing climatic conditions and issued fire warnings, which will be determined by factors such as wind speed, humidity and temperature. All neighbouring land users must also be informed of the intent to burn veld and the exact dates and time of burn.

Are all fires the same?

Not all veld fires are the same. They differ in intensity, temperature and speed. Different types of fires result into different effects on veld. We can distinguish between cool and hot fires. Cool fires are the best to remove moribund grass material. These fires can be obtained by burning on a cool day with moderate humidity levels and low wind speeds. Cool fires causes less damage to dormant grass plants, but in early spring, when grasses already start to sprout, one must be careful of a too slow moving fire, which will damage the active growth points of the tufts.



A typical "Back-fire" to remove moribund material.

A very hot fire is required to control bush encroachment. Hot fires can be obtained by burning on a very hot day with a low humidity. A moderate wind speed is also required to let the fire burn right up into the crown of the bush, causing minimal damage at ground level.



A typical "Head-fire" to control bush encroachment.

Burning against the wind, a very slow fire can be obtained and is usually called a "back-fire". Burning with the wind direction will produce very hot and fast moving fires, which are called "head-fires". In a typical veld burning scenario, a back-fire will be lit first, to start burning wind-up and create a safe fire-break. After a few minutes, the head-fire will be lit to move swiftly over the required area and burned out against the back-fire on the other end of the site.

How soon can veld be utilized after a veld burn?

When grasses start to regrow after a veld burn, they rely on the nutrient reserves stored in their roots. The grass plant will only start to produce and store new food reserves once the leaves are grown to a sufficient height where they can maintain the process of photosynthesis. Burnt veld that sprouts out is very palatable and is easily overgrazed. Burnt veld should preferably rest until the grass has regrown to a height of at least 15cm. By grazing veld directly after a burn, the grasses will keep using their root reserves, weakening the tufts resulting in small tufts with low production and very little vigour.

In the case of game farming, it is very difficult to exclude burnt areas from grazing. In such cases it is important to ensure that the sections which are burned are large enough to alleviate grazing pressure.

Resource Auditors check list for burning applications.

- ✓ Does the applicant want to burn for the right reasons?
- ✓ Is the date of burn aligned with the regulations of the Fire Act? (Right time of the year?)
- ✓ Is the veld in a good condition? (Perennial grasses in a sub-climax or climax stage)
- ✓ Is there enough combustible material? (>1.5t/ha for moribund grassveld or >3t/ha for bush control)
- ✓ Is the plant cover sufficient for a fire to carry itself over the entire area? (Not too patchy)
- ✓ On game farms – are the burnt patches large enough to alleviate grazing pressure?
- ✓ Are there sufficient fire breaks and access roads to the areas that are to be burned?
- ✓ Did the applicant inform the local Fire Protection Agency and adjacent neighbours of the intent to burn?
- ✓ Is the applicant aware of the regulations for grazing veld after a burn as stipulated in CARA?

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