

Six wetland foes that can become friends - and boost wetland productivity

By Michelle Nel

Yes, you CAN use your wetland and enjoy its many benefits for free, provided you follow a good management plan, advises David Lindley of the Mondi Wetlands Programme (MWP).

It is probably a luxury for many farmers to leave land lying fallow. The good news is that you can use your wetland to obtain resources, and if you do it wisely, the wetland will not only continue to manage your water for free, you will be doubling its value.

Some wetland uses (for example, sustainable harvesting of wetland plants) are much less destructive than others (such as draining and cultivating crops). The trick is to find uses which do not have a major impact on the way that water moves through the wetland. Such uses need to be promoted because they increase the total benefits extracted from the wetland. More people benefit and the total value of the wetland is increased.

Activities such as burning, grazing and building dams are usually the enemies of wetlands, but if you do these with savvy, you can get extra value from your wetland without destroying it. Read on for our essential tips.

1. Burning wisely

Wetlands are burnt for many reasons: to improve the grazing value for livestock by removing old dead plant material; to assist in alien plant control; to reduce the risk of runaway fires; and to improve the habitat for wetland dependant species. Different wetlands are best burnt in different ways:

- Stream source wetlands (seeps and springs) with a low level cover are often subjected to veld or firebreak burning because of their position on the slopes. Take extreme care if you burn because these soils are shallow, susceptible to erosion and the vegetation recovers slowly.
- Plains wetlands (flood plains and marshes) have gentle gradients and tend to be larger thus having higher potential for managing water. Burning on plains wetlands should allow for rapid plant regrowth.
- Burning the herbaceous layer of streambanks can assist in maintaining plant vigour thus enhancing their ability to hold river banks intact.

Burn the wetland approximately every second year if the rainfall is more than 800 mm per year. Burn every third or fourth year if the rainfall is less than 800 mm per year. In Cape Fynbos regions burn at up to 30 year intervals. Where practical, divide the burning into burning blocks and burn each half alternately leaving the other half unburnt to provide wildlife refuge. Where this is not practical, attempt to rotate burning with other wetlands in close proximity. Burn at the onset of the growing season so as to ensure rapid plant regrowth. Burning a wetland when it is dry can result in underground fires if the wetland soils have a high organic content like peatlands do.

If the wetland plants are damaged by a very hot fire, they will not re-establish in the growing season and erosion may occur. Use a head-fire (burn with the wind) as this is more controllable and less damaging to plant growth points. Back burns, burning against the wind raises ground temperatures and makes control more difficult. Delay burning to another day or even year in dry years or if winter breeding animals (such as wattled cranes) have not completed breeding. Keep records so that you can constantly improve your burning techniques.

Many wetlands in afforested areas are burnt annually in early winter because they form convenient firebreaks without losing valuable arable land. Late winter and early spring burns generally have less impact on the hydrological and ecological benefits of wetlands.

2. Grazing non-greedily

In certain wetland types, such as plains wetlands with an herbaceous cover, the grazing and trampling of wetlands plants by cattle encourages biological diversity. However, you have to manage the grazing correctly. Keep cattle out of wetlands on steeper slopes, the wettest areas of wetlands, channels, drains and head-cuts, and swamp forest ecotones.

Wetlands, such as those with gentle gradients that are large and not prone to erosion can be grazed. On average the grazing capacity in temporary wet areas of a wetland is 1,5 times higher than in a non wetland area, but this is dependent on many factors such as species composition and the water regime of the wetland. Ensure that you do not exceed the grazing capacity of your land.

Where regular monitoring of grazing is possible apply a flexible rotational system where the grass sward is allowed to be grazed down to a threshold level of 8cm or when the most favourable plants have been grazed down to 4cm high. Where regular monitoring is not possible apply a fixed rotational grazing system of 14 days in and 24 days out of the wetland. Or graze the entire wetland and allow a full growing season rest period every 4 years. You can even graze three quarters of the wetland excluding one quarter from stock on an annual rotational basis. One way of introducing this rest is to make use of a patchy burn, which leaves approximately one quarter of the vegetation unburnt and encourages stock to graze on the remaining post burn areas. All grazing must be discontinued when the soils are waterlogged (as this is when erosion can set in from over-grazing or over-trampling). Use non-wetland grazing when the wetland soils are sodden.

3. Cultivating cautiously

In South Africa wetlands are protected by the Conservation of Agricultural Resources Act 43 of 1983 (administered by the Directorate: Resource Conservation) that prevents land users from cultivating or draining wetlands. The recommendations below refer to the lowering of impact in wetlands which have been cultivated on a regular basis, before the act was promulgated in 1983.

Several management techniques can be used to reduce the effect of cultivation in a wetland. If cultivation should occur, no more than 30% of the temporary zone of a wetland should ever be cultivated. No parts of the seasonal or permanent zone should be cultivated under any circumstances.

- No drainage of the area to be cultivated should be undertaken so plant water tolerant crops such as madumbes and avoid the wetter areas.
- Minimum tillage techniques should be used to reduce the amount of soil disturbance.
- Leave strips of wetland vegetation between cultivated areas.
- Add organic matter on to the soil as mulch.
- Do not cultivate the same area every season. Leave cultivated areas fallow but vegetated periodically.
- Plant perennial pastures where possible.
- Apply fertilisers correctly (split applications at the right rates at the correct growth stages of the plant).
- Irrigate correctly to avoid over irrigation and the subsequent leaching of fertilisers (as well as causing erosion and wasting water).
- Till and harvest by hand which results in less soil compaction and disturbance.

4. Damming delicately

Whilst dams perform certain wetland functions (sediment trapping and water storage) they do not perform other functions well (such as the purification of pollutants other than sediment, flood attenuation and the maintenance of biodiversity). The effects of dams are usually most noticeable in the early wet season, when dams are at their lowest levels after the dry season and retain the early flows. Furthermore, bursting of farm dams is a frequent occurrence that may have high impacts on downstream areas. You need to apply for permission to the Department of Water Affairs and Forestry to build a dam. Also, follow our suggestions for less dubious damming.

- Place the dams at the lowest part of the wetland so that the wetland can still perform its functions
- The amount of dams in the wetland will have a cumulative affect on the wetland, so build as few as possible.
- It is vital that the dam wall and spillway should be built to withstand one in fifty year flooding. If not, the bursting of dams usually has a high environmental impact, increasing flood peaks, sediment load, streambank erosion and a waste of money on part of the dam owner. In addition, weirs and spillways should be built to allow for the movement of aquatic species. Consult the local Department of Agriculture soil conservation officer or an engineer to plan the dam wall and spillway.
- The main factor within the manager's control once the dam or weir has been built is the outflow control. The first wet season flows from a dam's catchment are often retained in the dam because levels are depleted at the end of the dry season. This may impact both on the river biota and the downstream users. Release at least 50% of the early season flow.

5. Attacking aliens

Identify your aliens: control requires that appropriate pre-treatment, initial treatment and follow-up treatments be applied that vary from species to species. Pre-treatment by cutting or burning may be necessary before herbicide is applied where alien plants are too tall or too dense to reach. Initial and follow up treatments may be carried out through:

- Application of herbicide to growth or re-growth.
- Cutting or grazing to deplete the nutrient reserves of the plant; this will then require several follow up treatments.
- Hand pulling, particularly for young plants where the roots can be pulled out easily.
- Ring and strip-barking.
- Felling of trees.
- Burning.

Always remember to conduct follow up operations otherwise clearing is unsuccessful and a waste of money.

6. Routing roads in the right way

The following must be considered when putting roads through wetlands:

- Try and seek an alternative route.
- Ensure that causeways have minimal disruption to flow patterns, both upstream and downstream of the crossing.
- Adequate culverts are required as to spread the flow of water across the entire wetland.
- Runoff from roads must be managed for erosion purposes and pollution from vehicles.
- Spread water, never concentrate water or erosion will occur.

Another important aspect of management is rehabilitating wetlands that have been degraded, and because it is such an important aspect, it will be the subject of the next article in our series.