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BASIC GUIDELINES FOR THE REHABILITATION OF OLD POTATO CIRCLES IN THE SANDVELD

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BACKGROUND

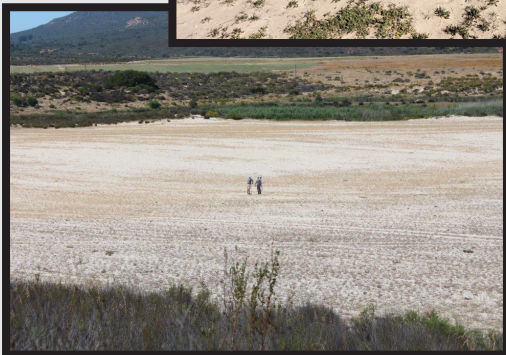
Rehabilitation of old fields can help improve ecosystem functioning and restore ecological connectivity in the landscape. Natural recovery tends to be very slow, and old fields without plant cover often experience wind erosion. Wind speeds in the area can exceed 11 m/s.

These recommendations are based on a research project conducted on three potato circles that had been withdrawn from active cultivation for 5 to 7 years. The circles were at different recovery stages. All the fields had sandy soils with high phosphate levels (29–64 mg/kg), compared to the surrounding natural veld (4–10 mg/kg), and also had a lower organic carbon content than the veld. The high phosphate levels hinder the establishment of fynbos species from the nearby area. Higher organic carbon content in the soil can improve water retention, helping plants survive dry periods more easily.

SOIL

Stabilisation

Nets: Follow guidelines as provided in *Ekologiese restourasie in Namakwaland - 'n praktiese gids* by Peter Carrick and others.



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Packing branches/sonkwasriet: Branches from invasive plants such as Port Jackson can be used; ensure there are no pods on the branches. Sonkwasriet (*Willdenowia incurvata*) can also be used for this purpose.

- Pack branches to cover 50% of the soil surface.
- Pack branches over as large a continuous area as possible.
- Start on the side of the field from which the prevailing wind comes.



Additional benefits:

- Branches help limit the effects of wind erosion.
- Trap seeds blown in by the wind.
- Create a microclimate that is cooler and more humid, aiding plant establishment and survival.



This also improves soil conditions by increasing organic matter, which leads to increased microbial activity and diversity, and an improvement in overall soil health.

Rye

Sow rye as soon as the decision is made to permanently withdraw the field from cultivation. Use existing irrigation to water the rye and only remove the irrigation system once the rye is well established. Alternatively, rye can be dryland sown, but this is entirely dependent on good rainfall.

REDUCTION OF PHOSPHATES

Rye/oats and lupins

Sow a mixture of rye/oats and lupins as soon as the field is withdrawn from cultivation. These species are known to extract large amounts of phosphate from the soil. Once the plants have flowered and produced seed, they can be harvested.

All above-ground material must be removed from the field to remove the phosphates. Supplementary irrigation can help achieve better plant growth and thus more phosphate extraction. The field must not be grazed, as animals return phosphates to the soil through their manure.



- In fields with good plant cover, phosphates decrease over time.
- Fields with no plant cover may lose phosphates due to wind erosion.
- However, phosphates can also increase in withdrawn fields if there are actively cultivated fields upwind from which phosphates can blow in.

PLANTS

The seeds of fynbos plants generally have a short dispersal distance. Fields that have been exposed to cultivation for years no longer contain seeds of natural species from the surrounding area.

To increase biodiversity and promote ecosystem health, it is necessary to establish plants, either by seed or cuttings. Establish plants of various growth forms (grasses, small and large shrubs, herbs, etc.).

Seed

Seeds of plants found in the adjacent natural veld can be sown in the fields in late autumn after the first good rainfall (>25 mm). Good success has been achieved with veldt grass (*Ehrharta calycina*).

During trials gombos (*Pteronia onobromoides*) germinated well, but the seedlings did not survive due to the hot, dry summer. Supplementary irrigation during the hot, dry months will promote the survival of seedlings and young plants.

Seeds can be harvested in the adjacent veld or in the Lamberts Bay Strandveld. Plants in the latter are adapted to soils with high phosphate content.

Written permission from the landowner is required before any seed can be harvested. Seeds of endangered species may not be harvested. Seeds may also not be harvested in the road reserve without a permit from CapeNature.

For fields with minimal plant cover, it is advisable to start with annual species and later establish perennial plants.



The soil should be lightly loosened before sowing, and seeds should be rolled in. Seeds should not be buried.

Cuttings

- Use plants from adjacent areas, such as Lamberts Bay Strandveld, where plants are adapted to high phosphate content.
- Make cuttings at the end of the growing season (September/October) and plant in bags with soil from the old fields where they will be established in the coming autumn.



Plant rooted cuttings after the first good rainfall (>25 mm) in late autumn. Plant in clusters with different species in each group.



Give each plant more than a litre of water when planting and, if possible, provide supplementary irrigation during the hot, dry months to promote survival.

Possible species:

Sandbietou (*Osteospermum moniliferum*);
Spanspekbos (*Manochlamys albicans*); Hondebos (*Exomis microphylla*).

See also Holmes and Grey (2017) for more potential species.



Sandbietou



Spanspekbos



Hondebos

On fields that have been lying fallow for a long time and have good plant cover, no soil intervention may be necessary. Desired plant species not already present on the field can be established to increase biodiversity.



If grazing occurs in the camp where the circle is located, the circle should be fenced off to improve the recovery rate of soil and vegetation.

If possible, grazing animals should be completely removed from the camp containing the circle until a good plant stand is established on the circle. This will allow plants in the camp to produce seed that can spread into the circle, thereby improving plant cover and biodiversity.

ADDITIONAL READING

1. Carrick PJ, Botha MS, Krüger R. 2022. *Ekologiese restorasie in Namakwaland – 'n Praktiese Gids*. Cape Town: Nuture Restore Innovate.
2. Holmes PJ, Grey PA. 2017. *Guidelines for the Rehabilitation of Leipoldville Sand Fynbos*. Report prepared for the Krom Antonies River Water-users Association in collaboration with CapeNature and partners in the Greater Cederberg Biodiversity Corridor.

With thanks to the landowners for their support and assistance during the research project.