



GROW
MACHINES

2026

HYDROPONIC GREENFEED

AN INTEGRATED SOLUTION FOR
FEED AND FARM OPTIMISATION

A scalable hydroponic solution for continuous greenfeed production, lower seed input and improved utilisation of farm resources and grazing.





INTRODUCTION

01

Grow Machines' Hydroponic Greenfeed System is a modular and scalable solution for feed and farm optimisation, designed to produce a continuous supply of young, high-quality greenfeed within a limited area. Through a longer photosynthetic growth cycle, the system uses sunlight, water, CO₂ and dissolved plant nutrients to produce more plant material from less seed. In this way, it combines optimal feed production, efficient use of space and the targeted support of grazing management within one practical production system.





OPTIMAL GREENFEED PRODUCTION

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The crops grow over a longer photosynthetic cycle of approximately 30–42 days.

During this period, the plants develop functional roots and leaves and use:

Sunlight

Water

Atmospheric CO₂

Dissolved plant nutrients

To produce new root, leaf and shoot material.

The system therefore produces more than just a young sprout mat; it produces a more developed plant mass formed over a longer growing period.



AVERAGE PRODUCTION RATIO

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1 kg seed → up to 64 kg fresh greenfeed

Grow Machines uses an average fresh-weight production ratio of 1:64 for production planning.

This means that:

- 1 kg of seed can produce up to 64 kg of fresh greenfeed;
- less seed is required per kilogram of fresh feed; and
- the ongoing seed cost is spread over a larger harvest.

Seed is one of the largest recurring costs in a conventional short-cycle fodder system. The lower seed input of the Greenfeed system can therefore offer a significant economic advantage.

THE THREE MAIN BENEFITS

1. *Continuous, young greenfeed*

2. *High production within a small area*

3. *Feed the animal and support the soil*





PRELIMINARY TRIAL RESULTS

04

In one Grow Machines trial, approximately 125 g of barley seed produced nearly 10 kg of fresh root and shoot material over approximately 30 days.

This represents a fresh-weight conversion of approximately:

1 kg seed → 80 kg fresh plant material

The 1:80 ratio is a preliminary trial observation and is not a guaranteed yield.

Only a limited number of crops and cultivars have been tested in the system to date. Further trials using other cultivars, mixtures and growing conditions may produce similar or even better results.

ACTUAL PERFORMANCE WILL DEPEND ON:

Cultivar

Temperature

Water quality

Seed quality

Light

Season

Climate

Plant nutrition

Daily management



THE THREE MAIN BENEFITS

05

1. Continuous, young greenfeed

The modules can be planted at different times to create a regular production and harvesting cycle. This can help make feed available during:

- winter;
- drought;
- late pregnancy;
- lactation;
- weaning; and
- finishing.

The greenfeed is used as a supplementary component together with veld grazing, hay, silage or other roughage.



2. High production within a small area

The hydroponic gullies make intensive use of the available space.

This offers a solution for farmers with:

- limited arable land;
- limited irrigated land;
- low or unreliable rainfall;
- seasonal feed shortages; or
- a need to produce feed closer to the livestock.

The same production area can be used repeatedly throughout the year.

3. Feed the animal and support the soil

The animal uses a portion of the greenfeed for:

- growth;
- production;
- reproduction; and
- body maintenance.

Nutrients that are not retained in animal production are partially returned to the grazing through manure and urine.

When feeding areas are moved strategically, animals remain in a camp for shorter periods and the grazing is allowed sufficient rest afterwards, the system not only feeds the animal but can also support soil nutrient status, pasture recovery and increased biomass in the soil.



A MODULAR AND SCALABLE SYSTEM

06

The farmer does not need to invest in a large commercial facility from the outset. The system can begin with:

- one hydroponic system;
- one or more production modules; or
- a smaller number of gullies.

Additional modules and independent systems can be added later as the production requirement increases.

Where possible, several smaller systems are preferred because they:

- allow for a better production cycle;
- enable different crops to be grown separately;
- spread risk;
- simplify cleaning and maintenance; and
- make expansion easier.

FEED PRODUCTION THAT CAN CREATE REST FOR THE VELD

Supplementary greenfeed can help reduce the amount of veld material removed directly by livestock. This can help to:

*Retain more leaf material
on the veld;*

Restore root reserves;

*Allow longer resting
periods*

Support basal cover

Reduce pressure on natural grazing

The aim is to stabilise production and support veld recovery, rather than immediately placing more animals on overgrazed land.



THE RIGHT CROP STRATEGY FOR EVERY FARM

07

There is no “one-size-fits-all” solution. Climate, water quality, season, available seed, the existing ration and the nutritional requirements of the livestock differ from one farm to another. We therefore recommend experimenting with different crops, cultivars and mixtures to determine which option provides the best yield, nutritional value and production cost under your own conditions.

The system can accommodate both single-harvest and multi-harvest crops:

- **Single-harvest crops:** The entire plant, including the roots and above-ground growth, is fed to the animals. Crops such as barley, rye, wheat, triticale and oats can perform well under this production method.
- **Multi-harvest crops:** Only a portion of the leaves and young shoots is cut, while the roots, crown and remaining plant material are left in the system to regrow. Depending on the crop, season and management, up to approximately four harvests may be obtained from a single planting.

We do not prescribe one specific crop for your farm. The system gives you the flexibility to test single-harvest crops, multi-harvest crops and mixtures, allowing you to identify the best option for your climate, livestock and production objectives.





HOW YOU OPERATE THE SYSTEM

08

You manage the daily production on your farm—from seed preparation, planting, water and nutrient management to harvesting, weighing and record-keeping. Grow Machines supports you with system design, installation, initial training, production procedures and technical guidance to refine the system according to your farm's conditions.

THE GREENFEED VALUE CHAIN

PRODUCE

Seed, water, sunlight, CO₂ and plant nutrients are converted into greenfeed.

FEED

The greenfeed supports the animal as part of the existing ration.

RECYCLE

A portion of the nutrients is returned to the grazing through manure and urine.

SCALE

The system is expanded according to actual production results achieved on the farm.

RESTORE

Pressure on the grazing is reduced, while improved nutrient distribution can support the soil and grazing over time.

IMPROVE

More nutrients are returned to the soil, thereby also supporting the improvement of the natural grazing.



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CONTACT INFORMATION



www.growmachines.co.za



Darling Farm, Standerton,
Mpumalanga, South Africa

WYNAND BEZUIDENHOUT:



info@growmachines.co.za



+27(0) 82 338 2051

RIKA BEZUIDENHOUT:



rika@growmachines.co.za



+27(0) 76 895 4879



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