Hydroponic Fodder for Cattle — Nutrition & Efficiency Executive Overview

Greenfield Hydroponics · Nov 7, 2026 · @Allan



Executive summary

Greenfield hydroponic fodder gives cattle fresh, highly digestible green feed 365 days a year at roughly 40% lower cost per kilogram of dry matter than purchased dry feed. Barley and wheat sprouted for 3–6 days test at 15–17% crude protein and 75–80% total digestible nutrients (Dairyland Laboratories). Grown on vertical racks in a 7–10 day cycle, it uses about 90% less water than field-grown feed and needs no fertilizers or agrochemicals.

- **Health:** fresh, pesticide-free feed with high digestibility supports rumen function and body condition.
- **Performance:** protein and minerals support milk yield in dairy herds and efficient weight gain in fattening cattle.
- **Efficiency:** 1 kg of seed yields 5.5 kg of fresh fodder on a fraction of the land, water and storage space.
- **Certainty:** controlled-environment production is independent of weather, drought and feed-market swings.



Nutrition: what the lab shows

Sprouted barley and wheat deliver a balanced, energy-dense feed with protein in the range dairy and beef rations target. Values below are on a dry-matter basis from Dairyland Laboratories' wet-chemistry analysis (report dated January 19, 2017).

Measure (dry-matter basis)	Barley, 3 days	Barley, 6 days	Wheat, 3 days	Wheat, 6 days
Crude protein (%)	14.88	17.13	16.48	15.94
Total digestible nutrients (%)	79.92	75.58	80.30	77.54
Non-fibrous carbohydrate (%)	64.90	55.33	69.16	64.12
Acid detergent fiber (%)	5.88	11.02	4.15	6.41
Crude fat (%)	3.69	2.88	2.25	2.00
Net energy, lactation (Mcal/cwt)	83.55	78.71	83.97	80.90
Net energy, gain (Mcal/cwt)	59.20	54.98	60.06	56.76
Zinc (ppm)	90	89	46	42

Measure (dry-matter basis)	Barley, 3 days	Barley, 6 days	Wheat, 3 days	Wheat, 6 days
Copper (ppm)	29	17	7	1
Dry matter (%)	40	18	44	29

What this means for a herd:

- **Protein for production:** 6-day barley reaches 17% crude protein, comparable to good alfalfa hay, supporting milk protein and muscle growth.
- **Energy that is easy to digest:** 75–80% TDN and low acid-detergent fiber mean most of each kilogram is usable energy, not roughage the rumen must work through.
- **Trace minerals:** in barley, zinc roughly triples and copper rises sharply versus seed — both important for hoof health, immunity and fertility.
- **Harvest timing is a lever:** earlier harvest (3 days) maximizes energy and dry matter; 6-day barley maximizes protein and fiber for rumen function. Greenfield's nutritionist sets the cycle to the herd's goal.

Health and performance by herd type

The same feed serves two goals: more and better milk in dairy herds, faster and higher-quality gain in beef herds.

	Dairy cattle	Fattening cattle
Primary goal	Quality milk, sustained through lactation	Efficient, healthy weight gain
What the fodder contributes	Protein plus calcium and phosphorus for milk production	Protein and nutrients for muscle development and marbling
Digestibility benefit	Better feed conversion; helps hold body condition in high-demand periods	Faster, fuller nutrient absorption; fewer days to market weight
Health benefit	Fresh, pesticide-free feed lowers digestive upsets; supports longevity	Fresh, controlled feed supports white intramuscular fat valued by premium buyers

	Dairy cattle	Fattening cattle
Business result	Stable, sustainable milk output year-round	More tender, higher-value meat and a more profitable operation

Because production is indoors and controlled, the ration stays the same through drought, winter and price spikes — cows are not forced onto a new diet when the hay runs short.

Efficiency: more feed from less water, land and money

High production density is what makes the system efficient: stacked racks turn seed into fresh feed every 7–10 days on a small footprint, with about 90% less water than field-grown feed and no fertilizer, herbicide or pesticide.



Measure	Greenfield hydroponic fodder (barley)	Traditional dry feed (USA)
Input cost	$0.20 per kg barley seed	$0.30 per kg corn/barley feed
Yield	1 kg seed → 5.5 kg fresh fodder	— (bought as dry feed)
Cost per kg as fed	$0.036	$0.30

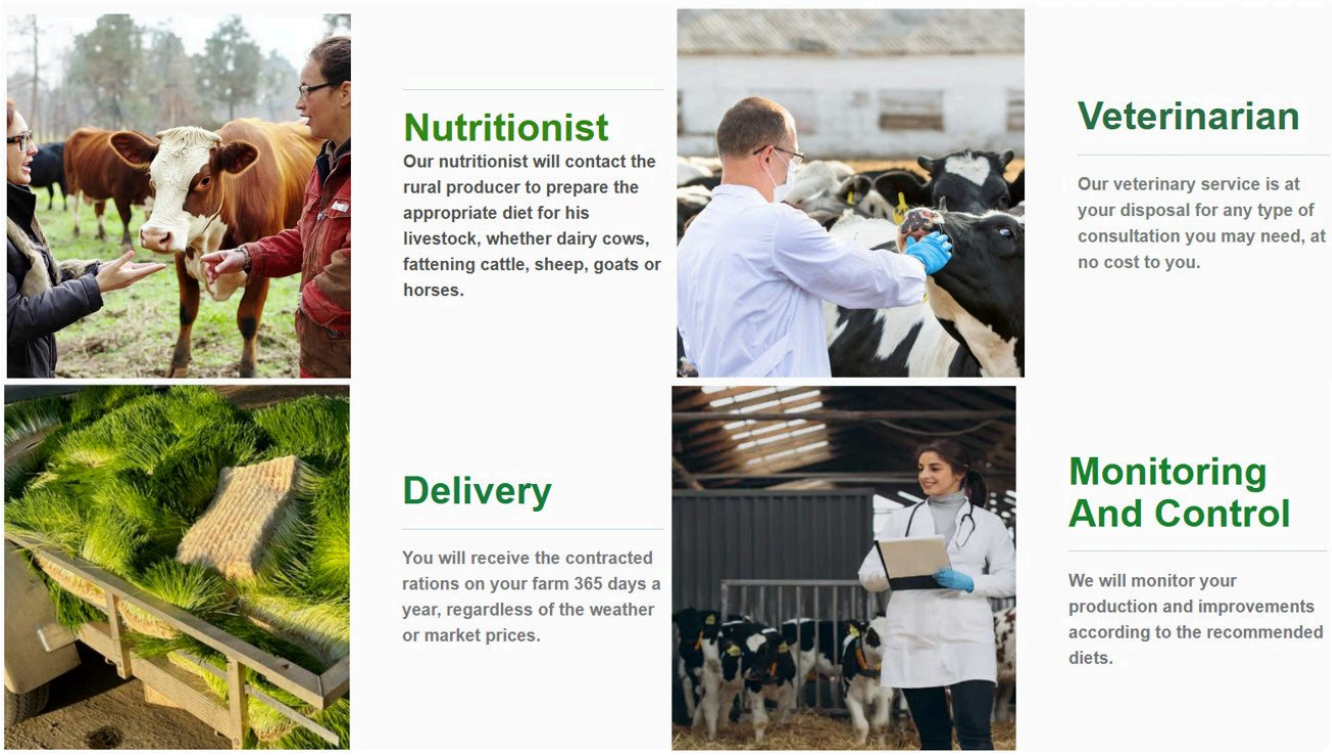
Measure	Greenfield hydroponic fodder (barley)	Traditional dry feed (USA)
Cost per kg of dry matter*	about $0.20	about $0.34
Production cycle	7–10 days, seed to harvest	Seasonal harvest plus storage
Water	About 90% savings versus field crops	High water use for corn and soy
Space	Vertical racks; no bulk storage	Storage barns and transport
Inputs	No fertilizers or agrochemicals	Fertilizers, pesticides, fuel

*Dry-matter comparison assumes 6-day fodder at 18% dry matter and dry feed at about 88%. Seed cost only; excludes electricity, labor and equipment.

On a like-for-like dry-matter basis, fodder costs roughly 40% less than purchased feed. A typical daily allowance of 15 kg fresh fodder per animal costs about $0.54 and supplies about 2.7 kg of highly digestible dry matter, so it is used as a high-value part of the ration alongside forage, not a total replacement.

The Greenfield service: fodder plus expertise

Producers buy results, not equipment: Greenfield delivers the feed and the expertise to use it well.



- **Nutritionist** — designs the diet for each herd: dairy cows, fattening cattle, sheep, goats or horses.
- **Veterinarian** — available for any consultation, at no cost to the producer.
- **Delivery** — contracted rations arrive on the farm 365 days a year, regardless of weather or market prices.
- **Monitoring and control** — production and herd improvements are tracked against the recommended diet.
- **Greenfield Precision Livestock Farming Collar** — tracks each animal's location, feeding and health indicators in the Greenfield Collars app, so the effect of the ration shows up as data, not guesswork.



Next steps

1. Share herd size, type (dairy or beef) and current ration.
2. Greenfield's nutritionist proposes a fodder inclusion rate and harvest cycle.
3. Agree a daily delivery contract or an on-site Greenfield fodder system.

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