



hydrogreen

NUTRITION TECHNOLOGY

Putting You In Control.

Our Mission

Proactive livestock producers demand solutions that help them become more sustainable and more competitive.

Today's livestock producers are faced with the rapid changes in consumer preferences, environmental regulations, high land prices, animal welfare concerns, continuous pressure from lower markets, limited land, high production costs, and unpredictable weather.

HydroGreen delivers a revolutionary solution – vertical farming and controlled environment agriculture that allows producers to grow their own nutritious feed indoors on their farm. The HydroGreen fully automated hydroponic grow system produces fresh livestock feed every day. The system works continuously all year, providing consistent nutrition, reliably every day, with a fraction of the water used in traditional crop production systems. HydroGreen systems produce quality nutrition without expensive farmland, and the weather is never an issue.

As a bonus... HydroGreen fresh feed is a great ration conditioner; an important aspect of any complete animal diet. This fresh feed also provides natural digestive enzymes that help animals better utilize the nutrients in their entire diet.

HydroGreen addresses producers' most pressing needs; cost effective animal nutrition they can count on. Innovative, efficient, environmentally responsible animal feed production.

It's the future of livestock feeding... Ready today!

Control in Your Hands Without Being Hands-On

HydroGreen's one of a kind grow-systems automate the production of live green animal feed without disruptions from weather, market conditions or transportation. With minimal land, labour, water and power, HydroGreen systems sprout grains like barley and wheat for daily fodder produced in a controlled environment.

All functions, including seeding, watering, lighting and harvesting are handled with the push of a button. This consistently improves production efficiency while optimizing animal health through the superior nutrient-rich feed source. HydroGreen Healthy nutrition comes without expenditures on fertilizers, chemicals, fuel, field equipment or transportation making it a safe and sound solution now and into the future.



The Miracle of Germination



01. Hydration of Dormant Seed

- Dynamic physical & chemical changes
- Seed swells and ruptures
- Hydrolytic enzymes formed by outer cells
- Hydrolytic enzymes begin transformation of stored nutrients
 - Proteins
 - Polysaccharides
 - Fatty acids
 - Minerals and vitamins
- Seed metabolism is activated



02. Respiration of Activated Seed

- Oxygen accelerates metabolism
- Hydrolytic enzymes continue transforming stored nutrients
 - More soluble
 - Less complex
 - More available
 - Light effects
- In some species, light can accelerate metabolism at this stage.



03. Nutrient Mobilization

- Transformed nutrients go to work
 - Concentrate at embryo growth axis
- Growth regulators develop & become active
- Hydrolytic enzymes continue transforming stored nutrients
- Early emergence of roots & sprout



04. Development & Seedling Growth

- Rapid growth of root & sprout
- Transformed seed nutrients are highly concentrated in this seedling

Nutritional Benefits for Your Animals



Digestible Protein & Energy

- High quality protein in the form of amino acids & simple peptides
- High quality energy in the form of simple sugars & starches
- High quality free fatty acids with higher levels of:
 - Unsaturated Fatty Acids
 - Omega 3's
 - CLA's
- All these nutrients are critical for health, growth, production & re-production



Digestible Minerals & Vitamins

- Oxygen accelerates metabolism
- Hydrolytic enzymes continue transforming stored nutrients
 - More soluble
 - Less complex
 - More available
- Light effects
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Overall Physical Diet Quality

- High moisture contributes to Ration conditioning
 - Texture and Palatability
- Higher moisture contributes to the mix stability
 - Less separation of the ingredients in the bunk
 - Less sorting of ingredients by animals
- Higher moisture contributes to less feed dust
 - Lower incidence of upper respiratory issues due to dust inhalation by animals



Devoid of Anti-Nutritional Factors Feeds

- Reduced Haemagglutinins; Increased red blood cell oxygen carrying capacity
- Reduced Trypsin Inhibitor; Improved protein digestion
- Reduced Tannins & Pentosans; Enhanced feed digestibility & palatability
- Reduced Phytic Acid; Improved macro & micro mineral availability

Wet chemistry - Dry weight

Report of Analysis

Average of Sample Assays January 2020

	Barley		Wheat	
	Seed	Day 6	Seed	Day 6
Dry Matter	86%	17.96%	87%	25.08%
Moisture	14%	82.04%	13%	74.92%

			Barley		Wheat		
			Seed	Day 6	Seed	Day 6	
Protein & Fiber	CP	Protein (Crude)	%DM	13.44	16.24	16.63	18.45
	ADF	Fiber (Acid Detergent)	%DM	4.95	11.62	3.17	9.33
	aNDF	Neutral Detergent Fiber	%DM	13.74	23.13	11.69	20.79
	Fat (EE)	Crude Fat	%DM	2.23	3.34	3.34	2.66
	NFC	Non Fibrous Carbohydrate	%DM	70.19	55.21	70.84	57.74
	TDN 1x	Total Digestible Nutrients	%DM	84.57	78.61	85.84	80.43
Minerals		Calcium	%DM	0.09	0.14	0.09	0.14
		Phosphorous	%DM	0.40	0.42	0.41	0.48
		Magnesium	%DM	0.14	0.16	0.15	0.20
		Potassium	%DM	0.39	0.46	0.34	0.44
		Sulfur	%DM	0.14	0.21	0.15	0.21
		Sodium	%DM	0.03	0.09	0.01	0.05
		Zinc	PPM	30	56.54	38	44
		Manganese	PPM	22	33.27	48	50
		Copper	PPM	1	9.07	1	1
		Iron	PPM	62	100.4	57	58
Energy	Nel 3x	Net Energy Lactation	Mcal/Cwt	88.72	81.68	90.14	83.51
	Neg	Net Energy Gain	Mcal/Cwt	60.81	58.62	63.01	60.95
	Nem	Net Energy Maintenance	Mcal/Cwt	90.40	87.66	92.98	90.16



Land on a Stand

HydroGreen Grow Systems are scalable, by combining multiple grow systems for larger herd sizes.



*Numbers provided are for reference only. Production will vary by operation, livestock type and specific inputs.

Financial savings

Better Results With less Inputs

Creating a highly digestible, nutritious green food is only part of the HydroGreen story. The growing system achieves these enviable results with a reliance on less: less land, less work, no chemical or fertilizer inputs. Because the system is fully-automated, you are in control of the consistent and reliable production of high-quality nutrition. Plus, if you ever need help, the experts at HydroGreen are available to guide you.



Fully-automated

You have complete control of the fully-automated growing-system. The dashboard shows you the stage of each of the six HydroGreen system sections and allows you to adjust all functions including seeding, watering, lighting and harvesting.

93% LESS WATER
SILAGE

98% LESS WATER
ALFALFA

Reduced water consumption

Turning on a tap is easy enough, but it comes with a cost to the environment and to the wallet. The HydroGreen growing system uses just a fraction of the water of conventional in-ground growing methods leading to more than a quarter million gallons of water saved per acre of green food produced.

Gain More, Save More

With a HydroGreen Grow System your livestock will become more affordable and profitable with reduced feed costs per head when compared to conventional systems. Reliance on additional feed sources will be greatly reduced as will the land required to grow feed crops.

1000 Head Beef Cows: Information Based on dry lot beef.

Conventional		
Silage, Corn	15# Fed	10 Acre
Alfalfa Hay	12# Fed	31 Acre
Grass Hay	12# Fed	200 Acre
Corn Stalks	12# Fed	0 Acre
Total	51# Fed	241 Acre
Annual Cost Of Feed : \$674.65/Head		

HydroGreen		
HydroGreen	25# Fed	0 Acre
Barley	Grow System	50 Acre
Grass Hay	6# Fed	100 Acre
Corn Stalks	12# Fed	0 Acre
Total	51# Fed	150 Acre
Annual Cost Of Feed : \$488.18/Head		

Feed Cost Per Head	
Conventional	\$674.65/Head
HydroGreen	\$488.18/Head
Feed Cost Savings	\$186.46/head

Land Required	
Conventional	241 Acre
HydroGreen	150 Acre
Land Savings	91 Acre

Annual feed cost savings up to **\$186,470.00**

Nutritional Feed

Nutrient rich green feed for better animal performance and health

Live green food created through the HydroGreen growing-system ensures your animals receive exceptional nutritional benefits from daily food. The increased moisture content not only improves palatability, but also aids in ration conditioning and reduces potential health issues associated with other forms of feed.

Hydrolytic enzymes occurring naturally in the infant plant dramatically improve the digestibility and absorption of nutrients like proteins, fatty acids, vitamins and minerals. This allows for: enhanced growth, overall better health, improved reproduction, greater fertility, strong immune systems and more.

Specifically, when it comes to nutrition, HydroGreen Healthy Feed makes use of the miracle of germination and early plant growth to capture the greatest nutrient profile and best digestibility of any feed available.

For example:

- Protein levels are as much as 25% higher than in the parent grain
- High digestibility means dietary energy is not wasted on digestion in the animal, resulting in greater energy efficiency
- Phytic acid levels are very low in young plants, making phosphorus more bioavailable
- Starch in the parent grain is largely converted to sugars supporting better forage digestibility and a more stable pH

Farm Stories

South Dakota Winter of 2018-2019

Cattle were fed in two groups

Fed November through mid-May

Group 1: Mainly Heifers +10 Steers

- Fed HydroGreen along with the grass hay, salt & mineral

Group 2: Heifers & Steers

- Fed grass hay, salt & mineral

Cattle were fed through a vertical mixer until the mud prevented feed deliveries in their pens. Then, the hay was fed in round bale feeders to both groups and the HydroGreen group received HydroGreen in a bunk.

Results:

Group 1: HydroGreen (which was primarily heifers)

- gained 0.3 pounds more per head per day
- \$0.51 cost per pound of gain

Group 2: Non-HydroGreen Group gained slower than the HydroGreen Group

- \$0.74 cost per pound of gain

Cattle from Group 1 appeared healthier with cleaner coats than Group 2.

Montana Winter of 2018-2019

Cattle were fed in two groups

- Grass-Fed" Steers
- Weighed every 2 weeks at the producer's ranch
- Both groups received 3 ounces of mineral per head per day
- Had limited grazing all winter
- Weaned end of October & went to grass in May, after test period

Group 1: "Grass-Fed" Steers

- Fed 57% grass hay (lower quality grass at \$80/ton) & 43% HydroGreen Barley

Group 2: "Grass-Fed" Steers

- Free choice grass hay (better quality grass at \$120/ton)
- 18lbs per head per day on average

Results:

Group 1: HydroGreen Group had an average daily gain of 1.77lbs/head/d

- \$0.58 cost per pound of gain

Group 2: Non-HydroGreen Group compared to the non-HydroGreen group at 1.07lbs/head/d

- \$1.01 cost per pound of gain

Cattle from Group 1 had much better health during weaning and through the entire feeding period, compared to the non-HydroGreen calves.



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Take Control!

Let's talk

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