



hydrogreen

NUTRITION TECHNOLOGY

A DIVISION OF CUBICFARM SYSTEMS CORP.

**Farmer founded, onsite, automated
livestock feed technology**

Our Mission

We help farmers succeed.

HydroGreen is a local chain ag-tech company founded by farmers. We provide unique automated technologies to grow onsite commercial-scale quantities of fresh produce and nutritious livestock feed, anywhere on earth, 365 days a year.

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 System produces fresh livestock feed every day. The system works continuously all year, providing reliably consistent nutrition, every day, with a fraction of the water used in traditional crop production systems. The HydroGreen System produces 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 is driven to transform the agriculture system to enable every community, city, and country the ability to provide fresh livestock feed onsite, in any climate, all year round.

We are creating local independent ecosystems now and for future generations.



Technology to successfully feed our changing world.

The HydroGreen System will significantly improve independent access to quality livestock feed and maximize crop yield all while reducing the environmental cost of feed production in a meaningful way. With minimal land, labor, water and power, the HydroGreen System sprouts 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 sustainable solution now and into the future.



The Miracle of Germination



01. Hydration of Dormant Seed

- Dynamic physical and chemical changes
- Seed swells and ruptures
- Hydrolytic enzymes are 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 and become active
- Hydrolytic enzymes continue transforming stored nutrients
- Early emergence of roots and sprout



04. Development and Seedling Growth

- Rapid growth of root and sprout factors feeds
- Transformed seed nutrients are highly concentrated in this seedling

Nutritional Benefits for Your Animals



Digestible Protein and Energy

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



Digestible Minerals and Vitamins

- Oxygen accelerates metabolism
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 - More soluble
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- 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 and pentosans; enhanced feed digestibility and palatability
- Reduced phytic acid; improved macro and micro mineral availability

Wet chemistry - Dry weight

Report of Analysis

Average of Sample Assays January 2020

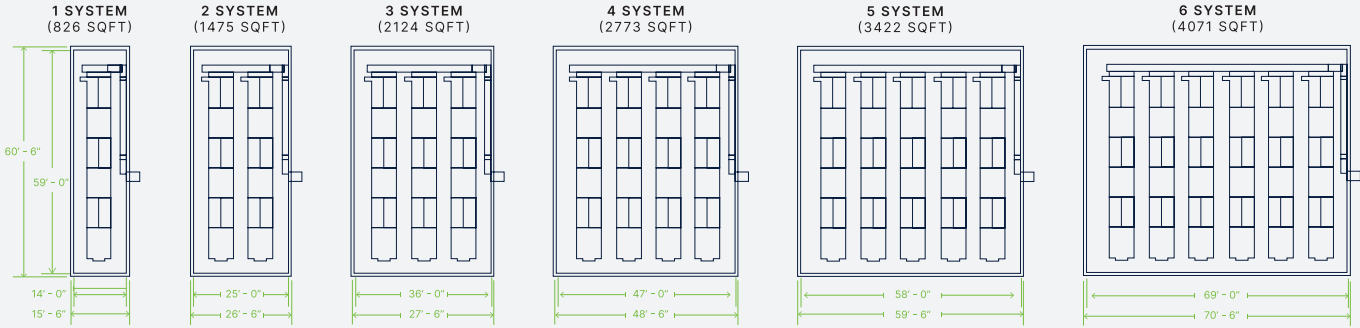
	Barley		Wheat	
	Seed	Day 6	Seed	Day 6
Dry Matter	86%	17.96%	87%	25.08%
Moisture	14%	82.04%	13%	74.92%

			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
Energy		Iron	PPM	62	100.4	57	58
	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

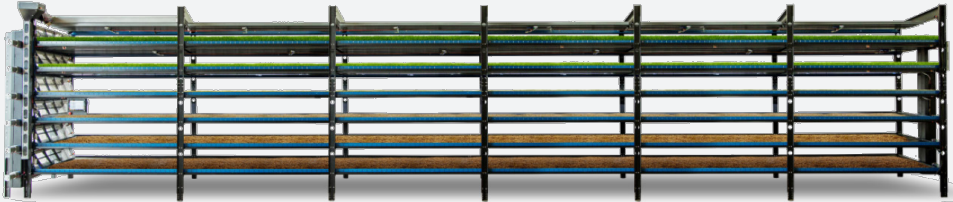


A Scalable System

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



I.D. MINIMUM ROOM DIMENSIONS | O.D. BUILDING WITH 9" WALLS



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

Financial savings

Better Results With Fewer Inputs

Creating a highly digestible, nutritious green livestock feed is only part of the HydroGreen story. The growing system achieves these enviable results with a reliance on less: less land, less work, and 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 level of the HydroGreen System 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 a farm's bottom line. The HydroGreen 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 feed produced.

Nutritional Livestock Feed

Nutrient-rich green feed for better animal performance and health

Live green feed created through the HydroGreen System ensures your animals receive exceptional nutritional benefits from fresh daily livestock feed. 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, stronger immune systems, and more. Specifically, when it comes to nutrition, HydroGreen live green 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, and minerals

Group 2: Heifers & Steers

- Fed grass hay, salt, and minerals

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 1.

- \$0.74 cost per pound of gain

Group 1 cattle fed HydroGreen 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 and went to grass in May, after test period

Group 1: “Grass-Fed” Steers

- Fed 57% grass hay (lower quality grass at \$80/ton) and 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: The non-HydroGreen group compared to the HydroGreen group 1 at 1.07lbs/head

- \$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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Together we will transform the agriculture system
to enable local livestock feed independence.

LET'S TALK!

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