



# The Fodder Feeds Company

presented by

## Green America Now

# Fodder Feeds, Company

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Fodder Feeds designs and develops self-contained, environmentally-managed, animal feed growing systems. Via state-of-the-art hydroponics; cereal grains and pod-legumes are efficiently germinated and cultivated into the highest quality, fully-hydrated, nutritionally balanced, and easy to digest foods, for all species of grazing animals. Included are: horses, cattle, sheep, goats, alpacas, llamas, hog, and pig, as well as all poultry, at a fraction of current dry feed costs.

Fodder Feeds uses barley seed, which is known to be the most nutritious of all the cereal grains in combination with sunflower seeds at a (40/1) mixture to produce near perfect animal feed. This ideal feed has a high alkaline PH, resulting in a highly digestible and energizing diet.

## Digestibility:

Dry, alfalfa hay has an acidic PH, with a digestibility rate of 20%.

Living, barley greens and sunflower greens have an alkaline PH with a digestibility rate of 80%.

## Nutritional Value:

Barley Greens have up to 400% more vitamin A, and 600% more vitamin E, than dry grass hay. Barley Greens have 30 times more B-1, 11 times the calcium, and 15 times the protein as milk, with 3.3 times as much Vitamin C, 6.5 times the carotene, and 5 times the iron as spinach.

## Water Savings:

Fodder Feeds Growing Systems use ----- 4 gals of water to grow 20 lbs of feed;  
Farmers using sprinkler pivots and wheel lines use - - - 488 gals of water to grow 20 lbs of feed;  
Farmers using flood irrigation use ----- 2,000 gals of water to grow 20 lbs of feed;

## Power Savings:

Fodder Feeds uses almost 6 times less power (5.75) to produce 20 lbs of feed, in comparison to typical dry hay farming. Also, no fertilizer, pesticides or herbicides are needed. No tractors, swathers, rakes, balers, squeezes or irrigation pumps are needed and no hay storage required.

## Land Savings:

In a 12 sq.ft. unit, Fodder Feeds can grow the same amount of feed as on 3 cultivated acres.

In a 88 sq.ft. unit, Fodder Feeds can grow the same amount of feed as on 40 cultivated acres.

In a 45,000 sq.ft. building, Fodder Feeds can grow the same amount of feed as on 3,650 acres.

## Reliability, Dependability and Sustainability:

Fodder Feeds' self-contained, automated, environmentally-controlled feed growing systems free the growers from all concerns regarding weather, petrochemical fertilizers and pesticides. With only electrical power and water, this state-of-the-art hydroponic growing system will produce the same high quality feed 24 hours a day and 365 days a year.

Transitioning away from weather-based industrial farming practices of the past to sustainable, self-contained, environmentally-managed farming of today can lead to the most stable, highest quality, consistent supply and affordable organic food production the U.S. has ever seen.

As America transitions to the 21st century regional and local organic food production system hundreds of thousands of jobs in an almost endless variety of markets will be created across our country. The new, regional and local, commercial scale, growing processing and packaging industries will support large and small wholesale and retail businesses alike a win/win for all.

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## Introduction

Three years ago, David Straight, founder and CEO of Fodder Feeds, Inc., made the decision to develop his automated animal feed growing systems. At that time David knew there was a market for his technology. What David soon discovered was just how big his market was and how much of a positive and transformative effect his state-of-the-art technology could have on the agricultural industry and the U.S. economy as a whole.

The drought taking place across the U.S. has added additional pressure to rethink agricultural practices nationwide. In Texas alone, the number of beef cattle has been reduced by two million head, simply because there is not enough animal feed being grown. Also, due to the nationwide drought, three million acres of hay farming is no longer in production. Examples such as these result in extreme hardship on farmers and cause sharply raising food prices, which underscores the problem of relying on weather for stability in the agricultural industry.

David Straight knew his technology reduced risk and uncertainty. He also knew it insured quality, consistency and affordability on a continuing basis. Within the first 3 years of operation, Fodder Feeds has delivered systems into 11 Western states, British Columbia, and Texas, Kansas, Wisconsin, Massachusetts and Maine. The company is now delivering an average of 10 to 12 systems per month, with more orders coming in daily all by word of mouth. The company's objectives are to greatly expand its manufacturing facilities. Once accomplished, the company's monthly production volumes and profits will be tripled within a matter of months.

*"In 1894, 24 year-old William H. Danforth, (Purina Mills founder) could see that our countries commerce was being constrained largely by one fundamental thing; the lack of a reliable supply of available, nutritionally balanced animal feed. This single observation resulted in one of the largest and most successful companies in America."* (Purina Mills)

While the challenges we faces in agriculture today are in many ways similar to what young William H. Danforth saw 118 years ago, this time the challenges are even more urgent and effect almost every sector of the American Economy. What is called for now goes to the very heart of what made America great. Empowering the 21st century American small farmer as a central player in rebuilding of our economy will expand and rekindling the American dream.

Central in this nationwide restructuring is the transition away from the weather based industrial farming practices of the past, and fully embrace the sustainable, self-contained, environmentally controlled, farming practices of today, practices that will lead to the most stable, highest quality, consistent high volume, and affordable organic food production that our country has ever seen.

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It's important to remember that the industrial farming practices of the past are dependent on the petrochemical industry. Most equipment required to operate these massive, mono-cropped, industrial farms is powered by petroleum, fertilized by petroleum, and most if not all of the pesticides and herbicides required to maintain the millions of acres of mono-cropped farmlands are petroleum based. When oil prices go up, food prices go up and most other markets suffer.

Also, industrial farming systems are based in attempts to control nature rather than work in harmony with nature. When all factors are taken into account, the results of industrial farming have been and continue to be devastating to the environment and our health. Topsoil life-forms are weakened and destroyed by massive amounts of toxic chemicals applied each year. Their misguided objective is to control nature's insects, fungi and molds via toxic chemicals. Life forms such as these are quick to adapt, leading to even higher levels of toxic chemical use.

With this spiraling petrochemical cycle continuing, the industrial farming industry's next idea was to start the process of modifying the DNA of seeds and plants and applying genetically modified organisms (GMO's) to stimulate growth and to fend off and destroy pest. While some studies claim GMO's are safe to use and consume, other studies now show definitively major links between GMO consumption and a wide range of life threatening illnesses.

Over 50 countries worldwide have banned GMO use. America, on the other hand, is the largest producer of GMO farm crops in the world. The Center for Food Safety notes, "Up to 85% of U.S. corn is genetically engineered, as are 91% of soybeans and 88% of cotton (cottonseed oil is used in food products). Also, up to 95% of sugar beets are now genetically engendered. It has been estimated that upwards of 70% of all processed foods on supermarket shelves, from (sodas to soup) and (crackers to condiments) contain genetically engineered ingredients."

In this November's polled election in California (Prop 37) was on the ballot with strong support showing 61% in favor of its passage. Sadly Prop 37 was defeated. If it would have passed 70% of all processed foods on supermarket shelves in California would have carried GMO labels centering on all meats, corn and soy-based products including high fructose corn syrup.

By using sustainable, environmental friendly farming practices and technologies nationwide to produce affordable, organic animal feed and affordable, organic human food, regionally and locally, most, of the industrial farming practices will no longer be required - including GMO's.

Also, the savings in water is massive. In Arizona alone, 250,000 acres of alfalfa hay are put into production each year. Using industrial farming irrigation practices, the water required for this one crop equals the equivalent of a 5-foot deep, 250,000 acre lake each year, which equals over 400 billion gallons! In comparison, Fodder Feeds would use just over 1 billion gallons. Fodder Feeds growing systems use 99.75% less water to grow the same total tonnage of feed.

Fodder Feeds is now installing a built-in-place system for a 3,000 cow dairy in New Mexico. The current feed bill for the dairy averages \$3 million a year! In most cases the fodder feeds growing system (turn-key building and all) will pay for itself within the first twelve months of operation. This is made possible by the savings in their yearly feed bill alone. In this case, the dairy's feed bill will be reduced by \$2.5 million each year, and all of their milk products will be organic!

As America transitions to the 21st century, regional and local organic food production system, hundreds of thousands of jobs in an almost endless variety of markets will be created across our country. The new, regional and local, commercial scale, growing, processing and packaging industries will support large and small wholesale and retail businesses alike. Once the American people learn of the massive amount of water, power and land saved nationwide, they will be even more emboldened to create a truly sustainable and bountiful future for all.

In summary, Fodder Feeds automated animal feed growing technology demonstrates how to move away from the weather and petrochemical-based industrial farming practices of the past to highly efficient, self-contained, environmentally-controlled, renewable energy based, regional and local farming practices of today. For more detailed info about Fodder Feeds Systems, please continue your review by noting the following highpoints of the nutritional report.



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The Fodder Feeds Company has developed a state-of-the-art animal feed growing system, that uses hydroponic principles to quickly and efficiently germinate and cultivate cereal grains and pod legumes, and at the same time, maintain the highest quality of animal feed standards.

**The Fodder Feeds Nutritional Report** contains compelling facts; some of the highlights follow; When using Fodder Feeds growing systems, seeds become young plants ready for feeding in a period of just 6 days; a root-mat with 6 to 8 inches of fresh barley greens are obtained, free of pesticides and parasites and full of high value, living enzyme-rich nutrients. Each Fodder Feeds mobile and fixed building system has been designed to provide an optimum growing environment in terms of airflow, temperature, humidity, and lighting controls. These advanced systems are designed to operate continuously, 24 hours a day, 365 days a year.

During the germinating process, enzymes that metabolize seed starch and protein reserves are triggered, converting them into basic nutritional elements (amino-acids and sugars) and creating new vegetable tissues rich in totally natural vitamins that are assimilated easily. The result is a highly digestible totally organic natural food, which has proven to increase the productivity, performance, and general health, of all forage eating animals.

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## **Nutritional Value:**

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## **Reliability, Dependability and Sustainability:**

Fodder Feeds; self-contained, automated, environmentally-controlled, feed growing systems free the growers from all concerns about weather, petrochemical fertilizers and pesticides, and the systems operate 24/7, 365 days a year, producing the same highest quality feed ever time.

One of the Fodder Feeds mid-size mobile units is shown below in its finished form, ready to roll.



The photo on the left is of the smallest mobile unit and feeds four horses per day. The photo on the right shows David Straight, CEO of the Company, on his farm getting ready to feed his horses. All units unrelated to size are designed to produce the same high quality feed on an ongoing basis. This also applies to the fixed building systems that range in size from 200 horses per day to 5,000 horses per day. Cows consume approximately 1 1/2 times as much feed as most horses. Having a clear picture of a customer's feeding needs sets the size of the system.



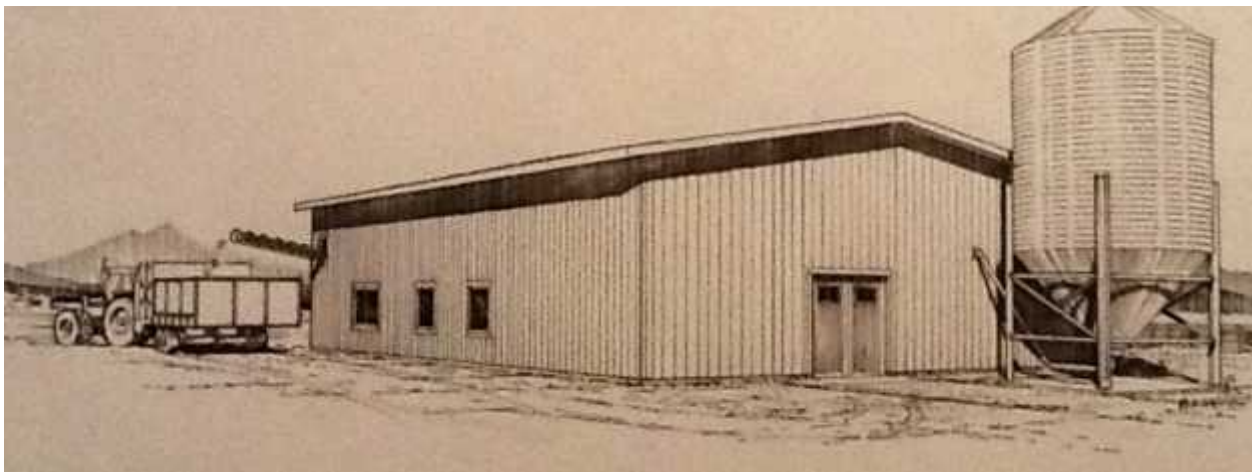
The following images demonstrate how David's highly nutritious, fully-hydrated living-feed, is enjoyed by his horses. Horse owners find their animals are healthier and have added stamina.



The two dairies currently using the Fodder Feeds living foods system are finding, that for fully grown dairy cows, 40lbs of fully hydrated, highly digestible barley greens and sunflower greens supplied daily is sufficient to keep their animals healthy and happy. They have found, for their dairy herds to thrive, the optimum total daily diet, is composed of (75% nutrient and mineral rich barley greens and sunflower greens) and (25% low cost, hay or straw for digestive fiber).

The above balanced diet is in contrast to the typical dry alfalfa hay based diet, which for most fully grown dairy cows in Arizona, ranges from 80lbs to 150 lbs of high quality, dry hay per day, along with nutritional supplements and possible medications. Also, because the hay is dry, the cows need at least 50 gallons of drinking water per day to aid in digestion and to minimize colic.

Key in a successful animal husbandry operation is to have a continuous steady supply of fresh high quality feed on hand daily, unrelated to weather and any of the suppliers' logistical issues.



All Fodder Feeds fixed building feeding systems are constructed as turnkey packages. The above images are of the 250 to 500 animal-per-day feeding system. The president of Fodder Feeds says such facilities can be up and running and fully operational within 7 to 9 months and are operated by a full time manager and one assistant. Barley and sunflower greens are loaded via simple conveyor belt. The facility can cost in range from \$250,000 to \$350,000, depending on location. Such a turnkey system can pay for itself within the very first year of operation.

The two (250 head dairies) currently using the Fodder Feeds System have found there is no longer any need for nutritional supplements or medications of any kind, and in both cases, their dairy cows overall health showed a marked improvement within the first few months of applying the new living foods diet. Other major benefits include elimination of the dry hay storage as well as eliminating chances of stored hay becoming moldy or losing its optimum food value.



## Large Scale Dairy Project - Under Construction

Fodder Feeds is currently contracted to install a fixed building system for a 3,000 head dairy in New Mexico. Currently the dairy's annual feed bill is \$3 million per year including supplements and medications. Once the new Fodder Feeds facility is fully operational feed cost will drop dramatically, from \$3 million per year to \$500,000 per year!

Once the new facility is completed, building, equipment and all, the final cost will be in the range of \$2.5 million. As a result, the dairy owners will save enough on their yearly feed bill to cover the initial cost of the entire new feeding facility within the first 12 months of operation.

There are few investments that can be made today, that return the initial investment within one year. To go from a \$3 million feed bill to a \$500,000 feed bill sounds almost too good to be true. When this fact becomes widely known, interest in Fodder Feeds systems will increase greatly.

There are thousands of dairies and cattle feedlots, horse stables, sheep, goat, hog, chicken and turkey farms all across the U.S. that can benefit greatly from such systems. These systems reduce costs, and at the same time, increase the health and wellbeing of the animals. Animals fed organic feed offer a much healthier quality of food, which sells at much higher prices.

Also, Fodder Feeds systems are easily scaled to fit the exact needs of any size operation.

## The U.S. Animal Feeding Industry

The U.S. animal feeding industry is estimated to be a \$250 billion a year Industry.

**Just 1%** of this market equals, ..... **\$2.5 billion each year**, ..... just 1%.

At the present time, Fodder Feeds is the only company in the U.S. offering a line of large scale, fully automated, fixed building, organic feed growing systems, designed to address this market.

The Fodder Feeds business plan calls for the development of 10 state-of-the-art 80,000 sq. ft. manufacturing facilities that will be strategically placed in 10 regions across the country; and even then, these facilities will only be able to supply a fraction of this 1% (\$2.5 billion) market.

Consider this: companies like Cargill, Purina, Tyson, and Archer Daniels Midland will be slow to change gears and adapt to a whole new way of producing and delivering feed for all grazing animals. These companies are set up to transport, over long distances, corn and seed grains that are easy to store. Companies who want to get into the market to compete with Fodder Feeds will need to be ready to install feeding systems, one dairy and one feed lot at a time. They will need to develop manufacturing facilities just as Fodder Feeds is doing. If others do decide to get involved and based on the size of the market, there is plenty of room for all.

Fodder Feeds, Inc., via its state-of-the-art animal feeding technology is presenting an exciting way to empower the rapidly growing trend of organic animal husbandry, across America as well as around the world, and at the same time, produce healthier, happier animals and save millions of dollars, millions of gallons of petroleum and billions of gallons of fresh water each year.

In Arizona alone, over (250,000 acres) of flood irrigated farm land is currently dedicated to alfalfa hay production. The result is more alfalfa hay (per acre) is grown in Arizona than in any other state in the nation (8 to 12 tons per acre per year). At 10 tons per acre, when applied to the entire states production would equal, **2.5 million tons** of alfalfa per year.

In order to produce **2.5 million tons** of alfalfa hay grown on the 250,000 acres per year, it takes approximately **1,600 gallons** to grow just 20 lbs of dry alfalfa hay. When this fact is taken into account, the amount of fresh water required is over "**400 billion gallons**" each year.

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The following math shows how this massive amount of irrigation water is calculated:

**250,000 acres x 43,460 sq. ft. (1 acre) = 10.89 billion sq. ft.**  
**x 7.5 gals (a cubic ft.) = 81.675 billion acre ft. (1 cubic ft of water per acre)**

**408.375 billion gallons = 81.675 billion acre ft. x 5 acre ft.**  
(consumed each year to grow alfalfa hay on 250,000 acres.)  
Over **400 billion gallons** of this water can be saved each year,

**2.5 Million Tons** of dry alfalfa hay, (AZ's crop) divided by **400 billion gallons** of water, equals;  
(80 gallons per 1 lb) of dry alfalfa hay, or **1,600 gallons** - to produce 20 lbs of dry alfalfa hay.

Which brings us back to the comparison with Fodder Feeds growing system which uses  
**4 gallons** - to produce 20 lbs of; fully hydrated, organic barley and sunflower greens.

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One final point to take into account: while the referendum on the ballot in California, at the time of the presidential election in November did not pass, Prop 37, which called for the labeling of foods that contain Genetically Modified Organisms (GMO's) was widely supported across the state. When such a bill does pass, such labeling will lead the way for other states to follow.

GMO labeling is currently required by many European Union countries, as well as China, Japan, South Korea, Russia, Chile, New Zealand, Australia, India, Saudi Arabia and others. It is important to know that barley seed in the U.S. is still free of genetic modification, which means all of the animals that have diets based on Fodder Feeds barley greens and sunflower greens, can be rated fully organic which means they are totally free of GMO's!

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### **Fodder Feeds Business Plan – First Major Step**

A major step in fully realizing the Fodder Feeds Initial Business Plan is to develop the first of the 10 to 12 regional, manufacturing and feed growing facilities. This first regional facility will be located in central Oregon and will serve as the Fodder Feeds' Headquarters with a systems showroom. In addition to this 80,000 sq. ft. manufacturing facility headquarters, a 25,000 sq. ft. Fodder Feeds food growing facility will be installed. The food growing facility will serve first as a profit center providing fresh living feed for local area customers and second as a demonstration facility to show how the living food is grown and handled on a continuous basis.

Once this first manufacturing facility is completed and fully operational, monthly production levels of both mobile and fixed building systems will be expanded greatly, allowing Fodder Feeds, for the first time, to commit to more orders delivered in much shorter turnaround times.

# 21 Century Agriculture

Key tenet: locally grown organic food at commercial scale.

## Objectives:

1. Minimize risk and limitations related to weather,
2. Minimize need for gasoline and diesel fueled farming equipment.
3. Minimize production and labor cost,
4. Minimize need for fresh water,
5. Eliminate need for insecticides, pesticides and herbicides
6. Eliminate need for petroleum based fertilizers.
7. Optimize nutritional value, quantity, consistency and reliability of agriculture produce.
8. Optimize local commercial scale production of primary food groups
9. Empower the 21<sup>st</sup> century American farmer! (or) Re-empower the American small farmer!

## Results:

The result of utilizing 21<sup>st</sup> Century Agriculture will be the creation of the most stable, highest quality, consistent volume, affordable, organic food production industry in world history!

## Notes:

21<sup>st</sup> Century Agriculture, as defined here, uses technologies and methods locally to produce a wide variety of all organic, nutrient rich produce of the highest quality at pricing that is much lower than any foods created today. This is especially true when the cost of health care is taken into account. Much of America's health problems are diet and pollution related. Health problems such as these, in large part, are caused by the petroleum based industrial farming practices that are still dominating agriculture in the U.S. and much of the world today. The fast food industry, in its present form is supplied by the GMO dominated corn, soybean and sugar industries. Cattle feedlots, dairies, and hog and poultry farms in the U.S. all use GMO animal feed.

If California had passed Prop 37, it would be the first state in the U.S. to pass GMO labeling legislation. GMO labeling is currently required by; many European Union countries, China, Japan, South Korea, Russia, Chile, New Zealand, Australia, India, Saudi Arabia and others. GMO labeling will be required by the U.S., it is just a matter of time.



*with Colleen Tierney*  
*Farmer Communications Assistant*

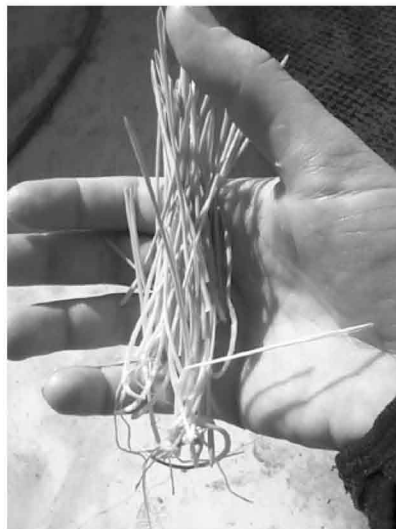
# Sprouted Barley Fodder

## Introduction

The summer of 2012 saw the worst drought in the nation in more than 25 years. As a result, feed costs reached an all-time high, and in August and September farmers had already tapped into their winter feed because of poor crop growth. Meanwhile, some producers around the country were still feeding fresh green fodder to their herds daily.

Most producers know adding fresh green grass to a dairy cow's ration is important because of the increased amount of starches, sugars, enzymes and vitamins. Although many areas of the country do not allow for year-round grazing, producers have the ability to feed fodder everyday by sprouting grain, barley in particular.

Barley fodder is hydroponically-grown barley grass that sprouts from soaked barley seed. Sprouted barley can be grown indoors, year-round, without soil and is ready to feed in six to seven days. In one week, the interwoven white roots of germinated seeds and green shoots form a carpet. The roots will be about two inches thick and a total of eight to ten inches from the root to the top of the grass.



## Before You Grow

Before you start growing, it is imperative to inform your certifier and add growing sprouted barley to your organic system plan. It is also important to conduct small test runs with different seed varieties before purchasing a large amount of seed. This can help determine which types of seed have a higher quality and a lower mold presence. Malting and two-row barley seem to be the most popular with the highest rate of success in growing and palatability.

*Begin by soaking the clean seed,  
and the green shoots can be  
ready to feed in about a week.*

Many factors, such as soaking time; grain quality; grain variety; temperature; humidity; depth and density of grain in trays; and mold incidence, influence the yield and quality of sprouts produced. To achieve maximum yield and nutritional benefits from the sprouts, the grain should be clean, free from broken or infested seeds, untreated and viable.

## Basic Steps

1. Clean and soak the seeds for about eight to 12 hours. Soaking more than 18 hours has been shown to reduce the quality of the sprouts and hinders the germination process.
2. Rinse, drain and spread the seeds into shallow trays that have drain holes. Seeds should be spread to half an inch in thickness.





3. Water a couple times per day, keeping them moist and drained for the duration of the growing cycle at a temperature range of 60° to 75°F. (The lower end of the range may help to reduce mold production.)
4. Harvest at the desired stage of growth (between day six and day eight). Fodder harvested on day six has been shown to have more energy but less overall weight than day seven and eight.

### Nutritional Benefits

One of the main reasons farmers are starting to sprout barley is the consistency in the quality produced. Cattle fed sprouted barley have access to high quality fodder year-round, which allows producers to give them lower-quality feed.

A consistent supply of fodder in the ration may minimize the negative effect of feed changes from grazing to winter feeding or any change in the ration due to feed inventory.

Having a consistent supply of fresh green plant matter during the non-grazing season will benefit a herds' overall health status. The essential vitamins and fatty acids that are present in live green grass and their benefit extend rumen digestion. Immunity and reproductive performance have been shown to improve with long-term fodder feeding.

Positive nutritional changes occur to the grain during sprouting. Complex compounds break down into simpler forms, transforming into essential elements. Energy is the main reason cattle eat grain. When the grain seed sprouts, starch converts into sugar, which is better utilized by the rumen. Analysis comparing sprouted versus unsprouted organic barley showed no increase in starch, but the total starch broke down into more sugars. Although total energy did not increase, when the rumen receives different types of carbohydrates it reacts differently. So for the health of the rumen, sprouted barley presents a much better composition than unsprouted barley.

Mineral and vitamin levels in hydroponically-sprouted barley are significantly increased over those in grain; in addition, they are absorbed more efficiently due to the lack of enzyme inhibitors present in sprouted grain. Sprouts provide a good supply of vitamins A, E, C and B complex. Like enzymes, vitamins serve as



*A consistent supply of fresh green plant matter during the non-grazing season will benefit the overall health of cattle.*



bioactive catalysts to assist in the digestion and metabolization of feeds and the release of energy. They are also essential for healing and repairing cells. However, vitamins are very perishable and, in general, the fresher the feeds eaten, the higher the vitamin content. The vitamin content of some seeds can increase by up to 20 times their original value within several

days of sprouting. These nutrients could result in enhanced microbial activity and growth in the rumen and, consequently, better-than-expected utilization of poor-quality hay.

### **Livestock Benefits**

Producers have found cattle eating sprouted barley tend to stay cooler during high temperatures due to sprouted barley's

high digestibility. Fresh sprouting fodder improves digestion and absorption and uses less energy in doing so, which allows cows to use the energy for such activities as milk production, reproduction, weight gain and more efficient waste management.

### **Cost Benefits**

On average, one pound of barley can produce seven pounds of fodder. If you want to feed 20 pounds of fodder per head per day, initially you would need three pounds of grain per head.

Sprouted barley is 17 percent dry matter, making 20 pounds of fresh fodder equal to 3.4 pounds dry matter. If you are feeding 10 pounds of barley grain and convert that into fodder, it will have the same amount of energy, but improved protein, starch and sugar.

Producers can purchase lower-quality dry hay because their cattle have access to high-quality fodder on a regular basis, saving more money.

Hydroponic fodder production requires as little as 2 percent of the water used under field conditions to produce the same amount of fodder. Barley is considered the best grain to sprout using hydroponics, not only because it requires less water to produce large amounts of fresh fodder, but also barley seeds are available at a lower price than other grains. As of September 2012, barley is \$590 per ton compared to \$790 per ton for corn.

There are many ways sprouting barley can save your farm money, but constantly improving your operation's efficiency seems to be the most important and beneficial.



*Barley grain converted into fodder will have the same amount of energy, but improved protein, starch and sugar.*

## Ration

There are no scientific reports available to determine the most effective feeding rate for completely replacing grain with fodder. As of now, a 100% barley fodder ration is not recommended. Sprouted barley is a highly digestible protein, but for rumen health, we need to slow down digestion by adding dry effective fiber particles. When you feed fodder, which is 17 percent DM, along with pasture, cattle need to have some dry hay to hold the passage of that matter. To keep the cows eating and utilizing their forages, free choice hay should be available. We know cattle will self-regulate in their particle size, so dry hay is important for both the energy and the protein that is going into that stomach.

Including a fodder supplement at 10 percent of the total diet represents 4 pounds (DM) of fodder, or 22 pounds as fed. Every herd is unique and farmers have found success with various feeding rations. Some found feeding 30 to 40 percent barley fodder worked the best, while others feed between 15 and 20 pounds of sprouted barley per head per day along with dry matter.

Feeding 10 pounds of corn represents about 9 Mcal and feeding 10 pounds DM of sprouts represents 8.8 Mcal. The conversion of one pound of dry grain (90 percent DM) into 7 pounds as fed of sprouted material (roots, grain kernel and green shoot – 17 percent DM) is an actual yield of 1.2 pounds DM.

When calculating dry matter intake for sprouted barley, it doesn't follow the rule completely because even though producers are feeding a small amount of dry matter, the quality of the sprouts will replace a larger amount of dry matter feed. The high digestibility of fresh, hydroponically-sprouted barley means the animal needs fewer pounds of feed to produce the same results. Sprouts act beautifully with the rest of the forage you are feeding, which is why feeding 5 pounds DM of something that is 17 percent DM will equal the nutrient value of more feed in the ration.

Even though a lactating dairy cow calls for around

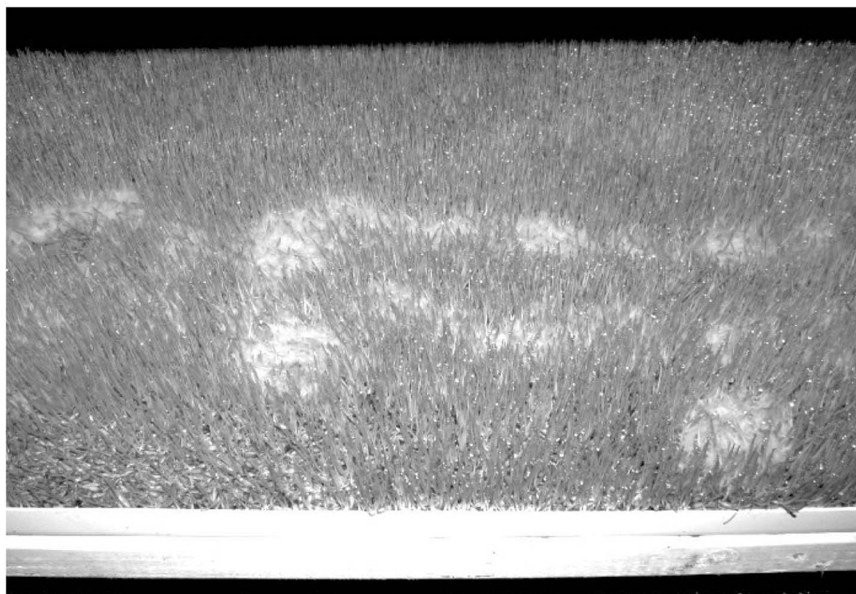
40 pounds DM in the ration, sprout fodder has all the vitamins readily available, better starch availability, less soluble protein and it acts better in the rumen so you don't need as much feed. Cows get the energy and the protein in an improved form.

## Controlling Mold

Mold while sprouting can be dangerous to animals consuming it and costly for producers. Starting with clean seed is the first step in preventing mold growth. Soaking seeds for 10 to 12 hours, then running them under cold water and allowing them to drain in a bucket should hinder mold growth.

Seeds always have traces of mold in them just waiting for the best opportunity to sprout. However, we can control conditions that allow mold to grow. Temperature and humidity can be controlled with fans and dehumidifiers. Farmers have found that forcing air into the grow room and keeping temperatures below 75°F helps regulate humidity and keeps mold away. Pressurizing the room not only helps with mold prevention, but can also increase production.

Cleaning trays between uses can also be done as a preventative measure. Producers can clean trays with chlorine water or a food-grade hydrogen peroxide solution, and then rinse it off before placing seed on trays.



*Sprouted barley, day five mold*

It is important to check with your organic certifier to see what cleaning solutions can be added to water while seeds are soaking as a cleaning agent. Food-grade hydrogen peroxide may be added to the water to help with mold.

No nutrient solution is required for fodder growth; most commercial sprouting systems that come with solution are for controlling mold, not helping the fodder's nutrient value. Recently, commercial machines have been made available to eliminate and prevent mold growth in production rooms.

*The interwoven white roots of germinated seeds and green shoots form a carpet about two inches thick and eight to ten inches from the root to the top of the grass.*



## Conclusion

The 2012 drought caused stress for farmers and their animals. In six to seven days, you can make your farm virtually drought-proof while feeding cattle highly nutritious material. With all the benefits of producing barley fodder, it might be time to reevaluate your current feeding system.

If you have any questions or would like to schedule a consultation with CROPP Ruminant Nutritionist Dr. Silvia Abel-Caines, please contact her at (630) 234-6989. All consultations are free of charge for CROPP Cooperative members.



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*The advice and techniques presented in this bulletin are provided as an educational service. No guarantees are implied or given. Always check with your certifier to ensure inputs are permissible under organic standards.*



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## Summary

Fodder Feeds Systems are being used by customers in 11 Western states, British Columbia, and Texas, Kansas, Wisconsin, Massachusetts and Maine. The Company is now delivering an average of 10 to 12 mobile systems per month, with more orders coming in daily.

The many benefits of the Fodder Feeds mobile and fixed building systems are becoming more and more widely known. Whether customers use the systems for feeding their personal animals, or as built-in-place, larger, fixed-building systems for commercial scale operations, they are all seeing their animal feeding and care costs dropping greatly and their animals health increasing.

To view the full line of Fodder Feeds mobile unit sizes and pricing and to learn more detail about the built-in-place fixed-building commercial-scale systems, go to the Fodder Feeds Website, and feel free to contact me or David Straight directly. Our contact information follows:

Thank you for your interest in the Fodder Feeds Company, and for your interest in a sustainable American agriculture, the true foundation of a sustainable American future.

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