

# Fodder

Growing Fodder: A Safer Way To Feed



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Fodder

## What is fodder?

Fodder refers to any type of livestock feed. This includes everything from straw to pelleted feeds. Back in the day all livestock feed was referred to as fodder, but today the word more specifically refers to sprouted grains and seeds.

There are many seeds and grains that can be grown as sprouted fodder and here they are:

- Alfalfa
- Barley
- Bermuda Grass
- Birdsfoot Trefoil
- Rapeseed
- Rutabaga
- Turnip
- Clover
- Red Clover
- Subterranean Clover
- White Clover
- Brome
- False Oat Grass
- Fescue
- Heath Grass
- Meadow Grasses
- Orchard Grass
- Ryegrass
- Timothy
- Corn
- Millet
- Oats
- Sorghum
- Soybeans
- Wheat



These grains and seeds take about 6-10 days to fully sprout. Once fully sprouted they will weigh as much as 15 times their original weight. This is one thing that makes fodder so appealing to farmers. Fodder is a big money saver.

Nothing goes to waste. The roots, seeds and grass are all eaten by the animals. Not only do the animals benefit from the nutrients that fodder is packed with, they also benefit from its high water content. This is especially beneficial to animals raised in warmer climates.



## The Benefits of Feeding Fodder

Fodder has a quick turn-over. When grown under good circumstances one pound of seed can turn into six pounds of sprouts. Because of its rapid growth and its ability to more than quadruple its weight, this food alternative is incredibly valuable to farmers, homesteaders and those who simply want to find a way to cut down on their feed expenses. Just feeding a single horse can cost upwards of \$100 a month. Imagine cutting that down to \$15-\$30. It's possible.



Growing fodder takes time as it must be cared for on a daily basis, but its benefits significantly outweigh the energy required.

Reduction in overall feed costs alone will make you a believer.

There is little-to-no waste. Your animals, from chickens to horses, will eat the fodder in its entirety- grass, seed, roots and all.

Your animals will benefit from increased nutrition. Not only is fodder rich in vitamins and minerals, it also helps normalize pH, increases enzymatic activity, increases natural hormones, increases amino acids and increases omega 3s.

By growing your animal's food you're able to increase your independence from cultivated land.

A large amount can be yielded from a small area.

365 days a year your animals will have fresh green feed- even in the dead of winter.

Just by growing fodder you'll be able to dramatically reduce your feed costs, increase the nutrients your animals are getting and provide them with this high-quality food year-round.



## **What Makes Fodder So Nutrient Rich?**

When grains and seeds sprout their nutritional qualities transform. Their complex compounds break down into simpler forms that are easier to digest.

An increase in enzymes, proteins, amino acids, fats and vitamins also takes place. All of these take the place of starch.

Because sprouted fodder is fed while it is still extremely young it is considered to be some of the richest enzyme-packed food on the earth. It is estimated that there are 10 times the amount of enzymes in sprouts than in mature fruit and vegetable plants.

The increase in nutrients that occurs within a week's time is remarkable. For instance, 7 day old barley grass has over 8 times the amount of vitamin E than it did when it was a grain and there is 10 times more beta-carotene as well. During this 7 day growth process an increase in crude fiber and crude protein also occurs.

## **The Breakdown of Enzymes**

When grains/seeds are sprouted a breakdown in enzymes occurs, turning them into simpler forms of themselves that are easier to digest. Fats break down into essential fatty acids, proteins become soluble proteins and amino acids, and starches become soluble carbohydrates.

## **Fodder's Powerful Antioxidants**

Antioxidants protect the body from free radicals which cause both short term and long term damage.

Studies have shown that horses who are fed higher levels of vitamins A, C and E (antioxidants) have better nerve function, skin condition, muscle function, blood capillary strength and more.

The body is improved through alkalization. This happens when the body is able to properly neutralize acidic waste and heal itself. The result is a stronger immune system.

## **Why Farmers Are Choosing To Grow Fodder**

*Barley is considered to be the most nutrient of all fodder sprouts, but each has its benefits.*

Sprouts are approximately 78% water. This is one reason why this easy to grow crop is a life-saver for livestock owners in hot and drought-stricken parts of the country (not to mention, the world).

We're seeing an increase in diabetic symptoms in horses, cattle and other grain-fed livestock. This is because of the high sugar contents of what they are consuming. The over-consumption of sugars and starches can cause ailments such as EPSM or PSSM (Equine Polysaccharide Storage Myopathy) in horses. The symptoms of this are "tying-up".

Fodder is low in sugar and is a balanced source of nutrients because it is rich in proteins, fat and fiber.

The highest vitamin concentration found in sprouts is vitamin A (a vitamin horses and other livestock are commonly deficient in if they don't have access to good forage). Vitamin A, thiamin, riboflavin, B12, folic acid, vitamin C and E, niacin and pantothenic acid are all packed into these little sprouts.

Fodder is rich in minerals. Its calcium concentration is 730 per mg/100g. The chromium and copper concentrations are very low (between 0.2-0.5 per mg/100g), but iron, magnesium, potassium, phosphorus and zinc are all accounted for (phosphate at approximately 415 and magnesium at 200+ mg/100g).

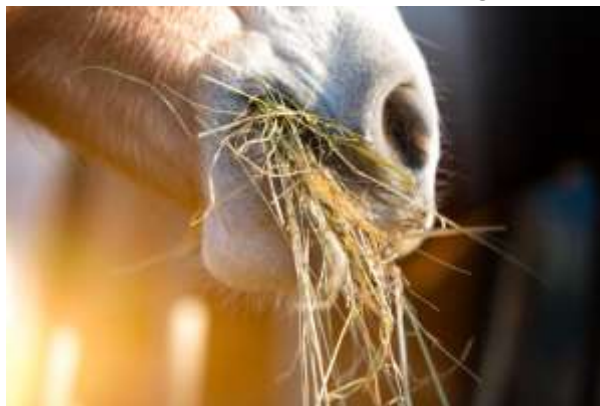
Enzymes, antioxidants and amino acids round out the compounds of fodder. A total of more than 20% per mg in amino acids complete the sprout's healthful contents.

### **Can Livestock Survive on Fodder Alone?**

The short answer is "yes", but let's take a look at what a proper diet consists of.

Fodder is a healthier and more natural feeding option. Not only is it packed with nutrients, it's also alive when fed. While hay and processed grains have their benefits, there's nothing better for the health of a herbivore than lush, green grasses and plants. Hays and grains have simply proven to be more convenient in the past and been easy to store for long periods of time.

The beauty of sprouted fodder is that it has a quick growth rate. In a week or less you can have fresh grown sprouts ready to be fed. This quickly eliminates the need for processed feeds and dried grasses.



Animals such as horses are foragers and because so need a diet with variety to live a healthful life. This means that even though fodder can be a staple of a horse's diet (accounting for as much as 3/4 of its daily intake), horses also need to be able to graze so that they can ingest a variety of healthy plants just as they would do in the wild.

In an animal's case, a single source of food (no matter how nutritious) can cause health concerns in the long run. Imagine eating spinach (and only spinach) for the rest of your life. It's a food that's packed with nutrients, but if it's the only thing you're eating it will cause health problems due to a lack of other important nutrients.

As you begin to feed your horse fodder pay attention to his weight, overall appearance and demeanor and contact your vet if you see anything out of the ordinary. It's also recommended that you get your vet's input before adding fodder to your horse's diet.

### **Health Benefits of Feeding Horses Fodder**

The health benefits of fodder are hard to ignore. Everyone from ranchers to high-level competitors are seeing a difference in their horses and you can too, while also cutting your feed bill by more than half!

*This list of benefits is specific to horses, but is certainly not limited to them as you'll see many of these same benefits in any of your livestock.*

#### **Less Recovery Time Required After Hard Work:**

As with any athlete, recovery time shines a light on how healthy and resilient the body is. The longer it takes the body to recover the farther behind an athlete gets in his/her training. The same is true with horses. A healthy horse that needs less time to recover after hard work is a must from ranch horses to racehorses.



**Reduced Instance of Colic and Ulcers:** Not only is colic a serious issue among horses, but ulcers continue to be a growing problem among show horses who deal with high-stress environments on a regular basis.

**Reduces Inflammation:** Inflammation is the body's way of protecting itself while it goes through the healing process, but when left uncared for it can become the root cause of many health issues in both horses and people. Prolonged inflammation can cause everything from arthritis to chronic digestive issues. This also speaks to the recovery time of a horse. The less inflammation the body has to deal with, the quicker the recovery will be.

**Improved Hoof Health:** We all want our horses to have better hoof health. Barefoot and shod horses both have a great deal of stress put on their hooves whether it's out on trails, working the ranch or competing at the highest levels of competition. A stronger hoof benefits every horse.

**Improved Behavior and Temperament:** Who wouldn't want their horses' behavior to improve? Even the best behaved horses can use an attitude adjustment every once in a while. So why not let their diet improve their moods?

**Higher Energy Levels:** Some of you are thinking "my horse doesn't need more energy, he needs less!" I hear you, but an even level of energy is much different than the strung-out horse. We just talked about improved behavior. Mix that with a healthy amount of energy and you have a well-balanced horse ready to do its job.

**Improved Coat Gloss and Appearance:** Put down that \$50 bottle of shampoo, the extra high shine lacquer and the tub of oil. Just feed fodder. You want your horses' coat to be healthy from the inside out not just appear to be healthy. Not only will your horse enjoy his nutrient packed diet, you'll save hundreds a year.

**Stimulates Appetite:** Is your horse a fussy eater? Does he/she refuse to eat at times? Fodder is a reliable appetite stimulant especially during hot conditions when your horse is more prone to heat stress.

#### **Benefits Specific To Cattle:**

- Lowered pH in rumen
- Faster weight gain
- Healthier weaning of calves
- Reduction in somatic cell counts
- Reduced occurrence of mastitis
- Reduced occurrence of acidosis
- Better digestibility
- Higher conception rates
- Increased breeding and milking longevity
- Higher milk production
- Higher butterfat content in milk



#### **Benefits Specific To Sheep:**

- Improved hoof health
- Lower stress levels in ewes
- Healthier weaning
- Faster weight gain
- Improved pH in rumen
- Reduced occurrence of digestive issues
- Reduced susceptibility to ulcers
- Improved hydration
- Less susceptible to parasite infection

#### **Benefits Specific To Poultry:**

- Higher quality meat
- Improved health
- Better energy levels
- Better egg quality



- Deeper egg yolk color
- Tastier eggs

**Benefits Specific To Goats:**

- Better quality meat
- Improved fertility
- Improved milk production
- Improved quality of milk
- Faster weight gain
- Improved hoof health

**Benefits Specific To Swine:**

- Higher quality meat
- Earlier breeding
- Easier weaning with less complications
- Improved gut function
- Faster weight gain

**Benefits Specific To Horses:**

- Faster recovery time
- Reduced stress and susceptibility to ulcers
- Reduced colic
- Improved coat
- Improved hoof health
- Consistent heat cycles
- Increased fertility
- Reduced inflammation
- Higher energy levels
- Improved temperament

**Benefits Specific To Rabbits:**

- Improved gut health
- Improved meat
- Healthier litters
- Faster weight gain
- Healthier skin and coat





## Starting Fodder

Finding a local grain source is a must if you want to keep your seed and grain expenses low. If you have to drive a long way to find what you need, ask the feed supplier about buying in bulk. This will save you money on each bag and on travel expenses.

### What to ask your feed store guy:

**Is this grain Non-GMO?** Not sure what a GMO is? Watch *OMG GMO* on Netflix. Pronto!

**Is this grain organic?** This may not be important to you, though it is recommended that you find the safest, most healthful seed available.

**How old is this seed/grain?** The age of the seed or grain will determine how well it germinates. You want the freshest seed/grain available.

**Do you offer discounts for bulk purchases?** But remember, the age of the seed/grain is important to its successful growth, so buying in bulk only to store it for months on end will not save you money in the long-run if your seed is too old to properly germinate.



### What You Will Need:

- ✓ **Trays:** Choose BPA (a toxic industrial chemical) free plastic trays thick enough to withstand many uses. Flimsy seedling trays won't hold up and will likely crack after one use because of how heavy the fodder will grow to be.
- ✓ **Shelving:** Wire shelving allows you to position each tray directly above the last. When it comes time to water you simply water the first one and the water will then trickle out of the holes at the bottom of the tray to the next tier and again and so on.
- ✓ **Buckets:** For the first 3-4 days it's easiest to start your fodder seed in buckets. Drill holes at the bottom of each bucket, fill a new one with seed each day and stack. This way you can fill the first one with water and the water will trickle down to each bucket below it, watering all of the seed at once.



- ✓ **Two Spray Bottles:** Fill the first with 2 tablespoons of **white vinegar**. You will use this to clean all of your used trays to kill any mold, mildew or fungus. Don't use diluted bleach for this. People commonly opt for using bleach, but it's never safe to have chemicals around your food.

The second will be filled with 2 tablespoons of **baking soda**. Lightly spray each tray of sprouts each morning to reduce the chance of mold.

- ✓ **Seed/Grain:** This is an obvious must. Barley is a popular grain for fodder growers. It is generally a non-GMO grain and sprouts very well. Here is a list of the most popularly grown fodder seeds and grains below.

- Alfalfa
- Barley
- Brome
- Clover
- Fescue
- Oats
- Red Wheat
- Ryegrass
- Timothy
- Triticale
- Wheat



### How To Set Up Your Fodder System:

1. Soak grain overnight (for 12 hours).
2. After the 12 hour soak, drain the water and repeat the process of rinsing and draining the grain in buckets for 3-4 days or until green grass-like shoots start to appear. Drill small holes in the bottoms of the buckets for drainage. After the initial 12 hours you don't want your seeds to be in any standing water as this will encourage mold growth.
3. After 3-4 days, spread the grain into a sprouting tray that has plenty of drainage holes. Spread no more than 1/2 inch thick.
4. Spray and rinse 2 times a day until the grass is fully matured. During each rinsing, spray a light mist of diluted baking soda on the grain to prevent mold. This happens between days 6-10. Once

the grass reaches its peak it will begin to lose its rich green color. In time you will learn what the grass looks like when it's ready to harvest.

### **Best Fodder Growing Conditions:**

- Fodder grows best in cooler temperatures of 60-70 degrees.
- Keep humidity low to prevent mold.
- Allow for a little bit of sunlight during the last couple of days of growth.
- Keep air circulating with a fan or air purifier.

### **Mold: Safely Feeding Your Animals**

Fodder is an incredible food source for many animals and saves growers hundreds and thousands of dollars on feed and hay every year, but growing it doesn't come without its challenges. No matter how many precautions you take, mold will eventually show up.

Ensuring your animals' safety means keeping your eyes on fodder as it grows. Many have found that large fodder production systems are impossible to keep mold out of without the use of bleach and other chemicals. Many people choose to grow fodder as a safer feed alternative, so using harsh chemicals defeats the purpose because it can affect the health of the animals eating it. Not only that, but these chemicals will also have a negative impact on seed yield. Chlorine is another popular chemical used as well as a variety of mold control chemicals. These all damage the enzymes in the sprouts, then they damage enzymes within the animals and then again in the humans who eat the animals.



Where does the mold come from? Good question. Mold spores are found within grain by the millions and billions. The downside to the way we grow sprouts is that it's the same way mold grows. We are essentially inviting mold by giving it a warm, wet environment.

As an owner of livestock you must take extreme measures to be sure that your animals are safe from harm.

Horse owners everywhere take extreme measures to be sure their animals are safe from harm. But did you know that your horse might be ingesting toxins on a daily basis? Molds and mycotoxins (toxins produced by molds and other fungi) found in crops are on the rise. Livestock producers across the United States are taking steps to minimize feed contamination, such as drying corn, adding propionic acid (a mold inhibitor) to stored grains and inoculating their silages.

### **What are mycotoxins?**

Mycotoxins are harmful secondary compounds produced by molds that are found in the soil and vegetable matter including grains, forages and feed. These toxins can cause respiratory, gastrointestinal, neurologic, and reproductive problems, and in severe cases even death.

### **What are the effects?**

Molds and mycotoxins have different effects on animals. Molds can cause skin allergies, inflammation, respiratory diseases and respiratory blockage.

Here is an in-depth list of Mycotoxins, where they are most often found and their effects.

- **Aflatoxins:** Cause tremors, fever, anorexia, loss of appetite, weight loss, icterus (yellowing of the eye or skin), bloody feces, brown urine, hemorrhages and death. Found mostly in corn, alfalfa pellets and soybean meal.
- **Deoxynivalenol (DON):** Symptoms are reduced feed intake, weight loss in exercising horses, liver damage and reduced immunity. Found in barley, rye, oats, wheat and corn.
- **Ergot alkaloids:** Can cause extended gestation length, agalactia (no milk production), red bag placentas, fetal losses, dead of offspring. Found in grass, hay, straw, wheat, oats, rye and barley.
- **Fumonisin:** Is very toxic to horses and causes equine leukoencephalomalacia (moldy corn poisoning), depression, abnormal behavior, head pressing, ataxia, staggers, stupor, lameness, seizure and death. Permanent neurological damage will be present in animals that survive. Mostly found in barley, rye, wheat, oats and corn.
- **Ochratoxin:** Causes kidney damage and is found in wheat, corn, rye, oats, barley, grass, straw and hay.
- **Zearalenone:** Can cause vaginal prolapse, abortions, uterine and internal hemorrhage and flaccidity of male genitalia. Is most often found in grass, hay, straw, oats, rye, corn and wheat.

### **Preventing Mold**

The good news is that mold can be controlled by using all-natural resources that aren't harmful to the sprouts, the animals, humans or the environment.

Some growers suggest using a few drops of bleach in the water that you initially soak your seed in, but no matter how diluted, this is far from being a safe option. If OSHA requires workers to use a mask, gloves and ventilation when using bleach, why let it come in contact with our animal's food?

It's even more baffling that growers use bleach when there is a safe, natural and organic alternative.

**You will need:**

1. Two Spray Bottles
2. Baking Soda
3. White Vinegar

Mix 2 tablespoons of baking soda with water in one spray bottle and 2 tablespoons of white vinegar in the other spray bottle. You will use the bottle with white vinegar as a safe way to clean and sterilize all of your equipment: trays, buckets, etc.

Spray the baking soda water on your seeds before watering. As you water the baking soda will make its way through the seeds to the bottom of the tray and help prevent mold.

Apple cider vinegar is another safe alternative (in place of white vinegar). However, go light on the ACV. It can be used as a fertilizer in gardens, but too much of it will kill plants, so you can expect too much of it to do the same to your seed. If your trays aren't sprouting like they should, too much ACV is likely the culprit.

Use just a dash per gallon of water. This is the water that your seeds will soak in for 6-12 hours before being spread onto trays for growing. Apple cider vinegar is only needed in the initial soaking. Continued use throughout the growing process will stunt and even prevent the seeds from sprouting and growing.

***Even though you are taking preventative measures against mold, be sure to inspect your fodder thoroughly before feeding.***

Mold can cause harm to animals, but is also a danger to people. Not only is mold prevention important to the health of your livestock, it's also important to your own health as you will be the one handling the fodder on a daily basis. In the instance that your system is set up in your home, the last thing you want is for mold spores to make their way into your HVAC system. This can cause a lot of damage to your home and the health of you and your entire family.

Yet, don't let these warnings scare you. When grown properly the benefits outweigh the challenges. Clean your equipment regularly and follow the "Best Fodder Growing Conditions" guidelines listed above.

**How To: Switching Your Animals From Feed To Fodder**

Like any other diet change, animals need time to adjust to fodder. It's a lengthier process than, say, changing a dog's diet, but in the long run it will be worth the time and energy.

Start by introducing your animal to fodder for the first time. Do this with just a few bites of fodder at a time. Remember: sprouts are unlike anything your animal has ever eaten so go slow. Feeding too much



too fast could result in side effects and a hefty vet bill, or worse, permanent damage to your animals' system.

Mix a few thin slices in with your animal's feed at each feeding. Gradually reduce the amount of grain you're feeding and increase the amount of fodder.

Cut and feed according to your animal's size and eating habits. It's better to feed chickens large pieces or they'll just toss the little pieces around and cause a lot to go to waste. Horses can be fed fodder in big pieces, but it's recommended that you cut the sprouts into smaller bite-size pieces to make it easier for them.

During the process of switching over you may even find that your animals prefer the fodder over their grain. However, don't rush the process just because they're less interested in their grain. Take it nice and slow and keep a close eye on your animals' behavior. At any signs of an upset digestive tract call your vet.

### **Fodder Feeding Percentages: How Much To Feed**

**Equine:** Fodder sprouts can replace up to 100% of your horses' current diet, but it is recommended that 60% fodder (by weight) be mixed with roughage from grazing and hay. This gives your horse a variety in his diet. It's recommended that horses be fed between 1.5%-3% of their body weight to manage a healthy weight.

**Cattle:** Cattle need 12% protein a day for proper growth (and milk production for dairy cows). Grazing alone falls short by about 2% which is why fodder can be incredibly beneficial for proper growth. Feed intake should be approximately 22 lbs. (10 kg) per day.

**Sheep and Goats:** Goats and sheep need about 4% of their bodyweight in food every day. Like horses, these foragers need a bit of variety. 60% fodder and 40% hay or grazing makes for a healthful, well-rounded diet.

**Pigs:** Growing pigs will benefit greatly from a fodder rich diet. As a pig grows his daily intake will increase significantly. For a pig that will grow to be about 250 lbs. feed as follows: 1/2 lbs. to a 6-11 lbs. pig, 1+ lbs. to a 11-22 lbs. pig, 2+ lbs. to a 22-44 lbs. pig, 4+ lbs. to a 44-110 lbs. pig, 5 1/2+ lbs. to a 110-170 lbs. pig, and 6-7 lbs. to a 170-250+ lbs. pig.

**Rabbits:** Rabbits generally eat 1 oz. per pound of weight. For instance, a 3 lb. rabbit will eat about 3 oz. of food daily. Feed fodder and hay in a ratio that best supports your rabbit's digestive system without overwhelming it.

**Fowl:** Chicken calculations are listed below. Turkeys eat about 4-5 lbs. each week. Geese eat 3 lbs. per week, and gamebirds will eat about 1.5 lbs. of food every week. These diets should contain a variety. Fodder is a healthful supplement, but doesn't necessarily need to be a staple of their diet.

Calculation: (hen weight) x 5% = (fodder weight)

**Chickens:**

- Ameraucana: 5.5 lb. bird eats approximately 0.28 lb. daily
- Australorp: 9.5 lb. bird eats approximately 0.48 lb. daily
- Bantam: 1.5 lb. bird eats approximately 0.07 lb. daily
- Brahma: 9.5 lb. bird eats approximately 0.48 lb. daily
- Jersey Giant: 10+ lb. bird eats approximately 0.50 lb. daily
- Leghorn: 4.5 lb. bird eats approximately 0.23 lb. daily
- Orpington: 9.5 lb. bird eats approximately 0.48 lb. daily
- Plymouth: 9.5 lb. bird eats approximately 0.48 lb. daily
- Road Island Red: 6.5 lb. bird eats approximately 0.33 lb. daily
- Silkie: 3.5 lb. bird eats approximately 0.18 lb. daily
- Welsummer: 6 lb. bird eats approximately 0.3 lb. daily
- Wyandotte: 6.5 lb. bird eats approximately 0.33 lb. daily

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