

Manure boosts Wyoming landscapes no matter the source

Growers in Wyoming - even with just a season under their belt - understand our soils leave something to be desired. Starting with a soil test is best to know exactly what that something is.

This previous *Barnyards and Backyards* article has some great tips on getting started: bit.ly/wyoming-soil-health.

USING MANURE AS A SOIL AMENDMENT

The reality is soil amendments are expensive to apply and can take many seasons to see results and show a change in soil quality. Many landscape enthusiasts turn to livestock manure as an inexpensive option. Finding livestock manure sources and understanding what types of manures are better than others can be a challenge. We all know where manure comes from, but how do we get it from there to our landscape?

There are a few different possibilities.

Manure can be purchased in sealed bags from local nurseries or home and garden stores. There are also many sources available through agricultural operations that manage livestock. No matter if purchasing manure from a nursery or sourcing manure from an agricultural operation, ensure, at a minimum, the manure has been aged at least a year. Composted manure is even better.

If done correctly, composting is important for several reasons:

1. Composting heats manure to a temperature that eliminates almost all weed seeds that pass through an animal's digestive system.
2. Composting manure decreases the overall mass of manure and provides a more nutrient-dense media.
3. Composting helps decrease pathogens found in raw manure.
4. Composted manure provides a better media for plants to absorb nutrients.

How to compost animal manure can be found here: bit.ly/composting-animal-manure.

SOURCING LIVESTOCK MANURE

Composted manures have carbon material such as straw, hay, sawdust, or wood chips added to balance the nitrogen-rich manure. A few key things happen when carbon and nitrogen bond together. The pile heats to a temperature that kills most, if not all, the parasites and weed seeds that could be found in the manure (pasteurized – heat treated).

The carbon and nitrogen bond also helps the composted manure smell more pleasant and “earthy,” and the process makes nutrients less likely to leach (move through the soil profile when watered) from the manure, or burn crops. Learn more about this process in this *Barnyards and Backyards* article: bit.ly/small-acreage-manure-composting.

Raw manure should be used with more caution. There are many sources available for raw manure with Wyoming's large agriculture industry. In many instances, livestock managers often clear manure from stalls and pens to keep them clean. The manure is stockpiled for later use or spread in pastures as their own low-input fertilizer.

This raw manure most likely has some carbon material in it from animal bedding or maybe uneaten feed. Even if the manure has been stockpiled and aged, it's less likely the pile has been turned or enough carbon



has been added to the pile to heat it and properly kill weed seeds or potential pathogens.

Managers can easily end up with mounds of excess manure if they aren't using the manure themselves or can't keep up with the amount of manure produced. Some livestock managers will gladly give the manure away (a cow or horse can easily produce 14,000-plus pounds of manure a year) - a win-win for everyone, but because of potential weed or pathogen risk, should not be used in a vegetable garden or with actively growing plants.

MANURE CHALLENGES

It's best to avoid swine, dog, and cat manure in the landscape because they are more likely to have parasites. As discussed above, manure from other types of livestock can also contain parasites or weed seeds. Cattle and horse manure are probably the most commonly used manures with sheep a close third.

Livestock manure does have the potential to contain chemicals found in pesticides. The active ingredients in certain plant herbicides will pass through an animal's digestive system if that animal consumes a plant sprayed with a herbicide. Many active ingredients in herbicides will stay active in the environment and take several years to break down. The chemical can often be present in manure for several years after consumed by an animal. Avoid using manure from animals that have consumed forages that have been exposed to herbicides that control weedy or undesired plants with residual active ingredients.

Many livestock manures also contain salts. Adding extra salt to a flower bed can be detrimental to the soil quality and plant success. Repeated use of livestock manures can build up salts in certain soils. Continued soil testing is important to avoid this. Soil testing will also indicate when the nutrient goal has been obtained; manure, composted or otherwise, should not be added to a landscape long-term without additional soil testing.

For challenges and uses of animal manure in the garden, please visit bit.ly/manure-composts-in-gardens for more information.

MANURE BENEFITS

All manures have nitrogen (N - leaf formation and "greening up" plants), phosphorus (P - root support and flowering), and potassium (K - overall metabolism). These nutrients are also the three numbers on store-bought fertilizer bags. For example, the bag might read 20-10-10 (N-P-K) to indicate the levels of each nutrient. Chicken manure tends to be high in both N and P, while sheep manure tends to be higher in K. Horse and cow manure are more uniform across the nutrients (this can change based on diet). Rabbit manure is also high in N and P.

The diet of an animal can greatly alter the nutrient content in the manure. Here is a bulletin that gives a general guideline for nutrient composition of livestock manures and determining what is needed for application amounts: bit.ly/animal-manure-characteristics.

Adding manure to the soil is not just great for plant nutrient availability, the organic material also increases the water-holding capacity - the amount of water that can be stored in the soil. More organic material in the soil means more water available for plants and less water required to keep plants growing.

Applying livestock manure may mean more intensive management of the garden plot by maintaining vigilance treating "manure weeds," handling and spreading manure, and being mindful of the age or "compost stage" of the manure; however, overall the addition can be low-cost and reap big benefits within the soil composition on plant production.

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