

The Scoop on Poop

by Kathi Joye

One of the unexpected joys of rural living is access to fertilizer. There is an abundance of animal manures in Tuolumne County available to use as soil amendments and/or fertilizers for your garden.

Why use animal manures? They act as both organic fertilizers and soil amendments. As fertilizers, manures are high in the nutrients necessary for plant growth and development. The California Master Gardener Handbook suggests that manures are more complete than inorganic fertilizers, as they provide micronutrients, as well as the macronutrients nitrogen (N), phosphorous (P) and potassium (K).

As soil amendments, manures improve the physical properties of the soil, such as increased aeration, water infiltration, moisture-holding capacity and decreased soil density. Manures also are typically a valuable source of bacteria that help to convert certain nutrients to forms that are more useable by plants.

Are there disadvantages to using animal manures in your garden? Certain types of manure, like horse manure, can contain weed seeds. These can germinate in your garden unless the manure has been composted at high temperatures. Often when you obtain manure in bulk, it is accompanied by bedding. The bedding is organic and contains some nutrients, too, but it is more acidic and slower to break down. Hot composting will enhance the breakdown of this material, as well.

Another potential problem with using animal manures can be salt content. Typically, in well-drained soils, a good percentage of salts found in manures are leached away with rain. In soils that drain poorly, or those that already contain a high percentage of salt, manures can be a problem.

What affects nutrient content in manures? Nutritional value of manures varies by the type of animal. In addition, nutrient value is also affected by water content, how it has been stored, how often it has been handled, the levels of protein being fed to the animals producing the manure and the amount of urine in the manure.

In general, dried manures have more concentrated nutrients than fresh manures. As manure is handled, some nitrogen is lost to the air and leached by rain, leaving less available for plants. Since nitrogen is a primary component of both proteins and the ammonia in urine, the more protein fed to an animal and the more urine found in its manure, the more nitrogen its manure will contain.

What type of animal manure is most advantageous for a home garden? When all the factors that affect nutrient value are held constant, chicken or poultry manures contain the greatest concentration of nutrients. Rabbit, goat and sheep manures are fairly high in nitrogen. Horse manure is less rich than chicken manure, but contains more nutrients than cow manure. Llama and alpaca manures are lower in nutrients but tend to be free of weed seeds, since food is digested a second time. Excrement from dogs, cats and humans should never be used in gardens as they can transmit diseases.

What is the difference between ‘cold’ and ‘hot’ manures? Cold manures release nutrients slowly, extending the time nutrients are available to plants, and decreasing the amount of manure that is needed in subsequent years. Cold manures, such as llama and alpaca manures, can be added directly to newly planted soil.

In contrast, hot manures will burn plant roots and inhibit seed formation if they are added directly to new plants. Typically, hot manures are rich in nutrients, low in moisture content and quick to decompose. Chicken manure, which is considered to be very hot, releases 90% of its nutrients within the first year of application. Hot manures, including those from rabbits, sheep, horses and goats, need to be composted or added to soil several months prior to planting so that it can decompose enough to not be a problem.

Seasoning cold manures as well as hot manures may be the best practice. Recent studies have found food-borne pathogens in drying and incompletely-composted cow manure (cold manure). This should not discourage your use of animal manures in your garden. Just be sure to keep farm animals from coming in contact with vegetable gardens, and don't apply raw manure directly to food-producing plants, particularly near harvest time.

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