Organic Amendments and Fertilizers

What is the difference between amendments and fertilizers?

Fertilizers, such as blood meal, primarily provide a direct source of nutrients to plants. Amendments provide nutrients over longer periods of time, and also alter the soil's structure to promote healthy plant growth, Adding amendments high in organic matter, like compost, can improve water drainage in clay soils and increase nutrient retention in sandy soils.

Identify products approved for organic use

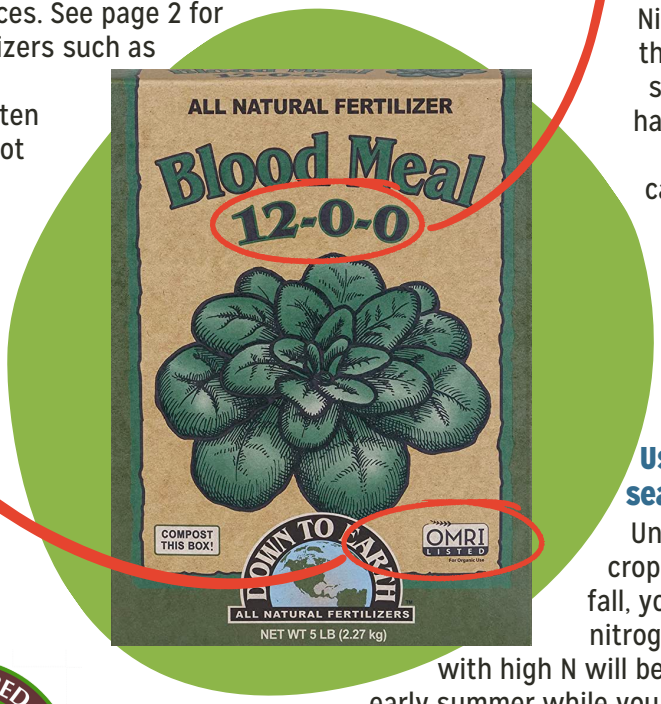
In keeping with our organic standards, we recommend looking for products with the Organic Materials Review Institute (OMRI) label. This ensures that the products are derived from plants, animals, or the earth. Products that are not certified organic may still be acceptable, as long as they are derived from natural sources. See page 2 for common examples. Synthetic fertilizers such as urea and ammonium nitrate are manufactured products that are often derived from fossil fuels, and are not permitted. So always check the ingredients label if you are unsure.

OMRI LISTED
For Organic Use

Other organic materials certifications to look for:

REGISTERED MATERIAL
For Use In Organic Agriculture
Washington State Dept. of Agriculture

REGISTERED
cdfa
ORGANIC INPUT MATERIAL



Identify nutrient contents

Fertilizer packaging displays three numbers representing the percentage of plant macronutrients in the product. These are:

Nitrogen (N) - Phosphorus (P) - Potassium (K)

Look for low P and K ratios

Nitrogen is the only macronutrient that you should apply each year in some form, as Utah soils typically have abundant levels of P and K. In fact, excessive levels of P and K can be detrimental to your plants, so look for products that have little or no P and K. Blood meal, for example, contains 12% N and nothing else. This is an excellent way to promote fast vegetative growth early in the season.

Use high N products early in the season, and low N products later

Unless your soil was recently cover cropped or you applied manure in the fall, you should assume that your soil's nitrogen levels are very low. Fertilizers with high N will be most effective in the spring and early summer while your plants are actively growing and before they have produced a crop. For an extra nutrient boost after June, switch to low N products like liquid seaweed/kelp or kelp meal to encourage fruit ripening. Extracts from compost or worm castings are also good options. With any fertilizer or amendment, follow product instructions and don't add too much, or you may burn your plants.

Application methods for amendments and fertilizers

Working in	Soil drenching	Top dressing/mulching	Foliar feeding *not recommended*
Incorporating materials into the top 2-10" of soil can be done with a shovel or digging fork. Double digging or broadforking are good methods for deeper incorporation (up to 24") in compacted soil. Ideally, wait 2-4 weeks to plant after working in cover crops, manure, or compost. Never dig or till the soil when it is excessively wet. It will damage soil texture.	Drenching the soil requires diluting concentrated liquid or solid fertilizers in water and applying them to the base of a plant. We recommend watering before soil drenching so nutrients can move easily to the root zone of the plant. Pull back any thick layers of mulch before applying a soil drench.	Adding leaves or compost directly to the surface of the soil retains water and suppresses weeds. You can also top dress with granular/solid fertilizers like kelp meal, feather meal, blood meal or worm castings and then lightly "scratch in" the material around plants to fertilize mid-season.	While plants can absorb nutrients through the surface of their leaves and stems, foliar feeding with liquid fertilizers is generally only effective when soil issues prevent nutrient uptake by roots (such as iron chlorosis in fruit trees). We do not recommend foliar feeding as your primary fertilizing method. but don't be afraid to get liquid fertilizers on leaves when you soil drench.

Recommended organic amendment and fertilizer application calendar

	Tasks	Benefits and tips	Application rate
March - April	Terminate and work in cover crops *recommended*	Cover crops may be hand-pulled, tilled, covered with a sheet of plastic, or all of the above. Do not throw away the plant material, as the purpose of growing the crop is to incorporate it into the soil or reapply to your garden beds as mulch after planting. For more cover crop information, see below in September-October.	
	Store mulch for later use *recommended*	Mulch applied in the fall, such as dried leaves or straw, should be raked aside to expose your soil to sunlight and warm up. Decomposed material can be worked into the soil, with the remainder piled in a corner of your garden bed. Do not throw away any mulch material - it will be reapplied in the summer.	
	Apply higher N fertilizer *recommended*	Blood meal is one of the highest organic N sources, and you can apply it in the early spring when working in other materials such as granular humic acid and/or compost, if applicable. For a vegetarian N option, we recommend growing fall cover crops (see below). Soybean/alfalfa/cottonseed meal are other veggie options. Note: leguminous crops (peas, beans, etc.) are light feeders, so apply sparingly where they will be planted.	Limit to 2-3 lb of blood meal p/100 sq ft, or 1-2 lb soybean meal p/ 100 sq ft
	Work in Humic acid *optional*	Humic acid is the end product of organic matter decomposition and a popular soil amendment among organic gardeners for encouraging soil microbiology. However, research on humic acid shows that its effectiveness can vary depending on the source, application method, and environmental conditions. Humic acid can be purchased in granular or liquid form. Liquid humic acid acts quickly, while granular humic acid will take more time to dissolve but will also improve soil structure when worked in.	5 lb of granular humic acid p/100 sq ft, or 4 tbsp liquid humic acid per 2 gal watering can p/50 sq ft
	Work in compost *recommended in new gardens and not recommended in established gardens*	While highly beneficial for improving soil structure and microbiology when first establishing good garden soil, compost contains relatively high amounts of P and K that you don't want in excess. If your soil already has more than 5-10% soil organic matter (SOM), compost is unnecessary and any application should be limited. To determine SOM and other soil nutrient levels, Utah State University Extension offers soil tests for a small fee. Composts can be plant or animal based, while most are a blend of the two. Blends containing aged animal manure with a high proportion of plant materials will be less hot (not as high in N) and safer than blends that primarily consist of animal manure.	Limit compost to a 1/8" - 1/2" layer, or 1-4 cu ft over 100 sq ft, depending on SOM
	Work in manure *not recommended in established gardens or if compost blends are available*	Animal manures present a variety of options for adding organic matter and nitrogen when used with care. Generally, about half of the nitrogen in manure is available in the first season, while the remainder becomes slowly released to plants in the next two years. However, manures should be used sparingly, as they contain P and K, and excessive applications can increase soil salinity. Raw manures, such as chicken/turkey manure, may contain pathogens, higher salts, excessive nitrogen, and weed seeds, so they must be aged before adding to the garden. We recommend choosing safer options that are already aged or composted. Goat and rabbit manure tend to be better options.	Limit to 20 lb goat manure, 9 lb rabbit manure, 17 lb cow manure, or 4 lb of well-aged poultry manure p/100 sq ft
May - June	Fertilize with fish emulsion *recommended*	Opt for liquid fish emulsion over powdered fish meal, as the latter is high in P. Apply via soil drenching through the end of June. Don't worry about getting liquid on the leaves as it will not hurt the plant. Water your beds before application so the liquid can move easily into the root zones of your plants. Apply in the morning or evening if possible. Note: feed leguminous crops lightly as they don't need as much N as other plants.	1-2 tbsp per 2 gal watering can, p/50 sq ft once a week or every other week
	Reapply leaf/straw mulch *recommended*	Re-applying mulch will help your garden retain water, keep the soil temperature cooler and suppress weeds. Be careful not to pile leaves too close or high around the bases of your plants. Be aware that mulch can encourage certain pests, such as slugs and earwigs, so place traps accordingly.	
July - Aug	Switch from fish emulsion to kelp *optional*	Liquid kelp/seaweed is excellent for mid season soil drenching, or kelp meal can be scratched in like blood meal. Kelp is not as high in N as fish emulsion, allowing plants to focus on fruit development instead of rapid vegetative growth. Begin use around July and continue applying once a week or every other week through early September.	2-5 tbsp liquid kelp per 2 gal watering can p/50 sq ft, or 1-2 lb kelp meal p/100 sq ft
September - October	Sow fall cover crops *recommended*	Cover crops are not grown to eat, but to add organic matter and N to the soil, and are often called "green manures." Plants in the legume family, such as hairy vetch, winter peas, clover, and fava beans will take N out of the air and make it available in the soil. These can be planted together with other cover crops, such as rye and daikon radish. For best results, sow as soon as possible in late summer/early fall, such as after harvesting potatoes/onions/garlic, even sowing between summer annuals if necessary. If you run out of time to establish cover crops before winter, you can sow as soon as the ground is workable in Feb-Mar.	
	Add organic matter *recommended*	Use dried leaves or straw to cover your beds for the winter. This will help prevent erosion, protect soil life and suppress weed seeds. Cover crops will also serve this function. If you're concerned about leaves blowing away, weigh them down with trellising materials for the winter.	