



MAKE YOUR OWN COMPLETE FERTILIZER

HGA-00131

For the home gardener, the actual purchase price of chemical fertilizer may not be much. But for people living in the Bush, the cost shipping can be the biggest expense when purchasing commercial fertilizer.

It is important to fertilize gardens in Alaska adequately. So look for a cheaper alternative to commercial fertilizers, but don't skip fertilizing altogether.

There are non-commercial alternatives that use ingredients usually available to residents of rural Alaska, especially to those living a subsistence life-style.

Chemical fertilizers may require the use of non-renewable resources in their manufacture. For some people, this may be reason enough to look for alternative ways to fertilize their garden or field crop.

WHY FERTILIZE?

It's simple . . . we have to feed our plants so that they will feed us. Growing plants take nutrition from soil, water and air. Unless there are enough of the right nutrients in the soil, the plant's growth will suffer. Garden plants can deplete many of the nutrients in the soil unless we replace them each year. The plant's nutrients we supply are commonly called fertilizers.

Fertilization is not that simple to accomplish. The choice of nutrients used, how much to use and where to put them are very important if we want the most out of the fertilizer. The condition of the soil in which the plants and fertilizers are placed is also important to know. For example, if the soil has too much or too little acidity it will not allow the plants to make good use of the fertilizers added.

THE HOME GROWN RECIPE

The three main ingredients or nutrients in a complete fertilizer are nitrogen, phosphorous and potassium. In commercial fertilizers the percentage of each of those ingredients is shown on the label by numbers. For our home variety we use fish waste for the nitrogen, burned bones for the phosphorus, and wood ashes for the potassium.

Fish waste for nitrogen

Fish guts and other discarded fish parts are a good source of nitrogen if handled correctly. Mix 1 part fish waste to 2 parts water. A 55 gallon drum is a good container for preparing an emulsion. Fill the drum $\frac{1}{3}$ full of fish guts and waste, then finish filling it with water. Allow this mixture to rot. Apply this emulsion at the rate of 3 gallons per 100 square feet (an area 10 feet by 10 feet.) NOTE: This will attract dogs, bears and other creatures.

Burn Animal Bones for Phosphorous

Collect animal bones of any type. Burn them into ash. Spread this ash over the garden area at the rate of 3 to 5 pounds per 100 square feet. If you burn the bones in a wood fire, the wood ashes can be part of the applied fertilizer.

Wood Ash for potassium

Wood ashes provide one-third of the three main ingredients. To insure that there is an adequate amount of potassium in your garden soil, apply straight wood ashes at the rate of 5 pounds per 100 square feet or $2\frac{1}{2}$ quarts per 100 square feet.

If a wood-fueled fire is used to burn the bones, the wood ash that is mixed with the bone ash can be used as the potassium source. You will have to estimate what portion of the ashes are bone and what portion are wood. Apply enough of the combined ashes to meet the bone ash (phosphorous) requirement, then if necessary apply more straight wood ash to achieve the potassium requirement.

PRE-MIXING

Some people like to pre-mix the three ingredients and apply it as a liquid mix. This will work only if proportions and application rates are properly figured. By applying each ingredient to the garden separately it is easier to be sure that your application rate is correct.

MANURE

Manure is probably the most common natural fertilizer used by gardeners. Although manure adds other minor nutrients and improves the physical structure of the soil, nitrogen is the main nutrient that is added to the soil. Phosphorous and potassium, either in the form of commercial fertilizer or as bone and wood ash, should be used in addition to the manure.

Manure may come from poultry, cattle, goats or other animals. It's a good idea to compost manure before it is used. Pile it up so that it heats itself and decomposes (rots). See *The Compost Heap in Alaska* (ACE # HGA-1-022 for more information on composting. Be sure to compost horse manure and pig manure. Horse manure may infest your garden with weeds unless composted. Do not use dog manure because it contains organisms that can cause diseases if people eat vegetables fertilized with it - especially if they are root crops like carrots or potatoes.

APPLICATION TIME

It is best to apply fertilizers in the spring before planting, and it is usually wise to add more fertilizer about the middle of the growing period. After the plants begin growing, fertilizer should not be applied directly to growing plants, but should be placed alongside each row of plants so that the fertilizer seeps into the soil without contacting the plant leaves or roots.

Organic fertilizers can be worked into the soil in the fall after all the garden crops are harvested. There may be some loss of nitrogen before spring because of runoff or leaching, but much of the nitrogen will stay in the soil. Fall application is an alternative to storing the fertilizer materials over winter. If organic fertilizers are stored over winter, protect them from water and moisture. Nutrients can leach out if water runs through the stored fertilizer.

Adding nitrogen in the fall could cause perennial plants (plants that overwinter and grow again in the spring) to start tender new growth that would put them in more danger of winter-kill. Therefore, in the fall avoid putting fish waste or manure on or near any plants that you expect will grow again the following spring.

FERTILIZER ANALYSIS

The approximate chemical analysis for the home-made fertilizers described are:

FISH EMULSION - 9 to 10 percent NITROGEN available to the soil

BONE ASH - 22 to 27 percent PHOSPHOROUS

WOOD ASH - 8 percent POTASSIUM

By applying these ingredients separately, you can control the application rate to fit the soil conditions of your garden - if you have gotten a soil analysis. For an explanation of soil fertility and fertilizer analysis terms see *Soil Fertility for Home Garden and Greenhouse* (ACE # HGA-00033), available from the Alaska Cooperative Extension.

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More detailed explanations of soil condition requirements and successful fertilization can be found in other Alaska Cooperative Extension publications available from your local Alaska Cooperative Extension Office. *Soil Fertility for Home Garden and Greenhouse* (ACE # HGA-00033) and *Soil Sampling* (ACE # HGA-00044) are very helpful.

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