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NORTH DAKOTA STATE UNIVERSITY

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# Lawn and Garden FERTILIZERS



Virgil L. Weiser  
Soils Specialist

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no. 294

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**EXTENSION SERVICE**  
NORTH DAKOTA STATE UNIVERSITY  
FARGO, NORTH DAKOTA 58102

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## LAWN AND GARDEN FERTILIZERS

GARDEN VEGETABLES vary in their plant food requirements. While all garden crops may be benefited and not harmed by quite high levels of available phosphorus and potassium, the desirable nitrogen level varies with different types of plants.

Leaf vegetables do best with high nitrogen levels and root crops with moderately high amounts of nitrogen. Vine crops, tomatoes, beans, peas and other fruiting vegetables respond to lower amounts of nitrogen and may be harmed by the high amounts that would be useful on leaf and root crops. Root crops with too much nitrogen often produce large tops and small roots.

### USE PHOSPHORUS AND POTASH LIBERALLY

A general fertilizer treatment for gardens should aim at maintaining a high level of available phosphorus and potassium. The liberal use of these fertility elements is advisable to insure that they are not deficient. With nitrogen, more care need be used in making general applications to the garden area. The amounts beneficial to the less tolerant crops should not be exceeded.

The small area devoted to each vegetable in the average home garden hardly justifies a great variety of different fertilizers. Because of the relatively small amounts of fertilizer needed for the home vegetable garden, strict economy in its use is not too important.

Lime is not recommended on North Dakota garden soils.

### MANURE IMPROVES SOIL CONDITION

Well-rotted manure and other organic materials are of greatest value in improving the physical condition of heavy or compacted soils and in making sandy and gravelly soils hold water better. Such organic materials also serve as a fertility bank, slowly releasing fertility as they decompose.

### FERTILIZER RECOMMENDATIONS

The following fertilizer materials, rates and methods of application are suggested for use on gardens:

Barnyard Manure (well rotted) -- 20 tons per acre; or 1 bushel per 30 square feet or, 1 pound per square foot.

Spread manure before plowing or spading and work in as soil is worked. Avoid using manure containing weed seeds and live roots.

## HOW TO APPLY COMMERCIAL FERTILIZERS

### Broadcast applications on the garden area --

Spread fertilizer on soil as evenly as possible. It is best to do this before garden is plowed or spaded, or spread fertilizer on soil in spring before seeding and work into the soil to depth of 2 or 3 inches with tillage machinery or garden hoe or rake. This is a good method to provide fertility throughout the general rooting zone over all the garden.

Row applications -- Apply the fertilizer in a shallow trench along the seed row or along the row of growing plants during the growing season and cover with soil. Keep fertilizer 2 inches away from seed and far enough from the row of growing plants so roots are not pruned in making the furrow. Use this method in place of the broadcast treatment or as a supplement to it for special types of garden crops.

Starter solutions -- Starter solutions are used to give a vigorous start to transplants such as tomatoes, peppers, cabbage, etc. Apply fertilizer solution to soil around plant after transplanting and then water.

COMMON FERTILIZER GRADES WITH SUGGESTED RATES FOR BROADCAST OR ROW APPLICATION

Fertilizer Grades*	Broadcast	Row Application Rates
	Lbs. per 1000 square feet	
2-12-6, 4-12-4, 5-5-2	20	1 heaping tablespoon per 3 feet of row or 1 pound per 50 foot row.
5-10-5, 6-10-4, 6-12-12, 4-24-12, 6-24-12	15	1 heaping tablespoon per 4-1/2 feet of row or 3/4 pound per 50 foot row.
5-20-20, 8-24-12, 8-10-5, 8-8-6, 3-36-6, 8-32-8, 8-32-16, 9-36-0, 10-30-10	10	1 heaping tablespoon per 6 feet of row or 1/2 pound per 50 foot row.
10-40-0, 12-24-12, 11-48-0, 13-39-0, 16-48-0, 18-36-0, (0-42-0 to 0-50-0)	5	1 heaping tablespoon per 12 feet of row or 1/4 pound per 50 foot row

\*This is not a complete list of fertilizer grades that may be suitable for gardens - use it as a guide for applying other fertilizers.

For leaf vegetables -- Leaf vegetables may respond to higher rates of nitrogen than supplied in the general garden area treatments just suggested. Additional nitrogen may be supplied by a band treatment alongside the row at planting time or after the plants are well started. Use row rates as suggested for above fertilizers or use other fertilizers of higher nitrogen content at 1/4 to 1/2 pound per 50 foot row. (Fertilizers with higher nitrogen content are listed for lawns.)

Starter solutions for transplants -- Two ways to prepare starter solutions are: (1) Commercially prepared starter solutions. Follow directions on container. (2) Add 1 ounce of any dry fertilizer materials listed in the table to a gallon of water (1/2 cup to 4 gallons of water). Use 1 cup (1/2 pint) of resulting solution for each transplant.

## LAWN FERTILIZERS

Lawns differ in fertilizer requirements, depending on the kinds of plants you want. Most North Dakota grass lawns respond well to nitrogen fertilizers. Clover in grass-clover mixtures will compete more effectively with the grass if a nitrogen-phosphorus fertilizer is used than if nitrogen alone is used on the lawn. An old lawn might benefit from phosphorus and potassium on certain sites, especially if clippings are removed.

If grass is mowed frequently so that clippings are short, leave clippings on the lawn. They will return fertility to the soil as they decay. Removal of clippings is advised if mowing is infrequent and clippings are especially long.

Application of lime is not recommended on North Dakota lawn soils.

Proper watering is a major factor in lawn success. The best practice is to soak your lawn until water penetrates the soil 4 to 5 inches or more at each watering, rather than to use frequent light sprinklings that merely wet the surface half-inch or inch of soil. Lawns will not respond well to fertilizers unless well supplied with water.

The following fertilizer materials, rates and methods of application are suggested for use on lawns:

Barnyard Manure (well rotted and screened) -- 20 tons per acre or 1 bushel per 30 square feet or 1 pound per square foot.

On established lawns apply manure early in the spring and rake to spread evenly. Applications repeated every few years will assist in building a good turf. In seeding new lawns, broadcast and work manure into the soil before seeding at recommended rates, then spread a thin layer on the surface after seeding.

Sewage sludge is available from sewage plants in some cities. This is a good substitute for manure. Use it at the same rates and in the same manner as manure. Such organic materials help keep the soil in good physical condition and release fertility slowly as they decay.

Commercial fertilizers for established lawns -- Broadcast by use of a lawn fertilizer spreader or by careful hand distribution to get even coverage. Fertilizer applied in late fall or early spring when the grass is dormant reduces chances of burning the foliage. Additional fertilizer applications may be desirable during the summer but care is required to avoid injury which will result in yellowing of the grass. Do not apply fertilizer if grass is moist. Apply to dry grass and water thoroughly. Fertilize and water 500 to 1,000 square feet at a time so fertilizer salts are washed off the leaves and into the soil soon after application. Most desirable periods for summer applications are about mid-June and late August.

In the following table use the higher rates where an old lawn is being fertilized for the first time or where only one application is to be made during the year. Use toward the lower rates if the lawn has been fertilized regularly and lowest rates if two or more applications are to be made during the year.

Commercial fertilizers for new lawn seedings -- For new seedings use commercial fertilizers at one-fifth the lower rate listed in table for established lawns. Broadcast fertilizer evenly and work into soil lightly before seeding. Fertilize at heavier rate only after turf is well established (after several mowings).

#### NITROGEN FERTILIZERS AND RATES (MAIN NEED FOR LAWNS IS NITROGEN.)

Fertilizer Grades	Lbs. per 1,000 square feet
*20-0-0 ammonium sulfate	5-10
33-0-0 ammonium nitrate	3-7
45-0-0 urea	2-5
38-0-0 urea-formaldehyde compounds (slow release of nitrogen)	3-10
27-14-0, *20-10-5, 24-20-0, 23-23-0, or any other mixed fertilizers containing 20 per cent or more of nitrogen.	5-10
16-20-0, 16-16-8, 14-14-7, 12-12-6 or others containing 10-20 per cent nitrogen.	8-15
*4-12-4, *5-10-5, *6-10-4, *8-10-5, *8-8-6, *10-6-4, or others containing less than 10 per cent nitrogen.	15-30

Nitrogen and phosphorus, or nitrogen, phosphorus and potassium fertilizers, are for occasional use or for use on special sites or where clover is desired in the lawn.

\*NOTE-commercial fertilizers with formulas marked with an asterisk above are usually obtainable in small packages from hardware stores, seed stores, greenhouses, florists and variety stores. Those not marked are usually sold in 80 pound sacks with some in 50 pound sacks.

#### OTHER LAWN AND GARDEN PROBLEMS

Poor growth of gardens and lawns is not necessarily due to lack of soil fertility. Other conditions that commonly cause poor growth are: Poor varieties, insect and disease damage, too much shade from trees and buildings, too much heat reflected from buildings, over-watering, not enough water, or use of salty water. The soil may be hard and cloddy, too sandy, too gravelly, too salty or poorly drained. Often building material wastes or other injurious materials have been added to the soil

Determine if other conditions for growth are favorable before you decide commercial fertilizers are needed.

