University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Historical Materials from University of Nebraska-Lincoln Extension

Extension

1951

EC194 Which Nitrogen Fertilizer Shall I Use?

M. D. Weldon

W. E. Ringler

Follow this and additional works at: http://digitalcommons.unl.edu/extensionhist

Weldon, M. D. and Ringler, W. E., "EC194 Which Nitrogen Fertilizer Shall I Use?" (1951). *Historical Materials from University of Nebraska-Lincoln Extension*. 4310.
http://digitalcommons.unl.edu/extensionhist/4310

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Historical Materials from University of Nebraska-Lincoln Extension by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

AGRI
1951
S
85
E7
#194

Department of Entomology
University of Nebraska
Lincoln, Nebr.

E. C. 194

Which Nitrogen Fertilizer Shall I Use?

M. D. Weldon and W. E. Ringler

The nonlegume crops such as corn, small grains, grass, potatoes, sugarbeets, sorghum, and others need plenty of available nitrogen in the soil if they are to make good yields. The nitrogen is best supplied by growing a legume crop such as alfalfa or clover, or by spreading manure on the land. Where neither manure nor a legume crop has been used for some years, it usually pays to apply a commercial nitrogen fertilizer.

There are several nitrogen fertilizers on the market. These are about equally good if used at rates which will supply the same amount of nitrogen per acre. The main difference in these fertilizers is the percentage of nitrogen in them. There is no great difference in how fast the nitrogen becomes available. There is considerable variation in the condition of the fertilizers, but the difference in condition of different lots of any one fertilizer may be greater than the variation between different fertilizers. The more common nitrogen fertilizers on the market in Nebraska are listed in the table below.

Fertilizer	% Nitrogen	Pounds of fertilizer to supply 40 lb. of nitrogen	Cost per Acre
Sodium nitrate	15.5 to 16	260	
Ammonium sulfate	20.5 to 21	200	
Calnitro	20.5	200	
Ammonium sulfate-nitrate	26.	150	
Ammonium nitrate	33.	120	
Urea (Uramon, Nugreen)	42.	100	
Anhydrous ammonia (liquid)	82.	50	

In the above table, one column shows how much of each fertilizer to use in order to supply 40 pounds of nitrogen. This is the rate per acre most often recommended for small grains, corn, and sorghum. The column headed "Cost per acre" is left blank. If you find out the cost of a ton of each

UNIVERSITY OF NEBRASKA-LINCOLN
R02378 93583

UNIVERSITY ICULTURE
AND URE
COOPERATING
W. V. LAMBERT, DIRECTOR

of these fertilizers, you can figure the cost of the amount of fertilizer which will supply 40 pounds of nitrogen per acre and fill in the blank column for yourself. This will show you which of the nitrogen fertilizers is most economical to use. They are all about equally effective on crops, if used in the right way. The fertilizer which costs the least per acre is therefore the most profitable, as a rule.

All of the nitrogen in sodium nitrate is available to crops as soon as the fertilizer gets into the soil. Nitrate will dissolve quickly in a light rain or a heavy dew, and will go into the soil with the moisture. Because of its low percentage of nitrogen, the freight rate and handling costs on sodium nitrate are high, and it is usually one of the more expensive nitrogen fertilizers.

Ammonium sulfate comes in two forms, powder and crystalline. The crystalline form is more drillable and stays in better condition. Both the powder and the crystal forms of ammonium sulfate have much less tendency to absorb moisture from the air and become lumpy than any of the other nitrogen fertilizers. It is true that ammonium sulfate tends to leave more acid residue in the soil than the other fertilizers, but this should not stop you from using it. It takes only 300 pounds of limestone to neutralize all the acidity developed from 200 pounds of ammonium sulfate, and limestone is cheap. So if your soil is acid, put on lime, no matter which fertilizer you use. And if your soil is limy or alkaline, a little acid may do some good.

Calnitro is a mixture of calcium nitrate and ammonium nitrate. It is quickly available to crops. In the form of pellets it is easy to handle, but it tends to absorb moisture and should be stored in the driest place you can find.

Ammonium sulfate-nitrate is a mixture of ammonium sulfate and ammonium nitrate. It has been popular in Europe for many years. It seems to be in good granular condition. It will keep better than ammonium nitrate, but may tend to absorb moisture more than ammonium sulfate. A large part of the price is due to the freight cost from Germany, particularly the overland freight.

Ammonium nitrate is well known to most Nebraska farmers. It may become lumpy in storage, but does not "lose strength" as many people seem to believe. When broadcast on the surface, it dissolves in the soil moisture or dew and soaks into the soil, ready for use by plants. It does not evaporate into the air, as many people believe, but stays in the soil. This is true of all of the nitrogen fertilizers. Nitrate moves with the soil moisture, and can be leached below the reach of plant roots by very heavy rains or irrigation, especially in sandy soils with gravelly subsoils, but this is very unusual.

Urea is an organic compound containing 46 per cent nitrogen. It is sold under the trade names of Uramon and Nugreen which contain 42 to 44 per cent nitrogen. In powder form it is hard to handle in fertilizer attachments. It is about as effective per pound of nitrogen as the other nitrogen carriers named above.

All of the above-named nitrogen fertilizers are readily soluble in water and can be made into concentrated solutions by dissolving in water. Concentrated solutions may be applied to the soil but will cause injury if sprayed on the growing crop.

Anhydrous ammonia is a concentrated nitrogen fertilizer containing 82 per cent nitrogen. It is a gas at ordinary temperature and pressure. It is usually stored and shipped in strong tanks as a liquid under pressure. The pressure depends entirely upon the temperature as described in E.C. 195.

Ammonia is very soluble in water and can be applied in irrigation water by releasing it into the water in the lateral. The usual method of application is by means of a special implement which injects the gas into the soil. For detailed description of anhydrous ammonia and its use as a fertilizer, see E.C. 193.

Cyanamid contains 20.5 per cent nitrogen. It is not listed in the table on page 1 because it requires special methods of application and is not on the market to any considerable extent in Nebraska. It is not suitable for application at planting time and is not considered good for top-dressing, as under certain conditions it becomes poisonous to young plants. It should be applied at least a week or two before planting.