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**Southern Loan and Savings Bank** CHARLOTTE, N. C.

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**When to Use Nitrate of Soda.**

Prof. M. E. Sherwin, N.C. A. & M. College.

I recommend without hesitation the use of nitrate of soda by those who understand its nature; not, however, in very large amounts, or as the only source of nitrogen, or for use late in the summer. There are limitations to its use which should be understood by all farmers before they attempt to use it. Judiciously used nothing else will take its place so well; injudiciously used nothing else is so extravagant.

The points which recommend nitrate of soda most strongly are (1) its solubility and availability without further chemical change, and (2), its tendency to cause deep rooting.

**Solubility and Immediate Availability.**

Nearly all nitrogen must be in the nitrate form before being used by plants. Nitrate of soda, being already in that form, is of use to plants at once without waiting for a longer or shorter period of decay and nitrification. This makes it especially desirable as a fertilizer to start a rapid vegetative growth of grass or winter grain in the spring when the temperature has become sufficiently warm for the growth of these crops but before it has become warm enough for nitrification to proceed rapidly. It is also excellent for starting a rapid growth of cotton or other crops which has been checked by a period of cool wet weather and which does not seem to easily regain its vigor. For starting rapid growth at such times fifty to one hundred pounds per acre is generally sufficient.

**Tends to Cause Deep Rooting.**

As stated above nitrate of soda is entirely and quickly soluble in water. But unlike most soluble fertilizers it cannot be held from leaching to any great extent, hence it passes downward very readily in the soil water which in turn causes the plant roots to strike downward to get it. This deeper rooting is a decided benefit to plants in dry seasons, as with its roots deep a crop is not so disastrously affected by drouth. It has been reported also on good authority that its benefit in comparison with other nitrogenous fertilizers is greatest in periods of excessive wetness because its availability is unchecked by the soil conditions which prevail at such times. A good time to apply it is just after a rain or at least on moist soil; not on dry soil.

The points which may be advanced against the use of nitrate of soda as a fertilizer are principally those which are brought against it on account of its injudicious use. These are (1) its solubility with consequent danger of loss by leaching, (2) ill effect on certain nitrogen fixing and nitrifying bacteria, (3) ill effect on the soil the following year. In addition to these it sometimes injures crops by being allowed to fall on the foliage. This draws water from the plants and burns them. Care should always be taken to keep it from direct contact with the plant.

**Danger of Loss by Leaching.**

This is reduced to a minimum when the nitrate is put on in small amounts at a time as recommended above and when put on at a season of the year in which crops can grow, as it is taken up very fast, especially by young plants. There is more danger of loss by leaching on sandy land than on clay land, hence

the applications to sandy soil will usually be lighter and more frequent. It may be stated that there is also less need of its use on sandy soil as other nitrogenous fertilizers not so much subject to loss are more readily available on sandy land than on clay land and may well replace the nitrate in part.

**Ill Effect on Bacterial Activity.**

Nitrate of soda exerts a depressing influence on nitrogen fixing and on nitrification. It should not be used for legumes except in very small amounts at the very beginning of growth if it is desired that the legumes shall make use of the free nitrogen of the air. The ill effect of nitrate of soda in this respect is more marked than that of other nitrogenous fertilizers, though high nitrogen fertilization is never recommended for legumes. Amounts recommended above will not show any depressing influence on nitrification but very large amounts may.

**Ill Effect on the Soil.**

There have been cases reported where heavy applications of nitrate of soda have caused a puddling of clay soils but this would not occur if used on soils which also receive acid phosphate. Hence the ill effect generally mentioned is not due to this puddling but seems to be due to heavy applications of nitrate late in the summer which stimulates rapid vegetative growth at a time when the plant should be normally maturing and which thus causes the crop to drain the land of all other available plant food and leave it "dead." The best advice is to depend upon humus nitrogen and nitrogen from organic fertilizers during the summer months when these can become readily available by decay and nitrification. If good supplies of humus nitrogen are present we will not feel the need of late applications of nitrate.

To summarize we would say, Use nitrate of soda if you know how and when and where to use it; otherwise leave it alone or follow the advice of some one capable of advising. It may be used safely in moderate amounts.

1. To start growth in the spring, or
2. Later in the season when crops have been stunted by cold, wet weather.
3. With less danger of loss on clay than on sandy land.
4. After a rain or on moist soil, and when so used will give more satisfactory results than any other nitrogenous fertilizer.

It should not be used:

1. In very large amounts.
2. In direct contact with plants.
3. On very dry soils.
4. On legumes when nitrogen fixation is desired.
5. Without being balanced the same season by other plant food.
6. In lieu of humus nitrogen late in the summer.

**TOBACCO MEETING.**

At a meeting of a joint committee to-day at Reidsville it was ordered that a meeting of the county presidents, secretaries, trade agents, dry prize officers, delegates, and, in fact, all farmers interested in tobacco culture, be called at Reidsville, March 28, at 7:30 p. m. This meeting will look to the handling of the crop of 1913 and the general development of the tobacco business in the hands of the farmers. All counties in Virginia and North Carolina growing tobacco are urged to send delegates. All members are invited. This means much. Let all members who can attend, do so. W. T. SWANSON.



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