

**How to Fertilize.**

Every farmer knows that plants need Food as much as cattle. He knows, too, that plants cannot get all the Food they need out of the ground alone. He must supply them with certain Foods himself, or they will not thrive and bear their full yield of fruit. Exactly as he supplies hay and oats to his horse, so he must supply Nitrogen and phosphate to his plants. He may buy these in the open market exactly as he does his hay or his oats, or he can buy them in combination. Moreover, there is no secret value in the "complete fertilizer," it is nothing more nor less than the ingredients combined and sold at a higher price. Nitrogen is by far the most expensive as well as effective of plant foods, and it will pay the farmer well to stop and think before he buys it in this combination form or waits season after season for legume nitrogen, or organic nitrogen to become available.

These compounds generally averaging 8-2-2 do not supply what nature requires, for the crops take out more nearly the equivalent of a 2-4-3; that is why we can, in most cases, and in most soils, use Nitrate alone as a straight top dressing, and the earlier the better.

Translated into Commercial Fertilizer terms, the comparison is as follows:

	What Nature Requires	What the Average Brand Supplies
Phosphoric Acid.....	2.02	8.00
Nitrogen.....	4.33	2.00
Potash.....	3.65	2.00

**The Best and Cheapest Nitrogen.**

The cheapest and most practical form in which to furnish Nitrogen to plants is Nitrate of Soda. In the rainless region of Chile are stored away vast quantities of Nitrogen in what are known as Nitrates—the only form in which Nitrogen can be utilized by plants. The Nitrogen which exists in organic, vegetable or animal matter—that is, roots, stems, dead leaves, weeds, leather, tankage, dried blood—and Nitrogen as well in the form of Ammonia salts, must first be changed to Nitrate before it can be taken up by plants. This change is dependent upon conditions of weather. If the season be backward, or there be a prolonged drought, this change may be so retarded as to deprive the plant altogether of Nitrate Food at the very time it needs it most; moreover, certain mineral forms of commercial nitrogen leave acid residues in the soil. Nitrate of Soda, on the other hand, is entirely independent of weather and leaves the soil sweet. It is immediately available under all circumstances, for it is readily soluble, and as soon as it comes within reach of the roots of plants it is taken up by them. It can, therefore, readily be seen that the practical value of various forms of Nitrogen ranges from nothing at all, where conditions of temperature or soil prevent Nitration, to 100 per cent. as Nitrate of Soda, where Nitration has already completely taken place. Moreover, the process of transforming the Nitrogen of cottonseed meal, dried fish, dried blood, tankage, and other Nitrogenous constituents into Nitrate is very wasteful, for much valuable nitrogen is lost in the process, as well as by natural oxidation. Official soil experiments have shown that 100 pounds of Nitrogen in these organic forms has only about one-half to three-fourths the manurial value of 100 pounds of Nitrogen in its NITRATED form of Nitrate of Soda.

**A Great Saving.**

In view of these facts it seems extraordinary that farmers should continue to purchase their Nitrogen in compounded form in a ready mixed fertilizer, when they can procure it much cheaper, and ready for the plants' immediate use, in the form of Nitrate of Soda.

Nitrogen is often in a form which is not available as food for the plants, for it must first be converted into Nitrate. The time required to do this varies from a few days to a few years, according to the temperature of the soil and the kind and condition of the materials used.

It must be recognized that the grower should have a chance to derive some profit from the use of a fertilizer, and wise buying is a prerequisite to successful use.

**How it Helps Crops.**

If a young pig or a young calf does not have an abundance of the right kind of feed when it is young, it becomes stunted in growth, and never recovers fully, no matter how judiciously it is afterwards fed. The intelligent cultivator has learned

**Results With Nitrate.**

For four years in succession samples of Nitrate of Soda were sent to farmers. In each experiment two patches were marked out side by side. One received an application of Nitrate of Soda at the rate of 100 pounds per acre, the other had none.

**Why Europe Makes Bigger Crops Than America**

**Average Production of European Crops is as Follows:**

Wheat.....	33 bushels per acre
Oats.....	45 " " "
Potatoes.....	199.84 " " "
Cotton in Egypt.....	400 pounds " "

Europe uses a Home-Mixed Nitrate Fertilizer containing 8 per cent. of Phosphoric Acid and 4½ per cent. of Nitrate Nitrogen.

The difference in yields is largely due to a larger amount of Nitrate Nitrogen used in Europe per acre as Nitrate of Soda. Our small American acre yields are due to failure to appreciate this necessity.

Write for "What Chilean Nitrate Has Done in The Farmer's Own Hands."

DR. WILLIAM S. MYERS

CHILEAN NITRATE COMMITTEE, 25 Madison Ave., New York, U.S.A.

**Average Production of American Crops is as Follows:**

Wheat.....	14 bushels per acre
Oats.....	40 " " "
Potatoes.....	97.15 " " "
Cotton.....	185 pounds " "

America uses a Fertilizer containing 8 per cent. of Phosphoric Acid and 2 per cent. of Nitrogen which is mostly not readily available.

that this holds good in the feeding of plants. Nitrogen is the element which enters most largely into the building up of the plant itself—roots, stems and leaves. Most plants need to take up the greater part of their Nitrogen during the early stages of their growth, as in oats. It is plain, therefore, that the cultivator cannot afford to overlook Nitrate, and thus endanger the chances of his crops, which must have Nitrogen in a form the growing plants can use. The presence of Nitrate at the outset enables the plant to get its food when it needs it most, and develops a vigorous growth of roots, leaves and stems capable of withstanding the scorching rays of the sun or sudden changes of temperature, disease, or the attacks of parasites. It is then able to mature properly. Without Nitrate present, the young plants will fail to attain stem and leaf growth sufficient to mature its fruit or grain. Why take chances with makeshifts or substitutes when the real thing is 100 per cent. effective?

Nitrate of Soda is of high value for early crops, such as peas, corn, beets, cabbage, where rapid maturity is desirable. It is a special help to hay, grain, rye, wheat, timothy, cereals and orchards, all of which are unable to obtain sufficient Nitrogen from the soil just when they need it. It is a great specific in the production of sugar beets, potatoes, cotton, cane and apples, or other fruits.

Small fruits, such as blackberries, currants, raspberries and gooseberries, which need a steady, even growth, are greatly benefited by Nitrate of Soda, which can be furnished all ready for digestion when the plants require it.

The highest agricultural authorities have established by careful experimentation that 100 pounds per acre of Nitrate of Soda applied to crops has produced the increased yields tabulated as follows:

Apples.....	100 bushels.
Barley.....	400 lbs.
Corn.....	280 "
Oats.....	400 "
Rye.....	300 "
Wheat.....	300 "
Potatoes.....	3,600 " Tubers.
Hay, upwards of.....	1,000 " Barn cured.
Cotton.....	500 " Seed cotton.
Sugar Beets.....	4,000 " Tubers.
Beets.....	4,900 "
Sweet Potatoes.....	3,900 "
Carrots.....	6,100 pounds.
Turnips.....	7,800 pounds.
Strawberries.....	37 per cent.
Onions.....	200 quarts.
Asparagus.....	1,800 pounds.
Tomatoes.....	100 bunches.
Celery.....	100 baskets.
Hops.....	30 per cent.
Hops.....	100 pounds.

Nitrate of Soda is a plant tonic and an energizer; it is NOT a stimulant in any sense of the word.

It may be used alone without other fertilizers, as a Top-Dressing, at the rate of 100 pounds to the acre.

The following are fair samples of the results reported:

**Crop—Sugar Beets.**

Name, E. C. CHATRAM,  
P. O. Address, Ross,  
R. F. D., 2,  
State, Alabama.  
Plot without Nitrate produced 1,200 lbs.  
Plot with Nitrate produced 2,000 lbs.  
Date of applying the Nitrate of Soda,  
July 17, 1908.  
Date of completing harvesting of the crop, Nov. 8, 1908.

**Crop—Grass.**

Name, M. H. O'BRIEN,  
P. O. Address, Upper Middleboro,  
R. F. D.,  
State, Cumberland, Co. N. S.  
Plot without Nitrate produced 120 lbs.  
Plot with Nitrate produced 210 lbs.  
Date of applying the Nitrate of Soda,  
May 15.  
Date of completing harvesting of the crop, July 28.

REMARKS:—Could see where the Nitrate was put on one yard away. The hay grew thicker and the quantity much heavier. Much pleased with Nitrate.

**Crop—Barley.**

Name, F. M. TRAVIS,  
P. O. Address, Marlboro,  
R. F. D., 1,  
State, New Hampshire.  
Plot without Nitrate produced 1½ bushels.  
Plot with Nitrate produced 2¼ bushels.  
Date of applying Nitrate of Soda,  
May 18.  
Date of completing harvesting of the crop, Aug. 5.

REMARKS: The Barley where Nitrate was used was 8 inches taller than the Barley where no Nitrate was applied. I am well pleased with the results obtained.

**Crop—Oats.**

Name, J. M. WINDER,  
P. O. Address, Williamsport,  
R. F. D.,  
State, Pennsylvania.  
Plot without Nitrate produced at rate of 17 bus. per acre.  
Plot with Nitrate produced at rate of 35 bus. per acre.  
REMARKS: The plot with Nitrate could be very plainly seen while growing.

**Crop—Wheat.**

Name, FRANK I. STEVENSON,  
P. O. Address, Perry,  
R. F. D., 1,  
State, Ohio.  
Plot without Nitrate produced 75 lbs.  
Plot with Nitrate produced 138 lbs.  
Date of applying Nitrate of Soda, April.  
Date of completing harvesting of the crop, August.  
REMARKS: Crop was on gravel land, rather dry for it most of the Summer.

**Crop—Potatoes.**

Name, T. J. RHODES,  
P. O. Address, Leitchfield,  
R. F. D., 1,  
State, Kentucky.  
Plot without Nitrate produced 5½ bushels.

Plot with Nitrate produced 11¼ bushels.

Date of applying the Nitrate of Soda, May 14.

Date of completing harvesting of the crop, Oct. 13.

**The Rational and Irrational Use of Nitrate of Soda.**

Everywhere in the world where there is progressive experiment station work, the unique qualities of Nitrate of Soda are putting it ahead of every other Nitrogenous plant food. Nobody who advocates the rational use of fertilizers ever recommends such large quantities of Nitrate of Soda per acre as would result in any abnormal accumulation of alkali salts. Moreover, the use of acid phosphates, associated as they are frequently with sulphate of lime, converts any alkali residue into harmless forms of soda.

The use of potash salts tends to leave acid residuals in the soil, as do acid phosphates even when rational quantities of acid phosphate and potash salts are used. Nitrate of Soda is needed to help neutralize these residues.

In most of our experiments where Nitrate was used alone at the rate of only 100 pounds per acre, with no further application of fertilizers to the plots, a decidedly marked effect was noticed. This speaks very well indeed for Nitrate of Soda not leaching out of the soil. The readily soluble elements of fertility are the readily available elements. The natural capillarity of soils, doubtless, is in most instances a powerful factor in retaining all the readily soluble elements of fertility, otherwise all the fertility of the world would, in a season or two, leach away into the ocean; and be permanently lost. A case is yet to be seen where the after-effects of Nitrate is not distinguishable, and in most cases such effects have been marked. The 2,000 or more tons of active service soil in an acre of land has a powerful holding capacity for all the useful, available elements of fertility.

**How to Use Nitrate**

Recent experience suggests that Nitrate may be applied as a Top Dressing to best advantage as soon as growth starts in the Spring, or even better, before seeding or planting.

Nitrate of Soda should be thoroughly cultivated in, as should other fertilizers, so that they may properly nourish the plant roots of the seeded and cultivated crops during the growing season. Most fertilizers should not touch the seed.

Nitrate has no acid residue to leave behind, and it will leave nothing deleterious in your soil after using. It will enable you to overcome the effects of droughts and frosts in the shortest possible time and prolong the bearing period of your trees. Nitrate does not have to wait to get busy.

**Proof Positive.**

In a twenty-year test to determine the value of various sources of Nitrogen, the New Jersey Experiment Station found "that crop yields and the percentage of Nitrogen recovered in the crop were greater when Nitrates were used."

Official figures are—

Nitrate of Soda.....	100.0
Ammonium Sulfate.....	76.1
Dried Blood.....	62.0
Manure.....	52.4

This research was published in "Soil Science," April, 1918.

**Valuable Books Free**

Numerous books have been written on the value of Nitrate of Soda in agriculture. These books deal with questions on which progressive farmers cannot afford to form incorrect opinions.

If you are farming to make money you owe it to yourself to send for the free books which pertain to your crop. If you want to know what farmers have done both in America and Europe, who grow the same crops as you do, these books will tell you. If you have any doubt of how valuable Nitrate of Soda would be to your particular crop, you should get the available information you possibly can on the subject.

These booklets are free—write for them addressing

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