

Use Fertilizers on Cotton

Tests Show Value of Proper Applications

By William I. Thomas

More fertilizer for cotton in 1950 is indicated from tests conducted by the Agronomy Department of the University of Arizona during the past three years. Proper application and use of a sufficient amount of nitrogen seem to be the keynote of success. In all cases nitrogen has paid out, and under certain poor land conditions profits of \$50 an acre have been obtained after considering all extra costs.

Nitrogen alone in these tests has been most profitable on an acreage basis and on a dollar-gain basis. Nitrogen plus phosphate has given the highest yields. Use of commercial fertilizers in the state is increasing quite rapidly and farmers are especially interested in its use on run-down land.

Use on Sandy Land

In the years past this department has recommended its use on sandy lands. Positive response on heavy soils has been erratic. The use of 100 pounds of nitrogen applied as a pre-dressing or one-half as a pre-dressing and one-half as an early side dressing seems to largely overcome the lack of response on these heavy soils.

The following summary is what we believe a farmer might expect on an average. Under poor land conditions we have obtained an 800-pound increase in seed cotton yields, while under good land conditions the fertilizer has barely paid out.

The farmer himself is the best judge as to when he needs fertilizers. He knows when his yields are poor, also he can remember if his plants were of poor color the previous year and did not grow very tall even though he watered them well. Soil samples may help, but most Arizona fields are so variable one can hardly get a fair average, at least with the number of samples one is likely to take. Observations on test plots and neighbors' experiences also help.

Our results indicate that nitrogen should be used at a rather heavy rate,

for example, two to three sacks of ammonium nitrate, five sacks of ammonium sulfate, five sacks of 16-20, 100 pounds of Shell gas or two sacks of Uramon should do the job. The idea is to get 60 to 100 pounds nitrogen equivalent.

Phosphate does not need to be applied so heavily. 100 pounds P_2O_5 equivalent is enough. We have been unable to get response above this figure. Two and one-half sacks of treble superphosphate will contain slightly over 100 pounds of P_2O_5 .

There is money to be made on nitrogen fertilizers if you buy and use them right. Your County Extension Agent and local Experiment Station can give you a guiding hand.

We prefer ammonium nitrate because of its lower cost per pound nitrogen and the fact that it seems to work well. Uramon, ammonium sulfate, Shell gas, 16-20 and ammonium nitrate all give about the same response. It is just a matter of price which to buy. We do not like salty fertilizers such as sodium or calcium nitrate especially where we are pre-dressing, as we have had some stand troubles with these fertilizers. If these are used, it might be better to side dress them in.

Treble superphosphate seems to do as well as any phosphate fertilizer. It is a cheap form of P_2O_5 and one can band it in to avoid loss by its mixing with other salts in the soil.

Nitrate (NO_3) nitrogen is the fastest acting nitrogen fertilizer. Plants use nitrogen largely in this form.

Ammonical nitrogen (NH_3) is a little slower acting than nitrate nitrogen, but lasts longer.

Organic forms such as Uramon are slower yet, but generally longer lasting.

Ammonium nitrate has both slow and fast forms of nitrogen. It gives the plants some food at the start and gives them some more later. The very fact that we like this form of nitrogen is an argument for the split application practice.

The P_2O_5 must be banded in before

the land is bedded to get maximum results. This fertilizer does not seem to migrate with the irrigation water and hence must be put in the root zone. Spouts behind some sort of cultivator tooth will do, 6 to 15 inches in depth, one band to a row.

Nitrogen fertilizers on the other hand may be pre-dressed or side dressed. We have obtained our best results by broadcasting after the first irrigation, but before seedbed preparation. This seems to be the simplest and most economical way to apply it. Also you do not run the risk of burning the crop. If you have to irrigate up, however, the nitrogen may be lost, and this is one possible argument against pre-dressing. Also you will run into stand difficulties, but in a cool spring and especially on early-planted cotton, you can see great differences by use of nitrogen in early plant growth.

Where you have good side-dressing equipment, this is perhaps the safer mode of application, but you lose the time in the early plant growth when the fertilizer is likely to do the most good. On side dressing, don't go too strong and too close to the plants because of burning.

Side dressing works on sands better than clays; on clays pre-dressing seems a little better. On heavy ground a split application seems advantageous and there is a lot of fertilizer applied this way. At any rate, try to get some in before planting to give the young plants a "kick." Growth at this stage really counts.

Leave Check Plots

Commercial fertilizers all affect the vegetative growth of the plant. Don't let this deceive you; weigh the cotton when you use fertilizers. Leave some check plots.

Our greatest yields have been obtained from the combination of nitrogen and phosphate, but not our greatest profits. Nitrogen alone has paid out better and returned more per dollar ventured. The use of nitrogen fertilizer at a rather heavy rate is suggested.

Do not fertilize two-bale cotton ground especially if the ground is

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Pure Cotton Seed Group Organized

Cooperation Effected Through Arizona Cotton Planting Seed Distributors

By Scott Hathorn, Jr.

Cooperation is the key to the production and distribution of pure cotton planting seed.

A newly formed organization to carry on pure-seed production in Arizona is Arizona Cotton Planting Seed Distributors. Cooperating with the Distributors are the ginning companies, University of Arizona Agricultural Experiment Station and Extension Service, United States Field Station at Sacaton, and Arizona Crop Improvement Association.

Has Three Aims

The aims of this new organization are: (1) grow and distribute enough improved cotton seed for planting purposes at as low a cost as practical for the benefit of all Arizona cotton growers; (2) eliminate all poor varieties of cotton by making available

pure seed from high-yielding, uniform cottons bred for and adapted to Arizona conditions that possess high lint turn-out and desirable spinning characteristics, and (3) insure growers participating in the program against losses from unsold seed stocks and seed-price fluctuations.

Arizona Cotton Planting Seed Distributors is a non-profit corporation. Its membership consists of bona fide growers of pure cotton planting seed. Its place of business is Phoenix, Arizona. Management of the organization rests with a board of seven directors, all cotton growers, who are from various cotton-producing areas of the state.

Each year the University of Arizona Agricultural Station or the United States Field Station at Sacaton will supply the Distributors with foundation seed of the approved varieties. The Distributors will place this seed with selected growers through various

gin points for the production of registered seed. The registered seed is in turn placed with selected growers for the production of certified seed that will be required to plant Arizona's commercial cotton acreage.

Only enough foundation and registered seed will be produced to meet the commercial requirements for certified seed. At all times the Distributors maintain complete control over the price and distribution of planting seed.

Since grower members are paid oil mill prices for seed saved under the program at the time of ginning, they are insured against loss as they will at least receive the oil mill price for their seed as soon as the cotton is ginned.

In determining the selling price for planting seed, the cost of processing and handling the seed and a grower spread which provides a premium for the pure seed producers is added to the oil mill price of the seed. One price is set for all classes of planting seed immediately after the close of the seed-saving season. Certified seed is sold to anyone desiring good planting seed, but foundation and registered seed is sold only to those growers who qualify to increase this seed.

Uses Contracts

The Distributors group uses two contracts in carrying on its business. One is between the Distributors and cooperating ginners. The other is between the Distributors and their pure seed growers. These contracts, which are now in the process of development, will be ready for distribution soon. In the meantime, any grower desiring to plant foundation or registered seed for increase purposes may make application for this seed at his county extension agent's office. Certified seed for commercial planting will be available at various gin points.

—Scott Hathorn, Jr., is Associate Agricultural Economist.

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heavy. At least try it in a small way first.

Too much nitrogen late in the season can throw the crop pretty late, and without the benefits of extra yield. Earliness is essential.

—William I. Thomas is Assistant Agronomist.

Acala 44 seed-increase field, Pima Indian Agency, Sacaton, Arizona. Photo by Robert Peebles, Sacaton.

