

# VIEWS OF EXPERTS ON WINTER CROPS

## Time to Plant Fall Grain

On this page The Intelligencer publishes articles dealing with grain, its planting, diseases, care, harvesting, etc., which were collected by Mr. S. M. Byars, Anderson county demonstration agent. These articles are timely, right to the point and will be of interest as well as much help to the farmers who intend sowing grain this fall.

The yields of the various crops for 1915 season will soon have been entirely harvested from the fields and will be history. The main stay, cotton, has made good on a much decreased acreage and the prices to be derived from it are the highest they have been for the past few years. Corn, also a chief staple to be grown by the farmers of Anderson county this year, is good considering the season, but will fall short of producing a sufficient quantity to supply the needs of the thousands of heads of horses, mules and hogs that must have feed through the winter season. The farmers this year have more hogs than usual and it is of course going to take more corn to fatten them. The pea crop is an abundant one this season, and will put much ready cash into the pockets of the producers next spring. The forage crops is especially good and large yields are being gathered off an increased acreage this year.

All the above is well and good, but it is now time that the farmer was up and about preparing to sow his winter crops of oats, wheat, clover, alfalfa, rye, etc. The low price of cotton last fall caused the acreage sown in oats and wheat in Anderson county to be increased to a large extent, and we believe there is not a single planter in the county who will not accede that the yields brought about by such planting were not one of the best investments he ever made. Flour mills all over the county have been busy this summer and report that they have done the most business in years. Talking with the owners or operators of threshing machines in the county it has been learned that the oat crop last spring was

one of the best in the history in Anderson County. These two crops alone have meant a great saving to the farmers in Anderson county and it is believed that they have been convinced that it will always pay them to sow plenty of grain.

But now the critical time has come, the real turning point for the future. A coat of production price for cotton has been brought about and the psychological moment to determine whether they are to try to farm the air for nitrates and build back the soil which has all but been destroyed and reduce the cost of production while building up the fertility of the soil, or whether they are going to do what the cotton manipulators have always counted on them doing. The time is now at hand for the sowing down of vetches and clover and farming the air for nitrogen all winter while raising forage so that a real live stock industry can be established. It is also the time to sow every acre possible with oats, wheat and rye, and continue the policy launched last year with such success.

One great danger that exists right now is that the farmers will let the present price of cotton deceive them so much in the next month that they will let the time slip to get in the cover crops which means dollars and cents to many of them, and so the time to sow oats and wheat, particularly the latter.

The one great need of the people right now is that they not permit themselves to be either deceived or misled; that they may seize the opportunity that will lead on to that complete economic independence and real prosperity that can only come when they are feeding themselves and their animals, with some to sell to others when they are steadily building up the soil instead of heading it for sterility when they will have a home-ford and raised live stock industry and when cotton—the great American monopoly crop—can take its place as the major surplus crop in a properly balanced system of agriculture.

## Instructions For Sowing

By S. M. BYARS, Farm Demonstration Agent Anderson County

Just a few years ago it was said that we could not produce corn in the south. For many years we had been very largely dependent upon the north and west for corn. So long had this condition existed that it had almost become a habit. We made little effort towards growing corn in sufficient quantity to supply our demand for this grain. We had run down and in a large measure exhausted the fertility of our farm raising cotton by furrow and other methods and grain and feed stuffs that we could raise cheaper than the man who was selling to us. Why had we not grown our own corn for these many years? "They said" that we could not grow corn and eventually we believed it. However, great changes have been brought about within the past few years. Evidently the people of the south became tired of hearing the statement "you can't" and replied by action "we will."

Beginning several years ago wide awake progressive farmers, experiment stations, agricultural extension workers, and others began studying conditions and experimenting to discover what was necessary for profitable corn production in the cotton belt and also to ascertain if we could produce corn in competition with the belt farmer, or rather to see if we could produce our corn cheaper than we could buy it from the north and west and have it shipped into the south. Among the leaders in this work was that grand old man Dr. Seaman A. Knapp. He organized the boys' corn club and it was largely through his efforts that many of the better cultural methods were adopted on many southern farms.

From the very beginning of this work the acreage increased and soon yields of 100 bushels of corn per acre were reported from various sections of the cotton belt. Later the 200 bushel mark was reached and passed and finally Walter Lee Dunson of Alabama headed the list with a yield of 232 bushels per acre at an average cost of 19.9 cents per bushel. No longer is it said that we cannot produce corn in the south. No other section can approach us when it comes to yields, not even the great corn belt. We are leaders because we have learned how to produce corn.

With reference to oats and other small grain about the same opinion was held as had been with corn. We had little evidence that we could grow oats at a profit. We were told that oats need a cool moist climate. We have no cool climate but we have the moisture. We needed to know more about the growing oats and now we know what is necessary to succeed with oats.

Setting down to "three tacks" Anderson county this season harvested about 850 bushels of oats and 244,000 bushels of wheat with a total value of \$222,000 and has grown, following this grain crop, the greatest crop of winter wheat in the history of the county. This is fine and we must not neglect to do the same thing this fall. Twelve cent cotton will

tempt many to neglect the oat crop and produce more cotton in 1916. Let us realize that the grain crop is in a large measure responsible for the present price of cotton and let us plant another good acreage to grain. Let us produce our own feed stuffs and food supplies and then produce all the cotton we can.

Approved methods of growing and handling grain:

1. Plant early. Better plant while the present season is in the ground. Oats planted from now until the last of the month do well. Plant later and chances are against you unless you use the "furrow method." Experience shows that the greatest loss is due to late planting.

2. Plant grain with drill. The little one-horse drill solves the oat problem in the cotton belt. This drill, used for planting oats between the cotton rows, enables the farmer to get his oats planted long before the cotton is off of the land. This drill is coming into quite general use and results obtained by its use are satisfactory. If a drill is not to be had very good results can be obtained by harrowing, discing, or plowing in oats if done early. I prefer not to use a turn plow for plowing in oats but rather some straight plow like a bull tongue or something of that kind that will leave the trash mostly on top of the land.

Plant plenty of seed. From two to three bushels per acre is a good average.

4. Fertilize grain. As a general rule commercial fertilizer for grain pays well. In fact, on some of our poorer soils we cannot get good results without the use of some kind of fertilizer. From 300 to 500 pounds of fertilizer, analyzing about 8-2-2, is about right for our clay loam soils. On account of the high price of potash it would probably be better to use a fertilizer made up of one-third cotton seed meal and two-thirds acid phosphate (16 per cent). If the preceding crop of cotton or corn has heavily fertilized the amount of fertilizer used on grain can be cut down to some extent. Top dress oats with about 100 pounds of nitrate of soda about the time they begin to "boot."

5. Harrow oats. If oats are planted between cotton rows, cut the old cotton stalks about the last of February with a stalk cutter. During March use nitrate of soda and harrow oats twice. This harrowing will help to grind the old stalks, cultivate the grain, and work the nitrate of soda into the soil.

6. Variety. Any of the Red Rust Proof variety will give good results. Some of the varieties most commonly used are Applied, Hundred Bushel, Baneroff and Fulghum. The last named is about two weeks earlier than the others and has other desirable qualities among which are weight, color, hardiness and hardness. It is distinguished by its not being quite as heavy yielding as the other Rust Proof varieties but the difference is very slight. This variety is growing more popular each year.
7. Treat oats for smut. Smut

is quite common in the oats in this section. Seed should be treated before being planted. The spores of the disease stick to the seed when planted. To kill these spores use pint of formalin to 40 gallons of water and dip seed in this solution until thoroughly wet then dry and plant. This formalin (40 per cent) will cost 28c per pint at the drug store. A pint is sufficient to treat several hundred bushels of grain. Do not neglect to treat for smut.

8. Cut grain when ripe and shock until dry. As soon as dry haul to stack or barn. Thrash when convenient and weather favorable.

9. Follow grain with peas or other legumes. Humus and nitrogen are our limiting factor in crop production so get as much trash as possible into your soil. Let us improve our soils for there is no way known to man whereby we can successfully farm poor land.

Wheat is not adapted to so wide a range of soils and conditions as oats. Wheat does best on our heavier soils and as a rule requires a better seed bed than oats. Plant wheat after the first killing frost in a well prepared, settled seed bed. Wheat usually follows corn and peas for the later planting enables us to get the corn off of the land and put it in condition for wheat. From one to two bushels per acre is the amount usually planted, with an average not much over one bushel per acre. Leap's Prolific, Bluestraw and Red May are good varieties for this section.

The fertilization and method of handling the wheat crop are about the same as for oats. Probably wheat requires more nitrogen than oats. It is estimated that Anderson county brings in more than 50,000 barrels of flour each year. Why can't the greater part of that be produced here?

## Local Farmer's Experience

By WADE A. DRAKE, A Successful Farmer of This County

According to your request I will give you my experience in growing oats.

I have been growing a very good acreage of oats for the past several years and consider it a profitable crop. This year I had 80 acres in oats and threshed 4,000 bushels or an average of 50 bushels per acre. For the past few years I have planted only the Fulghum variety because I have been able to get best results with it. This variety matures about two weeks earlier than other rust-proof varieties, is beardless, has good weight and color, is rust proof and stands our most severe winters well.

I follow a systematic rotation following both corn and cotton with oats planted in the middles between the rows between September 15th and October 15th, if possible. I plant about two and a half bushels of seed per acre using the little three row drills. I use the combination drill with fertilizer attachment putting down about 300 pounds of fertilizer per acre, when I plant oats. On my land, which is a clay loam, I use a fertilizer analyzing about 10-2-2. Where I do my own mixing I use 200 pounds of 16 per cent acid phosphate and 100 pounds of cotton seed meal per acre.

About the last of February I cut my stalks with a stalk cutter. In March I top dress the oats with 80 pounds of nitrate of soda per acre and harrow twice with section harrow. I find that the harrow helps to grind or crumble the old stalks as well as cultivating the grain and working the nitrate of soda into the soil. This harrowing is always desirable when done right and the land is not too wet.

I delay harvesting until grain is thoroughly ripe. The grain is shocked immediately behind the binder, six bundles to the shock, where it is left for about a week if the weather is dry. Longer if the weather is unfavorable. As soon as grain is dry it is hauled to the stack or house. Threshing is done to suit my convenience and weather. The straw is stacked for cattle or scattered over the field to enrich the soil.

As soon as the grain is off of the land I use harrow double cutting the land. Peas are then shown broadcast and harrowed in or drilled in using one and a half bushels per acre. That may appear to some as a heavy seeding of peas but I find that it pays me well to use that many.

Where I cut these pea vines for forage I plant Abbruzzi rye and vetch using one-half bushel per acre of seed of which about 40 per cent is vetch, or sometimes I use crimson clover instead of the rye and vetch. (Don't forget to inoculate your vetch and crimson clover if your land isn't already inoculated.) This rye and vetch or crimson clover served as a cover crop and is turned under in the spring and planted to corn. Where I am to plant cotton the following year the pea vines are cut out for hay but are left on the land.

For wheat I disc the land that has been planted to corn and peas thoroughly and drill in the seed one bushel to the acre after the first killing frost. I use either blue straw or leap's prolific. What has been said about the handling of the oat crop applies as well to the wheat crop. My yield of wheat this year on 12 acres was 20 bushels per acre.

I have lined 30 acres of my land using a ton of agricultural lime per acre and find it pays me well. Especially in this time where legumes are used in the rotation.

My experience with Abbruzzi rye shows it to be much better than the old varieties. For comparison I will say that my yield this year was seven bushels of the old varieties per acre while the Abbruzzi yielded 18 bushels per acre.

In conclusion I will say that under the above outlined system of farming or cropping my land is growing richer each year. My average yield now is about one bale of cotton per acre or 40 bushels of corn. This land has been in cultivation about 100 years or more.

## Oat Smut Harmful Disease

By Prof. W. H. BARRE, Botanist and Plant Pathologist Clemson College

### Oat Smut.

Oat smut is the most wide spread and destructive disease of small grain. It occurs wherever oats are grown and where proper control measures are not practiced frequently causes serious loss.

### Cause.

The smut disease is caused by the smut fungus, a parasitic fungus growth that lives inside the tissues of the plant. The disease is spread from one place to another by spores (exceedingly small seedlike bodies) which cling to the hulls or lodge in the creases of the individual oat grain, and are thus carried into the field when the seed are planted. The spores of this smut fungus germinate at about the same time that the young oat plants come up, and the filaments of the fungus grow directly into the tissues of the young plants. The fungus remains alive in the oat plants without apparently causing any serious damage until the plants begin to head out in the spring of the year. It then concentrates its efforts in the oat heads and fills up the places where the grains should form with black, sooty masses of its spores. At these black, sooty masses break up, the spores are carried by the wind and scattered all over the field. Many of them lodge in grains on healthy heads of oats and remain alive there until the seed are planted again. Some of the spore masses in the diseased oat heads are carried with the grain to the thrasher. While the grain is being threshed, the smut spores are scattered everywhere and many of them lodge on healthy grains of oats and thus spread the disease.

### Control.

Oat smut can be controlled by soaking the planting seed in some chemical solution that will kill these spores which are carried by the seed

without injuring the germination of the oats. The best chemical to use for this purpose is formalin (a 40 per cent solution of formaldehyde). This can be secured from any reliable druggist. This treatment can be made as follows: Make up your formalin solution by mixing one pint of formalin (40 per cent of formaldehyde) to forty gallons of water. Put the grain to be treated in sacks, about a bushel to a sack, then dip each sack into the barrel containing the solution and allow to remain for from five to ten minutes. The sack should be moved up and down several times in the solution so as to make sure that all of the grains are thoroughly wet. Then lift up the sack and allow the solution to drain out and either pile the bags of treated grain together and cover with burlap or canvas, or pour the treated grain out in a pile on a clean floor and cover with burlap or canvas for from twelve to twenty-four hours; then spread the grain out in a thin layer on a clean floor to dry. The object of this treatment is to get the grain thoroughly wet with the formalin solution, pile it up and cover it so as to keep it wet for from twelve to twenty-four hours, and then spread out to dry. In this way the formalin which otherwise would evaporate very readily, is kept in contact with the grains long enough to kill all of the spores of the fungus.

After this treatment is completed the oats should be dried as rapidly as possible so as to prevent sprouting. And, of course, the grain that has been treated should be put in clean bins or sacks so as not to be exposed again to the disease. Sacks and bins which have contained diseased grain can be disinfected by washing with formalin solution—one pint to ten gallons of water.

This same treatment can be used for bunt or stinking smut of wheat and for covered smut of barley.

## Farming Is Good Business

By W. L. HUTCHINSON, Professor of Agronomy of Clemson College

Farming is a business and to be worth while it should be profitable. Will oats and possibly some wheat, as a part of a system of cotton farming, make the net earnings for the year greater? To the extent that these products can be used on the farm they will help the year's business. A farmer needs a full year's work for his teams, implements and labor but where crops compete for these the best paying crop is always given preference. Small grain competes with cotton and corn at harvest time and too much competition is not wanted. Even cotton and corn compete for labor and while too much competition must be avoided if the best results are to be had still it is a demonstrated fact that the best thing for the cotton farmer, as a rule, is to first make the farm self supporting and then grow cotton or something better as a cash crop.

Oats will do well on most any type of soil but wheat does best on clay soils. Both crops require the use of commercial fertilizers. Nitrogen is a limiting factor for summer crops and the demand is greater where the crops grow in the winter season. For application when the crops are planted a mixture of cottonseed meal and acid phosphate in equal quantities or half and half is a good fertilizer. Use four or five hundred pounds to the acre. In the spring top dress with one hundred pounds of nitrate of soda to the acre.

Grain may follow cotton, corn or peas. After cotton one horse drill with one, two, three or four tubs should be used. When the drill plants the width of a cotton row at one trip the cost of planting is reduced to a minimum. To have the drills follow immediately behind the pickers prevents any serious injury to the cotton. Where the small grain follows corn or peas it is usually best to prepare the land before planting. In this case larger drills may be used for planting the seed and putting down the fertilizer. The cost of preparing the land about represents the

increased cost of seeding under the latter conditions.

October is a good time to plant oats but they may be planted later with good results. November and the first part of December is the best time to plant wheat.

One pound of formalin to 40 gallons of water may be used for treating the seed for smut. Shovel seed while applying the solution so that all parts get the full benefit of the treatment. It requires about one gallon for each bushel of grain. Cover the treated seed with sacks, sheets or blankets to retain the formalin fumes and let stand for three hours or even over night. Spread the grain so it will dry or it may be sown immediately. Clean sacks or those that have been dipped in the solution should be used in handling the treated seed—the same treatment is used for both wheat and oats.

While opinions vary as to the best amount of seed to sow per acre most growers prefer to sow about two bushels. Two inches is deep enough to cover the seed. Planting the seed deep does not cause the roots to be deep.

Texas Red Rust-Proof and its strains, Applor, Culberson and Hastings and hundred-bushel and Fulghum are the standard varieties of oats. Fulghum is about two weeks earlier than the others.

Purple Straw, Blue Stem, Red May, Leap's Prolific, Fultz and Fulcater are standard varieties of wheat for this section.

In harvesting every effort should be made to produce a sound, clean, bright colored article. Protect the ripened grain from the weather as much as possible. It should be sweet and free from mold.

Wheat, oats and beardless barley, when cut in the dough stage, make good hay. They also make a good cover crop for the winter. Enough may be grown for home use without seriously interfering with the main crops. Properly managed they will usually give a somewhat greater net gain for the farmer's business.

## Grain Relation Live Stock

By R. L. SHIELDS, Professor of Animal Husbandry and Dairying, Clemson College

We should raise more live stock. However, success with live stock must be preceded by preparation. Preparation means "safety first." The right preparation includes the production of ample grain and forage at home. Economy in production, whether pork, beef, dairy products, or the raising of horses and mules demands the liberal use of grazing crops. Cover crops are easily produced and they can supply an abundance of grazing at a time when feeds are most expensive, besides they serve as protection against soil washing, leaching, etc., add to the fertility of the land and improve the mechanical condition of the soil.

Abbruzzi rye, oats, wheat, barley, and common or native rye are all excellent cover and grazing crops. If sown early in the fall grazing can be provided for winter and spring. Bar and crimson clover will furnish early spring grazing and being legumes they are excellent soil builders.

The chemical analyses of grazing crops do not indicate their real value as a feed. Owing to the succulent nature of grazing crops a wholesome effect is obtained by all kinds of live stock feedings, on such forage.

However, one should not make the mistake of relying on grazing crops alone for young and undeveloped stock. Some grain or concentrate

should be fed as a supplement. The kind of concentrate to feed depends on the kind of forage used. It is especially important that pigs be fed some concentrate—such as rice meal, wheat shorts, corn, etc. Pigs are not able to use large amounts of roughage as they have comparatively small stomachs. Experiments in pig feeding indicate that only a maintenance ration is usually obtained from grazing crops alone. But experiments also prove that the cost of pork production can be reduced from 1-3 to 1-2 and sometimes more by the use of suitable grazing crops to supplement a grain ration. Similar economy is possible in the production of other kinds of live stock and in the production of milk and butter if grazing crops are liberally used in feeding.

In conclusion, these facts should be emphasized:

- (a) It is important that the farmer grow more grain and roughage for his live stock.
- (b) Cover crops improve the land and if grazed reduce the cost of live stock production.
- (c) The high cost of grains, etc., prohibit the economic production of live stock unless supplemented by grazing crops.
- (d) Live stock make better use of grain and other concentrates when supplemented by grazing crops.

## The All Important Crop

By W. H. BARTON, Assistant State Agent Clemson College

It has been said that "agriculture begins and ends with the plow." It is equally true that successful agriculture begins and ends with the production of an abundant food supply. Wheat is the great "staff of life" in the bread supply for man; oats is a safer crop than corn when given an equal opportunity, and produces as much or more animal food per acre than corn, with the advantage that it is produced during winter and spring, meanwhile conserving fertility, and leaving the soil open for a remunerative food and fertilizer crop during the summer.

As a food, oats is worth about 50 per cent as much as corn, pound for pound, but yields more bushels per acre with equal chances, and contains more protein or sustaining elements, thus making a better feed for growing, breeding and working animals. When cut for hay, oats is superior to No. 2 timothy and far superior to the whole crop plant as a roughage, and cost less to produce and harvest.

Grain helps break up the devastating one crop system of agriculture that has depleted and robbed the soils of all countries which have practiced it.

When and How to Sow Wheat. Sow as soon as possible after the first killing frost to avoid heavy

fly. Sow three to six pecks per acre, depending upon fertility of soil and fertilizer used. The richer the land and the earlier the sowing, the less seed should be used. Best results are obtained from sowing with grain drill which causes regularity in seeding, uniformity in germination and lessens the probabilities of winter killing if drill sows in open furrow.

It requires good land and liberal fertilization for a good yield of wheat. Medium soil should have applied at time of sowing, equal parts of cotton seed meal and 16 per cent phosphate at the rate of 400 to 800 pounds per acre, depending upon the fertility of soil and the yield desired. A final application of 75 to 100 pounds nitrate of soda when the wheat begins to "boot" will pay well.

Where ready mixed fertilizer is to be used, especially on clay soils, use an 8-4-4 or 8-3-3 grade supplemented if needed by a spring top dressing of nitrate of soda.

Liberal applications of stable manure with 200 to 300 pounds acid phosphate is also fine fertilization for wheat. Stable manure may be applied at sowing time or as a top dressing in December, January or early February.

Sow oats in September, October or November for best results. Best re-

sults are obtained from October and November sowings, if put in with open-furrow drill which prevents winter killing. September sowing may be made by disking, sweeping or harrowing. The earlier sowings in September will develop a deep root system that will better prevent winter killing and will produce earlier and heavier yields.

Oats may be sown in cotton middles, just behind the cotton pickers without preparation. Apply 200 to 300 pounds 16 per cent phosphate at time of sowing on fairly rich land. On thin land, apply a sowing time, 400 to 600 pounds equal parts cotton seed meal and 16 per cent acid phosphate per acre. In either case an application of 75 to 100 pounds of nitrate of soda per acre, just before grain gets in "boot" stage, will pay a good profit.

### Nitrate Soda for Special Cases.

If oats are sown on very thin soil, without fertilization or with acid phosphate only, (which is not advisable) there should be two applications of nitrate of soda, one early in spring, about March first to prevent "sodging" and hardening or "stunting" and to induce vigor. Then about the time the grain is the height of a rabbit make the final application. Never apply soda when grain is wet.

Best results are obtained by harrowing grain after each rain to conserve moisture, kill weeds and grass and to air the soil.

Sow, usually, 3 to 10 pecks of oats per acre, depending upon the fertility of the soil, the earliness of sowing, the amount of fertilizer used and the yield desired. Early sowings on fertile soil tiller more and require less seed.

One day, while walking with a friend in San Francisco, a professor and his companion became involved in an argument as to which was the laudable man of the two. Not being able to arrive at a settlement of the question, they agreed, in a spirit of fun, to leave it to the decision of a Chinaman who was seen approaching them. The matter being laid before him, the oriental considered long and carefully; then he announced in a tone of finality, "Both are worse."

Charlie and Nancy had quarrelled. After their supper mother tried to re-establish friendly relations. She told them of the Bible verse, "Let not the sun go down upon your wrath."

"Now, Charlie," she pleaded, "are you going to let the sun go down on your wrath?"

"Well, how can I stop it?" Three clothing stores were on the same block. One morning the middle proprietor saw to the right of him a big sign, "Bankrupt Sale, and to 3c left, 'Closing Out at Cost.'" Twenty minutes later there appeared over his own door, in large letters, "Main Entrance."

She—I suppose the duke has landed estates?

He—Landed one every time he married, but he managed to run through em all.—Boston Transcript.

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