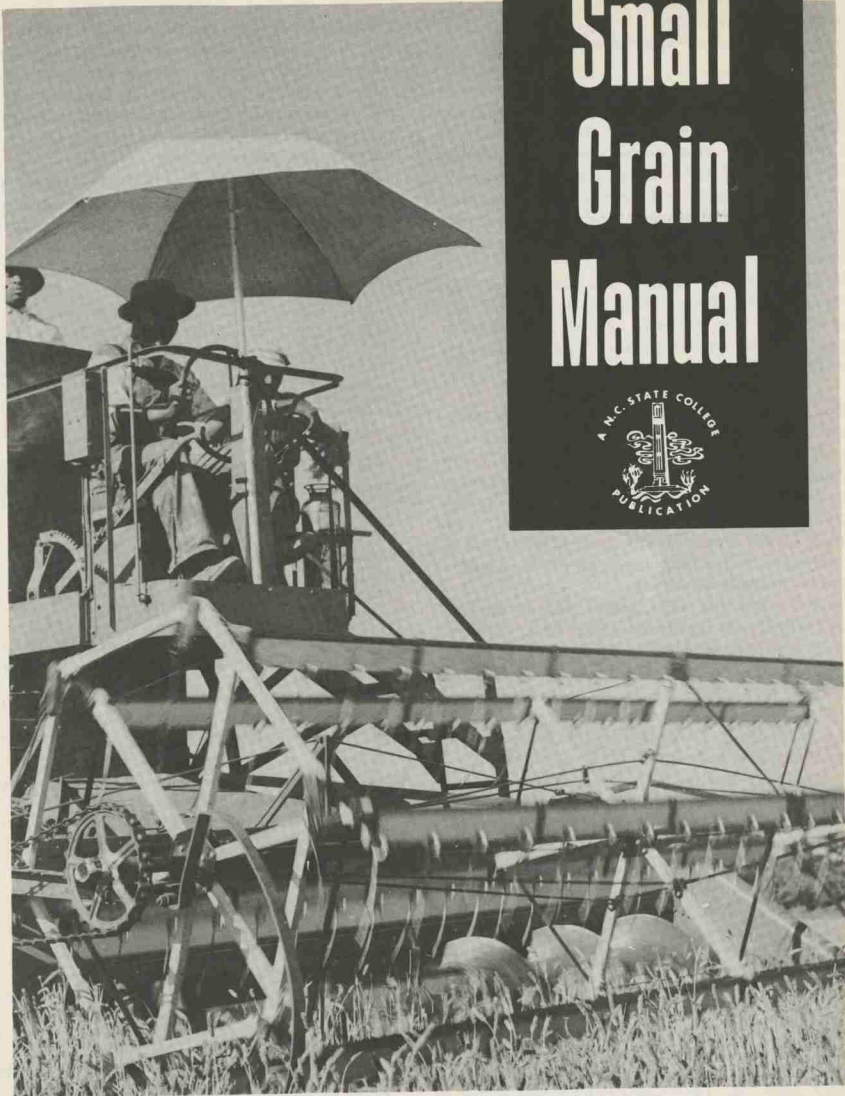


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4-H
**Small
Grain
Manual**



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Prepared with the cooperation of George D. Jones
and J. C. Wells.

In beginning your 4-H Club Small Grain project, you are preparing to work with your choice of 3 of the world's great cereal crops. They have provided food for mankind and livestock for many centuries. You will gain health and vitality in the sunshine and fresh air of the grain fields. You will find anticipation in sowing and satisfaction in reaping your harvest.

In your 4-H Club Small Grain project, see your County Agent and ask him to advise you as to the type of grain you will grow and on the following steps, which should be followed to carry through your project to a successful completion.

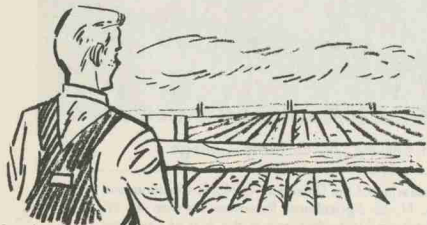
Select Your Soil Carefully

The soil supports the plant and is the storehouse of food and water. The ability of the soil to supply food and water depends on: (1) the amount of decaying plant material from previous crops turned under, (2) the fineness of the pieces or particles of the soil, (3) the amount of fertilizer applied to the crop, (4) the amount of fertilizer remaining from previous crops and (5) the fertility which is naturally in the soil.

Choose a soil that will come as close to the following schedule as conditions will permit: (1) well drained soil (water should not stand in the furrow); (2) soil on which vegetation grew the previous year and which has been worked into the soil (legumes such as red clover, lespedeza, soybeans, vetch, etc.); (3) soils which plow easily but are not too loose and sandy.

Measure The Land For Your Project

Your project should contain at least one acre. An acre contains 43,560 square feet and may be any dimension such as 208.7 feet square; 200 ft. x 217.8 ft.; 100 ft. x 435.6 ft.; etc. Another method of calculating is by the number of feet of row. There are 87,120 feet of row in an acre when your drill spouts are 6 inches apart.

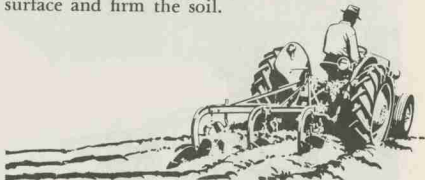


Prepare A Good Seed Bed

All seed beds for small grains should be firm with 2 or 3 inches of clod-free soil on the surface.

Small Grains After Sod Crops: Disk or plow sod crops or weeds in July or August. Leave soil rough and the residues in upper 3 inches of surface soil. Pulverize, smooth and firm the soil by disking and dragging just before seeding.

Small Grains After Row Crops: Remove row crops early and disk soil at once. Disk again just before seeding if necessary. Drag to smooth the surface and firm the soil.



Plant an Adapted Variety

Planting an adapted variety is probably the cheapest and easiest thing you can do to boost yields. Suggested varieties are:

Mountains

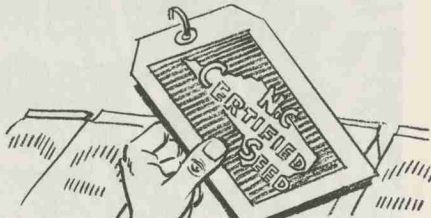
Wheat— Thorne, Seneca, Dual
Oats — Forkeddeer, Atlantic, Arlington
Barley— Colonial 2

Piedmont

Wheat— Anderson, Atlas 50, Atlas 66, Coker 47-27, Knox, Wakeland, Taylor 49. On mosaic-infested soils, plant Taylor 49, Knox or Thorne
Oats — Arlington, Victorgrain 48-93, Fulwood, More-grain, Carolee
Barley— Colonial 2, Davie, Wade

Coastal Plain

Wheat— Anderson, Atlas 50, Atlas 66, Coker 47-27, Taylor 49, Wakeland
Oats — Arlington, Victorgrain 49-93, Fulwood, More-grain, Carolee
Barley— Colonial 2, Davie, Wade



Plant North Carolina Certified Seed of the recommended varieties when available. This pedigreed seed of known origin is inspected and approved by the North Carolina Crop Improvement Association. Certified seed is free from noxious and objectionable weeds, dirt and diseases. It has high purity and high germination.

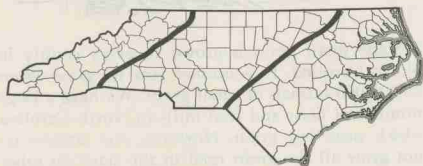
Seeding Rates

- 5 pecks of wheat per acre
- 2 bushels of oats per acre
- 2 bushels of barley per acre

Treat all seed you plant with New Improved Ceresan, Ceresan M or Panogen according to manufacturer's directions. This will control loose and covered smut in oats, bunt in wheat, covered smut in barley and the seed borne stripe disease in barley. Seed treatment also helps to reduce losses from scab of wheat and barley and from seedling blights and seed rots in oats, wheat and barley. This treatment does not control loose smut of wheat and barley. It is best to treat seed at least 24 hours (preferably a week) before planting. Seed treatment chemicals are poisonous and should be handled with care.

Seed On Time For Higher Yields

	Oats and Barley	Wheat
Mountains	Sept. 20-Oct. 10	Sept. 20-Oct. 10
Piedmont	Oct. 1-25	Oct. 10-30
Coastal Plain	Oct. 10-30	Oct. 25-Nov. 10



You may produce up to 50 per cent larger yields by seeding on time.

Seeding in the periods given above permit the small grain to produce reasonable growth before cold weather. A good stand goes through the winter better, controls erosion and has a good start in the spring.

Fertilize According To Soil Conditions

Lime according to the needs of the crop rotation. Test your soil every 3 to 4 years. When a soil test is not available, the following are general fertilizer recommendations.



Fertilization: On soils low in potash, or following lespedeza for hay, fertilize with 300 to 400 pounds of 5-10-10. Following moderately fertilized crops like corn, small grain or cotton, put on 300 to 400 pounds of 6-12-6.

On heavy clay soils where large yields of red clover have been turned or where excessive growth is produced, put on 300 pounds of 0-14-14. Where tobacco, truck or other heavily fertilized crops are grown regularly and precede small grain, you only need to apply 15 pounds of Nitrogen (N). Fifteen pounds of Nitrogen (N) may be supplied by using the materials in the table below.

POUNDS OF MATERIALS REQUIRED TO SUPPLY RATE OF NITROGEN NEEDED

Material	%N	15	30	45	60	80
Ammonium Nitrate	33.5	45	90	135	180	240
Anhydrous Ammonia	82	18	37	55	73	98
Calcinit or ANL	20.5	73	145	220	292	390
Cyanamid	20.6	73	145	218	290	388
Nitrate of Soda	16	94	188	282	375	500
Ammonium Nitrate Solution	21	71	143	214	286	382
Urea & Ammonium Nitrate Solution	30	50	100	150	200	267
Sulfate of Ammonia	21	71	143	214	286	380
Urea	45	33	67	100	133	178

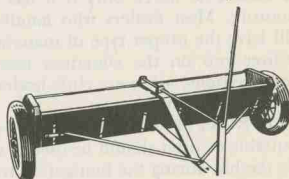
Topdress With Nitrogen On Time

Topdressing between February 15 and March 15 will mean larger yields. Topdressing promotes tillering, vigorous root systems and more and bigger heads of grain. Topdressing late increases the protein content of the grain and the green color of leaves, but it does not boost yield.

On heavy soils, use 30 to 45 pounds of nitrogen.

On sandy and very sandy soils, use 60 to 80 pounds of nitrogen, or more. (See table for sources of Nitrogen.)

On clay soils following red clover, or where you put on animal manures, do not topdress.



Control Weeds With Chemicals

You can control the following weeds by using 2,4-D: ragged robin, vetch, mustard, wild radish, bulbed buttercup, crowfoot, blessed thistle, dock, corncockle and garlic. See Extension Folder 105, *Weed Control in Small Grain*.

Harvest At Proper Time

Do not harvest your grain until it is ready for harvest. Your County Agent will be glad to work with you. He can help you in taking the sample and in having the moisture tested. When the

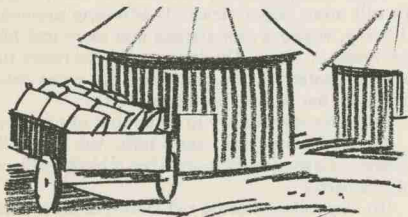
moisture gets down to 13 per cent, your grain can be harvested and stored safely.

If you wish to use the grain you grow for seed next year, be sure that your combine is cleaned out before you begin harvesting your grain. Be sure that the combine is adjusted properly so that it does not crack or injure the grain. Your County Agent can also assist you in checking this.

Store Safely

Suitable storage space for your grain should be provided in advance of harvest. The storage space should be ratproof. Plans should be made to store your grain in a tight bin if it is to be kept for any length of time. This is necessary to protect it against insect pests.

Before you store the grain, thoroughly clean all bins and remove all old infested grain. The walls, ceilings and floors should then be sprayed with a 2½ per cent methoxychlor mixture sprayed at the rate of one gallon to each 100 square feet of surface area. This spray is made by mixing one pound of a 50 per cent wettable powder or one quart of a 25 per cent emulsion concentrate, in 2½ gallons of water. Malathion 57% emulsifiable concentrate (premium grade) is another insecticide which can be used and should be used at the rate of 1 pint in 2½ gallons of water. A bucket sprayer or a garden (compressed air) sprayer may be used.



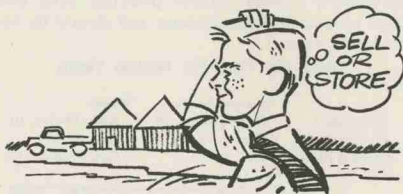
Grain should be stored only if it has less than 14% moisture. Most dealers who handle insecticides will have the proper type of material to use. Follow directions on the container carefully. If there are questions, ask your club leader to contact your county agent.

CAUTION WITH CHEMICALS—A gas mask with a suitable canister should be used if you must be inside the bin during the fumigation treatment. Do not permit fires of any kind, lighted matches, pipes, cigarettes, lanterns, etc., around the building while the fumigation is in progress. Treat grain only when the temperature of the grain in the bin is above 65 degrees Fahrenheit. Keep the bin closed tightly for 48 to 72 hours following the treatment. The fumigant will not leave a harmful residue on the grain which will affect either humans or livestock. Check the grain about once a month and, when insect damage is noticed, repeat the treat-

ments as necessary. The same insecticide, malathion (premium grade), mentioned above for spraying the empty bin can be used to spray the grain as it is placed in storage. The material does not act as a fumigant, hence it is less hazardous to use. The single application gives protection for several months. For more details ask your County Agent for a copy of the leaflet on control of stored grain insects.

Grain Marketing Facts For 4-H Members

As 4-H Club members, you may be interested in grain marketing from two standpoints: (1) how to sell grain for the most money, or (2) how to buy grain for the least money. You may want to sell grain for cash or to buy grain for use as livestock feed.



Some small grain is grown in every county in North Carolina. In a normal year we grow about 25,000,000 bushels of small grain. We have a large number of flour and feed mills in North Carolina which need our grain. However, our farmers do not grow all the grain used in the state. In other words, the demand is somewhat greater than the supply.

On the other hand, our storage bins are not large enough to hold all our grain at harvest. Little grain is shipped from the state at this time, however, because of the transportation situation and other factors.

Under these circumstances our grain prices fall to a low level at harvest when many farmers, with out proper storage, want to sell. Prices rise later in the year because the supply decreases, and our mills still need grain for processing.

We thus have opposite forces in grain marketing which you will want to understand. If you need feed, perhaps you can provide for some storage and buy grain at harvest. Some farmers are always ready to sell. If you want to sell grain, get storage and you can hold the grain until later in the year (small grains: December-March).

If you want to know more about grain marketing, ask your club leader to arrange a discussion.

Complete The Record

Fill in all required information on the record book when your grain project is finished. Complete the record and give it to your County Agent.