EXT. BULLETIN B-50 JANUARY 1961

Beginner's 4-H Agronomy Project

CROPS and SOILS

This hand book was prepared by Extension Specialists in Agronomy and Soils to aid you in giving project, record, or demonstration help. Notice that there are both helps for things to do as well as suggestions for items to make. Work done in the home may be divided into five units.

Beginner's Bulletin

4-H AGRONOMY PROJECT

Crops and Soils

We are glad you have enrolled in the 4-H Agronomy project. You will have an opportunity to explore the world of crop plants and the factors involved in growing and marketing a profitable crop. You will invest valuable time and labor, as well as seed, land, and fertilizer in your project. This bulletin is to help you understand what is needed for a successful crop before you actually plant in the field.

You can be active in the 4-H Agronomy project without actually growing a crop. This is especially true for members under 13 years of age, who under good safety precautions should not operate certain farm equipment. Members who live in town or in the country, but not on the farm, should also find the units in the agronomy project of interest.

PROJECTS AVAILABLE

The following field crop projects are organized and available to 4-H club members:

Corn	Small Grains
Soybeans	Forage

SIZE OF PROJECT

There is no requirement to grow a crop if the club member is under 13 years of age. However, in the Junior group, at least 1 acre of the basic crop is required in addition to crop practice units as specified. In the advanced group, the requirement is for at least 5 acres of any one of the basic crops, in addition to the required crop practice units.

CORN

Corn is the most important crop grown in Minnesota. It is a good crop for cash sale. It is also a good supporting project if you have a livestock project. You also have an opportunity to produce certified hybrid corn seed--when you gain more experience.

SMALL GRAINS

Wheat is a good cash grain crop. Both Hard Red Spring and Durum types are in demand. The production of certified seed wheat also offers a profit opportunity.

Barley is a good cash grain crop if you can meet malting barley standards. It is also a good feed for livestock, so it is a good supporting project to consider if you have a livestock project. The production of certified barley seed also offers a profit opportunity.

Oats is a major feed grain in Minnesota. The demand as a cash grain is not as good as wheat or barley, but for a supporting project to livestock it would be good. There is also an opportunity to produce certified oats seed.

Rye is not too important a crop in Minnesota but is well adapted to the lighter soil areas of the central and northern sections of the state. Rye can be used as a late fall and early spring pasture and is a good supporting project for livestock. Because rye is cross-pollinated, there is a good demand for certified seed rye to assure purity of variety.

Flax is not used as a feed but rather as a cash grain in Minnesota. There is a good demand for high quality flax. Production of certified seed flax also offers a profit opportunity.

SOYBEANS

Soybeans are the most important market crop grown in Minnesota. There is always good demand for certified seed of recommended soybean varieties.

FORAGE CROPS

For the 4-H member who has built up a sizeable livestock enterprise, forage crops are an excellent supporting project. Forage crops may be grown for hay, silage, and pasture and with some, there is a good demand for certified seed.

Certified seed production is possible with red clover, birdsfoot trefoil, sweet clover, alfalfa, bromegrass, timothy, and other grass species.

CROP PRODUCTION PRACTICE UNITS

In addition to the four basic projects--corn, soybeans, small grains, and forage crops, crop production practice units have been developed. These units should offer additional challenge to the member for growth in the agronomy project. These are the units now available along with suggested ages of members for them:

Beginners: Suggested ages - 9 through 12 years

- Unit 1 Learning to know seeds and plants
- Unit 2 Building a plant press
- Unit 3 Collecting plants
  - A. Weeds
  - B. Legumes
  - C. Grasses
- Unit 4 Germination test
- Unit 5 Soil test sampling
- Unit 6 Attend a crop production field demonstration meeting
- Unit 7 Clean market grain survey

UNIT 1

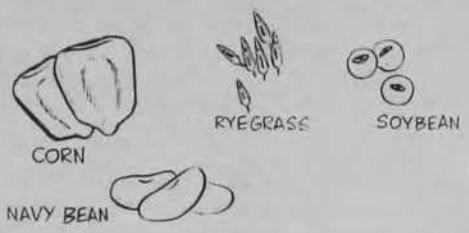
LEARNING TO KNOW SEEDS AND PLANTS

Seeds are the most important part of a plant. The roots, the leaves, the flowers all are necessary so there can be seed.

How To Recognize Seeds

Shape

Some seeds are round and others are egg-shaped. Some are long and slender while others are heart-shaped. Some are smooth; some are ridged. Some seeds have horns; others have tails; many have wings. These wings are often nature's way of helping seed to travel. Many seeds are carried by water and wind. Some are carried by birds, animals, and man.



Color

The skin color of seeds may be yellow, black, brown, striped, spotted, or any other color. Many seeds look like beetles or pebbles in shape and color. This keeps them from being eaten by birds.

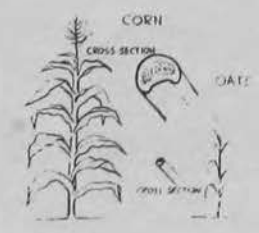
Size

Seeds may be any size from very small to very large. Kentucky bluegrass seeds are so small that 1 pound may contain as many as 2 million seeds. Corn is a large seed and 1 pound contains about 1,200 seeds.

The size of the seed does not always tell you the size of the plant that will grow from it. One of the tall field crops in Minnesota is forage sorghum which grows from a small seed.

Stems

As you look carefully at different crop plants you notice the qualities that are common to each crop. The stem may be large and strong as in the corn plant while other stems are small like oats. Some plants such as oats, wheat, and barley have hollow stems, while others like corn and alfalfa have solid stems.



Leaves

You will notice the difference in the size, shape, and color of leaves of different crops. Some are long and narrow like corn, small grains, and forage grasses. Soybeans have medium size, heart-shaped leaves with the upper part of the heart fastened to the stem. White clover has a small, heart-shaped leaf with the point of the heart fastened to the stem. Medium red clover has hairs on the leaf surface while alsike clover has smooth leaves.

Alfalfa and Bromegrass
Note difference between grass and legume leaves

Flowers

Notice the color, size, and shape of the flowers and fruit of each crop. This will also help you to identify them. Your parents or leader can help you identify the different crop plants and seeds grown on your farm and in your community.

Alfalfa

Typical grass flower

There are many different kinds of crops grown in Minnesota. You will find that learning to know and identify these crops can be fun and very interesting. The easiest way to learn the names of plants is to ask someone who knows.

EXHIBIT IDEAS FOR UNIT I

1. Seeds of crops grown on your farm and in your community.
2. Type of leaves found on different crops.
3. Type of flowers found on different crops.
4. Farm and industry uses of crops grown on your farm and in your community.

Your Name _____ Address _____

Name of Club _____ County _____

Unit I - Learning to Know Seeds and Plants

Remove this page from the bulletin after you have answered the questions and attach to your Agronomy Project Record.

1. Find out what crops are grown on your farm. List each crop and attach seeds of this crop in the space provided. Collect the seeds at planting time to be sure you have them for the record.

Crop	Seed Sample

2. Find out what crops are grown in your community. List each crop and attach seeds of this crop in the space provided. Collect the seeds at planting time.

Crop	Seed Sample

3. Do you grow some crops on your farm not commonly found in your community? Why do you think your Dad grows them?

Crop	Why do you grow them?

4. If you do not grow some of the commonly found crops in your community why do you think your Dad does not grow them?

Crop	Why you do not grow?

5. Give the farm and industry use of three crops grown on your farm.

Crop	Farm Use	Industry Use

UNIT 2

BUILDING A PLANT PRESS

A plant press is needed to help preserve the plants you collect. A press is easy to make and you will need it in Unit 3.

Materials needed:

The plant press may be made from strong box wood or wood lath. The press should be standard size, 12 inches wide, and 18 inches long, see Figure 1. Slatted construction is used so plant specimens will dry properly. You will need:

1. 4 pieces, 12 inches long and 3 inches wide
2. 8 pieces, 18 inches long and 2 inches wide
3. Nails or screws for assembling
4. A square for assembling
5. A supply of newspaper
6. 8 sheets of corrugated cardboard 12 inches x 18 inches in size
7. 2 straps or ropes about 4 feet long to bind the press

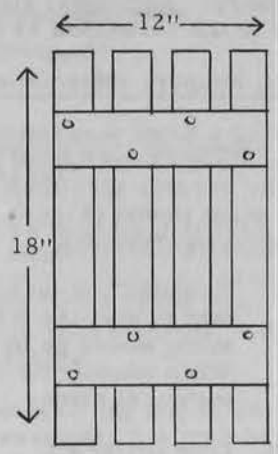


Figure 1
Slatted Plant Press
(make two)

Do this:

1. Place 4 of the 18-inch long slats on a flat surface and square off. Leave approximately 1¼ inches between slats.
2. Place 2 of the 12-inch x 3-inch pieces on top. Leave 3 inches at each end. Be sure these slats are square.
3. Use small ½-inch screws or box nails to assemble. If nails stick through, cleat them over from the underside. This will prevent putting holes in the plant specimens and will also give extra strength.
4. Repeat steps 1 through 3 to build the second frame.
5. Place folded newspaper and cardboard between the frames in alternating layers.
6. Place the straps or ropes around the ends of the frame so that the frames, newspapers, and cardboards form a tight bundle.

Now You Are Ready to Press Plants

7. Report what you have done on a separate sheet and attach to your agronomy project record.

Demonstration Suggestion

How to build a plant press. Have one frame built before the demonstration. Build the second frame during the demonstration.

UNIT 3

PLANT COLLECTIONS

Throughout the world there are thousands of different plants ranging from microscopic size (bacteria and fungi) to the giant trees of the forest. Plants have been carefully studied by botanists and placed in groups according to their physical characteristics. In this unit you will learn to collect plants from three groups.

The three groups selected are grouped by their common appearance on the farm, rather than by physical characteristics. The three groups are (a) weeds, (b) legumes, and (c) grasses.

A good way to become familiar with different plants is to observe how they grow in the field. You will want to look at their root systems, stems, leaves, flowers, and seeds.

Do this: (These instructions should be used with all three groups of plants to be collected.)

1. Make a collection of plants in any one of the three groups.
2. Collect the whole plant—root, stems, leaves, and flowers or seeds.
3. Mount plants on heavy white 8½-x 11-inch construction paper for exhibit. (Figure 2.)

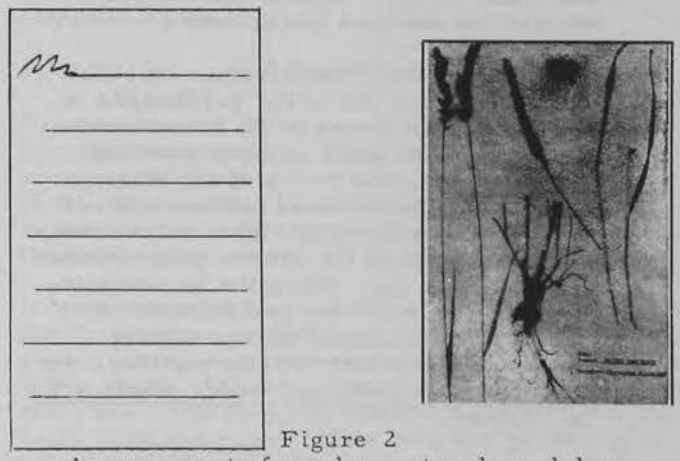


Figure 2
Arrangement of weed mount and weed description opposite each specimen

4. At least 10 plants should be collected—but you may add any number over this.
5. The completed collection should be given to the club leader or county agricultural agent to be credited with completion. The collection will be returned to you.

Materials Needed for Making Plant Collections

1. Two slatted frames for press, 12 x 18 inches long. Unit 2 gives directions for building a plant press.
2. Mounting sheets—heavy white construction paper, 8½ x 11-inches.
3. Transparent tape—1/8-to 1/2-inch wide.

4. Gummed labels 1 1/4 x 4 inches.

5. Bond paper for plant descriptions 8 1/2 x 11 inches.

6. Cover—looseleaf binder or other suitable cover.

How to Collect and Press Plants

1. Collect plants in the blossom or heading stage.

2. Collect the whole plant—root, stems, leaves, and flowers. Collect seeds if they are available. Collect more than one sample of each plant in case one of the plants becomes damaged.

3. Remove some of the stems, leaves, flowers, or roots if necessary to prevent crowding. Split thick stems and roots to reduce bulk.

4. Plants should be pressed between three sheets of newspaper until dry. The plant parts should be carefully arranged on the right half of the three newspaper sheets, so that the whole plant is flat and straight. Arrange the plants so they will fit on the size mounting paper (8½ x 11 inches) you will be using. When you have the plant in the right position, fold over the left half of the triple sheets. Repeat these steps with each of the samples you collect.

5. Place one of the slatted frames on a flat surface. Place one of the cardboards on the frame. Lay each of the folded newspapers with the plant specimen on this slatted frame, one on top of the other. Place a cardboard sheet between each of the newspaper folders. When all the sample folders are in the press, place another cardboard on top. Place the second slatted frame on top. Put two belts or two pieces of rope around the two slatted frames and pull them firmly together. Do not press so tightly that tender plants will be crushed.

6. Check specimens each day and replace newspaper and cardboard if necessary.

7. Put the plant press in a dry place and allow the samples to dry for 7 to 10 days.

How to Mount Pressed Specimens

1. After the plant specimens are dry, carefully remove from the newspaper folders. Lay them out on 8½-x 11-inch mounting paper and fasten in place with transparent tape. Use only enough tape to keep all parts in place and be sure all parts can be clearly seen.

2. After mounting, place one of the gummed labels (1¼inch x 4 inch) in the lower right corner. Print or type the common and technical name of the plant and date collected.

3. Place plant mounts in a suitable cover for exhibit. Have your name and address on the inside cover of the collection.

Name:_____
Address:_____
Project:_____
Unit:_____

With care, this collection can last for many years if not exposed to light or handling any more than necessary. Additional plant specimens can be added to the collection as desired.

How to Prepare Information About Plant Specimens

Write up a brief description of each weed collected on the 8½-x 11-inch bond paper. Tape this opposite the correct specimen on the back of the previous plant mount (Figure 2, page 5). Include the following information:

a. Common and technical name. It is important to give the technical name because many weeds go by several common names. When identifying it is helpful to know the technical name.

b. Date collected.

c. Crop in which found.

d. Life cycle: annual, biennial, perennial.

e. Type of damage or loss caused by weed.

f. Recommended methods of control.

g. Identifying characteristics that make it easy to distinguish from other weeds collected.

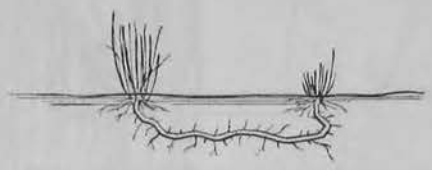
WEEDS

A Weed is defined as any plant that is growing out of place. If alfalfa is growing in a field of corn or soybeans, it is technically a weed. However, in this unit only those plants commonly known as weeds should be collected.

Certain weeds are better adapted to given growing conditions, much the same as crop plants. Therefore, some weeds such as lambsquarters (Chenopodium album) and pigweed (Amaranthus retroflexus) are common in cultivated and small grain crops, but seldom found in pasture or meadows. Quackgrass (Agropyron repens) is usually a problem in some cultivated crops, small grains, pastures, and meadows.

In addition, some weeds are more difficult to control because they can grow either from seed or underground root or stem parts. Other weeds can only grow if they are allowed to produce seed. The first type or perennial weeds can live for several years. They are usually more difficult to control than annual weeds which live for only one year.

As you make your collection of weeds, you should observe the below ground parts of the plant as well as the above ground portions. When you have checked your samples with the weed manual, you will begin to see some of the characteristics of the perennial and annual type plants. In the perennial, broad leaf group, you will notice, for example, large tap roots. In the grasses, you will see young shoots which develop from underground stems (rhizomes). Some weeds will have combinations



Rhizomes or underground stems of perennial grasses

of this characteristic such as with the Canada Thistle. In the broad leaf annuals, you will notice that the tap root system is not as large or as fully developed as with perennials. The grass type annuals have large branching root systems, but no underground stems or bud forms.

This unit can be carried out with any one of the basic crop projects. For example, if a member is in the advanced corn project, he should only collect a sample of those weeds that are within his project area. Because the same type weeds may grow in several different crops, it is possible that the weed collections from other crop projects may have some of the same weeds that you have collected.

Weed References

1. Weed manual, Weeds of the North Central States. N. C. Reg. Pub. 36, (Cost $1.00.) Bookstore, University of Minnesota, St. Paul 1, Minnesota.

2. Cultural and Chemical Weed Control in Minnesota. Ext. Folder 191 (Revised Annually), Minnesota Agricultural Extension Service, St. Paul 1, Minnesota.

LEGUMES

There are many different legume plants, but in this unit you will be interested in only those planted on the farm for use as forages, hay, pasture, or silage or for cash crops. In Minnesota, alfalfa (Medicago spp.) is the most important forage legume, and soybeans (Gycine max) are the most important legume used as a cash crop.

Alfalfa

Soybean

Legumes are credited with taking nitrogen from the air and placing it in the soil for later crop growth. This is accomplished by tiny bacteria (Rhizobium spp.) which take free nitrogen from the air and store it in nodules which they build on roots of legume plants. In return for this home,

Nodules on legume roots

the bacteria make it possible for the legume and other crop plants to use this nitrogen for their growth. Therefore, legumes are an important source of soil nitrogen as well as a source of food for livestock production and the market.

This unit will help you become familiar with the common legumes grown on Minnesota farms.

GRASSES

Grasses are the most numerous of plants growing throughout the world. Much of the great soil resource of Minnesota is a result of the dense cover of tall grasses that covered the area for centuries. In Minnesota there are two major groups of grass: (1) forage grasses and (2) the cereal grains.

A large share of U. S. food comes from the grass family when we consider the abundance of cereal grains (corn, oats, wheat, barley, and rye) that we have. Some of these products are used direct, but many are converted into livestock products (milk, beef, pork, and eggs). This dual use gives a good balance to Minnesota Agriculture, by combining crop production with livestock production.

Bromegrass

Timothy

Sudangrass

This unit will help you to become familiar with the common grasses grown on Minnesota farms.

Legume and Grass References

1. Varietal Trials of Farm Crops, Misc. Report 24 (Revised Annually) Minnesota Experiment Station, St. Paul 1, Minn.

2. Grass, United States Department of Agriculture Yearbook, 1948, Washington, D. C.

3. Numerous crops textbooks. Check with club leader or county agricultural agent.

Demonstration Suggestions

1. Preparing plants for exhibit.

2. Differences in physical characteristics of plants.

3. Life cycle of annual, biennial, or perennial plants.

Exhibit Suggestion

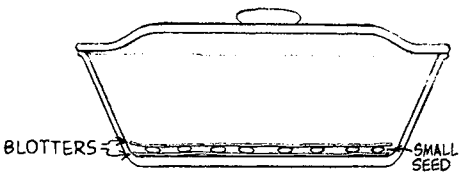
Exhibit your plant collection at the county fair, club booth, county achievement day, or other club activities.

UNIT 4

GERMINATION TEST

Not all seeds will germinate, but you want to be sure the seed you plant will grow into good plants.

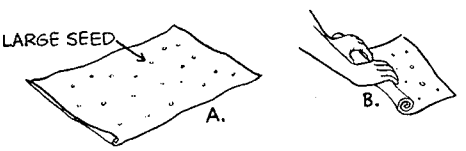
There are several ways to make a germination test. Small seeds can be placed between two wet



Covered dish for germination test

blotters or paper toweling. Place this in a flat dish with a cover and keep moist and at room temperature for several days.

Large seed can be rolled in wet paper toweling or newspaper, just tight enough to hold the seed in place. Keep this "paper doll" in a warm place for



"Paper or rag - doll" germinator

7 to 10 days. You may need to add a few drops of water to keep the seeds moist.

Do this: I

Make a germination test on seeds of four kinds of crops grown on your farm. Record results of the germination test in spaces provided on the next page which should be completed and attached to your agronomy project record.

How to do it:

1. Wet three sheets of clean newspaper or paper toweling (12 x 16 inches) and lay out flat on a table.

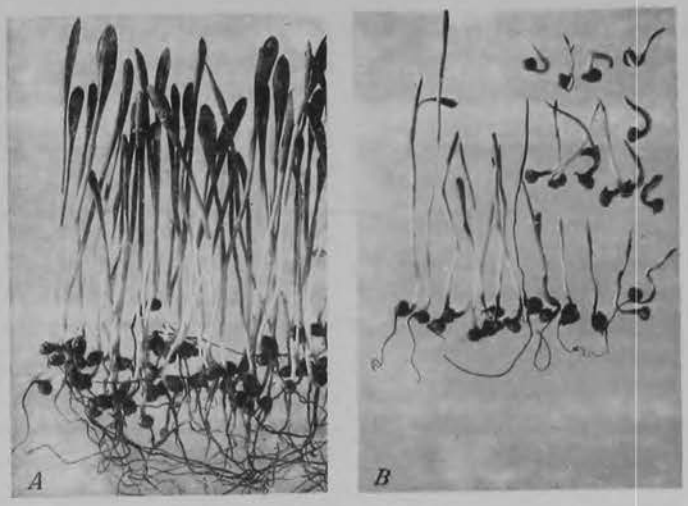
2. Place 100 seeds on the newspaper or toweling.

3. Cover with another sheet of wet newspaper or toweling.

4. Roll or fold into a flat roll allowing room for seeds and sprouts to expand as moisture is absorbed.

5. Place rolls in a quart fruit jar with a lid. Place this container at room temperature (60°-70°F.) and leave for 7 days.

6. After 7 days remove the roll from the jar. Unroll it and count the sprouted seeds. Count only strong sprouts. If 100 seeds were used, then the number of strong



Seed Germination
A - Strong Sprouts B - Weak sprouts

sprouts is the percentage of germination. An average of four separate tests of 100 seeds each will give reliable results.

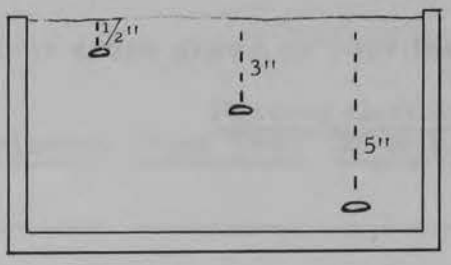
7. At the time you count out seeds for germination at home set aside 1/2 to 1 pint of seed for an official test. Send these samples to:

   Minnesota Department of Agriculture Seed and Weed Section
   Botany Building
   St. Paul 1, Minnesota

You are allowed five free germination tests each year. Compare the results of the official germination test with your own results.

Do this: II

Using seed that has already been tested for germination, plant 10 seeds each of corn, soybeans, oats,



Flower box and seed planted at different depths.
and alfalfa in a flower box at depths of 1/2 inch, 3 inches, and 5 inches. Keep moist and in a warm place. Count the number of plants that come through the soil.

Demonstration Ideas:

How to test germination of seeds.

How deep to plant seeds.

Exhibit Suggestions:

1. Germinate seeds of corn, soybeans, oats, or alfalfa. Arrange seeds according to strong and weak sprouts. Explain how you made the germination test.

2. Repeat depth of planting. Prepare the box with a glass front on one side. Place seed near the glass so growth can be seen.

Your Name _____ Address _____

Club Name _____ County _____

Unit 4 — Germination Test

Remove this page from the handbook after you have answered the questions and attach to your Agronomy Project Record.

1. Record results of the germination test on seed of four crops grown on your farm in the spaces below:

Kind of Seed	No. Started	No. Germinated	Percent Germinated	
			Your Test	State Laboratory

2. Record results of depth of planting demonstration in spaces below:

Kind of Seed	Number of Seeds that Germinated		
	1/2 inch	3 inches	5 inches
Corn			
Soybeans			
Oats			
Alfalfa			

Observe corn and soybean seeds as they germinate. How are the seedlings different?

Soybean _____

_____

Corn _____

_____

Why can't all seed be planted at the same depth? _____

_____

_____

_____

UNIT 5

SOIL TEST SAMPLING

In order to have success in crop production you must know the fertility level of your soil. The soil test measures the nutrient levels of soil and can be used as a basis for the recommendations of how much lime and fertilizer or manure to apply to meet the need of the crop on your soil.

TAKING A SOIL SAMPLE

Soils vary greatly in the way they supply plant food to crops. Since the sample is the basis for your fertilizer and lime recommendation, knowledge of how to take a good, representative soil sample is important.

Materials Needed:*

1. Soils Fact Sheet #4: How to Take a Good Soil Sample.
2. Two soil test information sheets.
3. One soil sample carton.
4. Tools for sampling: shovel, trowel, auger, tube.

* Items 1-3 can be obtained from the County Extension Office.

Do this:

1. Read the Fact Sheet How to Take a Good Soil Sample, carefully and follow the suggestions.
2. Beginners should select a field that needs testing. A field to be planted to corn or oats is best. Members growing a crop should take a soil sample from the project area. If possible the soil sample should be taken in the fall.
3. Send the soil sample and the completed information sheet to the Soil Testing Laboratory, University of Minnesota, St. Paul 1, Minnesota. Enclose a check for $1.00 to cover the cost of testing the soil sample. Indicate that this is a soil sample from the 4-H Agronomy Project.
4. Beginning members should encourage their Dads to apply the needed lime and fertilizer recommended from the results of the soil test.
5. Write a short story on taking the soil sample, and your use of how the soil test report was used. Attach this with the soil test information sheet and recommendation to your agronomy project record.

Demonstration Suggestions:

"How to Take A Good Soil Sample" is a good demonstration for a club tour or at an early fall club meeting.

UNIT 6

ATTEND A CROP PRODUCTION FIELD DEMONSTRATION MEETING

You will learn by seeing as well as hearing about new, improved crop production practices that may be of benefit to you on your home farm.

Materials needed:

1. Paper and pencil to take notes at the meeting.
2. White paper, pen and ink or typewriter to prepare final report on demonstration meeting.

How to do it:

Every year in nearly every Minnesota county, your extension office sponsors one or more field demonstrations on some phase of crop production. These demonstrations may compare different crop varieties, weed control, insect control, soil fertility, planting and harvesting methods, etc. During the growing season, your county agricultural agent will usually hold a meeting at the demonstration site to discuss the results of the various treatments in the demonstration. Meetings like this are designed to give you an opportunity to see how well certain new and improved crop production practices perform under soil and weather conditions like those on your home farm.

Check with your county agricultural agent to find where these demonstrations will be in your county. Find out when a meeting is to be held at a demonstration in which you are interested.

Attend this meeting. Take notes of what the county agent or extension specialist says about the demonstration, its purpose, the treatment comparisons and results. You may wish to sketch a layout of the plots. Draw conclusions from what you see and hear.

Do this:

1. Attend a crop production field demonstration meeting.
2. Write a report of what you heard and saw at this meeting.
3. Include this information in your agronomy project record.

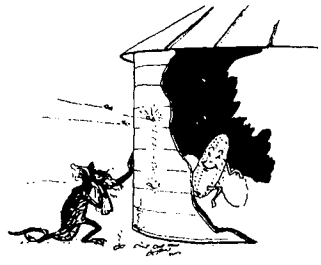
UNIT 7

CLEAN MARKET GRAIN SURVEY

Grain is food; keep it clean! This statement is a good one to think about as you start out to check the grain bin on your family farm, on a neighbor's, or several farms in the community. There are two major reasons that grain should always be stored where it can stay clean:

1. It is human food.
2. Dirty grain will not receive as good a price at the elevator.

To store for feed



To sell

Minnesota produces grain for human food — hard red spring wheat, durum wheat, malting barley, oats, soybeans, and corn. This grain must be kept free of filth.

If grain is sold to a local elevator, to a terminal elevator, or sampled in interstate commerce and contains certain rodents or other filth; it may be diverted into nonfood purposes. This may mean a cash discount of $1.00 or more per bushel in the case of wheat.

Loss through contamination costs grain producers many thousands of dollars each year. Such loss can usually be prevented by more careful handling and storing of food grains on the farm and in the country elevator.

Savings from preventive measures will more than pay the costs of cleanup, screening, rat-proofing, bin spraying, grain protectants, and rodenticides. The problem of keeping grain clean is a job for all of us.

Do this:

1. Complete at least one bin survey.

2. Write a brief report on one major improvement made on the farm where the bin survey was made which will help improve the quality of market grain.

3. Have two grain samples graded at the local elevator. Each sample should contain at least one quart of grain.
   Sample 1 should be taken from the top surface and near the outer edge of the bin.
   Sample 2 should be taken from the center of the bin and at least 6 inches below the surface.

4. Fill out the survey report and attach to your agronomy project record.

Demonstration suggestions:

1. Describe the habits of mice and rats. Demonstrate mixing bait and how home-made bait stations can be built and where they should be placed.
2. Mouse-,rat-,and bird-proof construction. Show proofing materials such as: 3/8-to 1/4-inch wire mesh, 20-gauge galvanized sheet metal, glass, and concrete-making materials. Tell how they are used in reducing contamination.

Exhibit ideas:

Exhibits can be made with materials on hand. Subjects: Grain damage, sanitation, prevention, or control methods that assure clean market grain.

Club Member's Name _____ Address _____

Name of Club _____ County _____

CLEAN MARKET GRAIN SURVEY SHEET

This survey sheet was prepared to help you make a detailed survey of individual granaries. The granaries that you survey may be on your own farm or on other farms in your community.

The list of points to be surveyed consists of an outline of conditions that frequently contribute to grain contamination. All points to be surveyed should be observed carefully and checked for each granary.

I. SURVEY OF STORAGE BINS:

Points to be Surveyed	GRANARY steel, wood, or other (state which in space below numbers)					
	No. 1		No. 2		If answer is no, tell when corrected, how, amount of time and money required. FILL OUT WHEN IMPROVEMENTS ON GRANARY HAVE BEEN MADE.	
	Yes	No	Yes	No		
FOR RODENT CONTROL (Mice and Rats)					No. 1	No. 2
1. Are premises surrounding granary free of rodent-harboring places such as junk piles, lumber, weeds, etc?						
2. Is building free of rodents as indicated by lack of pellets, burrows, etc?						
3. Is foundation open at the ends?						
4. Does foundation extend 12 to 18 inches above the ground?						
5. Is floor rodent-proof?						
6. Are doors, windows, and other openings closed at all times?						
FOR BIRDS AND POULTRY CONTROL						
1. Are windows, cupolas, and louvers screened?						
2. Is building free from other openings through which birds and poultry or their droppings can get to the grain?						
3. Are door openings used to put grain in the building properly fitted to remain in place and easily closed?						
4. If sparrows and pigeons are prevalent, are you doing anything to eliminate them?						
FOR INSECT CONTROL						
1. Are walls swept down and floors cleaned before putting grain in bins?						
2. Are walls and floors sprayed with a good insecticide before filling with new grain?						
3. Is granary kept clean and free from waste grain, commercial feeds, old grain sacks, etc., in which insects may breed?						
4. Do you check grain that is carried over for insect damage?						
5. Do you use fumigants when insects are found in grain?						
FOR MOISTURE CONTROL						
1. Is roof weatherproof?						
2. Are side walls weatherproof?						

I. SURVEY OF STORAGE BINS:

Points to be Surveyed	GRANARY steel, wood, or other (state which in space below numbers) No. 1 Yes	No. 1 No	No. 2 Yes	No. 2 No	If answer is no, tell when corrected, how, amount of time and money required. FILL OUT WHEN IMPROVEMENTS ON GRANARY HAVE BEEN MADE. No. 1	No. 2
For Moisture Control (continued)						
3. Is floor dry and weatherproof?						
4. Will doors, windows, cupolas, and louvers keep out driving rain and snow?						
5. Are bins properly ventilated?						
6. Is moisture content of grain stored low enough to prevent spoilage?						
7. Do you make monthly checks on building and grain stored?						
FOR OTHER CONTROL METHODS						
1. Are gas, oil, weed or insect spray materials kept out of granaries?						
2. Do you make certain that seed treated with mercury fungicides is not mixed with other grain?						
3. Is part of granary used for grinding feed or for feed storage?						

II. NARRATIVE: (Briefly report on one major accomplishment in clean grain work on your farm)

III. GRAIN GRADE REPORT:

Type of crop_____ Year harvested_____ Length of time in storage_____

Type of storage (wooden, steel, etc.). Capacity of bin_____ Date samples taken_____

THE FOLLOWING TO BE COMPLETED BY ELEVATOR MGR.

GRADE NUMBER

Sample No. 1_____

Sample No. 2_____

(If grade number for the two samples differs, list factors causing change in grade such as test weight, color, broken kernels, insect infested, treated kernels, or rodent contaminated.)

_____

_____

_____ _____

Signature of Club Leader Signature of Elevator Mgr.

_____ _____

Address Name of Elevator

Date_____ Address_____