DEPARTMENT OF EDUCATION
EDMONTON, ALBERTA

Program of Studies for the High Schools

INTERIM COURSE OF STUDY IN VOCATIONAL AGRICULTURE

for the year 1948-49

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COURSE OF STUDY IN VOCATIONAL AGRICULTURE

I GENERAL STATEMENT

The courses in Animal and Plant Science are being offered primarily to meet the needs of rural students who plan to remain in a rural community. They are practical courses designed to prepare boys and girls for farm work; they are not intended to prepare them for college, although it is reasonable to assume that some of the class members may desire to matriculate.

The small high school cannot offer a wide range of elective courses because of staff and equipment limitations. Accordingly, it is considered advisable to authorize the offering of Agriculture only in those schools which have a sufficient demand for the course and can provide the qualified instruction, plant and equipment demanded by the course.

The primary aim in teaching vocational agriculture is to give prospective farmers such training as will enable them to become successful farmers and worthy citizens in their communities. The course in Vocational Agriculture should provide experiences that will enable the student:

1. To develop desirable attitudes toward and appreciations of agriculture and farm life.
2. To produce and market agricultural products effectively.
3. To co-operate intelligently in economic activities.
4. To establish and maintain a satisfactory farm home.
5. To participate in worthy rural, civic and social activities.
6. To learn how to apply the results and the technique of modern research to the practical work of the farm.
7. To develop ability to maintain desirable relationships with teachers, parents, and the community.
8. To exercise constructive leadership and to recognize and follow worthy leadership.
9. To become established in farming.

Teachers of Vocational Agriculture are also reminded that the section entitled Basic Principles and Definitions on page 7 of the Regulations relating to the Program of Studies for the High School applies definitely to the courses in Vocational Agriculture. Special attention is drawn to Sections I (c) and (e), which read as follows:

(c) "Providing in the school and in the classroom the conditions and environment most favourable to mental, social, and personal growth: Of the two main purposes of the program, one is to give ample opportunity, both on the administrative side and in classroom work, for the free play of critical intelligence on the part of students and teachers, and for mastering the techniques and practices of the democratic way of life. The other is to facilitate the development of individual personality in accordance with the Christian principles of life, through social experiences in the classroom, and social activities of the school."

(e) "Functional instruction in English as the basic tool of comprehension and expression; not as one "subject" amongst others: Every teacher is a teacher of English. The student's ability to gather meaning from print at his level of instruction and his skill and correctness in oral and written expression are the proper concern of all his teachers; not merely of his teacher of English."

The outlines of the Agriculture courses are based upon the principle that effective teaching for any vocation calls for a directed participation in the vocation and a first-hand acquaintance with it. It follows, therefore, that supervised practice must play a large part and that classroom study must grow out of the supervised practice of the pupils.

Any program which may be suggested for a vocational course in Agriculture can be, at best, only a guide to which a teacher may turn for ideas and stimulation. The final program must develop from the project work and the needs which become apparent as the course attempts to fit local conditions and individual interests. The successful teacher will be alert for every opportunity to teach scientific information and practice at such times as they may have practical application.

Teachers of agriculture are not expected to attempt to cover every item of the outline in a given school. It is desirable that the course be sufficiently flexible that those phases of agriculture which have particular significance and practical application in a given area should receive special emphasis. It is also expected that other phases of study not contained herein may be encountered in some areas. Freedom is extended to teachers to take advantage of these opportunities to build the most practical courses for their communities.

II ADMINISTRATION

A 1. A properly qualified teacher must give continuous service for twelve months of the year, except during an appropriate holiday period.

2. All teachers of the Agriculture course must be approved by the Department of Education.

3. The teacher of agriculture should preferably have considerable training and experience in farm mechanics.

4. Any student to be eligible to enrol in the Agriculture course must be provided with facilities for carrying on projects or some form of supervised practices.

B Each student in agriculture is required to conduct some practical agricultural project as a part of the regular course each year. This work is under the supervision of the teacher of agriculture. The student may take over on his father's farm some enterprise which is to be carried out on a production basis, and handled according to the best practices. Reports on this practical work will be submitted to the instructor who will determine the value of the project.

For students who attend school from distant points limited facilities for project work should be provided by the larger schools. Facilities thus provided should be available to students at a nominal charge.

1. Field trips for the agriculture classes should be arranged so that there is no interference with other classes of the school.

2. Transportation for such field trips should be provided by the school.

C Only pupils who are genuinely interested in agriculture should be encouraged to take the Agriculture courses.

III PLANT AND EQUIPMENT

Schools planning to offer Agriculture Electives must have plant and equipment approved by the Department of Education.

A Classroom Equipment

Agriculture classrooms should possess the characteristics of any good classroom. There should be proper lighting, heating, ventilation, and janitor service. An adequate library of reference books, bulletins, and agricultural periodicals should be supplied. Tables and chairs should be provided for seating the students, thus making it possible to use the room as a laboratory for day or evening group discussions or meeting. Suitable charts, pictures, and illustrative material should be collected and used in classroom work. A motion-picture or film-strip projector would be valuable. Laboratory exercises requiring chemistry and physics apparatus can be arranged for in co-operation with the agriculture teachers and the science teachers. Storage space should be available.

B Farm Plant

1. A small farm equipped with the stalls and pens that would be required for housing various types of live stock used during the course should be provided. Facilities and material for adequate sanitation must be provided and used frequently. It is expected that stock for study and judging will be borrowed from successful live stock breeders in the area. Suitable loading and unloading facilities, preferably mobile, are to be provided. In many instances field trips to live stock farms in the community may constitute most of the live stock classes in judging and demonstrating the various breeds.

2. A room or pavilion, possibly attached to the barn, should be available for the display and judging of stock. This might be insulated for heating.

3. A paddock and a pasture of from three to ten acres, (depending on the locality) should be available for the exercising and pasturing of stock.

4. If poultry is selected as a project, a well-constructed poultry house is to be provided, equipped with proper facilities for the care of a flock. Runs should be provided. Such a project might well be linked closely with the operation of the school dormitory.

5. Plots of cultivated land should be available for teaching, for testing material, for gardening demonstrations and for orchard space. Again, the dormitory might play a part in the management and use of these plots. A root cellar should be constructed both for dormitory use and for demonstration.

C Farm Shops

1. Woodwork or Carpentry Shop

In some cases this will already be provided for in the school set-up. There should be no difficulty in using the same facilities for teaching the woodwork to the Agriculture students that are used for Farm and Home Mechanics, etc.

The shop must be equipped with storage space and an adequate supply of the tools necessary for practical work on the farm.

2. Machine and Metal-work Shop

A building should be provided to handle shop courses in Farm Mechanics and Metal-work. This building should have at least one door that is large enough to admit pieces of farm equipment and to permit the removal of large articles made by the students in the shop. The shop must be equipped with the common tools used in the repair and care of farm machinery, including blacksmithing facilities. In the smaller schools, one large room might be approved for all shop courses.

Where new shops are being built, competent authorities should be consulted and final approval of plans obtained from the Department of Education.

IV THE TEACHER

The agriculture teacher should be a man with a farm background who is in sympathy with rural life and its problems. He must hold a degree in Agriculture as well as a valid teaching certificate. He should be alive to all new developments in his profession.

The success of the courses depends largely on the initiative, resourcefulness and leadership of the teacher.

V PROCEDURE

A General Statement

The schools teaching Vocational Agriculture must meet the requirements specified by the Department in order to qualify for the grants.

B Organization

To secure pupil interest and to achieve the objectives set forth in this outline the courses are best conducted by the problems, conference, and project method.

In selecting the content of the course, consideration must be given to the following standards set up for the choice of subject matter:

1. It should be based upon a true-to-life situation.
2. It should be interesting in itself, or clearly connected with things that are interesting.
3. It should be clear and definite in statement.
4. It should be of proper scope and difficulty.
5. It should call for thinking of superior quality, and involve study, research, and sustained effort on the part of the pupil.

The course, to be effective, must prepare the student to think out his own problems as and when they present themselves in everyday life. It must teach the pupil to differentiate between good and poor agricultural practices. Subject matter should be selected that will aid the students in subsequent thinking and should be presented in such a manner that it will teach them where and how to find the information needed. It is not intended that agriculture shall become a text-book course.

C Presentation

There are several ways of presenting subject matter, but the one to be used in the course in agriculture is a combination of conference, problem, and project methods. There will be many things that the boys already know, which may be brought out by the conference method. Only problems pertinent to the agriculture of the locality should be used and they should be carefully selected. These problems should be studied in the classroom and in the field. A well-organized field trip will furnish material for several days' study. Such a trip gives the student both the common practice and the practice recommended by the experimental stations.

The projects should be on a plane commensurate with that of other high science courses and not be allowed to degenerate into simple farm routine work. They should also be graded in difficulty and integrated into a well-balanced course or series of courses designed for the individual student.

D Projects

The selection of projects by individual students is a very important part of the course. Al aspects of the jobs to be done including requirements, financing and methods to be used should be fully considered in conference with the instructor who will assist in the selection of projects without curbing the initiative of the student.

Consultation with the parents is important since the project is to be carried on with their co-operation. The student makes all decisions, gives all directions, and keeps all records in connection with the project, but the parent may carry out activities under directions during the time the student is necessarily absent. Properly managed, these projects foster admirable child-parent relationships.

To give sound advice and guidance in the selection and development of a project the instructor must visit the farm home to become familiar with all factors related to the problem. It would be desirable to make the initial visit to each student's home prior to the opening date of the school term. At this time an inventory form may be presented to the student who should list the number of acres on the farm devoted to various crops, the equipment used, the number of each kind of live stock on hand as well as a plan of the farmstead. This survey may include such sociological factors as farm literature, farm clubs, farm forums and other community activities. These visits may well become a strengthening influence on the development of wholesome home and school relatioships.

Regular class conferences will be devoted to analysing the problem, studying reference material, recording costs, receipts and other data and improving plans for the development of the project.

The variety of projects is manifold. They may be of long duration, lasting throughout the four years the student is in high school, or of short duration, lasting only two months. Their degree of complexity will will depend on the stage of development of the student. Some students will be limited to simple short projects at first, while others will be capable of major projects in the first year. It will be the instructor's job to decide whether a project is suitable or not.

As stated above, projects may be of varying length and difficulty. The only limitations are that the home farm must be suitably equipped to deal with them and they must be along agricultural lines.

E Records

It is necessary that the teacher and student keep a systematic record of the following activities.

For the teacher:

1. Projects of each pupil
2. Visitations by the instructor and pupils to each project
3. Instructional material given in each year
4. Visits by outside speakers
5. Class or pupil participation in farm meeting, field days, tours, etc.
6. Grading of each item of pupil activity

For the student:

1. Daily record of work done
2. Progress records of project work
3. Participation records of participation in group discussions, farm organizations, tours, field days, etc.

ANIMAL SCIENCE I

OBJECTIVES:

Throughout the year the teacher of animal science should keep in mind the objectives enumerated in the introductory statement. Frequent evaluation of the work being done in the light of these objectives is necessary and important.

GENERAL SCOPE

1. Each student shall be required to do either practical work involving individual supervised animal projects at home or at school, or complete an approved laboratory course in Animal Science.

2. Each pupil shall receive basic training in research and planning, i.e., to make pupils aware of sources of information, to give training and practice in the technique of seeking out, summarizing and organizing information pertinent to any problem.

3. Pupils shall be expected to acquire a body of information relative to their field of study.

4. The promotion of pupil-parent-teacher co-operation in a study of existing home-farm and community livestock practices with a view to developing a wiser livestock economy.

5. Pupil practice in jobs involved in animal raising.

SPECIFIC

I. Survey of the livestock industries of the community.

II. Selection of a suitable project or planning of a laboratory course related to these industries.

A Major jobs

1. Selection of animal <u>or</u>	1. Lab. problems
2. Ration plan	2. Gathering specimens
3. Shelter	3. Setting up equipment
4. Feeding - watering facilities	4. Procedures
5. Immunization, etc.	5. Results and observations
6. Marketing	6. Conclusion
7. Keeping records	7. Reports

B Minor jobs - establishing routine practices bedding, grooming, haltering, training for show.

C Research and evaluation - A study of available information to guide the project

D Pupil report on project

1. History of the breed
2. Reason for choice
3. Management problems and how they were solved
4. Feeds - costs - sources
5. Grains and cost per pound
6. Marketing
7. Financial statement.

III. Fields of Study:

A Simple genetics (Mendel's Law, etc.) and application, Registration system.

1. Follow up pedigrees of famous lines in animal class chosen for project - Cross breeding, inbreeding, line breeding.

2. How to register animals

(a) Livestock Branch
(b) Rules and Laws.

3. R.O.P. and A.R. systems.

4. Artificial insemination.

B Bacteriology and animals:

1. Germs theory of disease.

2. Nature of antibodies and antitoxins.

3. Animal diseases

(a) Indirectly affecting man
(b) Animal borne diseases communicable to man
(c) Pasteurization
(d) Testing and immunization
(e) Symptoms and treatments of common deseases.

4. Insects and parasite injuries to livestock.

C Study of Government policies and services:

1. Import and export laws

2. Dominion veterinarians and their services.

(a) Local man may attend classes and invite pupils to observe some practices.

3. Campaigns:

   (a) Anti-mange
   (b) Warble fly
   (c) T.B. Free areas
   (d) Encephylomyelitis
   (e) Dairy herd regulations

4. Livestock improvement plans. (25% on approved bulls)

5. Aid to fairs, etc.

6. Agriculture Schools

7. Animal films, etc.

D The place of animals in farm economy.

1. Meat supply: Butchering, cutting, curing.

2. Dairy products: Local dairies, creamery, cheese factory

3. Turning waste products into profit

4. Relation to soil conservation.

E Animal practice

1. Time of breeding

2. Care and handling of sires.

3. Dehorning, castration, speying, branding, tattooing.

4. Inoculation, preventive-treatment therapy, study of literature available from drug companies.

F Animal feeding:

1. Balanced rations.

2. Dietary deficiencies - limiting factors.

3. Techniques in feeding and watering.

G Animal shelters.

H Equipment and machines for animal handling, feeding, etc.

I Animal types, judging, selecting.

ASSOCIATED ACTIVITIES

1. Follow up blood lines of home sire or rancher's herd sire.
2. Prepare applications for registration, breeding, certificate, etc.
3. Conduct procedures as for R.O.P. with home cows.
4. Elementary bacterial cultures - use of microscope, etc.
5. Practical animal judging, use of score cards.
6. Records of feeds, costs, etc., on own projects.
7. Regular visits to feed lots with related activities.
8. Actual milking with and without machines.
9. Actual manipulation of syringes.
10. Actual dehorning procedures, chemical and mechanical.
11. Actual castration procedures, surgical and bloodless.
12. Post mortems when advisable.
13. Home farm plan (maps, rotations) as applied to livestock program.
14. An hour at a community auction sale of stock.
15. Drenching sick animals.
16. Preparing animals for show or sale.
17. Construction of feeding facilities.
18. Conducting monthly "parent-at-school programs".
19. Sponsor community animal field day or immunization week (Blackleg, Septicemea)
20. Reading and reporting on books and pamphlets.
21. Study of procedures and activities which might further the development of Vocational Agriculture centred at the school.
22. Building of a useful up-to-date library for the use of students and stockmen of the community.

PLANT SCIENCE I

It is conceivable that the course in Plant Science may serve best as an exploratory course. With this in mind teachers should plan to cover the work as suggested by the program without becoming too technical. A more thorough study may be left for the second course in Plant Science.

Objectives

1. To cultivate appreciation for science in the field of plant culture.
2. To give experience in the responsibility of plant projects.
3. To develop analytical thinking in evaluating plants and current culture methods.
4. To make pupils aware of sources of information, advice, and assistance in plant projects.
5. To provide practical application of information gained from study of biology - general science - community economics.
6. To develop through the pupils better practices, in conservation, crop methods and a farm economy.
7. To enrich the lives of the pupils through new social experiences, and the cultivation of broader appreciations, understanding, and attitudes toward nature as it influences man.
8. To get pupils started on profitable ventures in crop raising.

General Scope

1. A supervised project and laboratory practices for each pupil involving all the factors governing plant culture and related management.
2. Study of current crops of local agricultural importance and critical evaluation of practices involved.
3. Research and study of factors concerned with the success or failure of individual projects.
4. Actual practice in operations concerned with culture of common crop plants.
5. Social experience through plant science interest.
   (a) Field trips
   (b) Assigned interviews
   (c) Organizing crop improvement meetings
   (d) Cooperative crop planning with local farmers and parents of pupils
   (e) Community leadership in sponsoring newly proven practices or introducing new crops.
6. Plant science in relation to soil, climate topography, animal science, and local industry.

Specific

1. The Individual Project

   (a) Deciding on suitable individual project to fit in with home farm plan.
   (b) Analysis of problem to reveal necessary fall activities.
   (c) Get fall activities under way.

(d) Discover sources of desirable information, procure the pamphlets etc., and make a study of these on a systematic basis.
(e) Seasonal activities called for by the project.
(f) Reports of work done and progress of the project.
(g) Culmination and evaluation of the project.

2. Planning laboratory problems related to seasonal study.

3. Building up school and individual libraries of books, pamphlets, periodicals, magazines and encouraging their use by class and community.

4. Studying as the opportunity arises:
(a) Plant characteristics: roots
stems
leaves
flowers
seeds

This should be a general study of the following and their functions.

(b) Disease and control
(c) Weeds and their control (recognition of plant and seed etc.)
(d) Seed treatments
(e) Variety improvements

i seed selection
ii cross breeding and hybrids
iii sports - mutations
iv plant selections

(f) Government policy and services:
i. Laws re threshing, certification, shipping.
ii Assistance policies
iii Field service
iv Experimental stations and their work
v Publication service

(g) Pasture and forage practices
(h) Crop sequences - legumes, symbiosis and the nitrogen cycle etc.
(i) Soil conservation and plant science
(j) Fertilizers - organic and commercial
(k) Equipment and machinery for plant culture
(l) Crops suited to alkali soils, sour soils, eroded soils
(m) Other studies as suggested by local conditions.

Associated Activities

1 Make a survey to reveal relative importance of various crops of the district.
2 Report on farming practices with relation to these crops.
3 Get the history of popular varieties of grains and report the processes used in their development.
4 Arrange with the owner of eroded fields for trial with recommended soil reclaiming crops - Make a booklet on this project with pictures to bear out the claims.
5 Arrange with Government or commercial field men for trial plots of special crops - e.g. - mustard, bird seed, field peas, etc.
6 Collect - mount - display dangerous weeds of the community.
7 Do germination tests for seed grains as a service to farmers.
8 Organize cooperative system for spraying with 2 - 4 - D in controlling certain weeds.
9 Disseminate information regarding sources of good seed for distribution to farmers.
10 Set up demonstration plots to show values of fertilizers.
11 Sponsor seed fair.
12 Develop cooperative interest of a few farmers who will try suggested rotations or management systems on demonstration basis.
13 Debates on controversial issues in plant science.
14 Beautification of school grounds.
15 Trials in production of garden seeds.
16 Field inspecrions with agriculturists re: certified seed.
17 Sponsor farm forum nights with films, lectures etc.
18 Sponsor tree planting projects under Dominion Government plan.

ANIMAL SCIENCE II

Foreword, -

The program in Animal Science I makes it possible for pupils to touch on nearly every phase of the stock raising industry. As pointed out in the introduction, however, it is not intended that any class shall cover all the work that has been suggested, and it is impossible for any class to treat even the major topics thoroughly in one year. Much is left for a second course.

The first course in Animal Science is open to almost any pupil who may be interested enough to arrange for simple project work. It is felt that a course in Animal Science II should provide study and experience which only those boys who are looking forward to mixed farming or ranching as a vocation will find worth the effort required.

The principal of the school should examine carefully the year's program of subjects that each student of Animal Science II and Plant Science II has undertaken in order to ensure that he can give adequate time to those two subjects and carry out the required field work without interfering with the rest of his time-table.

The Program is arranged in two sections, - 1. A project of extensive scope. 2. Study and experience.

I. The Project

(a) For Animal Science II it is expected that each pupil will embark on a project calculated to develop into a permanent stock raising enterprise to be carried on indefinitely by the pupil or as part of the home farm economy. It will involve more than a few weeks or months and will not necessarily culminate at the close of the school year.

(b) Minor improvement projects - (See introduction).

Examples:

1. Poultry:

(a) providing proper buildings for a permanent enterprise.
(b) securing baby chicks.
(c) brooding the chicks.
(d) transfering to regular coops and providing care until maturity.
(e) culling pullets.
(f) marketing cockerels as fryers or caponizing.
(g) killing and packing.

(h) care and feeding of laying hens
(i) candling, grading and storing eggs.
(j) detailed study of parasites and diseases, immunization and treatment.
(k) judging and showing birds.
(l) keeping records.

2. Sheep:

(a) selection of breed to fit prevailing conditions.
(b) selection of five or six breeding ewes.
(c) selection of ram.
(d) breeding care.
(e) shelter, feed and care of ewes through winter.
(f) studying diseases and watching for symptons, giving treatment as required.
(g) lambing.
(h) docking and castration of lambs.
(i) registration of purebred stock.
(j) feeding ewes and creep feeding lambs.
(k) early marketing.
(l) shearing of ewes.
(m) summer care of rams.
(n) wool grading and marketing.
(o) keeping suitable records.
(p) fitting and showing individual sheep.
(q) judging events.

II. Study and Experience:

1. Thorough study of all the factors involved in the branch of stock raising involved in the project.

(a) Each pupil will prepare himself to deliver acceptable lectures to adult and student audiences covering the field of his project.

2. Study of the Animal Ecology of an actual farm.
(a) Secure permission and co-operation of a farm owner to make a study of his livestock economy.
(b) Map the farm showing fields, pastures, water etc.
(c) Plans of available buildings.
(d) Survey of farm by-products which may be used.
(e) Discover the farmers livestock interests.
(f) Market conditions over a five year period
(g) Plan a practical livestock policy.
(h) Have the plan evaluated and criticized by a District Agriculturist and by the farmer and instructor.

3. Take part in a group of the livestock ecology of the region in which pupil lives.
(a) Study topographical maps of the area.
(b) Secure and chart information regarding the shipments of various kinds of stock.
(c) Study of local industries dependent on stock and their contribution to the economy of the area. (creameries, cheese factories, egg grading plants, poultry plants, co-operatives etc.)

(d) Prepare a review of what has been the regional policy; suggest improvements.
(e) Have suggested policy evaluated and criticezed by competent men.

4. Take part in at least five laboratory dissections to study at first hand the anatomy of the animal, the body function, the symptons and effects of disease.

5. Provide at least five experiences in animal judging for each pupil. Select a judging team.

6. Provide actual experience in practices common to the livestock industry:
   (a) castration, - pigs, lambs, calves.
   (b) caponizing roosters.
   (c) vaccinations, inoculations.
   (d) drenching and dosing with ejector for capsules.
   (e) dehorning, using caustic on calves.
   (f) dipping sheep.
   (g) treating for warbles.
   (h) shearing sheep.
   (i) killing and dressing poultry.
   (j) removing retained afterbirth.
   (k) assisting ewe, sow or cow in difficult delivery.
   (l) removing of black teeth from piglets.
   (m) treatments for mastitis.
   (n) treatment for milk fever.
   (o) artificial insemination.
   (p) speying heifer or dog.
   (q) operation for calculi disease.
   (r) sticking for bloatedness.

7. Prepare and show an animal at field day or exhibition.

8. Take part in open forum discussions with adults.

9. Gather, index and arrange bulletins, treatises, etc. which serve as a reference library for a stock man.

10. Become active member of local organizations which foster a better livestock economy.

III. Suggestions

1. Bacteriology - Culture media
   isolation of organisms
   of at least one disease

2. Know how to cut up beef or pork or mutton
   for storing and cooking.

3. Rope halters - saddle blankets - rope making
   breeding markers - leatherwork - braiding

4. Branding and marking of cattle - ear tags - chemical etc.
   care of equipment

5. Fences - treating posts - gates etc.

PLANT SCIENCE II

FOREWARD

In Plant Science I pupils will have made a brief survey of most phases of plant production. Those who are proceeding to the second course should plan through study and practical experience to explore their own particular interest as it fits into the general farming scheme of the area.

In Plant Science II pupils are provided the opportunity to carry on advanced and intensive study of the fundamental principles learned in the first course. It is expected that the pupil's project will be developed to become part of the farm enterprise.

As in Animal Science II, the program is arranged in two sections:

1. A project for intensive scope
2. Study and experience

Section I. The project

It is expected that the pupil will undertake a major project which will provide the experience necessary to develop successful practices in a permanent plant production program.

Two examples of major projects follow:

1. Production of Malting Barley

   (a) Soil and climatic factors
   (b) Selection of acreage
   (c) Place of barley in the farm rotation
   (d) Selection of varieties to fit local conditions
   (e) Seed - selection, acquiring, treating, seeding
   (f) Tillage practices -
   Preparation of seed bed, weed control, cultivation
   Care and operation of various machines used for above activities
   (g) Prevention and control of insects and diseases
   (h) Harvesting - care and operation of various machines used
   Storage - types of suitable building - providing temporary and permanent buildings
   (i) Grading and selecting
   (j) Marketing problems, malting, brewing and distilling processes, and relevant social and economic aspects considered under study and experience
   (k) Analysis of costs and returns

2. Pea Seed Production Project

   (a) Choice of variety to meet local conditions
   (b) The place of peas in a rotation

(c) Obtaining a contract
(d) Selection of pea land
(e) Soil and climatic factors
(f) Seed - selection, acquiring, treating (inoculation) isolating, seeding
(g) Tillage practices -
Preparation of seed bed, weed control, cultivation
Care and operation of various machines used for above activities
(h) Roguing
(i) Harvestin (operation and care of machines used) and storage
(j) Sale of peas
(k) Analysis of income and expenses

The jobs from the above list which are most pertinent to the agricultural situation on the home farms of the pupils will be considered in class.

Section II. Study and Experience

1. A careful study of all factors concerned in the branch of plant production involved in the project must be undertaken.
Each pupil will prepare himself to deliver acceptable lectures to adult and student audiences covering the field of his project.

2. Students should take part in a group study of the plant ecology of the region in which they live.

(a) A more comprehensive study of the topographical, soil, and climatic factors affecting this area.
(b) Secure and chart information regarding the quantities, varieties and values of the respective crops marketed from this area.
(c) Study of local industries dependent on plant production and their contributions to the economy of the area (milling, seed cleaning, and feed distribution plants, etc.)

3. Study of the plant ecology of an actual farm.

(a) Secure permission and cooperation of a farm owner to make a study of his crop production economy.
(b) Map the farm showing fields.
(c) Discover the farmer's particular interests in crop production.
(d) Prepare and study the farm production practices.

i. Crops grown
ii. Crop rotations
iii. Soil conservation
iv. Tillage practices
v. By-products usage
vi. Harvesting
vii. Storage practices
viii. Marketing

ix. Seed preparation
x. Later prepare a crop management program for this farm
xi. Have this plan criticized and evaluated by the instructor, District Agriculturist and farmer.

4. A continuation of the study of grains and grasses in more detail.

(a) Botanical characteristics
(b) Variety identification

These studies should include laboratory classes in identification; market grading; seed selection, grading and testing; show preparation; judging.

Field identification and roguing trips should also be arranged. These should coincide with agricultural field days and field inspection trips with agricultural officials and inspectors.

5. A continuation and more comprehensive study of the common diseases of plants.
The pupil should have the opportunity to do laboratory identification of the diseases with laboratory and field practices in methods of control.

6. A continuation and more comprehensive study of insect pests and their control.

7. A study of farm tillage practices most suitable to the area and applicable to specific crops.

8. A study of fertilizers and fertilizing practices.

9. Soil conservation.

(a) Need - for - study of losses, etc.
(b) Accepted tillage practices
(c) Selection of most suitable crops
(d) Shelter belts culture

10. Plant Breeding

(a) Instruction in scientific plant breeding
(b) Simple genetics

11. Horticulture

(a) A study of the most suitable varieties
(b) Vegetable culture
(c) A study of small fruits and decorative shrubs and trees with a view to a more systematic farmstead planting.

It is expected that students taking Plant Science II will have an opportunity to receive instruction and practice in the following:

(a) Seed cleaning
(b) Seed growing (actual seed plot operations)
(c) Seed treatment (disease control)
(d) Seed germination (viability) tests
(e) Plant propagation

i. Artificial breeding and the application of simple genetics (greenhouse and field)
ii. Plant breeding practices in horticulture, cuttings, bulbs, corms, etc.

(f) Harvesting methods
(g) Grain grading and storage
(h) Moisture determination
(i) Common soil testing practices
(j) Weed eradication

i. Tillage
ii. Chemical
iii. Roguing

(k) Preparation of exhibits - sheaf and grain
(l) Fertilizers - i. natural
ii. artificial

(m) Planning and implementing a soil conservation program
(n) Practical work in combating insect pests
(o) Take part in open forum discussions with adults
(p) Gather, index and arrange bulletins, etc., as a reference library for plant producers
(q) Become an active member of local organizations which are fostering improved plant breeding practices.

STUDENT AND TEACHER REFERENCES

ANIMAL SCIENCE

Keeping Livestock Healthy (Yearbook 1942 of Agriculture) - U.S. Dept. of Agriculture

Animal Nutrition; Maynard

Raising Turkeys, Ducks, Geese, Game Birds; M.A. Jull

The Feeding of Farm Animals; Grant McEwan

The Breeds of Farm Livestock in Canada; A.H. Ewen and Grant McEwan

The Science and Practice of Canadian Animal Husbandry General Agriculture; G. McEwan and A.H. Ewen

Feeds and Feeding; Morrison 20th Edition

The textbook of Microbiology; Kenneth L. Burdon

Raising Livestock; Peter and Deyoe

Milk and Milk Products; Eckles, Combs and Macy

Modern Poultry Farming; Hurd

Poultry Breeding; Jull

Poultry Husbandry; Jull

Farm Building; Wooley

Farm Building; Foster and Carpenter

PLANT SCIENCE

Farm Management; Adams

Farm Management and Marketing; Hart, Bond and Cunningham

Farm Machinery; Stone

Crop Production; Hughes and Henson

Vegetable Crops; Thompson

Vegetable Growing; Shoemaker

Small Fruit Culture; Shoemaker

Floriculture; Laurie and Ries

Production of Field Crops; Hutcheson, Wolfe and Kipps

Basic Horticulture; Gardner

Propagation of Plants; Kains and McQueusten

Greenhouse Gardening for Everyone; Chabot

Practical Guide to Successful Farming; Moreland

Canadian Home Gardening; Cutting

Farm Weeds (Department of Agriculture)

Forage and Pasture Crops (Department of Agriculture)

Weed Control; Robbins, Crafts and Raynor

Manual of Plant Diseases; Heald

Modern Fruit Production; Gourley Howlett

Publications - Each Agricultural class should have available a list of publications by:

1. Alberta Department of Agriculture
2. Dominion Department of Agriculture
3. United States Department of Agriculture
4. Line Elevator Companies
5. Other organizations

News Letters:

Dominion Department of Agriculture

Du Ponts

(The school should be on the mailing list for these letters).

Other Free Publications:

Booklets - Mastitis of Cattle
Tyrothricin in the Control of Mastitis
Infectious Enteritis of Swine
- Sharp & Dohme,
865 Bay Street,
Toronto, Ontario.

The Control of Infectious Pneumonia and Enteritis
The Use of Gonadin in Mink
Hemorrhagic Septicemia
How to Prevent and Control Swine Diseases
- Cutter Lab.,
122 8th Avenue West,
Calgary, Alberta

Questions on Herefords
- Canadian Hereford Assoc.,
525 10th Avenue N. E.,
Calgary, Alberta

Feed for Greater Pork Profits
Save Milk and Raise Good Calves
- Quaker Oats Company

Hampshires
- American Hampshire Assoc.,
72 Woodland Avenue,
Detroit 2, Michigan.

Bulletins and Leaflets

1. The Judging Manual of the Hostein - Friesian Association of America
Published by The Hostein-Friesian Association of America,
Brattleboro, Vt.

2. Shorthorn Judging
Published by the Canadian Shorthorn Association.
H.R. White, Secretary,
Gummer Building,
Guelph, Ontario.

3. Guernsey Judging - Creating a Standard of Excellence
Published by the Canadian Guernsey Association,
Gummer Building,
Guelph, Ontario.

4. Jersey Judging Made Easy
Published by The American Jersey Cattle Club,
324 West 23rd Street,
New York 11, N.Y.

5. Shorthorns for Profit
Published by The Canadian Shorthorn Association,
Gummer Building,
Guelph, Ontario.

6. Champions of the Tanbark Trail
Published by The American Guernsey Cattle Club,
Peterborough, New Hampshire.

7. A Future with Herefords
Published by The Canadian Hereford Association,
Secretary, 525 10th Avenue N.E.,
Calgary, Alberta.

Journals

Aberdeen Angus Journal - Webster City, Iowa, U.S.A.

Hog Breeder - Henderson Publishing Co.,
314 Jefferson Building
Peoria 2, Illinois

Holstein - Friesian World - Holstein Friesian World Inc.
Lacona 1, New York

Poultry Review - Donnivan Publication W.
204 Richmond Street
Toronto 1, Ontario

Sheep Breeder - Live Stock Services Inc.
801 Elm Street
Columbia, Missouri

Shorthorn World - Shorthorn World Publishing Co.
16 S. Locust Street
Aurora 1, Illinios

The American Hereford Journal
Published by Walker Publications, Inc.,
600 Graphic Arts Building,
Kansas City, Mo.