

MONTANA COURSE OF STUDY
FOR
VOCATIONAL AGRICULTURAL EDUCATION
SUGGESTED REVISION

by
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MONTANA COURSE OF STUDY
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SUGGESTED REVISION

The purpose of this study is to prepare a suggested state course of study for vocational agriculture in Montana that will be a source of ideas for the revision of the present Montana State Course of Study for High School Vocational Agricultural Departments.

NEED FOR THE STUDY

Montana Vo-Ag teachers at their 1954 summer conference expressed the need for having the present State Course of Study revised. The present course of study was published in 1948. It has been extensively used by some teachers and sparingly by others. The Vo-Ag teachers expressed the idea that the State Course of Study is of great value to teachers who are just entering the Vo-Ag field in Montana. The State Course of Study is intended to serve as a guide in the formulation of the local course of study, and as a guide for suggested time allotment, and as an aid in explaining the Vo-Ag program to the local administrator. Additional needs for a State Course of Study can be summarized as follows:

1. To improve the teaching of Vocational Agriculture in Montana.
2. To set goals, standards, and objectives for an effective state-wide program.
3. To meet the needs of students who are enrolled in Vo-Ag.
4. To meet the needs of transfer students.
5. To aid in the development of competent citizens who will play an important and prominent part in the activities of their community.
6. To be understandable to the layman.
7. To keep Vo-Ag vocational.

The State Course of Study should coincide with the primary aim of vocational education in agriculture which is to train present and prospective farmers for proficiency in farming. It should likewise fulfill the major objectives of vocational education in agriculture.^{1/} These objectives are to develop effective ability to:

1. Make a beginning and advance in farming.
2. Produce farm commodities efficiently,
3. Market farm products advantageously.
4. Conserve soil and other natural resources.
5. Manage a farm business.
6. Maintain a favorable environment.

HISTORY OF MONTANA COURSE OF STUDY

The initial work on the present State Course of Study was started during the summer conference of Vo-Ag Teachers in 1946, and was ready for use in Montana by the fall of 1948. The Vo-Ag instructors realized that revision must be made from time to time to improve the State Course of Study and to keep it up-to-date.

The original State Course of Study comprised fourteen areas of interest in agriculture and followed a modified lesson plan form. Each area covered the entire four years of high school Vo-Ag. Some areas of instruction were broken down to suggested areas of study for Ag I, II, III, and IV, including suggested time allotments for each area for each year of Vo-Ag. When further emphasis was needed for a particular area, it was marked for use with young farmer and adult farmer programs. Each

^{1/} Educational Objectives in Vocational Agriculture, U.S. Office of Education, Vocational Division Monograph No. 21, 1940, p. 3.

Vo-Ag instructor was supplied with a copy of the State Course of Study. This copy was to serve as a guide and an aid in the formulation of the local course of study.

METHOD OF STUDY

The purpose of the study is to develop a suggested State Course of Study. This suggested course of study will be made available to committees of vocational agricultural teachers assigned to revise the present State Course of Study. In preparing this suggested State Course of Study, the following procedures have been followed:

1. Conduct a study of the literature dealing with vocational agriculture course of study development.
2. Secure the various suggestions made by local teachers and others for course of study revision.
3. Develop a suggested state course of study outline for Vocational Agriculture I, II, III, and IV.

REVIEW OF LITERATURE

States known to have State Courses of Study are Montana, Arizona, Nebraska, Minnesota, Virginia, Wisconsin, Nevada, South Dakota, and North Carolina. With the exception of these states, there has been relatively little done on the formulation or the revision of state courses of study. There has been considerable research and writing on building a local course of study. Some of this material is applicable to a state course of study.

Ekstrum ^{1/} states that as of 1949 a total of 1,185 studies had been completed and reported through the Summaries of Studies in Agricultural Education. Of these studies, 105 were classified under the heading Course of Study and Curriculum. The majority of these studies were based on the local course of study, and only twenty-three dealt with the organization of course content for all-day classes and were based on surveys of the local community. He states that curriculum trends in general education produces little evidence of findings which have implications for agricultural education.

Krum and Brown ^{2/} state that when a curriculum is to be changed, a criteria should be developed for evaluating curriculum change which is actually a philosophy and can be stated as follows:

1. The curriculum is a sum of the child's experience while under supervision of the school.
2. Curriculum change must be continuous.
3. Curriculum change is the task of all interested.
4. The organization developed must be flexible to provide for change.

Michels ^{3/} illustrates a course of study as a funnel into which are poured a basic philosophy, principles for a way of life, and the aims of education. This contains the principles of learning and teaching, and

^{1/} Ekstrom, G. F., "Course of Study and Curriculum", Agricultural Education Magazine, 24:4, July 1951.

^{2/} Krum, W. J., Brown, R. A., "Criteria for Evaluating Curriculum Change", School and Society, 66:219, September 1947.

^{3/} Michels, W. J., "Course Building and Overview", Industrial Arts and Vocational Education, 37:392-3, December 1948.

the specific objectives of the course. From the spout of the funnel comes the actual teaching and learning activities, the methods of approach, and the evaluation of the teaching process.

Torrence ^{1/}mentions that during the revision of the Wisconsin Course of Study the following things were kept in mind:

1. Changes made were current with the changing philosophies of vocational education in agriculture.
2. Course of study content was in harmony with major agricultural enterprises and approved practices of the state.
3. Each unit could be adjusted twenty-five percent either way for time allotment to fit the course of study to the community.

Hammonds ^{2/}feels that a complete program of Vo-Ag should consider that the aim of vocational agriculture is to train. Training implies a contemplated product in learning that is always purposeful and never accidental. Education or training takes place only when there is a definite provision for learning. Definite provision must be made by the educator for what is learned and how it should be learned.

^{1/}Torrence, A. P., "Contributions of a Curriculum to the Needs of Youth", Agricultural Education Magazine, 27:40, August 1954.

^{2/}Hammonds, Carsie, "A Complete Program of Vo-Ag", Agricultural Education Magazine, 21:36, August 1948.

Dr. H. W. Sander ^{1/} in the forward of a course of study unit outline states:

"This is a third revision. Such revisions are necessary because of the shifting in the importance of certain farm jobs, the desirability of deleting some of them and adding new ones, and the frequent changes in the content of individual jobs as research reveals the need."

Parsons ^{2/} states that teachers of Vo-Ag in Virginia are required to develop a four year course of study on a cross-sectional basis. He gives five reasons for a course of study:

1. It is necessary for the development of an efficient program of instruction.
2. It prevents duplication and repetition.
3. It serves as a record of work and a guide for succeeding teachers.
4. It saves the teacher time and gives unity to the course.
5. It provides for a more thorough job of teaching.

Deyoe ^{3/} in relation to the use of a source unit in instructional planning, makes this statement:

"Alert teachers of vocational agriculture recognize the importance of planning course materials which are adapted to the community and to the students. Reduced to its simplest terms, effective course planning consists of anticipating the needs and interest of the students to be taught and planning in advance an instructional program in keeping with these conditions."

^{1/} Suggested Teaching Units in Vo-Ag, Revised Edition, 1952, Department of Vocational Education, Virginia Polytechnic Institute, Ag Ed Bulletin No. 17, 95 pp.

^{2/} Parsons, D. W., "Organizing the Four-Year Course of Study", Agricultural Education Magazine, 21:10, July 1948.

^{3/} Deyoe, G. F., "Course of Study and Curriculum", Agricultural Education Magazine, 21:192, November 1948.

Hammonds ^{1/}states that when planning a course of study, the teacher should be guided by five major factors: (1) have clear, defined aims and purposes, (2) consider the characteristics and needs of those who will take the course, (3) the educative environment of the persons involved, (4) sources of available information, and (5) the vocational demands and requirement or other uses to which the learning is to be applied.

The trend among the Vo-Ag teachers in Montana is for more integration of enterprises taught. In the present Course of Study, there is some integration but it is not carried out to any great degree. Vo-Ag areas of learning for integration should include (1) the individual student's farm experience program, (2) farm mechanics, (3) agricultural science, and (4) the FFA. A review of the literature substantiates the need for integration and the areas to be used for integration.

Armstrong and Jones ^{2/}illustrate Vo-Ag as a tree. The root system of the tree is the supervised farming program, while the trunk and branches are the instructional program. They state, "The root system forms the foundation of the tree, and the tree is no stronger than its root system."

^{1/}Hammonds, Carsie, Teaching Agriculture, McGraw Hill Book Company, Inc., First Edition, 1950, p. 64.

^{2/}Armstrong, L. O., Jones, G. B., "The Vo-Ag Tree", Agricultural Education Magazine, 26:45, August 1953.

Dr. W. W. Garriss ^{1/}states:

"In vocational agriculture it is properly assumed that problems in the supervised farming programs of students form the core of the day-school course of study. These problems will not be foreign to the type or types of agriculture represented in the area. The agriculture of any state varies from one section to another. Since no general course can be satisfactorily prepared for the entire state, the local course of study should follow local agriculture. Hence, each teacher has to design a course of study for his particular community and the students needs for instruction."

"If the aims of vocational agriculture are to be attained, the course of study must be designed to launch students into the type of farming of their choice and the type adapted to the climatic and soil conditions of the area in which the farming operations will be carried on. In order to be able to prepare the course of study well, a teacher must therefore, be acquainted with local farming facts, conditions, and situations."

A directive from the U.S. Office of Education ^{2/}states that the content of any course of study in Vo-Ag should be derived from the student needs which arise from their supervised farming programs, their home farm, and the type or types of farming occurring within their community. The course of study for each year should be flexible enough to meet the instructional demands growing out of the students farming programs. The supervised farming program is the logical core of the course of study and provides subject-matter material from real-life situations for more practical instruction. It also gives a definite purpose and direction to the study of agriculture.

^{1/}Garriss, W. W., Teaching Vocational Agriculture, First Edition, McGraw Hill Book Company, 1954, p. 115.

^{2/}Directing Vo-Ag Day-School Students in Developing Their Farming Programs, U.S. Office of Education, Voc. Div. Bulletin No. 225, Agric. Series, No. 56, U.S. Gov't Printing Office, 1944, p. 72.

Teacher trainers who gave opinions in reply to the requests concerning farm mechanics from Dr. Ekstrom,^{1/} were summarized in the following statement:

"The general practice is to teach farm mechanics in all four years. However, there seems to be considerable variation as to the degree in which instruction is related to units in agriculture which are taught in the classroom."

"The blocking of time may vary throughout the year and may even follow a definite pattern of content in areas such as farm shop work and the care and repair of farm machinery. In certain states, the idea of integration is emphasized with each farm enterprise taught: for example, feeders are constructed at the time the feeding of poultry is studied."

Westfall, ^{2/} in a survey of former Vo-Ag students found the following points rated highest for the improvement of the Vo-Ag program:

1. More time spent on soil fertility and management.
2. More time spent on farm management.
3. More time spent on farm shop work.
4. Instructor to have made more on-farm visits.

Freebury, ^{3/} found that difficulties in obtaining farm machinery and other equipment, for work in the school shop, were attributed to twenty-five percent insufficient parent-teacher-student cooperation; ten percent

^{1/} Ekstrom, G. F., "Course of Study and Curriculum", Agricultural Education Magazine, 24:4, July 1951.

^{2/} Westfall, F. N., A Study of the Occupational Status of Former Vocational Agriculture Students at Powell County High School, 1929-1953, Problem, M.S. in Ag Ed, Library, Montana State College, Bozeman, Montana, 1954, 25 pp.

^{3/} Freebury, D. L., Difficulties in Securing Farm Machinery Projects in Vocational Agriculture Shops, Problem, M.S. in Ag Ed, Library, Montana State College, Bozeman, Montana, 1954, 34 pp.

because parents lacked confidence in students' ability; and seven percent of the students were not convinced of the value of maintenance. This report did not explain the "why" for these three factors, but this writer feels that part of the "why" is connected with the course of study used in the local departments.

Albrecht, ^{1/} states:

"We must base our teaching in farm mechanics on the students' farming program needs and the needs of the home farm. It will be necessary for the teachers to do more planning on a long time basis. These things which we need to do, point up a need for teachers to develop new methods of incorporating farm mechanics planning more thoroughly in supervised farming program plans and to devise new ways of recognizing the opportunities for the student to develop his skills at the same time that he builds things which he can use on the home farm."

Deyoe and Phipps ^{2/} state, as a result of a survey of five communities, most of the farmers desired to know more about maintenance operation, and adjustment of their farm machinery. It was of interest to note that farm machinery repair, adjustment, and farm safety ranked within the number one or two position, while soldering and rope work ranked consistently in the last or next to last place.

Howey ^{3/} divided farm mechanics into five areas. These areas are (1) farm shop skills, (2) farm buildings and equipment, (3) farm power

^{1/}Albrecht, C. F., "Developing and Application of Farm Mechanics Skills and Judgments", Agricultural Education Magazine, 25:68-69, March, 1952.

^{2/}Deyoe, G. F., Phipps, L. J., "Determining Farm Mechanics Content", Agricultural Education Magazine, 26:36, February, 1953.

^{3/}Howey, R. S., Farm Mechanics Practices and Interests of High School Vo-Ag Students, Problem, M.S. in Ag Ed, Library, Montana State College, Bozeman, Montana, 1955, 21 pp.

and machinery, (4) soil and water management, and (5) electricity on the farm. The results of the survey, to seventy-five high school students, indicated the following:

1. Students favor auto mechanics.
2. Electricity is a weak point at school.
3. Plumbing is a weak point at school and home.
4. Soil and water management should be stressed more.
5. More maintenance and repair work could be done by Vo-Ag students and the farm family.

The state courses of study reviewed by this writer differ in amount of material presented, method of presentation, and in application to the local department. There are points which are common and essential to all of the courses of study reviewed. These are: (1) development of a sound philosophy, (2) development of suitable objectives for Vo-Ag, (3) the suggested course of study be used as a guide in developing a local course of study, and (4) that a local course of study be developed to meet community and students needs. Suggestions were given for preparing the local course of study these are (1) know your community, (2) know your school, and (3) know yourself.

The Minnesota Course of Study ^{1/}differs from the others in its approach. The Minnesota Course of Study organizes the teaching units entirely in terms of the FFA program, and bases its units of instruction on the divisions of the National FFA Program of Work. The eight

^{1/} A Guide for Instruction in Agriculture Education, Curriculum Bulletin No. 15, State of Minnesota, Department of Education, St. Paul 1, Minnesota, 1952, 87 pp.

divisions used by Minnesota are: (1) supervised farming, (2) leadership, (3) conduct of meetings, (4) earnings and savings, (5) community service and cooperation, (6) scholarship, (7) organized recreation, and (8) summary of learning experiences. The breakdown of material, within the divisions is in terms of learning objectives.

The Virginia Course of Study ^{1/} is presented in terms of major farm enterprises and lists only important items under each enterprise.

The Nebraska Course of Study ^{2/} is based on farm enterprise units. The material presented in each unit is stated in terms of major problems with an addition of "Things to Do" for each problem.

The South Dakota Course of Study ^{3/} is developed in terms of important farm enterprises, with a list of topics under each enterprise which may be taught in any section of the state. The assumption is made that South Dakota Vo-Ag Teachers will select the items suited for their community.

In an interview with Mr. Don Elser, Vo-Ag Instructor at Elko, Nevada, he stated that the Nevada State Course of Study is developed similar to the one used in Montana but contains only the major enterprise

^{1/} Suggested Teaching Units in Vo-Ag, Revised Edition, 1952, Department of Vocational Education, Virginia Polytechnic Institute, Ag Ed Bulletin No. 17, 95 pp.

^{2/} Curriculum in Vocational Agriculture for Nebraska High Schools and Veterans Training, Department of Vocational Education, University of Nebraska, Vocational Agriculture Bulletin No. 431, Revised, 1949, 66 pp.

^{3/} Instructor's Guide for Teaching Vocational Agriculture in South Dakota, Department of Public Instruction, Div. of Voc. Educ., Pierre, South Dakota, Bulletin No. 47, 1950, 57 pp.

units and the FFA, rather than the area breakdown as used in the Montana Course of Study.

The North Carolina Course of Study ^{1/}is developed by major enterprise units, and the form of presentation is very similar to the type used in the proposed revision of the Montana Course of Study. This includes unit objectives, abilities to be developed, teacher and student activities, references and teaching aids, and date of application.

The Arizona Course of Study ^{2/}is similar to the Montana Course of Study. The two courses of study have very similar philosophies and objectives. The forward, prepared by R. W. Cline for the Arizona Course of Study for Ag I states:

"This course was developed in response to requests from teachers over a number of years for a unified body of teaching content planned to meet the specific needs of beginning students in vocational agriculture. Its purposes are to suggest:

1. Areas or divisions of the course of study.
2. Suggested content within each unit.
3. Time allotment and sequence for teaching the units.
4. Teaching-learning activities appropriate to the content.
5. References for the use of teacher and students.

Although the content of certain units in a beginning course are somewhat uniform for all schools and students, the teacher should make changes and adaptations in this course to meet the needs of students in local situation."

^{1/}Emergency Cotton Production Program, Vocational Agricultural Education Plans, State Dept. of Voc. Ed., Raleigh, North Carolina, Mimeo, 6 pp.

^{2/}Cline, R. W., and Schafer, W. A., "Course of Study for First Year Students of Vocational Agriculture", State Department of Vocational Education, Phoenix, Arizona, 1948, p. 3.

"The course is not new, since most of the areas and units have been used for several years by Arizona teachers of vocational agriculture who have assisted in developing the material in its present form.

The Research Committee in Agricultural Education for the Pacific Region served in an advisory capacity on setting up the general plan and organization of the course so that it would be useful as a guide for the development of courses in other states of the region."

The British Columbia Course of Study ^{1/} is similar to the Montana Course of Study. Each area is divided by major enterprises and discussed under columns headed (1) subject matter, (2) ability development, (3) references, and (4) teaching notes and suggestions. In addition, sample lesson plans are included to illustrate the use of the course of study. The farm mechanics program is very strongly correlated to the instructional areas.

The British Columbia Vo-Ag group was assisted in preparation of the Provincial Course of Study by A. W. Johnson, State Supervisor of Vocational Agriculture, and Dean Pence, Vo-Ag instructor of Huntley Project High School, Worden, Montana.

The present Montana Course of Study ^{2/} is divided into fourteen areas of learning, each of which is divided into major phases, containing abilities to be developed and teaching-doing activities. The

^{1/} Agriculture 1951 - Agriculture, Vocational Agriculture, Farm Mechanics, Department of Education, Division of Curriculum, Province of British Columbia, Victoria, British Columbia, 1951, 137 pp.

^{2/} Montana State Course of Study for Vocational Agricultural Education, State Board of Voc. Ed., Helena, Mont., and Dept. of Ag Ed, Bozeman, Montana, June, 1949, 58 pp.

fourteen areas of instruction are:

1. Understanding and appreciating farm and ranch life.
2. Objectives, organization and nature of the course.
3. Supervised farming.
4. Individual development through rural youth organizations.
5. Poultry production.
6. Animal production.
7. Farmstead improvement planning.
8. Vegetable gardening and horticulture.
9. Field crop and forage production.
10. Controlling common farm pests.
11. Conserving natural resources.
12. Farm mechanics.
13. Soil and water management.
14. Farm organization, management and marketing.

Plans for revision of the Montana Course of Study for Vocational Agriculture were instigated by A. W. Johnson, State Supervisor of Vocational Agricultural Education, during the 1954 Summer School session, Montana State College. Johnson taught a class in "The High School Program". At the close of the summer session, Johnson sent a directive ^{1/} to all Montana Vo-Ag teachers containing the seven suggested divisions of instruction. These are:

1. Orientation - Student Understanding.

Objectives, organization and purposes of the course to bring out and develop an understanding and appreciation of farm and ranch life and the local course of study outline (includes Guidance, Direction, Conservation and On and Off Farm Business).

^{1/} Johnson, A. W., "Suggested Course Outline Change", Vo. Ed. Div. State Department of Public Instruction, Helena, Montana, August 16, 1954, p. 4.

2. Individual Development.

Conservation of human resource - Guidance - Direction - Character Building - Leadership - Spiritual - Citizenship responsibilities.

3. Farm Selection and Organization.

Improving standards for farm and home surroundings - Arrangement of building - Maintenance of buildings and equipment - On and Off Farm Business - Conservation of human and material resources - Guidance and Direction. Farm land evaluation: selection, judging, and planning.

4. Individual On-Farm Instruction (Farm Experience - Supervised Farming).

Conservation - Management - Records - Off and On Farm Business - Guidance and Direction.

5. Animal Production and Marketing, including Poultry.

Integrating and relating needed farm mechanics, Conservation, Management and On and Off Farm Business - Guidance and Direction.

6. Field Crops - Forage Crops - Vegetable and Fruit.

Production and Marketing - Integrating and relating needed farm mechanics, Conservation, Management and On and Off Farm Business - Guidance and Direction.

7. Out-of-School Education (Needs Determine Content).

Includes current agricultural and other related subject matter - Conservation of human, natural and material resources - On and Off Farm Business - Integrating and relating needed farm mechanics - Spiritual - Leadership and Citizenship responsibilities, Guidance and Direction.

In the summer of 1954, Johnson held district conferences for the Vo-Ag teachers and school administrators for the major purpose of discussing the revision of the present State Course of Study.

The 1954 Summer Conference of Vo-Ag teachers was devoted to the discussion of the proposed course revision. The Vo-Ag teachers suggested that Farm Mechanics be retained as a separate division. Johnson suggested that supervised farming, farm mechanics, agricultural science and the FFA be integrated in the teaching of all the major divisions of the State Course of Study.

Johnson sent to each Vo-Ag teacher a form in which he could develop a local course during the 1954-55 school year. This form included such items as (1) Division, (2) Subject Matter, (3) Student Abilities, (4) References, (5) Student-Teacher Activities, and (6) Application and Results.

A special three week session will be held at Montana State College during June, 1955, for the purpose of revising the State Course of Study.

SUMMARY OF REVIEW OF LITERATURE

There is a need for further research in course building and course revision in Agricultural Education at the state level. The criteria to be used in course revision as found in the literature is limited. A course of study program should provide for the establishment of a sound philosophy, plans for systematic revision, formulation of general and specific objectives, and the goals and standards to be reached.

Course of study literature indicates an emphasis on integration of course content with special emphasis on integration of supervised farming, farm mechanics, agricultural science, and FFA. In addition to these four items, special emphasis is placed on integration of all the division of the program. Courses of study have been developed for Ag I, II, III, and IV, including objectives for each.

The most effective use of a state course of study is to use it as a guide and as a source of ideas for the development of a local course of study. Use of local farm surveys and advisory councils are stressed for the development of the local course of study.

The several state courses of study include (1) subject matter divisions, (2) abilities to be developed, (3) teaching and doing activities, and (4) references and teaching aids as a suggested form for organizing course of study content.

PROCEDURE FOR COURSE OF STUDY DEVELOPMENT

The purpose of this study is to prepare a suggested state course of study for vocational agriculture for Montana that will be a source of ideas for the revision of the present State Course of Study by committees of Montana Vo-Ag instructors during the 1955 summer school session.

The material for the State Course of Study is arranged by years for Ag I, II, III, and IV, and is divided into six divisions:

- I - Orientation
- II - Individual Development
- III - Farm Selection and Organization
- IV - Individual On-Farm Instruction
- V - Animal Production and Marketing
- VI - Field and Forage Crop Production

The course material for each division is developed by (1) subject matter, (2) student abilities to be developed, (3) references, (4) teacher-student activities and approved practices, and (5) application and results.

Special emphasis is placed on the integration of (1) the student's on-farm experience program, (2) farm mechanics, (3) agricultural science, and (4) the FFA. These four items are integrated in all six divisions. Emphasis has also been placed on the integration of all divisions of the program with each other. The material for integration is developed under Teacher-Student Activities and Approved Practices. This material could serve as a guide for development of further activities and suggestions for the development of the local course of study and illustrates how the process of integration operates.

The course content for each year is developed on the basis of 165 actual teaching days. Montana Vo-Ag teachers have found through experience that on the basis of 180 teaching days, approximately fifteen teaching days are lost by tests, assemblies, and other school functions. A suggested time allotment is given for each division for each year on the 165 day basis. More time is allotted for some divisions of the program than others. An example of this is Individual on Farm Instruction or Farm Selection and Organization. This is necessary because of the integration of the other divisions of the program with these two divisions.

An index for the total program is developed to show the complete scope of the four year plan for each division. Ag I, II, III, and IV, is individually indexed to show at a quick glance, the course content for each division and the suggested time allotment for each division. This is to facilitate easier use of the course of study by the local teacher.

The material presented in the course of study is obtained from the present Montana State Course of Study for Vocational Agriculture, courses of study from other western states mentioned in the review of the literature, the experiences and suggestions from Montana Vo-Ag teachers and the writer's experience in the Vo-Ag field.

SUMMARY AND CONCLUSIONS

A good state course of study is one that will give suggestions and serve as a guide for the development of a local course of study in each local Vo-Ag department throughout the state. A state course of study needs periodic revision to retain its usefulness.

Teachers just entering the field of Vocational need a guide which is up-to-date, and contains many suggestions for teacher-student activities, references and suggested course development. This will help them establish their own course of study and reduce the period of uncertainty in deciding what to teach, when to teach it, and how the student can obtain quicker and greater on-farm application of the things he has learned in school.

The four year high school program in Vocational Agriculture should be developed by years to insure the integration of (1) student on-farm experience, (2) the FFA, (3) agricultural science, and (4) farm mechanics with each division in the yearly program and integration of each division with every other division of the Vo-Ag program.

A revision of the Montana State Course of Study for Vocational Agriculture will require a great deal of work on a committee basis composed of experienced teachers. The suggested course of study developed in this study for the revision of the State Plan is not complete, but it will enable the revision committees to agree or disagree on the material presented and induce them to change and improve the material to meet the needs of Vocational Agriculture in the State of Montana.

SUGGESTED REVISION FOR THE MONTANA COURSE OF STUDY
FOR
VOCATIONAL AGRICULTURAL EDUCATION

INTRODUCTION

This course of study is developed to serve as a source of ideas for the revision of the State Course of Study for Vocational Agriculture.

The material presented in the course of study is obtained from the present Montana State Course of Study, courses of study from other western states, the suggestions from Montana Vo-Ag teachers and the writer's experience in the Vo-Ag field.

The plan is a modified cross-sectional type in which a major division of learning such as animal production (one of the several taught during the year) received central emphasis along with other needs that arise from student problems. Special emphasis has been placed on integration of (1) the student's on-farm experience program, (2) the FFA, (3) agricultural science, and (4) farm mechanics with all the divisions of the program as well as integration of each division of learning with the other divisions taught during the year.

The course of study is developed and indexed for Ag I, II, III, and IV, to facilitate development of teacher-student activities and to provide for quick and easy reference to the course content.

The course material is developed by (1) division of learning, (2) subject matter, (3) student abilities to be developed, (4) references, (5) teacher - student activities, and (6) application results.

The time allotment for the various divisions of the program is merely suggestive and will vary when adapted to various departments in the state. Approximately sixty percent of the time is allotted to agricultural science, the student's on-farm experience program, and the FFA. Forty percent of the time is devoted to farm mechanics related to the farming enterprises.

Farm mechanics is found in the Division of Learning: Individual On-Farm Instruction and is developed in a complete unit for each year. This is to give a complete picture of the farm mechanics program. There should be, however, as much integration in the teaching of farm mechanics with the other divisions of the program as possible.

The material presented is not in great detail and is only suggestive. It does not intend to limit the instructor in time spent on each division or in the development of course content for each division.

MONTANA VOCATIONAL AGRICULTURE PROGRAM

SUMMARY OF TIME ALLOTMENT AND NUMBER OF CLASS PERIODS BY YEARS

DIVISION OF LEARNING	AG I	AG II	AG III	AG IV	TOTAL
I Orientation and Student Understanding	9	1	2	5	17
II Individual Develop- ment	19	15	15	15	64
III Individual On-Farm Instruction	85	85	85	80	335
IV Farm Selection and Organization	5	5	43	55	108
V Animal Production and Marketing	22	29	20	10	81
VI Field and Forage Crop Production	25	30	*	*	55
	165	165	165	165	660

* Integrated with Farm Selection and Organization.

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AG I - COURSE OF STUDY

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	Vo-Ag Course of Study	2	1
	Ag Shop	1	3
	Farming as a Way of Life	1	3
	Agriculture in a Changing World	1	4
	Agriculture and Related Occupations	1	4
	Guidance	<u>2</u>	5
	DIVISION TOTAL	9	
INDIVIDUAL DEVELOPMENT	Farm Youth Organizations	7	6
	Leadership Activities	<u>12</u>	7
	DIVISION TOTAL	19	
INDIVIDUAL ON- FARM INSTRUCTION	Supervised Farming	15	8
	Farm Mechanics:		
	Introduction	2	9
	Farm Safety	3	10
	Skills	<u>65</u>	12
	DIVISION TOTAL	85	
ANIMAL PRODUC- TION AND MARKETING, INCLUDING POULTRY	Introduction	1	18
	Breeds of Livestock	7	18
	Livestock Selection	4	19
	Livestock Sanitation	5	20
	Poultry	<u>5</u>	21
	DIVISION TOTAL	22	
FIELD AND FORAGE CROP PRODUCTION	Introduction	1	23
	Identification of Grain, and Forage Crops	8	23
	Common Farm Pests	3	24
	Vegetables and Fruit	3	25
	Range or Pasture Management	<u>10</u>	25
	DIVISION TOTAL	25	
FARM SELECTION AND ORGANIZATION	Farmstead Improvement	3	27
	Conservation of Natural Resources	<u>2</u>	27
	DIVISION TOTAL	5	
	TOTAL DAYS INSTRUCTION	165	

AG I
DIVISION OF LEARNING: ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Orientation	Vocational Agriculture 1. Introduction (1 day)	1. Understanding of the purposes of Vocational Agriculture. 2. Understanding the relationship of Vo-Ag to the rest of the school. 3. Understanding relationship of the local department to the rest of the state. 4. Understanding the application of Vo-Ag in the farm business.	1. Slides on School Activities. 2. School annual 3. District & State Convention slides. "Handbook for Vo-Ag teachers" Phipps, Interstate.	ON-FARM-INST. & SU PROG 1. Contact prospective students during summer. 2. Explain Vo-Ag to student & parents. 3. Prepare or obtain Vo-Ag & FFA Handbook to leave with parents. 4. Visit senior chapter member to see application he has made of Vo-Ag. 5. Briefly discuss FFA, Supervised Farming, aims & purposes, objectives and Individual Development.	
	2. Course of Study (2 days)	1. Recognizing objectives of the course. a. Understanding of processes of production of agriculture enterprises and commodities. b. Develop skills for enterprise operation. c. Develop ability to work with others. 2. Understanding class activities. a. Grades and grading. b. Credit in Vo-Ag. 1. Course work. 2. Extra credit. a. Improvement project. b. Supervised farming projects.	"Your Farming Program" Hammond & Tabb, Hurst Pub. Co., Lexington, Ky. "Farming Prog. in Vo-Ag", Deyoe, Interstate Pub. Co. Ag Ed Magazine	AG SCIENCE 1. Discuss typical activities on the farm for one day. 2. Reasons for taking Vo-Ag (by students) FFA 1. Scholarship Award to high indiv. from each class.	

AG I
DIVISION OF LEARNING: ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
orientation	(Course of Study contd)	2. (contd) c. Tests. d. Field trips. e. Supervised study. f. Standards of classroom conduct. 3. Understanding of Course of Study a. Ag I, II, III, & IV 1. Units that will be covered during the year. 2. Major units that will be covered in Ag II, III, & IV. 4. Ability to secure and use bulletins and other reference material. 5. Organize a suitable notebook.	Local & State Course of Study. Filing system. Bulletin room. Student notebooks from other years.	FFA (contd) 2. Buzz sessions for class conduct and conduct on field trips. AG SCIENCE 1. Give a brief summary of the four year course in Vo-Ag. 2. Have students determine why some things are taught one year and then developed further in the next years work. 3. Hand out copies of course of study for Ag I for student use and to take to parents. 4. Stress importance of supervised farming program. AG SCIENCE 1. Practice in locating books and bulletins. a. Use of filing system. b. Locating information in a given reference. FFA 1. Delegate student to obtain desired notebooks and handle sale of them to rest of class. 2. Emphasize use of pen.	

AG I
DIVISION OF LEARNING; ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practices Results
Orientation	(Course of Study contd)	5. (Contd)			
	3. Ag Shop (1 day)	1. Understanding the purpose of the Ag shop. 2. Ability to work safely in the shop. 3. Ability to locate material and proper work areas in the shop. 4. Plan for charges of materials. a. Replaceable -- lumber, nails, screws, etc.	Ag Ed Magazine "Farm Mechanics Text and Handbook", Cook, Scranton and McColly, Interstate.	3. Show class notebooks of former students of Ag I. 4. Stress value of keeping a notebook. 5. Notebook will be graded. FARM MECHANICS 1. Show articles in shop that have been built by former students. a. Stimulates interest and starts students thinking about shop projects. b. Show chart of required jobs. 2. Illustrate safety rules. 3. Show power tools that can be used and the "why not" for others.	
	4. Farming as a way of life. (1 day)	1. Determine the need for study of agriculture. 2. How to make farming more desirable. 3. Relationship of urban and rural areas. 4. Trends and changes in agriculture. 5. Determine advantages and disadvantages of farming.	Film; American Farmer--Ford Motor Co. Doanes Agric. Digest Montana Statistics "Teaching Agriculture" Hammonds, McGraw Hill	AG SCIENCE 1. Use of people in community for talks to the class and to use for examples. 2. Visit different places of business. FFA 1. Visit to chapter member home farm. a. Note method of operation. b. Note improvements and farmstead beautification.	

AG I
DIVISION OF LEARNING; ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Orientation	(Farming as a way of life contd)	6. Understanding the essentials of success in full-time as well as in part-time farming. 7. Understanding of the activities encountered in part-time farming, and the reasons why there is part-time farming.		ON-FARM-INST & SU PROG 1. Develop list by students of changes in farming methods that they have noticed on their own farm.	
	5. Agriculture in a changing world. (1 day)	1. Understanding of the changes taking place in the agricultural world. a. Methods of production. b. Mechanization. c. Influence of science	Doanes Agric. Digest Montana Statistics	AG SCIENCE 1. World conditions. 2. Chemistry. a. Weed and Insect control. 3. Improved varieties. 4. Federal controls on production.	
	6. Agriculture and related occupations (1 day)	1. Understanding of the types of farming in the community, state and nation. 2. Understanding the related occupations in agriculture.	Publications on vocations from Guidance Dept. "Careers Ahead" from Land Grant Colleges & Univ (MSC) County Agent SCS Forest Service Bu. of Land Mgt.	AG SCIENCE 1. Briefly skim the surface in related occupations. a. purpose is to show students the vastness of the field of agriculture. b. Opportunities in agriculture. 1. Professional. 2. Occupational.	

AG I
DIVISION OF LEARNING: ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Orientation	7. Guidance (2 days)	1. Developing ability of student to study efficiently and effectively. 2. Developing ability of students to plan four year high school program. 3. Developing the confidence of the students in their instructors. 4. Stressing morality or "the golden rule". 5. Value of thrift in all things. 6. Personal; a. Manners. b. Speech. c. Appearance. 7. Appreciating the value of continuing with education. a. Formal education. 1. College requirements and opportunities. 2. Informal education--trades and trade schools. 3. Adult and young farmer classes.	Guidance Instructor. Home Ec Instructor. Senior girls.	AG SCIENCE 1. Help students develop study schedule. 2. Illustrate how best to study. 3. Show importance of high school subjects in relationship to Vo-Ag. a. Math, Science, English, Typing, History, and others. 4. Show that teachers are human. 5. Use of free period by Vo-Ag instructor for guidance activities. FFA 1. Have senior girls talk to class on manners, dress, courtesy, and other factors. AG SCIENCE 1. Use of resource people. 2. Occupations of former students.	

AG I
DIVISION OF LEARNING: ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Orientation	7. Guidance (2 days)	1. Developing ability of student to study efficiently and effectively. 2. Developing ability of students to plan four year high school program. 3. Developing the confidence of the students in their instructors. 4. Stressing morality or "the golden rule". 5. Value of thrift in all things. 6. Personal; a. Manners. b. Speech. c. Appearance. 7. Appreciating the value of continuing with education. a. Formal education. 1. College requirements and opportunities. 2. Informal education--trades and trade schools. 3. Adult and young farmer classes.	Guidance Instructor. Home Ec Instructor. Senior girls.	AG SCIENCE 1. Help students develop study schedule. 2. Illustrate how best to study. 3. Show importance of high school subjects in relationship to Vo-Ag. a. Math, Science, English, Typing, History, and others. 4. Show that teachers are human. 5. Use of free period by Vo-Ag instructor for guidance activities. FFA 1. Have senior girls talk to class on manners, dress, courtesy, and other factors. AG SCIENCE 1. Use of resource people. 2. Occupations of former students.	

AG I
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual development	1. Farm Youth Organizations. (7 days)	1. Recognizing the interrelationship of Vo-Ag and FFA. 2. Recognizing what the FFA is and what it stands for. 3. Understanding of the history of FFA. a. National. b. State. c. Local. 4. Understanding the organization of the FFA. a. Operation of the FFA, National, State, and Local. b. Degrees of membership. c. Degrees of active membership. d. Qualifications for membership. e. Requirements for FFA degrees. f. Part that each member plays in operation of the chapter. 5. Knowledge of the activities sponsored by the FFA. a. National. b. State. c. Local. d. Conventions - district, state, and national.	Chapter slides. Film: National FFA Convention 19 ____. National, State and Local program of work. Film: "That Inspiring Task" FFA Manual. District Meetings. "Introduction to FFA" Publication, Dept. of Ag Ed, MSC. "Putting the Punch in Your FFA Program" Don Lee, Dept. of Ag Ed, MSC.	FFA 1. Talks by chapter officers. 2. Slides of FFA activities. a. Application of knowledge of Vo-Ag. b. Work projects. c. Field trips. d. Recreation. 3. Use of "Big Brothers" in learning creed, aims, and purposes, etc. ON-FARM-INST 1. Projects are required. 2. Nat'l foundation awards. 3. State awards.	

AG I
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual Development	(Farm Youth Organizations contd)	6. Understanding the values of activities of different rural groups. a. The Grange. b. The Farmers Union. c. The Farm Bureau. d. 4-H Clubs. e. Churches. f. Other organizations.	4-H Club Manual and Handbooks from other organizations.	AG SCIENCE 1. Have buzz sessions. 2. Use local resource people.	
	2. Leadership Activities (12 days)	1. Understanding the value of being proficient in the use of parliamentary procedure. a. Ability to work in an organized meeting as a member and as a chairman. b. Ability to state a motion. c. Ability to develop self-confidence. 2. Ability to use parliamentary procedure. a. As member of the organization. b. As chairman of the organization. 3. Ability to participate in organized activities. a. Committee member. b. Committee chairman. 4. Ability to follow as well as lead.	Parliamentary Procedure at a Glance. Roberts Rules of Order Film; Parliamentary Procedure in Action. State Film Library. Film; How not to Conduct a Meeting, CMC "When you Pre-side", S.S. Sutherland, Interstate Pub.	FFA AND AG SCIENCE 1. Have students observe how meetings are conducted in assemblies, other school organizations. 2. Observe details of FFA Chapter meeting. 3. Organize class in FFA organization. a. Change officers every quarter or six weeks. 4. Use leadership activities throughout the year. 5. Participate in other organizations. 6. Have initiation teams. 7. Have parliamentary procedure team. 8. Participate in State, Local Fairs and Exhibits. 9. Summer trips. 10. Field trips.	

AG I
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	1. Supervised farming (15 days)	1. To develop a well balanced supervised farming program. a. Purpose & importance of farm experience programs. b. Types of projects. c. Individual opportunities for development of farming programs. d. Long time plan. e. Annual plans. f. Farming plan for out-of-school training. g. Ability to keep farm records. h. Ability to make a cost analysis of enterprise operations. i. Farm enterprise agreements with parents and others. j. Developing of home farm shop.	Chapter slides of farming programs. Teaching plan for Project for Project Studies; Dept. of Ag Ed, MSC. Current magazine articles. Future Farmer Magazine FFA Manual Montana Project Record Book. Montana "Father and Son" business agreement. Instructor's Manual for Project Accounting, Dept. of Ag Ed, MSC. Present and former students.	FFA 1. Examine chapter revolving projects. 2. Visit nearby chapter member's farming program. 3. Part of project plans in formulating summer program of work. 4. Examine outstanding farming program plans of upper class and former members. 5. Have chapter members talk to class and explain their farming programs. 6. Form committees of students. 7. Have supervised farming program on percentage basis with parents. 8. Develop card index for farming program of every student Includes visitations, problems, etc. 9. Fairs and exhibits. AG SCIENCE 1. Establish common record keeping system. 2. Keep and make records of transactions. a. Use one student's records for an example of record keeping. 3. Set up goals & approved practices for each enterprise.	

AG I
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	(Supervised farming contd)				
	2. Farm Mechanics a. Introduction (2 days)	1. Determining kinds of farm mechanic skills necessary for operation of the supervised farming program. a. Enterprises. 1. Beef. 2. Dairy. 3. Sheep. 4. Swine. 5. Field Crop and Forage Production. b. Acquainting the student with farm mechanics. 1. Status of farm mechanics in the community. a. Kinds and amount. 2. Types of repair and construction needed in different farm enterprises.	Farm Surveys Montana Statistics. Doanes Agric. Digest. Farm Machinery Dealers. "Farm Mechanics Text & Handbook" Cook, Senaton & McColly, Interstate Pub. Co.	FARM MECHANICS 1. List equipment necessary for project operation. a. Importance of farm machinery in overall operation. 2. Determine equipment which can be built. 3. Determine skills necessary to do the job. 4. Development of home farm shop. FARM MECHANICS 1. Use of farm surveys. 2. Formulate list of equipment used for each enterprise. 3. Determine skills that Ag I students should be able to do by end of the year. 4. Determine skills necessary to operate, build, and maintain for each enterprise. 5. Integrate with other divisions of the program. FFA 1. Field trip to survey mechanics needs on a members farm.	

AG I
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	(Farm Mechanics contd)	c. Formulating objectives for farm mechanics. 1. Repair and construction jobs that can be done on the farm and school shop. 2. Information and skills that can be learned during the year. 3. Shop projects that can be completed during the year. 4. Plan four year farm mechanics project plan in conjunction with supervised farming plan. 5. Long time home farm mechanics improvement program.	"Operation, Care and Repair of Farm Machinery", John Deere Company.	ON-FARM INST & SU PROG 1. Have each student carry a farm mechanics project. This would be on same basis as supervised farming program.	
	b. Farm Safety (3 days)	1. Becoming proficient in maintaining safety conditions in the shop and on the farm. a. Ability to practice safety precautions in the school and on the farm. b. Ability to analyze existing conditions for safety. c. Ability to initiate a safety program on the farm and school shop.	Film: "Safety Our No. One Crop", GMC "Farm Safety", Dept. of Ag Ed, MSC. Publications from National Safety Council.	FARM MECHANICS 1. Have student and instructor demonstrations on safety procedure in working with tools. 2. Survey shop and home farm for safety violations. 3. Know location of first aid kit and also fire extinguisher in shop and entire school and how to use. a. Demonstrate use of each type in shop to students. b. Instructor check extinguishers himself once a year.	

AG I
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	(Farm Mechanics - Farm Safety contd)			(Farm Mechanics contd) c. Have permanent inventory record of all Vo-Ag equipment. 1. Depreciation type. 4. Have repair of dangerous equipment. 5. Stress safety in equipment operation on the farm. a. Shields b. Other factors. FFA 1. Have FFA week for: a. Cleanup. b. Fire prevention. c. Accident prevention. 2. Sponsor school assembly on fire prevention. 3. Safe driving campaign. AG SCIENCE 1. Have students develop safety rules for the shop. Test to see that all students know the rules. a. Carry over to the farm 2. Have students carry accident insurance. a. Most schools have student insurance. b. Check if accident policy for teachers.	

AG I
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	(Farm Mechanics contd) c. Skills. (65 days)	1. Ability to select proper tool for proper job. 2. Ability to read and interpret blueprints or sketches. 3. Ability to construct a working drawing. 4. Ability to figure bill of material. 5. Ability to work farm mathematics 6. Ability to select & determine cost of, and order building & repair materials. 7. Ability to use hand tools. a. Safety precautions. b. Sharpening and conditioning of tools. c. Proper use of tools. d. Identification of tools. 8. Identification of building materials. a. Lumber. b. Hardware. c. Nail, screw and bolt nomenclature. 9. Approved practices in construction.	CMC "Jam Handy" film strips. Colonial film strips on; "Plane iron" "Cross cut saw" "Rip saw" "Rafter cutting" Film: "Use & Care of Hand Tools" Proto Tool Corp 2209 Santa Fe Ave., L.A., Cal. "ABC of Hand Tools (Primitive Pete)", CMC. "Behind the Shop Drawing", (414), Mont. Film Library Dewalt Framing Film, Dewalt Inc., Lancaster, Penn.	FARM MECHANICS & AG SCIENCE 1. Have each student select a piece of equipment from his enterprise that he wishes to build. a. Develop list of skills necessary to accomplish the job, with permanent record. b. Have students learn the necessary skills. 1. Demonstration by instructor and students. 2. Use of student instructor. 3. Practice of skill application on small projects that students have suggested. 4. After mastery of skills build project, using proper procedure: a. Construct drawing. b. Figure Bill of Material, cost and purchasing materials c. Actual mechanics of construction.	

AG I
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practices Results
On-Farm Instruction	(Farm Mechanics - Skills contd)	10. Ability to perform forge skills. a. Drawing, upsetting, bending, shaping, and tempering. b. Identification of metals. 1. Spark test. 2. Color test. 3. Chip test. 11. Ability to do painting and glazing. a. Recognize need for painting. b. Requirements of a good paint. c. Methods of applying. d. Selection, care, and use of brushes and spraying equipment. e. Measuring, cutting & fitting glass.	Mail order catalogue (tool identification) Diston charts. CMC charts. Stanley charts. "Shop Work on the Farm", Jones, McGraw Hill. "Farm Mechanics Text & Handbook" Cook, Scranton, McColly, Interstate. "Arc, Acetylene & Forge Welding" Charles Bowman, Dept. of Ag Eng MSC. Paint Study Kit Film: "Brushes Their Care & Use", Osborn Manuf. Co., 34-44 Hubert St. NY 13, NY	(Farm Mechanics & Ag Science contd) 2. Develop check list so that basic skills can be checked off when accomplished. Provide space for outside application. (Shop charts) 3. Development of home farm shop. 1. Student and instructor demonstrations. 2. Use of sample metals. 3. Individual projects (home) ON-FARM INST 1. Reshape and temper chisels and picks. 2. Make branding numbers. 3. Integrate with other divisions of the program. 4. Build chutes and corrals at home. FARM MECHANICS & AG SCIENCE 1. Classroom instruction. 2. Use of paint study kit. 3. Inspect building for paint requirements and failures. 4. Individual projects. a. If worth doing, it is worth painting.	

AG I
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	(Farm Mechanics - Skills contd)	12. Ability to use soldering equipment. a. Requirements of soldering job. 13. Ability to do rope & leather work (minor). a. Ability to tie common knots & splices for on-farm use. b. Ability to care for leather, and repair leather equipment for farm use.	"Making the Most of Spray Painting Business", DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio "Shop Work on the Farm", Jones, McGraw Hill "Farm Mechanics Text & Handbook", Cook, Scranton, McColly, Interstate. "Columbia Rope" Columbia Rope Co.	(Farm Mechanics & Ag Science contd) 5. Replace broken glass at school and home. 6. Paint every object built in the shop. 7. Use FFA emblem stencil on articles built. ON-FARM INST & FFA 1. Establishment of farmstead beautification and improvement projects. 2. Survey home farm for necessary improvements. 3. Paint covers a multitude of sins. FARM MECHANICS & AG SCIENCE 1. Demonstrations by student or instructor. 2. Electrical repair jobs (home). 3. Individual projects (shop & home). FARM MECHANICS & AG SCIENCE 1. Demonstrations. 2. Individual projects. 3. Construct rope board. ON-FARM INST 1. Make rope calf halters. 2. Repair broken harness & other leather equipment.	

AG I
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	(Farm Mechanics - Skills contd)	14. Recognizing need for proper maintenance of farm buildings. a. Simple and general repairs. b. Fence, gate and corral repairs. c. Extensive general alterations.	Farm Survey forms. Bulletin: B 255, "Planning Better Homes", Ext. Serv., MSC. Magazine: Better Farming Methods Film: "Plumbing Pointers", Ideal Pictures, Inc., 1915 Chicago Ave., Minneapolis 4, Minn. "Shop Work on the Farm" Jones, McGraw Hill. Local Plumber Film: "More Power to the Farmer", International Film Bureau, 57 East Jackson Blvd., Chicago 4, Ill.	ON-FARM INST 1. Make survey trip (use form) to well and poorly kept farms. 2. Make list of maintenance jobs observed. 3. Establish farmstead improvement projects.	
		15. Ability to do common farm plumbing jobs. a. Plumbing terminology. b. Knowledge of common fittings and tools. c. Operative jobs. 1. Measuring, cutting, threading, and bending. 2. Use of copper pipe, fittings, and tools.		FARM MECHANICS AND AG SCIENCE 1. Demonstrations by student and instructor. 2. Make up plumbing principles demonstration board.	
		16. Ability to repair and maintain electrical equipment. a. Appreciating electricity & its many uses. b. Ability to keep home equipment in operation.		ON-FARM INST 1. Repair all leaky faucets. 2. Improvements on watering devices (home farm). 3. Uses and application of "orangeberry" and plastic. a. Irrigation.	
				FARM MECHANICS & AG SCIENCE 1. Demonstrations by student and instructor. 2. Talk and illustration on electrical safety by REA representative.	

AG I
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
On-Farm Instruction	(Farm Mechanics - Skills contd)	c. Ability to keep school electrical equipment in operation. d. Develop safety precautions. 1. Recognize proper and improper practices. 2. Install safety devices and accept safety ideas.	"Principles of Electricity", GE Co., 200 S. Main, Salt Lake City, Utah. REA Representative. Montana Power Representative. Bulletin: C-202, "Plan Your Wiring", Ext. Service MFC. "Wiring Simplified", Montgomery Ward.	(Farm Mechanics & Ag Science contd) 3. Construct electrical demonstration board. 4. Read meters. 5. Select wire & wiring materials. FFA 1. Participate in State, and National Electrical foundation program. 2. Fairs, exhibits, shows. ON-FARM INST 1. Repair electrical equipment on home farm. 2. Install stock water heater. 3. Build lamb warmer and pig brooder. 4. Servicing of electric motors. 5. Dev. student list of electrical energy use on the farm. (proper size for the job) FARM MECHANICS & AG SCIENCE 1. Local survey of farms for equipment. 2. Demonstration by representative from oil and machinery dealers. 3. Demonstration by student & instructor.	
		17. Ability to maintain and operate farm power and equipment. a. Ability to select power unit and machines. b. Relationship of equipment & size of farm.	Film; "New Ways to Farm Power", Standard Oil Co. Billings, Mont.		

AG I
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
On-farm Instruction	(Farm Mechanics - Skills contd)	1. Depreciation rates. 2. Costs, initial and operating. 3. Coordination of equipment already owned. c. Develop proper safety procedures. d. Ability to do preventative maintenance. 1. Lubrication system. 2. Fuel system. 3. Cooling system. 4. General. e. Ability to safely operate common farm equipment. f. Ability to operate farm equipment.	"Farm Tractor Care", Standard Oil Co. Film Strips: "Servicing Air Cleaner" "Servicing the Lubrication System" Colonial Films, Chicago. "Green Book" Continental Oil Co. Dealer. Charts Guide to Free Illustrative Material, Interstate, Danville, Illinois.	(Farm Mechanics & Ag Science contd) 4. Develop check sheets for maintenance. 5. Individual reports by students. FFA 1. Participate in National Foundation Award. 2. Fairs, Exhibits, and shows. 3. Chapter safety program. ON-FARM INST 1. Establish maintenance program on home farm. a. Project basis. 2. Have safety (protective) devices on all machines. 3. Check and correct all danger areas on home farm equipment. 4. Follow manufacturers' recommendations; a. Speed. b. Load. c. Operation. d. Maintenance.	

AG 1
DIVISION OF LEARNING: ANIMAL PRODUCTION AND MARKETING,
INCLUDING POULTRY

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Animal Pro- duction and Marketing, Including Poultry	Animal Pro- duction. 1. Intro- duction (1 day)	- Understanding of value of farm animals to mankind. - Clothing. - Beasts of burden. - Food. - By-products. - Understanding of importance of animals in farming. - Monetary return. - Soil fertility. - Utilization of land not suited for farming. - Regular employment and distribution of labor load.	Film: "By prod- ucts Of Farm Animals" Swift and Company Film Strip: "More From What We Have", Purina Co. (Local Feed Dealer) Montana Statis- tics. Film: "Sheep in the Desert" Wool Bur. Inc. "For Lands Sake" International Harvester Dealer	AG SCIENCE - Judgment problems on econom- ics of farm animals. - Tour local slaughter house and sales ring. - Problem on number of live- stock in county, and approx- imate worth. - Problem on acres of land in county devoted to farming and to non-tillable land. - Problem on income from various farm enterprises. Determine percent of income derived from non-tillable land.	
	Breeds of Livestock. (7 days)	- Ability to recognize common breeds of livestock adapted to the community. - Beef cattle. - Dairy cattle. - Sheep. - Swine. - Understanding of common live- stock terms. - Purebred. - Commercial. - Stocker. - Heiferete.	Pictures of breeds. USDA Bulletin Breeds of: Beef Sheep Swine Dairy	AG SCIENCE - Develop breed of livestock chart showing common and specific characteristics, special adaptations and uses. - Socio-drama on breed dis- cussion. - Use approved practices. FARM MECHANICS & ON-FARM INST - Listing of equipment nec- essary for livestock oper- ation for each breed.	

AG I
DIVISION OF LEARNING: ANIMAL PRODUCTION AND MARKETING,
INCLUDING POULTRY

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Animal Pro- duction and Marketing, Including Poultry	(Animal Pro- duction -Breeds of Livestock contd)	e. Other common terms in work- ing with livestock. f. Livestock marketing termi- nology.	"Breeds of Livestock" by Briggs, Macmillan Co., N.Y., N.Y. Chapter slides.	(Farm Mechanics & On-Farm Inst contd) 2. Projects that can be built during year (home farm & school shop) a. Stock rack, lambing jugs, feeders, water troughs, crop feeders, windbreaks, and others.	
	3. Livestock selection. (4 days)	1. Understanding the factors for selecting and improving live- stock. a. Factors in selection. 1. Conformation, constitution, uniformity, size, and other body characteristics 2. Breeding. 3. Purpose. 4. Breed present in community. 5. Marketing facilities. b. Factors for improving. 1. Use of purebred sires from same source. 2. Culling herd. 3. Production records. c. Understanding why it is de- sirable to improve animals. 1. Dairy cattle - greater & more economical product- ion of milk & butterfat.	USDA Bulletins; Judging Beef, sheep, dairy & swine. "Approved Practice Series", Inter- state, Danville Illinois. Film Strips on "Selection & Judging" Colonial Film Co., Chicago, Illinois Outstanding purebred breed- ers in area.	AG SCIENCE 1. Buzz sessions on cross- breeding, line-breeding, in-breeding. 2. Have students develop chart on factors for selecting herd replacement animals. FARM MECHANICS 1. Construction of breeding crates and stalls. 2. Construct portable loading chute. ON-FARM INST 1. Development of records for production, yield, birth weights, and other factors to use for guide in culling. For use in livestock super- vised farming program (efficiency factors).	

AG I
DIVISION OF LEARNING; ANIMAL PRODUCTION AND MARKETING,
INCLUDING POULTRY

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
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Animal Production and Marketing, Including Poultry

(Animal Production - Livestock Selection contd)

2. Beef Cattle - More economical production, better quality, will receive higher prices.
3. Sheep - more pounds of clean wool of uniform quality, more pounds of lamb per ewe.
4. Swine - faster and more economical gains, larger litters, more lean meat, less fat, quicker marketing.

"Livestock Judging Handbook" by Nordby, Beeson, & Fourn, Interstate, Danville, Ill.

- (On-Farm Instruction contd)
2. Setup replacement program on each student's farm with aid of the parents.
 3. Use approved practices.

FFA

1. Livestock judging trips in area.
2. Exhibit project animals at fairs.
3. Have members register animals from Chapter Revolving project.
4. Project tour.
5. Participate in National foundation awards program.

4. Livestock sanitation (5 days)

1. Understanding the importance of preventing livestock disease.
 - a. Losses on average farm during year.
 - b. Ability to treat animals for disease.
 - c. Ability to administer vaccine and knowledge of available vaccines.
 - d. Ability to perform livestock operative jobs.
 1. Branding, dehorning, castrating & ear marking.

Film; "Disease the Unhung Rustler"

"Partners for Healthier Swine"
"Science of the Range", Cutter Laboratories, Fourth & Parker Streets, Berkeley 10, California

AG SCIENCE

1. Have students develop chart of livestock disease prevention and treatment. (Same chart put out by Cutter Lab).
2. Class reports by students on diseases.

AG I
DIVISION OF LEARNING; ANIMAL PRODUCTION AND MARKETING,
INCLUDING POULTRY

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Animal Production and Marketing, Including Poultry	(Animal Production - Livestock Sanitation contd)	e. Ability to prevent losses from parasites (internal and external). f. Know the veterinarian and use him.	"Vaccines and Vaccination", Wool Bureau, Inc., 16 W. 46th St., N.Y. 36, N.Y. "Common Diseases of Livestock", Bulletin, Lederle Lab. Local veterinarian. Film: "It Pays To Take It Easy" Allis-Chalmers Tractor Division Milwaukee, Wis.	FARM MECHANICS 1. Build portable hog houses. 2. Build calf, lamb and pig brooders. 3. Build hay feeding rack. 4. Build creep feeders. 5. Install electric fence (farm) FFA 1. Chapter members help other organizations in progress of Brucellosis Control Program. 2. Chapter initiate disease control program for members. 3. Perform livestock operative jobs for local ranchers to develop the skill. ON-FARM INST 1. Develop pasture rotation system for control of parasites. 2. Use of treated salt for parasite control. 3. Spray for fly control. 4. Use approved practices.	
5. Poultry (5 days)		1. Ability to properly produce and manage poultry flocks. a. Study of breeds, feeding, housing, and care of laying hens.	Film Strip: "Trip Through an Egg Factory"	AG SCIENCE 1. Use of poultry identification sets. 2. Problem on income of poultry to the average farmer.	

AG I
DIVISION OF LEARNING: ANIMAL PRODUCTION AND MARKETING,
INCLUDING POULTRY

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Animal Pro- duction and Marketing, Including Poultry	(Animal Pro- duction - Poultry contd)	b. Disease control & problems. c. Problems in raising baby chicks to laying age. d. Laying flock and housing. 2. Ability to market poultry and poultry products.	"Feeding for Profit" "Raising Baby Chicks", Ralston Purina Co. or local Purina Dealer Bulletins - B-243 Feeding Laying Hens B-246 Culling the Farm Flock C-150 Pullorum Disease C-188 Feeding and Manage-ment of Chicks & Pullets, MSC Extension. "Common Diseases of Poultry", Lederle Lab. Film; "Golden Egg" Venard Organ., Peoria, Ill. "Culling Chick-ens" Union Pac. RR.	(Ag Science contd) 3. Develop list of approved practices for poultry management. 4. Demonstration on egg candling and preparing poultry for market. 5. Development of student list for diseases, age that disease is prevalent, prevention, and treatment. FARM MECHANICS 1. Build poultry feeders. 2. Build egg candler. 3. Build trap nests (on farm) 4. Build dropping pits (on farm) 5. Remodeling house and other equipment. FFA 1. Cull a chapter member's flock. 2. Have Chapter "starter chick project" for town boys. 3. Cooperative mixing or buying of feed. 4. Visit local poultry farm. ON-FARM INST 1. Have strict sanitation program. 2. Use approved practices. 3. Hatcheries & quality (Rating of product)	

AG I
DIVISION OF LEARNING: FIELD AND FORAGE CROP PRODUCTION,
VEGETABLE AND FRUIT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Field & Forage Crop Produc- tion, Vegeta- ble and Fruit	Field and Forage Crops. 1. Intro- duction (1 day)	1. Understanding importance of field and forage crops to the nation, state, county, and individual far- mer. 2. Understanding kinds of field and forage crops grown in the county. 3. Understanding of the uses of field and forage crops in the community. a. Amount used for human consumption. b. Amount used for livestock feed. c. Use of crop by-products.	Montana Statis- tics. Bulletin: Mont. Agriculture at Mid-Century. Film: "Saga of the Soil", Minn.-Moline Co. Box 1050, Minn., Minnesota. "Field Crops and Land Use" Cox & Jackson "Approved Practices Series" 1. Grain & Potatoes. 2. Forage & Feed. Interstate, Danville, Ill. Bulletin; "Recommended Varieties of Field Crops in Mont." Ext. Service, MSC.	AG SCIENCE 1. Student list of field and forage crop terminology. 2. Survey community farms for field and forage crops grown in area and use made of the crops. FFA 1. Visit chapter member farm and observe types of crops grown and practices used. FARM MECHANICS 1. Student list of equipment necessary for field and forage crop enterprises. 2. Determine if full use is being made of the equipment on one student's farm. 3. Operation and basic mainten- ance of equipment used.	
	2. Identifi- cation (8 days)	1. Ability to recognize different divisions of field crops. 2. Ability to recognize different divisions of forage crops. 3. Understanding of plant physiology. a. Absorption of minerals, manu- facture of food, process of growth.		AG SCIENCE 1. Definitely teach identifi- cation but keep to general types only. Reason is to know what you are planting, not what some one tells you are. (Winter Wheat, for Spring Wheat)	

AG I
DIVISION OF LEARNING, FIELD AND FORAGE CROP PRODUCTION,
VEGETABLE AND FRUIT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Field & Forage Crop Produc- tion, Vegeta- ble and Fruit	(Field and Forage Crops Identifica- tion contd)	4. Understanding of importance for using recommended varieties.	"Identification and Judging Crops, Weeds, & Disease", Wilson & Larson Webb Pub. Co., St. Paul, Minn.	(Ag Science contd) 2. Student reports. ON-FARM INST & FFA 1. Use recommended varieties on member farms. 2. Collection and making sheaves for displays at fairs, shows, etc. 3. Chapter germination serv- ice.	
	3. Common Farm Pests (3 days)	1. Ability to recognize harmful and prevalent insects of the community. 2. Ability to practice control measures on harmful insect pests. 3. Ability to utilize public services in controlling harmful insects.	Bulletin "Bugs" Z & E Dept., MSC Film "500,000 to 1" Sinclair Refin- ing Co., Continental Bldg., Denver.	AG SCIENCE 1. Talk by County Agent on insect and weed control program. FFA 1. Chapter participation in "Clean Grain" program. FARM MECHANICS 1. Build magpie traps, poison spreaders, repair of spray- ing equipment. ON-FARM INST 1. Each chapter member prac- tice insect and rodent con- trol on home farm. a. Cleaning of fence rows. b. If treatment needed, apply at right time. c. Crop rotations in control of some insects.	

AG I
DIVISION OF LEARNING: FIELD AND FORAGE CROP PRODUCTION,
VEGETABLE AND FRUIT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practico Results
Field & Forage Crop Produc- tion, Vegetable and Fruit	(Field and Forage Crops contd) 4. Vegetable & Fruit (3 days)	1. Understanding value of farm garden. 2. Understanding principles of garden planning. 3. Understanding and applying approved practices in gardening.	4-H Club Garden Manual. C-129 - The Family Garden. C-130 - Irrigating the Family Garden. Ext. Serv., MSC	AG SCIENCE 1. Have students levelop reasons why gardening is important to the home farm. 2. List some approved practices in gardening. 3. Individual instruction for those who will have garden- ing projects. ON-FARM INST 1. Planting of small fruits. a. Raspberry. b. Strawberry. (barrel or box plot)	
	5. Range Management or Pasture Management (10 days)	1. Understanding the importance of range land (or pasture) in the operation of the farm or ranch. a. Amount of land on average farm that is not tillable. b. Utilization of roughage by livestock. c. Maintain soil fertility. 2. Ability to recognize plants that produce majority of live- stock food. 3. Basic understanding of plant succession, physiology, and ecology (Why the plant is found where it is, and why it stays there).	SCS County Agent. Range Ext. Spec Agonomy Ext. Spec. Bulletins: M-1014 - Range Plants. M-1033 - Plant Relationships. Ext. Serv., MSC Film: "Grass- land", SCS.	AG SCIENCE 1. Identification of plants in the field through use of flagged, metal marker. a. Stake out five or six plants and go through identifying character- istics. Do the same for five or six more. Stu- dents can learn 10 to 12 plants in one session.	

AG I
DIVISION OF LEARNING: FIELD AND FORAGE CROP PRODUCTION,
VEGETABLE AND FRUIT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Field & Forage Crop Production, Vegetable and Fruit	(Field and Forage Crops, Range or Pasture Management contd)	4. Understanding value of having good pastures on good range. 5. Understanding of use of approved practices.	"Green Promise" New Holland Machine Co., New Holland, Pa. "Grasslands Miracle", Nat'l Fert. Assoc., R. H. Engle, 616 Cont. Bldg. Wash. 5, D. C. "Range Course of Study", Dept. of Ag Ed, MSC	(Ag Science contd) b. Test students on these plants next time in the field. Note: The above applies to range, pasture plants and weeds. 2. Have range or pasture plots in shop or classroom. Keep these growing and use for experiment, fertilizer, clipping, dormancy, and other factors of plant physiology. 3. Have students develop a list of range terminology.	
				FFA 1. Collect plants and mount for shows and exhibits. 2. District & State Conventions	
				ON-FARM INST 1. Initiate range improvement plan with student and Dad. 2. Show value of using good pastures and good range. a. Higher percent calf and lamb crop. b. More economical gains. c. Less expense.	

AG I
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organization	1. Homestead Improvement (3 days)	1. Understanding the value of a well kept farmstead. a. Ability to develop a landscape plan. 1. Features included are lawn, shrubs, tree, borders, flowers, and flower beds, outdoor fireplaces and eating area. b. Ability to determine the characteristics of a well kept farmstead. 1. Arrangement and location of buildings, drives, fences, fields, shelter-belts and other features.	Bulletin: C-198 - Planting and Care of Shelter-Belts. Chapter slides. Local farms.	AG SCIENCE 1. Develop basic landscape plan for farm home by each student. 2. Prune shrubbery around the school. 3. Aid in the lawn rejuvenation program for the school. FFA 1. Formulate plans with students for entry in Farmstead Beautification contest. 2. Have FFA clean-up week. ON-FARM INST 1. Repairs that are needed on fences, gates, etc., around farm home. 2. Plan out-door fireplace and eating area for more enjoyable farm living. AG SCIENCE 1. Have talks by Forest Service SCS, Fish & Wild Life men. 2. Have students develop list of available game refuge on their farm, and what they could do to improve it.	
	2. Conserva- tion of Natural Resources. (2 days)	1. Understanding the need for conserving our resources. a. Land - Increasing population no new frontiers, increased demands for food by the world. b. Water - used for agriculture industry, domestic purposes, and recreation. c. Forests - used for lumber, recreation, wild life.	Fish and Wild Life Service. Game Worden. Forest Service SCS		

AG I
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATIONS

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organiza- tion	(Conservation of Natural Resources contd)	d. Wild life - decrease or depletion of game, fish, and birds. Used for food, recreation, etc.		FFA 1. Attend SCS field day. 2. Establish Chapter conserva- tion program and participa- tion by all members. ON-FARM INST 1. Build and develop stock water dams. Stock with fish.	

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	DIVISION TOTAL	30	
	TOTAL DAYS INSTRUCTION	165	

AG II
DIVISION OF LEARNING; ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Orientation	1. Course of Study (1 day)	1. Understanding the course re- quirements for the year. a. Student-grading. b. Tests. c. Location of reference material. d. Shop organization. e. Course content. f. Notebooks to be kept on class and shop work.	Bulletin Room. Filing case. "Shop Work on the Farm", Jones, McGraw Hill. "Farm Mechanics Text and Hand- book", Cook, Scranton, and McColly. "A Handbook on Teaching Vo-Ag" Phipps, Inter- state.	AG SCIENCE 1. Tour the classroom and shop. 2. Have students catalogue periodicals. 3. Have students participate in planning course content, major field trips, and other factors. FARM MECHANICS 1. Have students determine abilities to be mastered during the year. 2. Develop suggested list of shop, and home farm projects to be constructed, maintain- ed or repaired during the year.	

AG II
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual Development	1. FFA (5 days)	1. Understanding the value of having a well balanced program of work. a. What the program of work is and its importance. b. Divisions that make up the program of work. c. Desired goals to be reached during the year. 1. Production goals for livestock and crop enterprises. 2. Continuation of all projects. 3. Member participation in all chapter activities. a. Public speaking. b. Foundation programs. c. FFA Week. d. District and state conventions.	FFA Manual. Chapter, State and National Program of Work. Proceedings of District and State Conventions Outstanding "Program of Work" from other chapters. "Introduction to FFA", Mimeo, Dept. of Ag Ed, MSC. "Programs for Future Farmer Meetings", Tenney, Interstate. FFA Manual. Robert's Rules of Order.	AG SCIENCE 1. Examine the program of work from: a. Past years. b. State and National program of work. 2. Discuss divisions of program of work and stress the integration of the program of work with Vo-Ag. FFA 1. Have students develop program of work for Ag II. 2. Use chapter members in formulation of chapter program of work. a. Committee members. ON-FARM INST 1. Progress check on improvement projects (survey form). 2. Broaden scope of farm mechanics project to utilize and apply newly learned abilities. AG SCIENCE 1. Have students develop list of parliamentary skills that are commonly used in all meetings.	
	2. Leadership Activities. (10 days)	1. Understanding the value of becoming proficient in the use of parliamentary procedure. a. Ability to work efficiently in an organization. b. Ability to properly present and handle a motion.			

AG II
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practices Results
Individual Development	(Leadership Activities contd)	c. Ability to act as chairman of a group. d. Ability to increase self-confidence at a meeting or before a group. e. Present ideas clearly to a group. f. Ability to follow as well as lead.	Film: "How Not To Conduct a Meeting", GMC "When You Pre-side", S. S. Sutherland, Interstate. "Introduction to FFA", Mimeo. Dept. of Ag Ed. MSC.	(Ag Science contd) 2. Show application of parliamentary procedure in adult organizations, such as Lions Club, Rotary, and in all fraternal organizations. 3. Integrate throughout the year. FFA 1. Have parliamentary procedure team. 2. Have members give reports on program of work at regular meetings. 3. Have class public speaking contest. Winner to participate in chapter public speaking contest in preparation for district and state convention. 4. Participate and belong to other youth and rural organizations. 5. Outstanding member of Ag II class to be delegate at District and State Conventions.	

AG II
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	1. Supervised Farming (15 days)	1. Ability to make out and re-evaluate long time farming program. 2. Ability to make annual project plan. a. Evaluate project plans. b. Make out ideal type of plan. c. Plan for increasing size of project, and broadening scope of projects. 3. Ability to keep records, and analyze project results. a. Make inventory. b. Enter data. c. Enter yearly farming program. d. Draw up financial statement. e. Make budget. f. Replan continuation profits and long time farming program.	Local project charts. "Instructor's Manual for Project Accounting", Dept. of Ag Ed, MSC. "Your Farming Program", Hammonds & Tabb Hurst Printing Co., Lexington, Ky. "Farming Programs in Vo-Ag" Deyoe, Interstate. "Guiding High School Students of Vo-Ag in Developing Farming Programs", Johnson and Elorn, US Dept. of Health, Educ. & Welfare, Washington, D.C.	AG SCIENCE 1. Have students judge several outstanding long-time farming programs. 2. Divide group into similar project types. a. Have students develop ideal type of plan, including approved practices, production standards, and goals to be reached. b. Have each student check his plan against standards. 3. Have students present project problems to the entire group. 4. Chart efficiency factors, gains and cost of production and income from different enterprises. ON-FARM INST 1. Stress use of approved practices.	

AG II
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	2. Farm Mechanics a. Objectives (2 days)	1. Understanding of the objectives of farm mechanics for Ag II. a. Abilities and skills that should be mastered by the end of the year. b. Operative jobs that can be done by students. c. Enterprizes and suggested projects that can be done by students during the year. 1. Integrate with other divisions of the program.	"Farm Mechanics Text and Handbook", Cook, Scranton, and McColly, Interstate. Chapter slides. Projects of former members.	Note: The farm mechanics course of study is developed under the Division - Individual On-Farm Instruction so that farm mechanics for Ag II can be viewed as a complete unit. The teaching of the various units should be integrated and taught with the other divisions of the program whenever possible.	
	b. Safety (2 days)	2. Ability to maintain satisfactory safety conditions and standards on the farm and in the school shop. a. Ability to determine causes and extent of farm injuries. 1. Stress necessary safeguards that should be provided.		FARM MECHANICS 1. Safety demonstrations put on by class members. 2. Have students resurvey their home farm for progress check on safety program established in Ag I.	
	c. Use of Hand Tools (6 days)	3. Ability to use hand tools and basic skills.	"Shop Work On The Farm", Jones, McGraw Hill.	FFA 1. Have a safety team put on demonstrations for local rural organizations. 2. Farm safety booth at fairs and shows. Integrate with other divisions of the program.	
				FARM MECHANICS 1. Review sharpening, selection and use of hand tools.	

AG II
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practices Results
Individual On-Farm Instruction	(Farm Mechanics- Use of Hand Tools contd)				
	d. Building Construction and Maintenance (20 days)	1. Ability to do common construction, repair, and maintenance jobs on farm buildings. a. Drawing of plans. b. Figuring bill of materials. c. Selecting and ordering lumber and other supplies. d. Salvaging of building materials. e. Recognizing need for proper maintenance. 1. Simple and general repairs. 2. Fence, gate and corral repairs. 3. Specific repair jobs. f. Electrical installations and repair. g. General plumbing practices.	"Concrete on the Farm", USDA Bull. "Concrete in the Country", Portland Cement Co. "Shop Work On The Farm", by Jones, McGraw Hill. Local Carpenter and other tradesmen. Film: "Building A House", State Film Lib.	(Farm Mechanics contd) a. Have students check over all tools in shop and see that they are in proper condition. (Safety factor) b. Have students repaint danger zones on all shop equipment. FARM MECHANICS AND AG SCIENCE 1. Observation of Junior and Senior class shop projects. 2. Field trip to construction jobs. 3. Simple construction jobs. Integrate with animal production and field and forage crop production. 4. Work on advanced students projects such as shed construction, plumbing installation, farmstead wiring and others. This will give actual experience in; a. Concrete. 1. Mixing, pouring, and finishing concrete. a. Foundations, walks, and other projects. b. Rafter cutting. c. Applying siding and roofing. d. Plumbing.	

AG II
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics-Building Construction and Maintenance contd)			ON-FARM INST	
	e. Arc and Acetylene Welding (20 days)	1. Understanding safety factors when welding. a. Ability to learn and follow safety procedures at all times. b. Factors to consider in establishing safety procedure. 1. Knowledge of first aid. 2. Protective clothing. 3. Procedures of machine operation. a. Arc welder. b. Acetylene welder. 4. Fire prevention. 5. Protection against fumes and electric shock. 2. Understanding the importance and use of the welder on the farm.	"Forging and Welding", Smith, McKnight and McKnight, Bloomington, Ill. Welding manuals from: Hobart Lincoln Fournery Welding company representatives. Film: "Welding Comes to the Farm", Lincoln Electric Co, 22801 St., Clair Ave., Cleveland, Ohio.	1. Do building and other repair jobs as they arise. 2. Stress application of hand tool care and use, and application of skills involved with their use. FARM MECHANICS AND AG SCIENCE 1. Have students develop list of safety rules. a. Test students on rules before starting to work. 1. Every student have 100% on test. 2. Use advanced students for example of safety violations. 3. Demonstration by students on the right and wrong way for safety. 4. Student reports on first aid treatments. FFA 1. Every student carry accident insurance (school insurance policy) 2. Visit local welding shop. 3. Visit good farm shop.	

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AG II
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics-Arc and Acetylene Welding contd)	3. Understanding of the kinds of metals and their characteristics. a. Identifying characteristics for all commonly used metals and their properties. b. Tests which can be used to identify different metals. 4. Understanding of welding terminology. a. Kinds of welds. b. Welding positions. c. Welding rods. d. Types of welders. 5. Ability to use and apply arc and acetylene welding technique. a. Common jobs. b. Specialized jobs. 1. Aluminum welding. 2. Hard surfacing.	"Welding On The Farm", General Electric. "Forging and Welding", Smith. Welding manuals from Hobart, Lincoln, Fourney and others. "Oxy-Acetylene Welding", Linde Air Corp. "Arc, Acetylene, and Forge Welding manual", Dept. of Ag. Eng., MSC Film Strips on welding from Linde Air Corp. and Lincoln Electric Corp.	ON-FARM INST 1. Have students develop list of uses of the welder on the farm. 2. Demonstrations by welding company representatives for students and their dads. FARM MECHANICS 1. Demonstrations by students and instructor. 2. Have different farm machinery parts. a. Cast. b. Aluminum. c. Tool and mild steel. d. Bronze. 3. Have students develop welding terminology list in their notebooks. 4. Demonstrations by student and instructor. a. Safety. b. Operational procedure. c. Welding process. d. Start students welding. 1. Don't overload the minds of the students with regimented procedure. 2. Don't scare students. (Welding is simple)	

AG II
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics- Arc and Acetylene Welding contd)			(Farm Mechanics contd) 3. Proficiency and techniques will come from practice. 4. Have students work on all welding positions. Don't practice on the one position and then go to next.	
	f. Farm Machinery (20 days)	1. Ability to select power units and machines that will meet farm requirements. a. Size and type of farm in relation to the amount of equipment necessary for operation. b. Initial overhead and operating costs. c. Coordination of machines already owned.	Charts; 1. J. I. Case. 2. Standard Oil. 3. International Harvester "Modern Farm Management" Boss Pond, Webb Pub. Co.	FARM MECHANICS & AG SCIENCE 1. Use farm survey for average farm requirements for equipment. 2. Use of implement dealer and local rancher for trend suggestions and indications.	
		2. Ability to do and recognize preventative maintenance needs for common farm equipment. a. Equipment for seed bed preparation. b. Equipment for seeding. c. Equipment for cultivation and harvesting.	"Job Instruction Sheets", Dept. of Ag Ed, MSC. Farm Machinery Operator's Manual.	ON-FARM INST 1. Determine costs per acre for producing various crops. 2. Problem; Would it be cheaper to have custom work on various phases of crop production or better to own the machine?	
				FARM MECHANICS & AG SCIENCE 1. Integrate with Field and Forage Crop Production. 2. Develop check sheets for routine maintenance jobs. 3. Demonstrations to the class by students. 4. Have students bring in equipment from home farm.	

AG II
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics-Farm Machinery contd)	d. Ability to service, operate, make minor adjustments on farm power units. 1. Fuel system. 2. Ignition system. a. Firing order. b. Replace points. 3. Ability to recondition and overhaul common farm equipment. a. Ability to recognize need for reconditioning and overhauling plow, drill, duck-foot and mower. b. Ability to tear down, clean, repair, reassemble, and paint equipment.	"Farm Mechanics Project Book" L. Merson, Dept. of Ag Ed, MSC. "Trucks & Tractors", Standard Oil Co. "Green Book" Continental Oil Co. Farm Machinery Operator's Manual. "Job Instruction Sheets", Dept. of Ag Ed, MSC. "Farm Machinery and Equipment", Smith, McGraw Hill. Film: "Reconditioning a Mower", Minn. Moline.	ON-FARM INST 1. Establish maintenance project program on the part of each student. a. Develop mechanics project record book. To be used for record of farm mechanics done by student on the home farm. FARM MECHANICS & AG SCIENCE 1. Field trip to examine implements for need of reconditioning or overhauling on one student's farm. Use check sheets developed by the class. 2. Small group and/or individual instruction. 3. Integrate with Field and Forage Crop production. 4. Review of Paints and Painting.	

AG II
DIVISION OF LEARNING: ANIMAL PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Animal Production	1. Introduction (1 day)	1. Understanding the importance of livestock in farming operations. a. Role of livestock on the farm. 1. Utilization of roughage. 2. Distribution of labor load and requirements. 3. Supplement income. 4. Soil improvement through use of manures. b. Classes and breeds of livestock found in the community. 1. Review of breeds.	Doanes Agri. Digest. "Western Range Livestock Industry", Lawson, McGraw Hill "Approved Practice Series", Interstate. Film; "Cow Business", American National Cattle men's Assoc.	AG SCIENCE 1. Develop student list of factors in determining size and scope of livestock enterprises on the farm. 2. Integrate with Field and Forage Crop production. 3. Buzz sessions; specialization versus diversification.	
	2. Production (3 days)	1. Ability to produce, select, judge, improve and manage all classes of livestock. a. Breeding and improving. 1. Types of breeding programs. 2. Factors in selecting herd replacements and herd sires. 3. How to read a pedigree. 4. How to register an animal. 5. Size and age to breed. 6. "Quality" animal will mean "quality" price.	Breed Assoc. Publications. Local Livestock Producers. County Agent Grazing Assoc. Districts. Breed Assoc. Representatives.	ON-FARM INST 1. Discuss ways and means of improving and increasing livestock projects, and use of supplementary projects. AG SCIENCE 1. Buzz sessions on purebred versus commercial class of livestock on the farm; calving out two year olds versus three year olds. 2. Have local breeder explain his system for herd improvement. FFA 1. Bring chapter livestock registrations up-to-date. 2. Attend local sales ring.	

AG II
DIVISION OF LEARNING: ANIMAL PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Animal Production	(Production contd)	7. Use of artificial in- semination rings - dairy and possibly beef.	Local Buyer "Animal Breed- ing", Winters, Wiley and Sons. "Judging Notes For Junior Farmers", Oberhansley, Star Printing Co, Ogden, Utah. "Lesson Plans" Mimeo, Dept. of Ag Ed, MSC. Approved Practice Series, Interstate. "Job Instruction Sheets", Mimeo, Dept. of Ag Ed, MSC. "Raising Live- stock"	ON-FARM INST 1. Field trip with breed association representative to examine animals eligible for registry. 2. Use approved practices.	
	3. Feeding and Management (25 days)	1. Ability to care and manage live- stock enterprises. a. Feeding of the breeding herd. 1. Feeds and feeding termi- nology. 2. Requirements of a good ration. 3. Building a ration to do the job. 4. Requirements for farm animals. a. Maintenance. b. Growth. c. Fattening. d. Production. e. Reproduction. b. Caring for the breeding herd. 1. Care during pregnancy. 2. Problems and care during and after parturition.	AG SCIENCE 1. Discuss new factors in feed- ing. a. Stilbesterol. b. Antibiotics. 2. Use rats or other small animals to demonstrate essential nutrient require- ments of animals. Results can be seen in 10 days after initiation of trial. 3. Use group method in develop- ment of approved practices for livestock production. FFA 1. Exhibit animals at fairs and shows. 2. Have project tour.		

AG II
DIVISION OF LEARNING, ANIMAL PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Animal Production	(Feeding and Management contd)	3. Growing out young animals. 4. Veterinary problems. a. Obstetric. b. Sanitation. c. Disease prevention and treatment. Note: Special skills and abilities required in certain enterprises and types of production should be taught as needed.	Films; Film strip from Ralston Purina Co., Contact local Purina dealer. "Cattle Country" "Along the Milky Way" and other films from Union Pacific, R.R.	ON-FARM INST 1. Tour local feed yard and note practices used (use a form developed by class prior to the tour). 2. Have students use approved practices for their livestock enterprises. 3. Use experimental ration (completely balanced) in comparison to regular ration a. May involve four or five different farms. FARM MECHANICS 1. Have students construct and repair equipment used in livestock production. a. Feeders (creep and other types), shelters, breeding stalls and crates. b. Labor saving equipment. 1. Squeeze chute, calf tables, loading chutes, corrals, and fences.	

AG II
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organization	1. Farmstead Improvement (5 days)	1. Ability to develop plans for improving and landscaping the farm and home. a. Map the farmstead showing field layout, size, roads, fences, developments and improvements. b. Develop approved landscape plan of the home or farmstead 1. Draw to scale, showing present plantings, and suggested planting plans.	B-257 - Trees Native to Mont. B-268 - Shelter Belts For Your Farm. B-1003 - Farm Your Timber Line. B-273 - Plan - Beautify Your Home Grounds. ESP-141 - Evergreen and Deciduous Trees, Shrubs, Vines, for Landscaping Use. C-1020 - Perennials For Landscaping. L-M-26 - Fruit Varieties For Montana Gardens Ext. Serv., MSC.	AG SCIENCE 1. Have students obtain aerial photo of home farm. a. Use "square method" in figuring acreages (check with SCS on this method). b. From aerial photo traces overlays. Keep this photo on file. It can be used in Ag III and IV. c. Discuss reading of land descriptions. 1. Have each student obtain complete land description for his home farm. 2. Stress value of using small fruits in planting plans. ON-FARM INST 1. Discuss field and road layout on one farm. a. Advantages and disadvantages. 2. Check progress of farmstead improvement project started during Ag I. 3. Integrate with Field and Forage Crop Production.	

AG II
DIVISION OF LEARNING; FIELD AND FORAGE CROP PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Field and Forage Crop Production	1. Introduction (3 days)	1. Understanding the value of efficient crop production in farming operations. a. Why crops are grown. 1. Cash, food, soil improvement. b. Diversification. c. Labor utilization. d. Relationship of crop and livestock production.	Mont. Statistics. Doanes Agricultural Digest "Handbook on Teaching Vo-Ag" Phipps, Interstate. Film: "It Can Happen Here", SCS.	AG SCIENCE 1. Survey of crops grown in the county. 2. Develop student list of uses made of crops on the farm. 3. Group discussions on feasibility of introducing new specialized crops in community. FARM MECHANICS 1. Develop list of equipment necessary for crop production enterprises, also farm mechanics projects that can be carried in conjunction with crop enterprises.	
		2. Understanding the role of related sciences in crop production. a. Agencies and services available for use by the modern farmer. 1. Botany, soils, disease, insect and weed control, and agronomy. 2. Government agencies and programs such as SCS. 3. Understanding classification of crops. a. Botanical. 1. Method of reproduction. 2. Growth habits.	SCS County Agent ASC "Services Rendered", Mimeo, Dept. of Ag Ed, MSC "Field Crops", Rather & Harrison, McGraw Hill	AG SCIENCE 1. Role of grassland farming. 2. Need for growing crops not under government control to utilize acreage. 3. Discuss value of using services offered by the State College. 4. Opportunities for grass seed production.	
				ON-FARM INST 1. Field trip to local farm for purpose of collecting	

AG II
DIVISION OF LEARNING; FIELD AND FORAGE CROP PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Field and Forage Crop Production	(Introduction contd)	b. Agricultural 1. Use of the crop or its purpose, such as cereal, forage, fiber and special (soil improving).		(On-Farm Inst contd) plant specimens to illustrate plant classification for botanical and agricultural use. a. Grasses, grass likes, annual, biannual, perennial, cereal, and forage.	
	2. Factors of Plant Growth (5 days)	1. Understanding how a plant grows. a. Factors affecting germination and dormancy. b. How a plant grows. c. Environmental factors affecting reproductive growth. d. Environmental factors affecting reproductive growth. e. Process of photosynthesis. f. Factors affecting water and mineral absorption and utilization. g. Uses of hormones in modern day crop production. ----- 53. Influence of growth substances on stems and leaves. Breaking dormancy of hard coated seeds. Division of Botany, Dr. Barton Hahn, MSC. Film: "Making the most of a Miracle" American Plant Food Council.	Plant Physiology experiments. 39. Release of CO ₂ by Roots 47. Effect of Excess H ₂ O on Germination & Growth. 48. Phototropism 49. Geotropism 50. Growth Substances & Root formation. 51. Growth Substances & optical dorminance. 52. Growth Substances & leaf abscission.	AG SCIENCE 1. Use of simple experiments by the student to illustrate germination, growth, effect of light, hormones, and water relationships. Note: These experiments are easy to set up and run, and clearly illustrate factors of plant growth. The experiments explaining the procedure and necessary materials can be obtained from the Div. of Botany, Dr. Barton Hahn, MSC. These experiments can also be worked in cooperation with the high school Biology Department.	

AG II
DIVISION OF LEARNING: FIELD AND FORAGE CROP PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Field and Forage Crop Production	3. Culture of Common Farm Crops (22 days)	1. Ability to determine and apply successful practices in field and forage crop production. a. Select improved varieties of crops. b. Sources of good seed. c. How to treat seed. d. How to properly prepare a seed bed. e. Factors in planting such as time, amount, depth, fertilizer. f. Care of growing crops including plant enemies, irrigating methods and practices, fertilizers. g. Harvesting procedures and practices. h. Marketing and storage problems. i. Importance of the soil and soil problems. 1. Water requirements in relation to soil type. 2. Soil fertility. 3. Proper land use. 4. Erosion problems and control. 5. Crop rotations and their use in maintaining soil fertility. a. Grassland agriculture.	SCS County Agent. "A Series", Insects, No. 4-59, MSC. B-216 - Handbook of Plant Diseases and Their Control. B-225 - Perennial Weeds and Their Control. "Using and Managing Soils" Gustafson, McGraw Hill. Bulletin 1040 "Land Appreciation" "Productive Soils", Weiss, Interstate. "Field Crops & Land Use", Cox and Jackson, Wiley & Sons.	AG SCIENCE 1. Develop chart for field and forage crops containing information on planting disease, varieties, water requirements, fertility requirements, harvesting and marketing. 2. Develop crop rotation plan requirements. 3. Develop list of approved practices. FFA 1. Operate germination testing service for chapter members. 2. Obtain test plots on chapter member farms for fertilizer, tillage, variety and other experimental tests. 3. Participate in "Clean Grain Program". ON-FARM INST 1. Each student develop crop rotation plan. 2. Stress value of green manure crops.	

AG II
DIVISION OF LEARNING: FIELD AND FORAGE CROP PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Field and Forage Crop Production	(Culture of Common Farm Crops contd)	Note: Special skills and abilities required in certain enter- prises should be taught as needed.	Film: "Know Your Land" "Life of the Soil" "Top Soil", SCS "What's in the Bag", National Fertilizer Association.	(On-Farm Inst contd) 3. Observe irrigation methods and practices in the area and discuss in class. Apply desirable methods on the farm. 4. Stress soil conserving practices. FARM MECHANICS 1. Maintain, adjust, calibrate and operate field crop equipment. 2. Build labor saving devices. 3. Integrate Farm Mechanics in this division.	

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AG III - COURSE OF STUDY

DIVISION OF LEARNING	SUBJECT	SUGGESTED TIME ALLOTMENT (days)	PAGE
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	DIVISION TOTAL	2	
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	Leadership Activities	<u>7</u>	3
	DIVISION TOTAL	15	
INDIVIDUAL ON- FARM INSTRUCTION	Supervised Farming	15	5
	Farm Mechanics:		
	Introduction	2	6
	Farm Safety	2	7
	Farm Shop Work	10	8
	Farm Building and Structures	30	9
	Farm Machinery	<u>26</u>	10
	DIVISION TOTAL	85	
ANIMAL PRODUC- TION	Factors of Production	10	14
	Managing Livestock	<u>10</u>	15
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FARM SELECTION AND ORGANIZATION*	Conservation Planning:		
	Introduction	3	16
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	Conserving the Soil	8	21
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	DIVISION TOTAL	43	
	TOTAL DAYS INSTRUCTION	165	

*Field and Forage Crop Production is
integrated with Farm Selection and Organization.

AG III
DIVISION OF LEARNING; ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Orientation	Course of Study (2 days)	1. Understanding the organization, nature and objectives of Ag III a. Grading system. b. Tests. c. Course content. d. Location of reference material. e. Shop organization and operation. f. Notebooks to be kept on class and shop work.	New bulletins and periodicals which will be used by the class during the year.	AG SCIENCE 1. Check over new reference material with the class. 2. Show and distribute new periodicals. 3. State that notebooks will be kept and graded. 4. Designate shop and laboratory equipment that will be furnished by the students. 5. Have student participation in formulating objectives and course content for Ag III.	

AG III
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Individual Development	1. FFA (8 days)	1. Understanding the characteristics, purposes, and values of a program of work. a. Plan activities for the year. b. Develops interest in the FFA. c. Aids in successful chapter operation. 2. Ability to evaluate a chapter program of work. 3. Ability to plan and obtain high member participation in all chapter activities. 4. Ability to plan a desirable program of work. 5. Ability to develop plans for carrying out proposed program.	FFA Manual "Introduction to FFA", Mimeo to FFA", Mimeo Ag Ed Dept. "Putting the Punch in the FFA" Mimeo, Ag Ed Dept, MSC. Proceeding of State and National Convention. National Future Farmer Magazine. Montana Future Farmer Magazine.	AG SCIENCE 1. Develop list of activities for all parts of the program of work based on the needs and interests of the group. 2. Divide class into committees, one committee for each division of the program of work. a. Each committee appoint a chairman. b. Each committee develop their assigned portion of the program of work. Have chairman of each committee report to the rest of the class. 3. Suggested criteria for selecting activities. a. Student and community needs. b. Cooperative participation c. A challenge to all members. d. Feasibility of the activity. e. Stimulate and motivate interest of chapter members. f. Development of leadership qualities. g. Will it contribute to state and national program of work.	

AG III
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Individual Development	2. Leadership Activities (7 days)	- Ability to know the purposes and advantages of using parliamentary procedure in all meetings. - The means by which ideas and suggestions can be acted upon by group action. - Determines the will of the majority in an orderly manner. - Developes confidence of members. - Understanding the principles of parliamentary law. - Vote of the majority decides the issue. - Equal rights and obligations of the members. - Protection of minority rights. - Full discussion of ideas presented. - Definite and logical order of precedence for all motions. - Using democratic process to choose those to whom power is delegated. - Impartiality of presiding officer.	"When You Pre- side", S. S. Sutherland, Interstate. "Parliamentary Procedure at a Glance." FFA Manual	AG SCIENCE AND FFA - Student and officer reports. - District and state conventions. - Use of parliamentary procedure in other school organizations. - Conduct sample meeting using no parliamentary rules. - Have students present various types of motions, explaining precedence, vote required. - Develop list of parliamentary terminology. - Discuss steps and procedures in presenting a motion, and disposal of a motion. - Discuss officer duties and responsibilities. - Have parliamentary procedure team. - Use big brother training system for Ag I students.	

AG III
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual Development	(Leadership Activities contd)	3. Ability to use parliamentary skills. a. Obtain the floor and present motions. b. Recognition and assignment of the floor. c. Presenting or proposing a resolution. d. Debate or discussion of the question. e. Methods of voting on the question. f. Requirements for a quorum. g. Nominations and elections.	Chart; Parliamentary Procedure, State Dept of Voc. Educ., Helena, Montana. A Guide to Parliamentary Practice. Robert's Rules of Order.	AG SCIENCE AND FFA 1. Have students present various phases of a meeting (Order of Business) 2. Have students practice parliamentary skills. a. Methods of voting. b. Lay on the table. c. Rescind. d. Precedence of motions. e. Kind of motions. f. Amendments. g. Parliamentary terminology.	

AG III
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	1. Supervised Farming (15 days)	1. Ability to summarize and analyze project records. a. Summarize records of the enterprise. 1. Determine total income 2. Determine net profit or loss. 3. Determine labor income. b. Determine the success of the enterprise. 1. Determine efficiency factors. a. Production per acre or head. b. Cost per acre or head. c. Net profit per acre or head. d. Amount and cost of labor per acre or head. e. Other efficiency factors that were of benefit for the success of the enterprise. c. Compare efficiency of production with like enterprises in the community and state. d. Determine factors for success or failure with different enterprises. e. Replan the farming program. 1. Kinds, scope, financing, approved practices, and management.	"Instructors Manual for Project Accounting", Mimeo, Dept. of Ag Ed, MSC. Local charts. Records of former students. Montana Statistics Doane's Agricultural Digest	AG SCIENCE 1. Follow procedure for closing out project records. 2. Making closing inventory. 3. Draw up financial statement. 4. Compute efficiency factors. 5. Make chart of efficiency factors for each enterprise. (Summarization) 6. Use past supervised farming efficiency reports for comparison. 7. Have students give high lights of their program, both the good and the bad. 8. Feasibility of having supervised farming projects on the percentage basis of total farm operation with the parents.	

AG III

Teaching
and
Learning
Subjects
or Jobs

Subject
Matter
and Time

DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teacher and Student
Activities and
Approved Practices

Application
Practice
Results

Individual
On-Farm
Instruction

(Supervised
Farming contd.)

2. Understanding of the conditions which will affect the supervised farming program.
 - a. Price and production cycles.
 - b. Evaluation of price outlook and long range price forecasts.
 - c. Factors which affect demand and supply.
 - d. Effect of grain and roughage costs on livestock enterprises.
 - e. Local and home conditions which will have an effect on the farming program.
 - f. Selection of new projects to increase scope of the present program. Consider projects that will balance the program and appear to be profitable.

2. Farm
Mechanics
Introduction
(2 days)

1. Understanding of the status of farm mechanics in the community
 - a. Kinds of machinery, power and hand tools found on the farm.
 - b. Kind of repair, construction and maintenance needs for operation of various farm enterprises.

References

Doane's Agricultural Digest.
Montana Outlook Bulletin.
Market reports in newspapers and commission yard publications.
Charts from Ag Econ Dept., MSC.
Local Dept. charts.
"Guide for Estimating Receipts and Expenses", Mimeo, Dept. of Ag Ed, MSC.
Local Machinery Dealer.
"Farm Mechanics Text & Handbook", Cook, Scranton, and McGally.

AG SCIENCE

1. Make graphs of price and production cycles for livestock.
2. Use outlook information and list marketing facilities.
3. Attend auction sale and obtain prices from local dealers.
4. Visit elevator and check supply and prices.
 - a. Have elevator operator discuss his buying and selling procedure.
5. Make home and local survey for hints and helps for enterprise selection.
6. Have projects on percentage basis of all farm enterprises with parents.

FARM MECHANICS AND AG SCIENCE

1. Survey (use form) home farms of the students for equipment used.
2. Have students analyze forms for farm mechanic skills and abilities which they should master.

AG III
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Activities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics contd) b. Farm Safety (2 days)	2. Formulate objectives for farm mechanics program in Ag III. a. Maintenance, repair, and construction jobs that could be done on the farm and in the school shop with additional farm mechanics instruction. b. Abilities and skills that should be mastered during the year. 1. Ability to carry on safety procedures in the school and farm shop. 2. Ability to determine causes and extent of farm injuries. a. Value of time and labor lost. b. Type of injuries most common. c. Causes of injuries. 1. Machinery. 2. Carelessness. 3. Equipment not in proper condition. 4. Lack of operational knowledge. 3. Ability to apply safety procedures for accident prevention on the farm. a. Safeguards. b. Operational know how for all farm equipment.	"Farm Safety" Mimeo, Dept. of Ag Ed, MSC. "Farm Mechanics" Text & Handbook Cook, Scranton and McColly, Interstate. "Farm Machinery and Equipment" Smith, McGraw Hill. Operator's Manual for all Machinery.	(Farm Mechanics and Ag Science contd) 3. Have students assist in formulation of course content in farm mechanics. ON-FARM INST 1. Have students review progress of their farm mechanics projects that are in progress. FARM MECHANICS AND AG SCIENCE 1. Have student and instructor demonstrations illustrating safety practices. a. Hand tools. b. Power tools. c. Welders. d. Farm equipment. 2. Survey community for types and causes of farm injuries. 3. Student reports on accidents and accident prevention. ON-FARM INST 1. Have progress check on safety program established on each member's farm. a. Agriculture has a higher occupational hazard rate than any other American industry.	

AG III
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Activities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics Farm Safety contd)	c. Proper maintenance and care. d. Removal of nails, wire and other debris.		(On-Farm Inst contd) 2. Stress that each student should have a thorough knowledge of the operator's manual for all equipment.	
				FFA 1. Sponsor school assembly on accident prevention in the home and on the farm. 2. Have 100% member participation in chapter sponsored activities. a. Fire prevention. b. Clean up week. c. Assist Ag I in developing and demonstrating farm safety program.	
	c. Farm Shop Work (10 days)	1. Ability to use and apply basic skills learned in Ag I and II. a. Selection of tools. b. Tool care and maintenance. c. Read and interpret blueprints, make sketches and working drawings. d. Proper use of shop tools and equipment. e. Selecting lumber supplies, building hardware, and figuring bill of materials and costs for a definite job.	"Shop Work on the Farm", Jones, McGraw Hill. "Job Sheets", Mimeo, Dept. of Ag Ed, MSC.	FARM MECHANICS AND AG SCIENCE 1. Have students inventory and check condition of shop equipment. 2. Have students lay out tools and identify tools for tool identification in Ag I 3. Use of better students as instructors in Ag I and II when possible. 4. Have students build needed shop equipment. 5. Have students design and build display rack, chart rack and other needed equipment for the classroom.	

AG III
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics Farm Shop Work contd)	f. Selecting and using plumbing equipment. g. Selecting and using paints.		(Farm Mechanics and Ag Science contd) 6. Have students paint all projects that leave the shop or that are constructed on the farm.	
	d. Farm Buildings and Structures (30 days)	1. Ability to select and plan farm buildings employing best construction standards and appropriate building material. a. Construct and interpret working drawings. b. Construction of sheds, small farm buildings, and repair and maintenance of other farm buildings. 1. Plan and construct concrete structures and other facilities. a. Mixtures. b. Volume. c. Strength and reinforcement necessary. d. Building forms. e. Mixing, pouring, and finishing.	"Concrete on the Farm", USDA Bulletin. "Wiring Made Easy" Montgomery Ward Co. "Shop Work on the Farm", Jones, McGraw Hill. "Farm Mechanics Text and Handbook", Cook, Soranton, McColly.	ON-FARM INST 1. Have students draw plans, figure cost of material, and construct sheds or other needed small buildings on the farm. ON-FARM INST AND FARM MECHANICS 1. Have students build shed, farm shop or some other type of building on one chapter member's home farm. a. Have students make the working drawings, bill of materials and costs, and obtain approval from their parents. b. Have students select and purchase the necessary building materials. Obtain estimates for materials from several different sources. c. Have students develop work schedule for the construction job.	

AG III
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics Farm Buildings and Structures contd)	2. Wire building and install fixtures. a. Wire size and requirements. b. Codes and specifications. c. Methods. d. Safety. 3. Install necessary plumbing. 4. Frame, side, roof, hang doors and windows for the building.	Bulletins; B-267 - Learn to Use Electricity. C-202 - Plan Your Wiring.	(On-Farm Inst and Farm Mechanics contd) d. Have construction foreman appointed or elected for the job. 1. Have job foremen thoroughly briefed on their duties, and see that the foremen instruct their crews. 2. Thoroughly discuss in class a. Details of construction and construction methods b. Concrete requirements. c. Wiring codes and specifications. d. Plumbing specifications and methods.	
	e. Farm Machinery (26 days)	1. Ability to select the proper farm machinery that will meet the farm needs. a. Kinds and amount of machinery needed for the various farm enterprises. 1. Size of enterprise, and size of machinery needed. Economic feasibility. a. Factors in selecting. b. New or used machinery. c. Initial cost, operation costs, and rate of depreciation.	Film; "Helpful Henry" International Harvester Co. Local Machinery Dealer. Montana Statistics.	FARM MECHANICS AND AG SCIENCE 1. Survey farms in area for machinery on hand and machinery requirements. 2. Use machinery dealer for trends and new developments in farm machinery. 3. Use buzz session groups. 4. Have two students attend farm auction sale and report back to the class, the kinds of machinery sold, the price, and the condition.	

AG III
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics Farm Machinery contd)	2. Ability to determine and apply proper safety procedure in machinery operation. 3. Ability to safely operate, service and maintain farm power units. a. Set up servicing and maintenance program on the home farm. b. Observe and practice safety policies in tractor operation. c. Lubrication program. 1. Factors in selecting lubricants. 2. Requirements of a good lubricant. 3. Farm equipment lubrication. d. Air cleaner system. 1. Types of cleaners and their importance. 2. Use of precleaner. 3. Servicing crankcase breather. 4. Servicing air cleaner, hose clamps, and gaskets. 5. Servicing to prevent leaks in air cleaner system.	Doane's Agricultural Digest. "Farm Mechanics Text and Handbook", Cook, Scranton, and McColly. Film: "Farm Tractor Care", Standard Oil Co. Continental Oil Co. Standard Oil Co. Texas Oil Co. Local Machinery Dealer. "Farm Machinery and Equipment" Smith, McGraw Hill.	(Farm Mechanics and Ag Science contd) 5. Student and instructor demonstrations on safety factors in machinery operation. ON-FARM INST 1. Have students give reports on progress of maintenance projects programs. FFA 1. Have students maintain a "wanted" and "for sale" board in local feed store or other places that ranchers frequent. FARM MECHANICS AND AG SCIENCE 1. Demonstrations by students and instruction on all phases of tractor maintenance. 2. Have demonstration motor to use for illustration, and for use in trouble shooting. a. An old car motor doesn't cost much and has the same principles as a tractor or other types of farm power units. Have motor mounted on dolly so that it is portable.	

AG III
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics Farm Machinery contd)	e. Electrical system. 1. Principles of electricity 2. Types of ignition systems 3. Servicing above systems. 4. Firing orders, timing, trouble shooting. f. Fuel system. 1. Selecting fuels. 2. Servicing and maintaining fuel system. g. Cooling system. 1. Types of cooling systems and coolants. 2. Servicing and maintaining cooling system. h. Other factors in maintenance. i. Operation and preventative maintenance and repair on all types of farm equipment. 1. Seed bed preparation. 2. Seeding. 3. Cultivation. 4. Harvesting. 4. Ability to recognize need for reconditioning, and overhauling all equipment for seed bed preparation, seeding, cultivation, and harvesting, including the ability to do the job.	Film Strips from Colonial Film Co on Air Cleaner Carburetion Spark Plugs. Film, "Farm Tractor Care", Standard Oil Co. "Green Book" Continental Oil Co. "Free Illustrative Material", Interstate. Parts Dept. man from local machinery dealer.	(Farm Mechanics and Ag Science contd) 3. Discuss principles of gas and diesel motor operation and maintenance. 4. Have demonstrations by representatives from oil and farm machinery companies. 5. Follow operators manual and go no further than is recommended. 6. Follow manufacturers specifications for operation, load, fuels, lubricants and other factors. FFA 1. Plan tractor rodeo at fair. 2. Have a program of awards for farm mechanics program achievement. 3. Participate in State Foundation Program. FARM MECHANICS AND AG SCIENCE 1. Field survey on chapter members farms to determine needs for reconditioning or overhauling. 2. Develop procedure for determining needs for repair.	

AG III
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics Farm Machinery contd)		"Operator's Manual". "Farm Machinery and Equipment", Smith, McGraw Hill.	(Farm Mechanics and Ag Science contd) 3. Stress that students should know the name of the part and the number to facilitate ease in ordering replacement parts. 4. Have talk by "Parts" man from local machinery dealer.	
				ON-FARM INST 1. Each student develop plan for machinery maintenance and repair so that the equipment is ready for use when needed. a. When possible do maintenance and repair during slack work seasons. b. Make list of breakages and needed repairs before the machinery is stored for the winter. c. Use approved practices in storage of all farm machinery.	

AG III
DIVISION OF LEARNING: ANIMAL PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Animal Production	1. Factors of Production (10 days)	1. Understanding the importance of the livestock raising industry to the community, state, and nation. 2. Understanding the present outlook for livestock. a. County, State, and National production and consumption of livestock products. b. Long time and present trends in livestock production. c. Cost factors and grain - livestock ratio. d. Changes in feeding and management. 3. Understanding of the factors affecting a livestock production enterprise in the local community. a. Climate. b. Available range and pasture. c. Competition with other enterprises. d. Capital needed. e. Availability of breeding stock. f. Marketing facilities and outlets. 1. Freight differential. 2. Shrinkage. 3. Other favorable and unfavorable factors.	"Agricultural Outlook Charts", Bur. of Ag Econ USDA Doane's Agricultural Digest. "Montana Outlook Information", Dept. of Ag Econ, MSC. Radio, newspapers. Commission News Letters. County Agent. Montana Statistics.	AG SCIENCE 1. Develop chart of livestock prices in graph form and have students maintain during a six weeks period. 2. Buzz session on advantages and disadvantages of various marketing facilities. 3. Socio-drama on local livestock buyers and ranchers. 4. Have local feeder give a talk at his feed yards on feeding practices, difficulties, and what he looks for when he buys feeder animals. 5. Feasibility to establishing direct feeder area connection for disposal of feeders. FFA 1. Chapter handle orders for sire purchases in the area for out of area breeders. 2. Attend marketing schools. 3. Participate in local live- FARM MECHANICS 1. Develop list of equipment and projects which can be carried on in conjunction with livestock enterprises.	

AG III
DIVISION OF LEARNING: ANIMAL PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Animal Production	2. Managing Livestock (10 days)	1. Understanding of the factors in operating a herd replacement and culling program. a. Production records. b. Goals and requirements which animals must meet. c. Economics of buying all replacement animals and factors involved. d. Sire selection and breeding practices 2. Ability to manage livestock for the greatest return possible. a. Obtaining high percentage of animals born. 1. Flushing before breeding. 2. Prenatal care and management. 3. Feeding program. 4. Livestock sanitation. a. Disease prevention, treatment and control. 5. Growing out young stock. b. Proper utilization of forage resources. 1. Forage inventory, condition and trend. 2. Present and potential carrying capacities using approved practices.	"Approved Practice Series", Interstate. "Lesson Plans", Dept. of Ag Ed, MSC. "Western Range Livestock" Clawson, McGraw Hill. Film Strips Available From Ralston Purina Dealer.	AG SCIENCE 1. Develop production record forms. 2. Have students develop factors for selection and culling. ON-FARM INST 1. Visit local ranch and have rancher tell and illustrate the practices he uses in selecting replacement animals, and culling undesirable animals from the herd. AG SCIENCE 1. Use past records of supervised farming projects to stress efficiency factors. 2. Stress that a lack of proper nutrition is the seat of many disease problems. ON-FARM INST 1. Integrate with field and forage crop production. a. Have SCS assist in making forage inventory of range or pasture. b. Determine what the stocking rates should be for improvement of the range or pasture, and the practices involved.	

AG III
DIVISION OF LEARNING; FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organi- zation	1. Conserva- tion Planning a. Intro- duction (3 days)	1. Understanding the importance of soil for the success of farming operations. a. Serves as source of life for plant and animal survival. b. Essential for growth and prosperity of our nation. c. Relationship of soil characteristics to the type of farming operations in the community. 2. Understanding the available services for the aid in conserving, using and improving the soil on the home farm. a. Soil Conservation Service. 1. Services performed by the SCS. 2. How the SCS operates. 3. How to obtain SCS aid. b. County Extension Agent. c. Forest Service. d. Bureau of Land Management. e. Soils Testing Service, MSC. f. Agronomy Department, MSC. g. Entomology Service, MSC.	SCS County Soils Survey Report. "Soils and Men", USDA Year Book. Film: "The Land Is Good" SCS. "This Is Our Land", SCS. "Services Rendered", Mimeo, Dept. of Ag Ed, MSC. County Agent. SCS Supervisor. Forest Service.	AG SCIENCE 1. Stress that we are only six inches from starvation. 2. Examine the lawn outside the school and have students list all the things which the soil supports. 3. Examine Soil Survey Report and discuss for known farm locations, the types of farming enterprises encountered and why. Stress that as soil conditions change, so does the type of farming. 4. Develop list of businesses that depend directly or indirectly upon the soil. 5. Represent biotic pyramid by series of rectangles with the soil as the base and the microbes, plants and animals at succeeding levels. 6. Have representatives from agricultural services in the local community explain the purposes for their existence and the services which they perform.	

AG III
DIVISION OF LEARNING; FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	(Conservation Planning contd) b. Soil (8 days)	1. Understanding the importance of the soil forming factors. a. Formation of soil from rock to mature soil. 1. Relationship of the soil forming factors. a. Climate. b. Vegetation and organisms. c. Time. d. Parent material. e. Topography. 2. Understanding the composition of a soil profile. 3. Understanding the factors in classifying soil. 4. Understanding the importance of proper land use.	"Development and Significance of the Great Soil Groups of the United States", USDA Bulletin No. 229. "Soils and Men", USDA Yearbook. "Climate and Man", USDA Yearbook. "Factors of Soil Formation", Jenny, McGraw Hill. Film Strip; "Land Classification" "Land Use", Colonial Film Co. Land Use Slides, Extension Service, MSC. Soil Profile Cuts from SCS.	ON-FARM INST 1. Obtain aerial photo for one student's farm. With the help of the SCS, examine the soil, determine the soil classifications, and land class, and develop land capability map. a. Do the above in form of land judging. This will stimulate high student interest. The students will be asking the "why" on soil formation, classification, erosion and treatments. FFA 1. Sponsor land judging contest in cooperation with SCS and Extension Service. AG SCIENCE 1. Show soil texture by having soil sample in jar filled with water, shake and allow to settle.	

AG III
DIVISION OF LEARNING; FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organiza- tion	(Conservation Planning contd) c. Vegeta- tion (6 days)	1. Understanding the relationship of soil and climate to the vegetation which is found on any particular site. a. Soil development and vegetation (climax) are in balance and rest on the fulcrum, climate. This is true in the natural state. Man is the disturbing factor. b. Climax vegetation produces, in most cases, the largest amount of forage. A vegetative condition as close as possible to climax is desired for most efficient livestock production. c. Specific plants found on a given site, will be found in different states on the same site if soil, and climatic conditions are the same. d. Soil types and vegetation types are strongly correlated, and when mapped, the general outlines of vegetation types and soil types very closely coincide.	"Soils and Man" "Climate and Man" "Grass", USDA Yearbook. Bulletins: M-1014-Range Plants. M-1015 - Plant Relationships. "Range Course of Study", Mimeo, Dept. of Ag Ed, MSC.	AG SCIENCE AND ON-FARM INST 1. By field identification, have students learn the plant community in the local area. (Prepare students in class for field trip) a. Distinguish between decrease, increaser, and invader and the approximate percentages of each that should occur on excellent, good, fair, and poor condition ranges. 1. Examine ranges in the above condition classes and compare the vegetative community and the amount of forage produced. b. Show that an understanding of the vegetation and soil is of great importance in leasing or buying range and in maintaining a range. c. Note in studying vegetation, that vegetation and soil types are closely integrated.	

AG III
DIVISION OF LEARNING; FARM SELECTION AND ORGANIZATION

Teaching and Learning or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	(Conservation Planning Vegetation contd)	d. Water and Soil (6 days)	Film; "Water" "Arteries of Life" "Adventures of Junior Rain-drop", SCS. Living Earth Series "Natures Raw Materials", Forest Service. "Grass" "Soils and Man" USDA Yearbook.	(Ag Science and On-Farm Inst contd) d. Study relict areas for true climax vegetation and soils. e. Develop vegetative and soils terminology section of the student notebook. 2. Integrate with animal production and field and forage crops.	
		1. Understanding the effect of water upon the productivity of the soil. a. Purpose of soil water. 1. Plant use. 2. Carry soluble minerals found in the soil to the plant for absorption. a. Soil composition. b. Amount of water in the soil available for plant use. b. Factors affecting amount of water which can enter the soil. 1. Soil texture (permeability) 2. Vegetative cover and ground litter. 3. Slope. 4. Organic matter of the soil.		AG SCIENCE 1. Show by experiment in class with sand and clay, the amount of water that will be absorbed by the two, the time that it takes, the amount of water retained by the sand and the clay. Weigh the two samples before and after application of water. (Same experiment illustrates value of organic matter) a. Discuss in class the experimental results and how they will affect range of cropping and irrigation practices. 2. Use soil testing kit to test for minerals present.	

AG III
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organiza- tion	(Conservation Planning Water and Soil contd)	c. Loss of soil moisture through needs. 1. Noxious weeds. 2. Common weeds.	"Our Land and Its Care", US Office of Education. "Productive Soils", Weir, Interstate.	(Ag Science contd) 3. Discuss nitrogen cycle and how organic matter is added to the soil. Stress use of green manure in crop pro- duction. ON-FARM INST 1. Field trip to illustrate effect of soil texture, vegetative and ground litter, on amount of water absorbed in a given time. 2. Illustrate erosion problem on different condition ranges or fields using stubble mulch through splash test. 3. Survey form for weeds found and develop practices for the control of weeds. a. Sprays used and amounts. b. Time of spraying. c. Cultural practices.	

AG III
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practices Results
Farm Selection and Organization	(Conservation Planning contd) e. Conserving the Soil (8 days)	1. Understanding the need for conservation of the soil. a. Extent of soil loss through visual appraisal. b. Soil loss a national interest. 1. Establishment of USDA. 2. Establishment of Forest Service. 3. Start of the SCS in 1935. c. Kinds of erosion and seriousness of each. d. Effect of soil erosion on crop yield, farm income, water supplies and water sheds, floods, human health and happiness.	Films: "This Is Our Land" "It Can Happen Here", SCS "Treasure Acres", SCS Publication. "Productive Soils", Weiss, Interstate.	ON-FARM INST 1. On a field trip or on previous trips note any drifted soil along fence lines, pedestaling of plants, formation of rills and gullies. 2. Establishment of grassed water ways. 3. Installing water spreading systems where practical. 4. On field trip note good and poor irrigation practices. 5. Survey a farm and observe (survey form) the causes for erosion that has occurred. Develop approved practices to prevent erosion. a. Seedbed preparation. b. Proper seeding and planting. c. Cultivation and tillage methods. d. Combating alkali. e. Proper irrigation methods. f. Cropping system.	

AG III
DIVISION OF LEARNING; FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	(Conservation Planning contd) f. Soil and Farm Management (12 days)	1. Understanding the relationship of the soil in the ability to help solve the problems of farm organization, management and marketing. a. Influence on total farm organization. b. Influence on the cropping and livestock system. c. Influence on selecting farm machinery and equipment. d. Influence on the farm labor requirements. e. Influence on the financial status and the availability of farm credit. f. Influence on marketing farm products. g. Influence on the "why and what for" of government agencies and programs.	Bulletins: B-228 - Montana's Agriculture. B-M-1012 - Seasonal Price Patterns for Montana Farm Products. Montana Farm Lease C-242 - Rates for Custom Work in Montana. C-94 - Montana Form Taxes. C-204 - Land Reclassification For Tax Purposes in Montana.	AG SCIENCE 1. Discuss the influence of the soil on each of the seven items encountered in farm management and develop each item for clear student understanding. 2. Have local banker talk to students on what he looks for when making a loan. 3. Show how soil affects type of farming operations. a. Livestock systems. b. Cropping systems. c. Labor requirements. d. Irrigation. 1. Amount of water. 2. Water rights and laws.	

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AG IV - COURSE OF STUDY

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	Agriculture and Related Occupations	<u>3</u>	2
	DIVISION TOTAL	5	
INDIVIDUAL DEVELOPMENT	Leadership and the FFA	<u>15</u>	4
	DIVISION TOTAL	15	
INDIVIDUAL ON- FARM INSTRUCTION	Supervised Farming	15	5
	Farm Mechanics:		
	Introduction	2	6
	Farm Safety	3	7
	Farm Buildings	30	7
	Farm Machinery	<u>30</u>	8
	DIVISION TOTAL	80	
ANIMAL PRODUC- TION	Factors of Management	<u>10</u>	11
	DIVISION TOTAL	10	
FARM SELECTION AND ORGANIZATION*	Conservation Planning:		
	Introduction	5	13
	Resources of the Farm	15	13
	Farm Plan	30	15
	Related Factors	<u>5</u>	18
	DIVISION TOTAL	55	
TOTAL DAYS INSTRUCTION		165	

*Field and Forage Crop Production is integrated
with Farm Selection and Organization.

AG IV
DIVISION OF LEARNING; ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Orientation	1. Course Study (2 days)	1. Understanding the course re- quirements for the year. a. Grading system. b. Tests. c. Course content. d. Class and shop policies. e. Location of reference material.	New bulletins and periodicals. "Handbook on Teaching Vo-Ag, Phipps, Inter- state.	AG SCIENCE 1. Tour the classroom and shop 2. Have students catalogue periodicals. 3. Have students, with the help of Ag I, II, and III, maintain and keep up-to-date a magazine article abstract of articles pertaining to all major divisions of the program. (Continue during the year) 4. Have students participate in planning course content, major field trips, and other factors. 5. Suggestions from class for improvement of Ag I, II, and III. 6. State notebooks will be graded. FARM MECHANICS 1. Have students determine abilities to be mastered during the year. 2. Develop suggested list of shop and home farm projects to be constructed, maintained, or repaired during the year.	

AG IV
DIVISION OF LEARNING: ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Orientation	2. Agriculture and Related Occupations (3 days)	1. Understanding the opportunities for productive farming. a. Characteristics of truck farming, fruit growing, dairying, part-time farming and speciality farming. b. Where to farm - personal considerations, type of land, cost of land, and other related factors. c. How to get started in farming - farm laborer, share cropper, tenant, partner with parents, and FFA projects. d. Cost of getting started - cost of buying a farm, cost of equipment, operating cost, cost of stocking the place with livestock. e. Where to get money to farm - private individuals, farm mortgage companies, life insurance companies, government agencies. 2. Understanding the opportunities in business and industry related to productive farming. a. Professional agriculture - Extension Service, Forest Service, SCS, Bureau of Land Management & other government agencies.	Montana Statistics. County Agent. Local farmers. Banker. SCS. "Handbook for Teaching Vo-Ag Phipps, Inter- state. "Careers Ahead" Assoc. of Land Grant Colleges, MSC. County Agent	AG SCIENCE 1. Review of types of farming found in the area. 2. Discuss merits of renting, part-time farming, and others as an aid in becoming established as a full-time farmer. 3. Review advantages and disadvantages of farming. 4. Survey local ranchers as to the method used by them to become established in farming. FFA 1. Tour (use a form for taking notes) farms with different enterprises in the local area. 2. In class discuss the "pros" and "cons" of each type of farming observed. 3. Have local banker talk to the class on farm credit. 4. If possible attend Federal Land Bank annual meeting. AG SCIENCE 1. Have students interview various businessmen in the local area, and report to the class on their findings.	

AG IV
DIVISION OF LEARNING: ORIENTATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Orientation	(Agriculture and Related Occupations contd)	1. Salaries, rate of advancement, retirement, and other factors. b. Private business - florist, nursery operator, hatchery, merchandising, journalism and other products needed by the farmer. c. Manufacturing and distribution of machinery, feed, and other products needed by the farmer. d. Processing and distributing farm products. e. Local buyer. f. Auction ring, and packing house buyer.	SCS. Forest Service. Fieldmen from feed and machinery dealers.	(Ag Science contd) 2. Use occupational information available from different industrial concerns. 3. Use local resource people for vocational information talks. 4. Discuss requirements for success in each of the fields.	

AG IV
DIVISION OF LEARNING: INDIVIDUAL DEVELOPMENT

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual Development	1. Leadership (15 days)	1. Ability to develop individual and chapter FFA activities for the coming year. a. Planning chapter program of work. 1. Delegation of authority and responsibility to underclassmen. b. Form executive committee. c. With aid of chapter, develop calendar of activities. d. Development of chapter awards coinciding with program of work. e. Organize standing committees for the year for full development of the program of work. f. Plan trips to district, state and national conventions. g. Participation in fairs and livestock shows. 1. Individual and chapter possibilities. 2. General arrangements. 3. Specific problems. 2. Ability to win friends and influence people. 3. Ability to use parliamentary procedure.	"FFA Manual" "When You Pre-side", S. S. Sutherland, Interstates. Former Students Outstanding Program of Work Plan from other Chapters in State. "Handbook for Vo-Ag Teachers", Hammonds & Tabb Hurst Pub. Co., Lexington, Ky.	AG SCIENCE AND FFA 1. Have chapter officer meetings prior to each chapter meeting. 2. Have executive committee meeting once a month. 3. Have members talk to Ag I and II about the FFA. 4. Have students develop point system for: a. Trips to conventions. b. Chapter awards. 5. Have students use parliamentary procedure at all meetings. 6. Provide big brothers for Ag I students. 7. Encourage membership in other organizations. 8. Encourage out-of-school members to retain active membership.	

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AG IV
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	1. Supervised Farming (15 days)	1. Ability to summarize and analyze project records. a. Summarize records of the enterprise. 1. Determine total income and expense. 2. Determine net profit or loss. 3. Determine labor income. b. Determine the success of the enterprise. 1. Determine efficiency factors for costs, net profit, labor required and other factors that were of benefit for the success of the enterprise. c. Determine factors for success or failure with different enterprises. d. Replan the farming program for the coming year and reevaluate long time farming program plans, considering establishment in farming, further education, and military service. 2. Understanding the conditions which will affect the farming a. Price and production cycles. b. Law of supply and demand. c. Effect of grain and roughage costs on livestock production.	"Instructors Manual for Project Accounting", Mimeo, Dept. of Ag Ed, MSC. Montana Statistics Production records from local rancher. Doane's Agricultural Digest. Local Charts. Records of former students. Young Farmer Groups. Doane's Agricultural Digest. Market Reports in Newspapers.	AG SCIENCE 1. Follow past procedure for closing out project records 2. Draw up financial statement. 3. Compute efficiency factors. 4. Use past supervised farming efficiency reports for comparison with this years production. 5. Have student give high lights of their programs. 6. Discuss partnership agreements with parents. ON-FARM INST 1. Use of approved practices for all farm enterprises. FFA 1. Have project tours of chapter members farming programs. 2. Establish chapter farm. AG SCIENCE 1. Make graphs showing price and production cycles for all classes of livestock. 2. Use outlook information.	

AG IV
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practices Results
Individual On-Farm Instruction	(Supervised Farming cont'd)	d. Effect of government control programs on kinds of crops produced and acreages. e. Local and home conditions which will have an effect on the farming program.	Local Dept. charts. "Guide for Estimating Receipts and Expenses", Dept. of Ag Ed, MSC.	3. Discuss marketing facilities. 4. Make home and local survey for helps in enterprise selection. 5. Analyze present operations for feasibility of new farm enterprise.	
	2. Farm Mechanics a. Introduction (2 days)	1. Understanding the status of farm mechanics in the community. a. Kinds of machinery, power and hand tools found on the farm. b. Types of construction, maintenance, and repair jobs that should be done by the farmer. 2. Formulate objectives for farm mechanics program in Ag IV. a. Skills and abilities that should be applied on the farm and in the school shop.	Local Machinery Dealer. "Farm Mechanics Text and Handbook", Cook, Scranton, & McColly. Montana Statistics. Doane's Agricultural Digest Bulletin: C-242 - Rates For Custom Work in Mont.	FARM MECHANICS AND AG SCIENCE 1. Survey student farms for equipment used. 2. Analyze farming operations to see if full and best use is being made of the machinery. 3. Is the machinery found on the farm feasible in relationship to size of the farm? 4. Have students assist in developing the course content for farm mechanics. ON-FARM INST 1. Have students review progress of their farm mechanics project to the class and also to Ag I, II, and III.	

AG IV
DIVISION OF LEARNING: INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics contd) b. Farm Safety (3 days)	1. Ability to carry on safety procedures in the school and on the farm. 2. Ability to determine causes and extent of farm injuries and monetary losses. a. Value of time and labor lost. b. Types of injuries most common around the farm. c. Causes for breakage of equipment. 3. Ability to apply safety procedures and fire prevention on the farm. a. Safeguards. b. Operational know how. c. Proper maintenance and care. d. Removal of nails, wire, debris, and other waste material.	"Farm Safety", Mimeo, Dept. of Ag Ed, MSC. Local Fire Chief. "Farm Mechanics Text and Handbook", Cook, Scranton, and McColly. Operator's Manual for all machinery.	FARM MECHANICS AND AG SCIENCE 1. Have student and instructor demonstrations illustrating fire prevention practices and safety procedure. a. Use of all equipment, the right and the wrong way. b. Survey farm and shop for fire traps. 1. Demonstrate how spontaneous combustion occurs. 2. Have each student know the location of fire extinguishers in the shop. 3. Have display of types of farm fire extinguishers. 4. Have students demonstrate use of the common farm fire extinguishers. 5. Stress value of having fire insurance for the farm. 6. Stress fire prevention.	
	c. Buildings (30 days)	Ability to use and apply basic skills in planning and constructing farm buildings. a. Drawing of plans.	"Shop Work on the Farm", Jones, McGraw Hill.	ON-FARM INST AND FARM MECHANICS 1. Have students build shed	

AG IV
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics - Build-ings contd)	b. Figuring bill of materials and costs. c. Use of shop tools and power equipment. d. Use of approved construction procedures.	"Farm Mechanics Text and Handbook", Cook, Scranton, & McColly. "Wiring Made Easy", Montgomery Ward. "Concrete on the Farm", USDA. "Farm Shop Practice", Jones, McGraw Hill. "Farm Buildings", Wooley, McGraw Hill. REA Representative. "Farm Mechanics Text & Handbook", Cook, Scranton & McColly.	(On-Farm Inst & Farm Mechanics contd) or some other farm building to apply previously learned skills and abilities. 2. Have students supervise and assist in development of drawings and plans, construction costs, procuring materials for Ag II and III students. 3. Have students aid in installations of all types. Supervise and check procedures and specifications for all jobs. 4. As opportunity arises: a. Level buildings. b. Replace rotted timbers. c. Replace siding, floors, and roofing. d. Wire or rewire electric installations in previously constructed buildings. e. Water and sewage disposal repairs and installations. FARM MECHANICS AND AG SCIENCE 1. Have students survey the home farm for farm machinery used.	
	d. Farm Machinery (30 days)	1. Understanding the factors for selecting farm machinery that increase the efficiency of farm operation. a. Kinds and amount of machinery needed for the various farm enterprises.			

AG IV
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Individual On-Farm Instruction	(Farm Mechanics - Farm Machinery contd)	b. Amount and kind of machinery in relation to the use made of the machinery, and the size of the farm. 1. Initial cost of equipment. 2. Machine costs per acre. 3. Cost of self owned machinery versus use of custom work machinery. (costs per acre) 4. Factors "pro" and "con" for cooperatively owned equipment. 5. Life of machinery and depreciation rates. 2. Understanding the safety factors essential for farm machinery operation. 3. Ability to safely operate, service and maintain farm machinery used for seed bed preparation, seeding, cultivation, and harvesting.	"Farm Machinery and Equipment" Smith, McGraw Hill. Bulletin C-242 - Rates For Custom Work in Mont. Operator's Manual.	(Farm Mechanics and Ag Science contd) a. Include the following items in the survey: 1. Initial cost and life of the machine. 2. Accidents and causes. 3. Operating costs of machines. 4. Repairs that have been made at home and by a commercial concern. 5. Major criticisms of each machine. 2. Analyze survey forms and have students formulate approved practices for selecting, using, improving maintaining and operating farm machinery. a. Stress factors for promoting farm safety and an organized preventive maintenance program. 3. Have students plan course content for farm machinery, and skills and abilities that should be mastered by the end of the year.	

AG IV
DIVISION OF LEARNING; INDIVIDUAL ON-FARM INSTRUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practico Results
Individual On-Farm Instruction	(Farm Mechanics Farm Machinery contd.)	4. Ability to recognize need for reconditioning, and repairing all equipment used in farming operations. a. Costs of making repairs. b. Feasibility of the repair. c. Approved practices for repair and maintenance work. d. Value of operators manual for farm equipment.	Operator's Manual "Farm Machinery and Equipment" Smith, McGraw Hill. "Servicing and Maintaining Farm Tractors" Johnson and Hollenberg, McGraw Hill. "Operation, Care and Repair of Farm Machinery" John Deere Co.	(Farm Mechanics and Ag Science contd) 1. Have students develop check sheets for; a. Repairs needed before machinery is stored. b. Preventative maintenance needs while equipment is being used. c. Approved practices to follow when making repairs. 1. A bad habit is harder to correct than it is to form a correct habit to start with. 2. Develop student list for uses of the farm welder in making repairs on broken equipment. a. Review arc and acetylene welding and use the skills in the proper manner. 3. Have students recondition one piece of equipment commonly used for each farm enterprise and stress operation know how.	
				ON_FARM INST 1. Student progress reports on farm mechanics projects. 2. Plan projects for the year.	

AG IV
DIVISION OF LEARNING: ANIMAL PRODUCTION

Teaching and Learning or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
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Animal Production	1. Factors of Management (10 days)	1. Understanding the principles of efficient livestock management. a. Future of livestock industry. 1. Competition from various areas in U.S. 2. Supply and demand. 3. Consumer trends. 4. Price and production cycles. b. Understanding the basic principles of genetics and animal breeding. 1. Genetic terminology. 2. Fundamentals of heredity. 3. Heredity and environment. 4. Lethals and abnormalities. 5. Systems of breeding and selection. c. Understanding the value of proper livestock feeding. 1. Essentials of an adequate ration. 2. Needs for growth, production, work and reproduction. 3. Nutritional deficiencies, symptoms, and diseases. 4. Approved practices.	"Animal Science", Ensminger, Interstate. "Western Range Livestock Production", Clawson, McGraw Hill. "Animal Breeding", Winters, Webb Pub. Co. "Approved Practice Series", Interstate. Film Strips from Ralston Purina Co.	AG SCIENCE 1. Discussion groups and student reports on all phases of livestock production. 2. Buzz sessions on breed types, consumer demand, and rancher needs. 3. Determine costs of becoming established in the livestock business. 4. Discussion groups on so called farm freaks. 5. Group problem on working out heredity transformations. 6. Student reports on "Dwarfism" and its effect on the livestock industry. ON-FARM INST 1. Develop and use approved practices for breeding, selection, and feeding. FARM MECHANICS 1. Projects which can be built to aid and improved livestock production. a. Feeders. b. Fences. c. Chutes. d. Other needed equipment.	
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AG IV
DIVISION OF LEARNING; ANIMAL PRODUCTION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Animal Production	(Factors of Management contd)	d. Understanding factors for improvement of animal health. 1. Common and infectious diseases. 2. Obstetric practices. 3. Disease and parasite control. 4. Livestock sanitation. e. Understanding factors for efficient marketing of livestock and animal products. 1. Marketing outlets. 2. Marketing information. 3. State and national requirements on disease prevention in livestock shipments. 4. Practices in preparing and shipping livestock to market.	"Approved Practice Series", Interstate. Bulletins; C-272 - Beef Production in Montana. C-246 - Minerals for Montana cattle and sheep. C-140 - Range Concentrates. C-169 - The Milk Producers Feed Guide. C-221 - Cattle Lice. C-201 - Ergot. L-2 - Brucecellosis. B-266 - Make Your Farm Flock Pay.	AG SCIENCE 1. Develop student charts for: a. Diseases - causes, symptoms, treatment, and prevention. b. Breeding and gestation tables. c. Common obstetric problems. d. Marketing facilities - advantages and disadvantages. FFA 1. Survey local sales ring and note (use form) handling practices at unloading point and in yards; way animals are prepared for market; and factors which buyers look for when buying livestock. ON-FARM INST 1. Develop approved practices for preparing livestock and livestock products for market. 2. Use correct procedure in handling and loading livestock. FARM MECHANICS 1. Build or repair equipment used for handling livestock	

AG IV
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	1. Conservation Planning a. Introduction (5 days)	1. Understanding need for efficient farm planning and operation. a. Requirements for a good farm. b. Personal requirements for a successful farm operator. c. Rate of return on capital investment for a good farm and a good manager in comparison to a good farm and a poor manager. d. Utilization of the SCS in farm planning. e. Requirements for a good farm plan.	Montana Statistics. County Tax Records. SCS County Agent Local Farmers. Film; "Your Soil, Your Fortune", SCS.	ON FARM INST AND AG SCIENCE 1. Field trip to two places, one that is under the SCS using the services of the SCS, and the other not. a. Observe differences between the two places, noting practices used, and improvements made on the two farms (use of check sheet on field trip). 2. Explain the services offered to the farmer by the SCS. 3. Have entire class closely examine an SCS farm plan. 4. Develop student list for correct procedure for developing a farm plan and the factors of farm management involved.	
	b. Resources of the Farm (15 days)	1. Understanding the factors for land and soil classification. a. Color of top soil. b. Depth of top and sub soil. c. Permeability. d. Texture of surface soil. e. Drainage and slope. 2. Understanding the factors for proper land use. a. Class of land. b. Agricultural use. 1. Cropping use - intensive, moderate, light.	Land Capability Chart. Soils Survey for the County. Film Slides on Land Capability and Use, Ext. Service, MSC.	ON-FARM INST AND AG SCIENCE 1. Work with SCS and survey one student's farm. a. Soils survey. b. Land capability survey. 2. Have aerial photo of the place and develop over-lays from the photo showing: a. Field layout and size. b. Location of fences and roads.	

AG IV
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	(Conservation Planning - Resources of the Farm contd)	2. Grazing use. c. Hazards or limitations correlated for each land class.	Film: "This is Our Land", SCS. "Soil Structure", SCS.	(On-Farm Inst and Ag Science contd) c. Present improvements. d. Land class and capability map (colored). e. Map of hazards and limitations for each land class. f. Soils map. 3. With aid of SCS, tour local area noting (use form) proper land use as well as improper land use. a. Develop student list in class of approved practices observed. Discuss observed land use and practices that were not desirable. (Use every acre according to its capability and treat every acre according to its needs)	
		3. Ability to determine the present productive capacity of a farm. a. Present land use. b. Crop production. 1. Kinds of crops grown. 2. Amount produced per acre. 3. Estimated income from crop land. c. Livestock production. 1. Percent of young animals born.	"Guide for Estimating Receipts and Expenses", Mimeo, Dept. of Ag Ed, MSC.	ON-FARM INST AND AG SCIENCE 1. Discuss present land use, production per acre estimated income from each enterprise, present methods and other factors involved. 2. Develop range condition map from aerial photo (SCS method for determining range condition.	

AG IV
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organiza- tion	(Conservation Planning - Resources of the Farm contd)	2. Percent and weight of young animals available for market. 3. Estimated income from livestock. d. Range land or pastures. 1. Forage inventory. 2. Present carrying capacity. 3. Estimated income from range or pasture.	"Range Course of Study", Mimeo, Dept. of Ag Ed, MSC. Doane's Agri- cultural Index. Montana Statistics. County Tax Records. SCS.	(On-Farm Inst and Ag Science contd) 3. Discuss plans for continuing, improving, or changing present method of operation and the ways and means by which such plans can be carried out.	
c. Farm Plan (30 days)		1. Ability to develop a practical and effective farm plan that will aid the student or the farmer for improving his farming operations. a. Factors to be considered in drawing up a plan; 1. Soils classification of the farm and land use. 2. Legal description, type of operation and size. 3. General information about the farm, such as location in the area, soils, and limiting factors.	Film; "Range Country", Union Pac. RR. Films: "Water" "Under Western Skies" "Top Soil" SCS. "Whats in the Bag", Nat'l. Fertilizer Assn.	ON-FARM INST AND AG SCIENCE 1. Divide class into groups to draw up plans for the farm. Have each group develop their own plan. Discuss these plans and draw a master plan. 2. Have students prepare a file for each group containing the necessary bulletins and reference material to draw up the plan.	

AG IV
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	(Conservation Planning - Farm Plan contd)	4. Conservation practices that should receive first priority. 5. Planned use and practices for the farm acreage. a. Rotations. b. Irrigation requirements. c. Soil building practices. d. Cultivation practices. e. Planting plans and varieties to be used.	Bulletins, Soil Survey Report for the County. Recommended Varieties of Field Crops in Montana. B-259 - Irrigation. C-216 - Irrigation. "Westland Pastures", Northrup & King. B-250 - Irrigation Water Measurement.	(On-Farm Inst and Ag Science contd) 3. Have group and class discussion on disputed points and points of planning that are not clear. a. Rotation plans and requirements for a good rotation. 1. Varieties used and adapted to the area. 2. Use of green manure. 3. How long a period should the rotation cover. 4. Approved practices. b. Tillage methods. c. Irrigation. 1. Methods of irrigation a. Border dike, contour flooding. b. Structures needed. c. How often to irrigate. 1. Soil requirements. 2. Crop requirements. 3. Availability of water. 4. Water laws. a. Measuring. b. Rights. c. Use.	

AG IV
DIVISION OF LEARNING; FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	(Conservation Planning - Farm Plan contd)	f. Treatment, rotation and planting plan for hay or pasture. g. Treatment of range land. 1. Grazing plans. 2. Water and fencing developments. 3. Reseeding plans and needs. h. Weed control. 1. Purpose. 2. Need.	Folder 12 - Grass Seed Production, Ext. Ser., MSC "Approved Practice Series", Interstate. Film: Rebuilding With Grass", Forest Service. M-1014 Range Plants. M-1015 - Plant Relationships.	(On-Farm Inst and Ag Science contd) 5. Have students participate in; a. Use of transit. b. Survey contour ditches. c. Lay out border dike system. d. Stake land for leveling. e. Build a drop, weir or Parshall flume. f. Measure water. d. Hay or pasture. 1. Varieties to use. 2. Irrigation practices. 3. Use of fertilizers. e. Treatment of range land. 1. Merits of different grazing systems. 2. Review of plants that should be dominant. 3. Factors for range recovery. 4. Stocking rate intensities. 5. Livestock system. f. Weed Control. 1. Organization and operation of a weed control board.	

AG IV DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Application Practice Results
Farm Selection and Organization	(Conservation Planning - Farm Plan contd)	3. Costs. 4. Control program. i. Development of other natural resources on the farm.	B-225 - Perennial Weeds and Their Control. County Agent. SCS. Fish and Wild Life Service. Forest Service.	(On-Farm Inst and Ag Science contd) 2. Noxious weeds in the community. 3. Time to control and methods of control. 4. Costs of weed control. 5. Effects of no weed control. g. Where possible stress development of: 1. farm wood lots. 2. Shelter belts. 3. Bird and small game cover. 4. Stocking ponds with fish. 5. Other material resource development.	
d. Related Factors (5 days)		2. Ability of the student to determine potential production and income from a farm under a conservation farm plan. a. Costs of proposed conservation practices and improvements. b. Potential increase in production and farm income. c. Priority rating of conservation practices. d. Sources of credit for aid in financing and speeding up the conservation program.	Loan Assn. Representative. Banker County Agent Montana Statistics. Bulletins: Extension Service	AG SCIENCE 1. Have each group figure what the potential production of the farm will be at the end of ten years or twenty years. a. Will the added production and income pay b. Amount of financial aid possible for conservation practices from ASC.	

AG IV
DIVISION OF LEARNING: FARM SELECTION AND ORGANIZATION

Teaching and Learning Subjects or Jobs	Subject Matter and Time	Student Abilities to be Developed	References	Teacher and Student Activities and Approved Practices	Applica- tion Practice Results
Farm Selection and Organiza- tion	(Conservation Planning - Related Factors contd)	3. Ability to manage farm opera- tions so that farm products will be ready for market at most opportune time. a. Products to be sold at price peaks. 4. Understanding factors of farm law.	B-228 - Montana Agriculture. Montana Farm Lease. Montana Live- stock Share Lease. Montana Farm and Ranch Re- cord book.	(Ag. Science contd) 2. Have representative from a loan association examine the plan for feasibility of extending credit, and the amount of credit. 3. Have students develop sound marketing plan for all farm products. a. Marketing services. b. Marketing information. c. Discuss marketing costs and ways to cut the costs. d. Effect of price and production cycles on the success of the con- servation plan. 4. Discuss farm law that could be involved in some of the work, and other factors, that will be carried on. a. Leases, contracts, titles, farmer liability and abstracts.	

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