

AN ABSTRACT OF THE THESIS OF

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Title: DEVELOPING THE AGRICULTURE CLUSTER AT CANBY

UNION HIGH SCHOOL

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With the impetus in the state of Oregon toward career education, known as the "cluster concept", Canby Union High School began planning for five career clusters for the school-year 1970-1971. Agriculture, being one of those clusters, was in need for expansion and improvement to meet the needs of a true agricultural cluster.

The major purpose of this study was to develop recommendations for the agriculture cluster at Canby Union High School in light of the following questions: (1) What should be the objectives of the agriculture cluster? (2) What policies of the agriculture cluster are needed? (3) What courses should be offered by the agriculture cluster? (4) What are the student performance objectives for the courses? (5) What facilities are needed by the agriculture cluster?

Recommendations for the agriculture cluster were developed by the author in consultation with the agriculture staff at the State

Department of Education and Oregon State University, vocational administrators, agriculture teachers, and the agriculture advisory council at Canby Union High School. The State Agriculture Cluster Guide was used extensively in these consultations.

The recommendations of the author on the basis of this study include:

1. Canby Union High School continue to support agricultural education by adopting the objectives and policies developed in this study.
2. The courses for the agriculture cluster recommended in this study be implemented by school-year 1971-72.
3. Facilities for the agriculture cluster at Canby be developed along the lines recommended by the agriculture advisory council, with particular emphasis on land laboratory facilities in the areas of nursery-field crops, forestry, and livestock.
4. Additional staff be hired to serve added enrollment and to give more individualized instruction to students.
5. Time be given the agriculture staff to develop specific student performance objectives for each course in the agriculture cluster.

Developing the Agriculture Cluster at  
Canby Union High School

by

Ralph Harold Anderegg

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Typed by Ilene Anderton for Ralph Harold Anderegg

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# DEVELOPING THE AGRICULTURE CLUSTER AT CANBY UNION HIGH SCHOOL

## INTRODUCTION

Since the passage of the Vocational Education Act of 1963 and the Vocational Education Amendments of 1968, vocational agricultural education in the secondary schools has been changing rapidly. Prior to 1963, agricultural education had been structured primarily for preparing boys ages 14 to 21 years for entry into farming. Since 1963, agricultural education has been expanded to prepare boys and girls for careers in off-farm employment in the agricultural industry, as well as for farming itself.

Vocational agricultural education in Oregon has been represented, during the past few years, by a variety of departments in over 100 high schools. These departments have expanded their facilities to include greenhouses and land laboratories, implemented specialty courses in agriculture (such as ornamental horticulture and farm forestry) and hired additional instructors to meet the needs of added enrollment.

Presently an attempt is being made by several school districts in Oregon to expand their vocational programs to the cluster concept of career education, sometimes called "the Oregon way". Agriculture is one cluster among others such as mechanical, health,



business, food services, construction, metals, and electrical occupations (14).

### Statement of the Problem

Dr. Dale Parnell, Superintendent of Public Instruction, State of Oregon, writes:

Today, in a society oriented to higher education, one out of five Americans still does not finish high school, and only one in ten actually graduates from a four-year college. Yet, most of the school curriculum (high school in particular) has been structured as though everyone were preparing for a four-year college education (16, p. 21).

The above statement is a reflection of the problem in our public schools that has spurred initiation of the cluster concept of career education in Oregon. The formidable task now before public educational institutions is to implement career clusters in order to make the school curriculum more relevant to the world of work. With the majority of students not completing a degree from a four-year college, the task of establishing career clusters becomes a matter of urgency.

The administration and the board of education at Canby Union High School have committed themselves to the establishment of five career clusters by the Fall of 1971. Agriculture, because it is already an established department, will be one of those first clusters.

With the new clusters being formed at Canby, more planning and developing of objectives and policies for the agriculture program

need to be carried out. Changes need to be made in light of the structure of other clusters, as well as changes in students agricultural backgrounds, interests, and career objectives.

With the implementation of other clusters, such as metals and construction, an opportunity will be created for coordinating and sharing teacher-time and resources of the agriculture program with these other cluster areas. This "inter-disciplinary" approach will permit the agricultural staff to concentrate more on agricultural specialties and areas of teacher strengths. Agriculture students will have the opportunity to strengthen their skills and backgrounds in areas that are outside of, but related to, their special interests in agriculture. This situation requires some study and planning of agricultural courses, and how these courses will be coordinated with the over-all cluster program at Canby. Planning agricultural instruction in grades seven and eight in the form of occupational orientation will also be implemented.

Since each of the clusters could possibly offer "supporting" courses for other clusters, it will be necessary to determine what allied courses the agriculture program could and should offer. This will be of great importance at Canby during the first years of cluster operation, because there is presently a lack of facilities and staff to meet the needs of other clusters.

With student enrollment at Canby Union High School expected to

increase from the present 800 students to over 1,000 by the Fall of 1972, additional buildings will be needed. The agriculture cluster is included in plans for a new building to house a number of the clusters. Therefore, some concrete planning needs to be done in order to fit the needs of all the clusters, and in this particular study the agriculture program, to architectural planning.

### Purpose of the Study

The purpose of this study is to develop a proposal for the agriculture cluster at Canby Union High School. The proposal will be made by answering the following questions:

1. What should be the objectives of the agriculture cluster at Canby Union High School?
2. What courses should be offered in the agriculture cluster at Canby Union High School?
3. What should be the student-performance objectives of the agriculture courses?
4. What should be the policies of the agriculture cluster and Canby Union High School?
5. What are the facility requirements for the agriculture cluster at Canby Union High School?

### Limitations

This study is limited to the state of Oregon and the programs and personnel of the agriculture cluster in public institutions.

Findings and recommendations of this study will be limited to the cluster program at Canby Union High School, Canby, Oregon.

### Assumptions

For the purposes of this study, the following assumptions are made on the basis of the outlook and intentions of the Canby Union High School Administration and Board of Education:

1. The enrollment at Canby Union High School will be near 1,000 students by Fall of 1972.
2. By the school-year 1973-1974, fifty percent of all students at Canby will be enrolled in a cluster.
3. The clusters to be implemented during the next three school years are 1) 1971-72: agriculture, electronics, business, construction, and health; 2) 1972-73: mechanical and metals; 3) 1973-74: food services and marketing.
4. Courses in the clusters will be geared for occupational training rather than general education.
5. In the school-year 1971-72, the class schedule will consist of a non-rotating seven-period day.

6. Youth organizations such as FFA, will continue to be an important part of career education.
7. The Board of Education will rely heavily upon advisory councils for guidance and support.

#### Definition of Terms

Cluster of occupations, (10, p. 22) commonly called a cluster, "is a logical group of selected occupations which are related because they include similar teachable skills and knowledge requirements".

Cluster concept of career education is a principle of vocational education that attempts to prepare students for the world of work through one or more career clusters.

Agriculture cluster is the vocational agriculture department of a high school that has been geared to the cluster concept.

Future Farmers of America, (6, p. 5) referred to as FFA, "is the national organization of, by and for students studying vocational agriculture in public secondary schools under the provisions of the National Vocational Education Acts".

Terminal Performance objective is a doing-level skill/(s) that a student can perform at the end of a course.

Department Head is the individual instructor of a department that is responsible to the school administration for departmental matters.

Instructor refers to a teacher in a cluster program.

Land laboratory refers to a facility in the agriculture cluster that comprises livestock and land (crops, nursery, and forest) for use in classroom instruction for demonstrations and experiments, student projects and money-raising activities for the FFA.

Supervised occupational experience program refers to a planned program for students to gain practical experience in a particular cluster. Programs in agriculture could be farm projects at the student's home, work placement on another farm, or work placement in an agricultural business.

Vocational director is a person responsible for the administration of the total career cluster program at a school district.

Advisory council is a group of people selected by the board of education of a school district to advise and provide assistance to a specific cluster or to the entire career cluster program. The advisory council to the total program usually has one member on it from each of the advisory councils of the individual clusters.

### History and Background

Canby is a town of approximately 3,775 people, according to a preliminary count by the 1970 census. The town is located in the southern end of Clackamas County, just 20 miles south of Portland on Highway 99E. The economy of the area is based primarily on

agriculture and small industry. Many of the people in the community commute to the Portland metropolitan area for employment.

The Canby Union High School District is approximately 20 miles long from its western border to its eastern end, and approximately ten miles at its widest point from north to south. The district encompasses three elementary school districts: Canby District Number 86, which is comprised of Canby Elementary School, Canby Middle School, and Howard Eccles School; Ninety-one District Number 91; and Carus District Number 29.

The agriculture of the Canby area is largely horticultural, contributing significantly to the County's over \$15,000,000 gross income from horticultural crops. Poultry production, particularly layers and hatching eggs, is followed by livestock and field crops in gross income. Having a variety of soils, and terrain that ranges from river-bottom to forested hills, the agriculture is very diversified (15).

Canby Union High School has had a two-man vocational agriculture department since 1967. At that time it was possible to expand course offerings to include specialty courses such as forestry and ornamental horticulture. Significant to the changes in the department since then is the fact that a new instructor has come to the department each year to replace an instructor leaving for advanced degrees or other employment positions.

Other "vocational" departments at Canby Union High School are

Home Economics, Electronics, Wood Shop, and Drafting-Graphic Arts.

Presently, the vocational agriculture department offers a four-year sequence in agriculture as well as specialty courses, which are open to students outside of the regular agriculture sequence. Table I lists the courses presently offered.

Table I. Courses Offered by the Canby Vocational Agriculture Department, School Year 1970-71.

| Course                  | Number of Sections | Semesters |
|-------------------------|--------------------|-----------|
| Agriculture I           | 2                  | 2         |
| Agriculture II          | 2                  | 2         |
| Agriculture III         | 1                  | 2         |
| Agriculture IV          | 1                  | 2         |
| Ornamental Horticulture | 1                  | 2         |
| Forestry                | 2                  | 1         |
| Agricultural Machinery  | 1                  | 1         |
| Project Construction    | 1                  | 1         |

Chapter Two will begin the process of accomplishing the purposes of this study by outlining the available information on the cluster concept. This data should be significant to the agriculture cluster because it fits into the concept of career education.



## REVIEW OF RELATED LITERATURE

### Introduction

The cluster concept of career education, being a relatively new principle of vocational education in Oregon, has little written about it. The key to implementing the agriculture cluster is found in the Agriculture Occupational Cluster Guide published by the Oregon Board of Education (13).

This chapter will briefly outline the recommendations of the Agriculture Guide and some related literature, as they pertain to school philosophy, curricular consideration, organizational practices, and agricultural objectives.

### School Philosophy

Parnell (16, p. 15) states that:

High schools must make a definite commitment to move from the present curricular tracking system which uses such terms as "advanced-college prep", "terminal-general", or "remedial-basic" to career cluster tracks.

For many years high schools have been geared for the college-bound, which usually have been a minority of their high school enrollment. Kunzman (9) describes the changes (accomplishments) which the cluster concept will require of our school system:

Accomplishment No. 1: Assuring that all instruction is relevant to the real life concerns of students so that they develop the basic skills, knowledge, and values that will be essential for success in any career they might choose.

Accomplishment No. 2: Providing all with ample opportunities to explore the knowledge, skills, technical requirements, working conditions, and political and social environments and responsibilities of each of the career fields that are open to them.

Accomplishment No. 3: Providing guidance services adequate to assure that every young person gains expert help in assessing his personal interests, aptitudes, and abilities, in making career choices, and in planning an appropriate educational program.

Accomplishment No. 4: Providing a high school curriculum based on career goals that will allow all students to prepare for the occupational fields of their choice....

Accomplishment No. 5: Assuring that opportunities for advanced occupational preparations are readily accessible to all persons through community colleges, other public and private post-high school programs of business and industry.

It is planned by the Oregon State Department of Education that 80 percent of Oregon's 11th and 12th grade students will have access to enrollment in career cluster programs, and that 50 percent actually will be enrolled (5).

### Curricular Considerations

Parnell (16) makes the following assumptions concerning some principles of the cluster concept:

1. Most students will be selecting a broad career cluster goal at the eighth or ninth-grade level. Many students would

gain from such programs as S. U. T. O. E. (self-understanding through occupational exploration) during these years (13).

2. Specific instruction in a particular cluster should be confined to the 11th and 12th grades, with instruction time being ten hours per week.
3. Enrollment for the efficient operation of the 11th and 12th grades is 15 to 18 students.
4. An adequate guidance program is essential for grades seven, eight and nine.
5. Exploratory classes should be offered in the middle grades to allow students to have experiences in the various cluster areas.
6. Supervised occupational experience programs are a vital part of career cluster curriculums.

Students should be encouraged to supplement their specialty training in a cluster by taking supporting electives such as economics, speech, science, etc. (13).

### Cluster Programs

Maley (10) agrees with Parnell as he describes the cluster concept (in Maryland) as a type of vocational education preparing students for a variety of occupations within clusters--clusters of occupations requiring common skills and proficiencies.

He lists the following advantages of the cluster concept:

1. The cluster concept provides for greater occupational exploration by students.
2. The cluster concept provides "direct educational experiences with a range of related occupations" for those students who cannot select a specific trade or occupation.
3. The cluster concept is aimed at meeting the diverse needs of students in an age of job mobility.
4. Because of present-day mobility within occupations, the cluster concept does not tie students to a specific job or skills in their preparation.

Maley (10) and Gussenhainer (7) agree that in the cluster concept students will be able to further their education toward specific careers by cooperative work-experience preceded by occupational exploration and orientation. Post high school training is still needed.

Sheets (17), in describing the cluster concept in Kansas City, Kansas, says that the cluster concept has three basic parts: one, offering students in grades seven through nine basic vocational classes in exploratory skills and job exploration; two, job cluster training experience in grades nine and ten, which carries further the development of skills related to clusters of student's choice; three, grades 11 and 12 consist of specific skills and technical training to prepare students for their occupational choice. The cluster program

simply brings students from an era of broad occupational exploration to one of more specific study and preparation within a particular occupational cluster.

Crews (4) describes the cluster concept in the Cobb County Public Schools in Georgia as having a framework of four parts, which are quite similar to those of Kansas City:

1. Elementary schools offer examples of the world of work through occupational information and exploration.
2. Middle schools offer further occupational orientation and begin job-exploratory activities and skill-building.
3. Senior high schools continue occupational exploration and pursue student preparation for specific occupational clusters through more advanced skill development.
4. Continuing education provides for further specialized training and upgrading.

Ryan (17) states that the innovations needed in most school curriculums could be categorized into four parts. These four innovations seem to be universally characteristic of the cluster concept:

1. Schools need an integrated interdisciplinary approach to career education in grades kindergarten through 12.
2. Non-school activities need to become more a part of traditional curriculums.
3. Real or simulated work-experience must be utilized.

4. Career and job exploration needs to be emphasized.

Matheny (11) agrees with Ryan that we need to bring the community into the traditional curriculum, and eventually have a "school without walls".

Especially in the middle school, writes Matheny, we need to emphasize occupational exploration by bringing the real world into the school and taking the school (students) into the real world of jobs and occupations.

Weaver (19) writes that the social sciences are "naturals" for implementing occupational exploration, which could be done in most schools with very little added resources.

#### Interdisciplinary Approach

Crews (4) writes that "vocational education should complement and be complemented by the regular curriculum". It is apparent that the interdisciplinary approach to the total curriculum is very important to the cluster concept. Agan (1) describes the interdisciplinary approach used in Paola, Kansas as the utilizing of teachers and their strengths to form a common effort for preparing students for entry- occupations. This common effort involves both the academic and the vocational staff. The results of the Paola work are described by Agan (2) as having four major beneficial outcomes:

1. The interdisciplinary approach brings about a "team effort" among staff toward true comprehensive vocational

education.

2. The teachers provide an improved guidance function.
3. The community is involved more.
4. Students have a better opportunity to explore their early vocational choice.

### Organizational Practices

Coats (3) recommends the following organizational practices for a vocational agriculture department:

1. Operational plans are a necessity.
2. Policy should be made with all staff members participating.
3. There should be a department head.
4. Policy should include major responsibilities of each instructor to allow for greatest competency areas of each to best be utilized.
5. Regularly-held department meetings are important.
6. Supervised occupational experience programs should be supervised by the instructors that are responsible for teaching the student.

Hamlin (18, p. 33) writes: There are wide variations among states in the policy decisions about agricultural education which can be made in a school district. Generally, however, the following decisions are local:

1. Who will share in making local policy? How will they share?

2. Will state and national funds be accepted? Will they be used locally for all of the purposes for which they may be used?
3. What will be the specific purposes of the program of agricultural education to be conducted?
4. What kind of program will be conducted to implement these purposes?
5. How will the local program be evaluated and improved?
6. Will those be taught who need agricultural education but cannot be included in reimbursed classes in vocational agriculture?
7. What local funds will be provided?
8. What will be the standards for teachers and facilities in excess of those set up by the state?
9. How and by whom will the local program be administered?

### Agricultural Objectives

The State Agriculture Cluster Guide outlines the following suggested objectives of the agriculture cluster (13, p. 14):

1. To assist students in the selection of an agricultural occupation.
2. To develop agricultural competencies needed by individuals engaged in or preparing to engage in production agriculture.
3. To develop agricultural competencies needed by individuals engaged in or preparing to engage in an off-farm agricultural occupation.
4. To develop an educational and experiential basis for entry-level employment in agriculture.



5. To develop an educational and experiential basis for post-high school training and/or specialization in agriculture.
6. To develop skills needed to exercise and follow effective leadership in fulfilling occupational, social, and civic responsibilities.
7. To assist students in obtaining satisfactory employment in an agricultural occupation.

### Summary

The Agriculture Cluster Guide is the base from which planning the agriculture cluster at Canby Union High School will be carried out. However, the use of this guide is highly dependent upon the other factors pertinent to the purposes outlined for this study.

The cluster concept has three major characteristics that are common throughout the country. One is that occupational exploration by the students be provided during junior high school years. Another is that preparation for an occupational cluster takes place during the junior and senior years with specific skill development. Three, work experience is vital along with the entire staff being involved in interdisciplinary work to provide a comprehensive education for occupational preparation.

Chapter three will describe the process of the procedures carried out in this study. It will describe the development of recommendations and present these recommendations as approved by the jury and agricultural advisory council.

## PROCEDURES OF THIS STUDY

There are many surveys, both national and state, available that provide guidelines for the development and improvement of agricultural programs. However, to zero in on local problems, local surveys and local planning need to be undertaken (5).

In light of the above statement, the author began planning this study during the summer of 1970. Working with Agricultural Education staff at Oregon State University, and taking the course, Research Procedures in Education, at the University, the author developed the procedures of this study. The procedures were developed into six steps: visits to six high schools with agriculture clusters; consultation with resource persons in the State Department of Education and Canby Union High School staff; development by the author of course objectives and policies; having the material developed (objectives, policies; course offerings) reviewed and approved by a "jury" of professional agricultural educators in Oregon; development of a plan for facilities in consultation with Mr. Leno Christensen, Agricultural Engineering Department, Oregon State University; consultation and approval of the recommendations developed by the nine-member agricultural advisory council at Canby Union High School.

In consultation with the Agricultural Education Department, Oregon State University, six schools were selected for the author to

visit.

The six high schools were Cascade (Turner), Lebanon, Molalla, Hermiston, Hood River and The Dalles. These particular schools were selected on the basis of having up-to-date agriculture clusters and competent agricultural staff. Cascade High School was of particular importance, since it was the agriculture cluster pilot program for the State Department of Education. The purpose of visiting these schools was to compare their agriculture programs with that of Canby's. Comparison was made on the basis of these schools' agriculture cluster objectives, agriculture cluster policies, course offerings of the agriculture clusters, behavioral objectives of those courses, and agricultural facilities.

Since it was important to involve the administration at Canby Union High School in the development of this program, the school principal, Mr. Richard Brown, and Career Education Director, Mr. Don Austen, visited all six schools.

#### Consultation With Resource Persons

After visiting the six high school agriculture programs, the author, working with the other agriculture instructor at Canby, Mr. Bruce Moos, and Career Education Director Mr. Don Austen, conferred with the agricultural education staff of the Oregon State Department of Education. Mr. Gordon Galbraith, Agricultural Education

Consultant and State FFA Advisor, and Dr. Curt Loewen, Agricultural Education Specialist assisted the author in selecting agricultural cluster objectives and course offerings for school-year 1971-72.

The particular importance of this step of the study was to guide the author in the use and interpretation of the Agriculture Cluster State Guide.

In developing the course offerings, special consideration was given the following:

1. The projected enrollment for the agriculture cluster for 1971-72 is: Freshmen, 40; Sophomores, 25; Juniors 20; Seniors, 20.
2. At this time, there are not enough students (ten to fifteen) with true career goals in horticulture, agricultural mechanics and machinery, agricultural sales and services, farm management, and forestry to offer career-style courses in each area.

#### Development of Policies and Course Objectives

The author, using Hamlin (8, p.201-219) as a guide and reference, outlined some general policies for the agriculture cluster.

These policies dealt with these four areas: persons served by the agriculture cluster, interpretation of agriculture policy, agriculture staff, and funding the agriculture cluster. Personnel policies for the

Canby agriculture program had previously been developed, therefore, the author incorporated these into the general policies.

In consultation with Mr. Bruce Moos, the author developed student performance objectives for each course to be offered in school-year 1971-72. The objectives were chosen by following very closely the State Guide for the Agriculture Cluster and the "agriculture core" objectives developed by the Oregon agriculture teachers at the 1970 Agriculture Teacher's Conference in Lakeview, Oregon (8).

#### Jury Consultation

Upon the advice of Oregon State University personnel, the author selected a group of ten people to serve as a "jury" for the proposals developed in this study. The author visited with each of these people to get their reactions, input, and approval of the material developed. A letter sent to members of this jury by the author appears in Appendix A.

The people selected for this jury were those most familiar with the agriculture cluster in Oregon. They were of two basic groups: agricultural education staff at Oregon State University and the Oregon State Department of Education, and agriculture instructors and/or vocational directors in schools with agriculture clusters. Several of the instructors from the schools visited earlier were selected for this jury because of their familiarity with this study and the situation at

Canby Union High School. The members that served on this jury appear in Appendix B.

Each jury member received a copy of the agriculture objectives, policies, course offerings, and performance objectives for those courses. The author's visit followed their reviewing of this material. During the visit with individual jury members, the author reviewed and discussed each area of the proposals (objectives, policies, etc.) to get their further suggestions and approval.

#### Agricultural Facilities

The type of facilities for vocational agriculture programs in Oregon are somewhat standardized. Facilities vary in size and design but are basically of the same general type. Therefore, the author met with Mr. Leno Christensen, Teacher Trainer in Agricultural Mechanics, Department of Agricultural Engineering, Oregon State University to seek advice on developing facility recommendations for the agriculture cluster at Canby.

In light of the objectives and course offerings developed, and the projected student enrollment, the author and Mr. Christensen considered the following major points in developing facility needs:

1. Nursery and floral crop production is a major industry of the area and will continue to expand.
2. There is no place for students to do general greenhouse and

forestry work except in the present greenhouse. There is not adequate work area or storage place for tools and equipment.

3. The present shop is 3,000 square feet.
4. There are basically no land laboratory facilities for livestock, forestry and horticulture.

#### Advisory Council Activities

The need and use of lay advisory councils for vocational education has long been realized. Therefore, for the purposes of this study, the nine-man vocational agriculture advisory council (see Appendix C) was utilized.

After the author completed the work and obtained the approval of the jury, the material was presented to the advisory council in two separate meetings. The first meeting (with Mr. Galbraith and Mr. Loewen in attendance) dealt with the objectives of the program and the course offerings for the school-year 1971-72. The second meeting dealt with the cluster policies and course performance objectives. Each council member was given an opportunity to review all the material before each meeting.

After the author developed the facility requirements with Mr. Christensen, another advisory meeting was called to review these facility recommendations. In determining their final recommendations,

the advisory council considered the future outlook of the agriculture program and budget problems.

### Summary

The procedures of this study were developed by the author and Oregon State University personnel to encompass six major steps. Prior approval of the work developed by the author in consultation with resource persons was approved by a jury of ten persons and then submitted for approval and recommendation by the agriculture advisory council at Canby. Facility recommendations were developed in consultation with Mr. Leno Christensen, Oregon State University.

Chapter four will describe the findings made throughout the process of this study and present the cluster objectives, policies, course offerings, performance objectives, and facilities developed and approved in this study.



## FINDINGS AND DEVELOPMENT OF THE PROPOSAL

As the six steps of this study were carried out, pertinent information was gathered and applied to the development of the proposal for the agriculture cluster at Canby Union High School.

### Comparison of Schools

The six schools visited had many similarities to the program at Canby. However, the comparison for this study was based upon the four points dealing with the objectives of the agriculture clusters, the policies of the agriculture clusters, the course offerings of the clusters, behavioral objectives of their courses, and their facilities.

All of these schools had no written cluster objectives. However, all of the programs were agriculture clusters approved by the State Department of Education. As the author reviewed each program with respective instructors and/or vocational directors, it was apparent that each had as his objectives those outlined in the State Agriculture Cluster Guide (13, p. 14).

No school had a written set of policies for the agriculture cluster. Molalla, like Canby, had a "division of instructor responsibilities". All of the programs came under general school policies, with nothing specific for any particular cluster. All instructors

and/or vocational directors at these schools agreed that it would be important to have a general set of policies for the agriculture cluster.

All of the schools visited had as their "core" an AG I through AG IV four-year sequence like Canby's. The only major variation in content or structure was found at Hermiston where their AG IV was still one class but was divided into specialty groups such as farm management and agricultural mechanics, to allow students to specialize in an area of their specific occupational interest. This was done because of the lack of adequate numbers of students to fill entire vocational classes in these subjects. Two of the schools had one-year specialty courses in forestry, horticulture, and agriculture mechanics. These courses were open to any student, whether or not that student had an occupational interest in the subject. Two schools had an agricultural cruise course, which is four nine-week sessions divided with three other cluster areas to offer exploratory experiences for students not enrolled in a cluster.

Each school had course outlines for the agriculture program, but none had performance objectives. All instructors agreed that behavioral objectives were more meaningful, and should be used.

The classrooms and shop facilities at the different schools are similar. The Dalles had a skill center where the advanced agriculture classes met, but it had the disadvantage of

being four miles from the high school. Four of the schools had or were developing land laboratories. Lebanon had the most extensive, which included forestry, horticulture and livestock facilities, but it too had the disadvantage of being several miles from the high school. Hermiston was developing its crops and livestock laboratory on the grade school campus with the intention of the facility being utilized by grades kindergarten through 12. Hood River, Molalla, Cascade, and The Dalles agriculture programs shared shop facilities with the other programs, which had been a disadvantage in some cases where instructors disagreed on shop policies.

The author found the following things to be true of a comparison of these six schools and Canby:

1. All of the agriculture programs have common similarities in regard to course content, objectives, and facilities, with some variation due to size of school, school policies, and the agriculture and agricultural businesses in the area.
2. The agriculture clusters are principally patterned after traditional agriculture programs, with two major changes taking place: more interdisciplinary approaches to teaching occupations are being emphasized, and the curriculum in agriculture is being upgraded and updated to emphasize agricultural occupations and the skills required in these occupations.

3. The agriculture program at Canby is already an agriculture cluster, but it should have improvement in facilities, as well as written objectives and policies.

### Objectives and Course Offerings

The author, in consultation with Oregon Board of Education personnel found the objectives for the agriculture cluster as outlined in the State Guide to be satisfactory objectives for the agriculture cluster at Canby.

The author was advised by these men that the specialty courses now being offered at Canby in horticulture, forestry, and agricultural machinery and construction could not be considered true vocational courses, since they contained several non-agriculturally career-oriented students. Therefore, it was decided to "beef-up" the AG I through AG IV sequence to encompass all these subject areas in a true occupational preparatory sense, and to offer semester specialty courses for non-agriculture students to get some basic training, as well as open for some students a "door" into AG IV for specialized preparation.

An agriculture cruise was recommended but could not be incorporated since Canby will not have any other cluster areas available to teach the other cruise sections during this first year of cluster development.

Table II is an outline of the recommended courses for 1971-72.

The following is a brief explanation of each course:

1. Agriculture I is a one-year introductory course in agriculture skills and occupations. It is basically exploratory and taken usually by freshmen. Some type of supervised occupational experience is strongly emphasized along with participation in FFA activities.
2. Agriculture II is a one-year course in production agriculture, usually taken by sophomores. Projects and FFA are again strongly emphasized.
3. Agriculture III is a one-year course (double period--ten hours per week) involved with agricultural management and science. Usually taken by juniors, this course places strong emphasis on projects and FFA activities.
4. Agriculture IV is a one-year course (double period--ten hours per week) with emphasis on individualized instruction in an area of student's interest--taken only by seniors who have completed AG III or by students who have suitable background and who have completed the course in horticulture or forestry. Areas of specialization are: forestry, horticulture, mechanics and machinery, and farm management. Projects and/or work experience, along with FFA participation, are strongly emphasized.

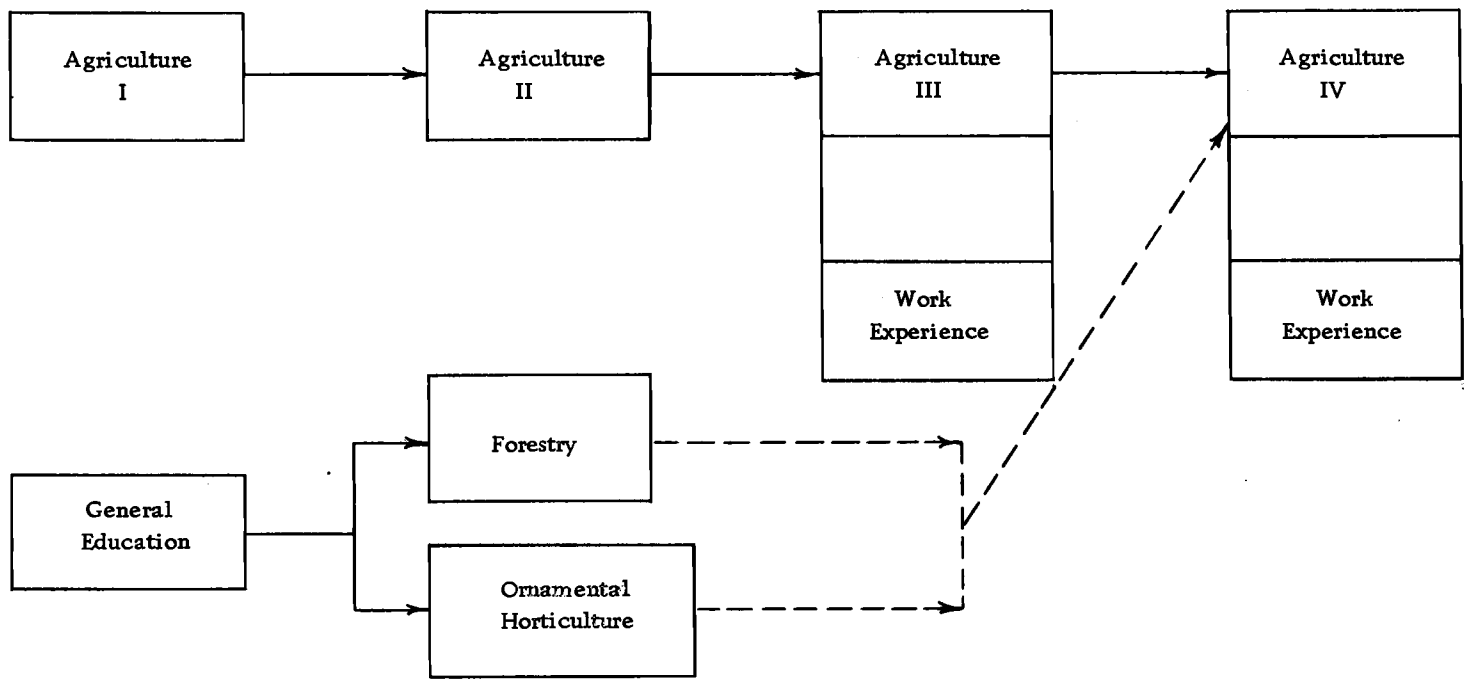


Table II. Agriculture Cluster Course Offerings, 1971-72

The jury unanimously agreed that the cluster objectives were sound, and that the course offerings were adequately developed for the time being. The consensus of the instructors on the jury was that the specialty courses in horticulture and forestry should eventually be extended to one-year courses as additional manpower was made available.

### Agricultural Policies

The author, after having developed policies for the agriculture cluster, presented them to the jury. Very little change was made in the policies, except for the following:

1. The wording was changed in many parts, but the intent of the statements was not changed.
2. A load of 50 to 60 students was established as maximum per full-time instructor.
3. The use of "Verify" was added for student follow-up.

The policies, as approved by the jury, follow:

### Policy Interpretation

The superintendent will be responsible for interpreting the meaning of these policies in particular situations. He may delegate this responsibility as he sees fit. Appeals from interpretations of policies by the superintendent may be made to the Board of

### Education of Canby Union High School.

The administration, agricultural staff, and agricultural advisory council are expected to review current policies and offer recommendations for their revision at least every two years.

### Persons Served

There will be a continual study of the needs of residents in the school district, and adjustments will be made in the agricultural education program to meet the needs of these residents.

There will be no discrimination of any kind in providing agricultural education for those who need it. There will be no discrimination as to sex, race, religion, color, or social or economic class.

The first priority of those to be served will be the regularly enrolled students at Canby Union High School. Others served will be according to time and resources available to the agriculture cluster as determined by the agricultural advisory council.

Students from outside the district may be admitted to the agriculture cluster upon acceptance by the superintendent and Board of Education.

A continual follow-up study will be carried out for students in the agriculture cluster. This will be done through the "VERIFY" system with the State Department of Education.



### Agricultural Staff

Competent personnel will be employed under the agriculture cluster. Staff members need to meet State of Oregon standards of certification.

Persons who do not meet full state certification requirements, but who meet special requirements for part-time teaching may be employed for tasks specified in the description of their duties.

The agriculture advisory council will assist in determining the employment of staff in the cluster.

Specific responsibilities of staff members in the cluster shall be designated. (Refer to "Division of Specific Responsibilities").

A department head shall be appointed by the superintendent, considering staff and advisory council recommendations. The department head will be the coordinator of the overall agriculture cluster, and will be responsible to the administration and Board of Education for enacting agriculture cluster policies.

Each staff member having responsibilities for supervision of supervised-farming programs and/or supervised-occupational-experience programs shall have one regular period a day for every 60 students to assist meeting those responsibilities.

Staff members will be protected by insurance, carried by the district against liability for accidents incurred when they are

employed in tasks included in the "Division of Specific Responsibilities".

For adequate supervision of supervised-farming programs and/or work experience, staff members will be employed twelve months of the year with vacation privileges provided.

Leave will be provided for continuing education, educational travel, and other purposes considered to contribute to greater usefulness of the staff member in the cluster and in the school system.

Salaries will be paid which are adequate to command the full-time of staff members.

#### Funding the Agriculture Cluster

Agriculture staff will originate requests for funds for the program. These requests will be reviewed and compiled by the agriculture advisory council and presented to the superintendent for Board of Education approval.

State and national funds will be used to the extent necessary to supplement local funds. Student reimbursement derived from agricultural enrollment will be used for the agriculture cluster.

Undue expenditures for buildings, equipment, and extracurricular activities will be avoided.

All educational costs involved in the agriculture cluster will be provided by the school district, except for materials used by students

for individual projects. This applies to adult students as well as regular day-students.

Accounting for all funds for agriculture cluster will be handled by the superintendent. Accounting for FFA funds will be the responsibility of the student-body clerk.

Food, lodging, transportation, and all other necessary expenses involved in authorized trips made by staff members will be reimbursed by the district.

The cost of transportation for class and educational FFA activities will be financed by the district.

Any gifts to the agriculture cluster must be accepted with no obligations to the giver.

Needed facilities will be planned in cooperation with staff, advisory council, administration, and Board of Education.

Use of the facilities of the agriculture cluster will be determined by the Board of Education and the superintendent with the advice of the advisory council and staff.

#### Course Performance Objectives

The author, having developed the performance objectives for each course to be offered, presented these to the jury for their approval and recommendations. The members of the jury made two basic changes: shortened the number of objectives to be met by each

course, and more clearly defined some objectives.

The objectives as approved and recommended by the jury are as follows:

### Forestry

1. Identify the opportunities in forestry and wildlife fields and determine necessary requirements for employment.
2. Identify the functions of government agencies in management of public lands.
3. Outline the needs and problems in forest recreation management.
4. Identify common fish and wildlife of Oregon.
5. Identify at least 25 common commercial trees and shrubs of the Northwest.
6. Use correctly the following tools: increment borer, abney level, clinometer, biltmore stick, measurement chain, transit level.
7. Properly plant trees.
8. Culture Christmas trees.
9. Use and service a chain saw safely.
10. Select and thin undesirable trees from a woodlot.
11. Identify some common diseases of forests.
12. Identify terms used in forest management.

13. Judge soils typical of forested lands.
14. Identify grades of lumber and other forest products.

### Ornamental Horticulture

1. Identify types of nursery and greenhouse operations of the area.
2. Identify plant parts and functions.
3. Define types of plants grown (bedding, liners, etc.)
4. Select and mix proper soil mixtures and plant-growing media.
5. Sterilize soil with steam.
6. Select fertilizers for lawn and landscapes.
7. Identify common plant pests and diseases common to ornamentals, and their prevention and control.
8. Propagate plants by seeds, cuttings, layerage, division, bulbs, budding and grafting.
9. Prune ornamental shrubs.
10. Become familiar with propagating equipment such as time clocks, heat cables, etc.
11. Draw landscape plan and plant shrubs and/or bulbs accordingly.
12. Plant grass seed and maintain a lawn.
13. Prepare potted plants for sale and delivery.

14. Make flower arrangements and specialized plantings such as bonzai.
15. Identify career opportunities in ornamental horticulture.
16. Operate and service small gasoline-powered equipment.

Agriculture I (Including SFP or work experience)

A. Animal Science:

1. Identify healthy and unhealthy animals.
2. Apply basic disease-prevention practices.
3. Identify stress-producing factors in livestock.
4. Determine when to consult veterinarian.
5. Identify toxic materials to livestock.
6. Determine gestation and heat periods of livestock.
7. Identify and use common livestock tools.
8. Select and feed a basic ration to livestock and/or poultry.
9. Recognize basic housing needs for livestock.
10. Keep adequate records.
11. Identify markets and terms.
12. Identify livestock terms.
13. Identify breeds and their general characteristics.

B. Plant Science:

1. Propagate plants by seeds, bulbs, and cuttings.

2. Match locally-grown plants with soils.
3. Recognize insect damage and diseased plants in a growing crop.
4. Interpret the labels found on chemical containers.
5. Identify the common field, nursery, and forest crops of Oregon.
6. Carry out rodent control.
7. Prepare a seedbed and plant a crop.
8. Prepare greenhouse soil mixtures.
9. Operate gasoline-powered greenhouse equipment.
10. Culture bedding and potted plants.
11. Plant trees and shrubs correctly.
12. Operate a chain saw correctly.
13. Determine age and growth-rate of trees.
14. Select good-quality hay, concentrates, and roughage.
15. Classify plants correctly as to growth habit.

C. Soils:

1. Determine soil texture, structure, pH and characteristic parts.
2. Take soil sample and have analyzed. Interpret soil analysis report.
3. Read labels on fertilizer bags correctly as to N-P-K.

D. Machinery and Equipment:

1. Operate a common farm tractor safely.
2. Use and apply instructions in the operator's manual.
3. Outline a proper maintenance and lubrication program for a tractor or other equipment.
4. Plan and carry out a winterizing program including proper storage for tractors and farm equipment.
5. Properly inflate tires.
6. Give general service to a tractor (clean air cleaner, sediment bowl, etc.).
7. Obtain Tractor Operator Permit.

E. Farm Shop:

1. Using a basic blueprint or sketch, construct a small wood project.
2. Identify common building materials, including lumber, nails, bolts, etc.
3. Figure a bill-of-materials and compute its cost.
4. Identify and use properly both hand and power tools.
5. Sharpen tools such as chisel, shovel, and drill bit.
6. Select proper paints and preservatives for wood.
7. Observe proper shop safety rules.

F. Leadership Development:

1. Participate as an informed member of the FFA.



2. Plan, organize, write and deliver a five-minute speech on an agricultural subject.
3. Chair and participate in an orderly meeting using parliamentary procedure.
4. Work in a committee cooperatively.

G. Agricultural Occupations:

1. Identify the career opportunities in the farm and off-farm occupations in agriculture.

Agriculture II (SFP and/or work experience)

A. Animal Science:

1. Keep adequate records.
2. Work problems on livestock-related production factors such as dressing-percentage, etc.
3. Locate, read, and interpret market reports and forecasts.
4. Keep specialized records (DHIA, Breeding, progeny performance, etc.).
5. Prevent and treat common diseases.
6. Use common livestock tools.
7. Correctly lay out and anchor fences.

B. Plant Science:

1. Correlate the life cycle of pests and diseases with

control program.

2. Correctly apply chemicals in a safe manner.
3. Render first-aid treatment in case of accidental poisoning.
4. Outline correct production practices of crops grown in community.
5. Select proper conservation practices.
6. Determine proper harvesting techniques for local crops.
7. Identify nutrient deficiencies in crops.
8. Determine local markets for crops.
9. Prune and thin fruit and forest trees.
10. Conduct wildlife and watershed management practices on land laboratory.
11. Map a woodland area using a staff compass.

C. Farm Management: Analyze production and management records at end of production year.

D. Soils:

1. Interpret and apply data from OSU soil test.
2. Plan ways of correcting a poorly-drained soil.
3. Determine the factors affecting the availability of soil nutrients.
4. Determine the role of the Soil Conservation Service.
5. Judge soil profiles correctly according to OSU score

card.

E. Agricultural Mechanics:

1. Demonstrate welding fundamentals and proper techniques of welder operation.
2. Define terms related to welding.
3. Select proper electrodes.
4. Demonstrate proper cutting techniques with oxy-acetylene equipment.
5. Visually determine improper welds.
6. Solder different types of joints.
7. Properly use paint on metal surfaces.
8. Select pipe and fittings for plumbing. Measure, mark, cut, ream, and thread pipe.
9. Repair leaks in faucets and irrigation equipment.
10. Splice plastic pipe.
11. Build a shop project (wood or steel).

F. Leadership:

1. Participate as an informed member of the FFA.
2. Plan, organize, write, and deliver a five-minute speech on an agricultural subject.
3. Chair and participate in an orderly meeting using parliamentary procedure.
4. Participate on a committee.

5. Lead a 15-minute group discussion.

Agriculture III (SFP and/or work experience)

A. Animal Science:

1. Determine the functions of nutrients and the nutrient requirements of livestock.
2. Determine the nutritional value of feeds.
3. Design balanced rations for livestock.
4. Trace feed through digestive tract.
5. Determine the significance of feed additives.
6. Identify male and female reproductive parts.
7. Chart the development of the fetus.
8. Work genetic probability problems.
9. Chart common breeding systems.
10. Determine market grades of meats.
11. Identify the major cuts of meat.

B. Ornamental Horticulture:

1. Propagate plants by division, layering, grafting, budding, and making cuttings.
2. Select suitable plants for parent stock.
3. Prepare plants for sale (ball and burlap, trim flower pots).
4. Identify and visit the various types of nurseries and

their products and/or services.

5. Transplant shrubs and small house plants.
6. Operate and service power nursery equipment.
7. Prepare and plant a lawn (maintain).
8. Sketch a simple landscape plan and establish that planting with shrubs and/or bulbs.
9. Prune ornamentals and fruit trees.
10. Use specific growth regulators and record results.
11. Select proper chemicals for greenhouse use.
12. Identify careers in ornamental horticulture.
13. Identify at least 25 common ornamentals.

C. Farm Leveling and Surveying:

1. Operate level and surveying equipment.
2. Use forestry tools such as abney level.
3. Lay out contour lines and drainage ditches.
4. Lay out building foundation.

D. Agricultural Management:

1. Outline the basic economic principles affecting agricultural products.
2. Determine the role of government agencies in affecting farm and consumer prices.
3. Keep accurate records on enterprise, and analyze at year-end using financial summaries.

4. Outline basic functions and operating procedures for cooperatives.

E. Agricultural Electrification:

1. Plan an electrical circuit and install according to code.
2. Replace switches, fuses, outlets, and do general repair work.
3. Select and service electric motors.
4. Reverse electric motors.
5. Read electric meter.
6. Identify electrical safety hazards.
7. Determine number of outlets for a complex wiring problem.

F. Leadership:

1. Participate as an informed member of FFA.
2. Plan, organize, write and deliver a six to eight-minute speech on an agricultural subject.
3. Chair and participate in an orderly meeting using parliamentary procedure.
4. Participate on a committee.
5. Make a one-period class presentation on an agricultural subject.

### Agriculture IV (SFP and/or work experience)

The course is designed to provide individualized instruction to meet the student's needs and interests according to his occupational goals. Instruction will be guided by instructors working individually, or in small groups, with students in an area of their interest. Experiences provided will have a wide variation. The students will be placed part-time at a work-experience station in the community, while independent study will be the classroom procedure. Involvement in FFA activities will continue to be a vital part of each student's development.

Some formal class meetings will take place; however, use of the shop, land laboratories, and the community and its people will be maximized.

### Facilities Recommendations

The author met with Mr. Leno Christensen, Teacher Trainer in Agricultural Mechanics, Oregon State University, to develop recommendations for facilities for the agriculture cluster. Consideration of new or added facilities was given in light of the following observations:

1. Nursery and greenhouse production will continue to expand in the area.

2. There is need for a student work-area near the greenhouse and nursery facilities.
3. The shop is too small (3, 000 square feet) to adequately handle the present and anticipated student load.

These considerations were given scrutiny by Mr. Christensen, the author, and the agriculture advisory council. The following are the recommendations for facility needs presented to the Canby Board of Education by the advisory council:

1. Convert one-half of the present machinery shed to a head house (work area) for the greenhouse and nursery facilities.
2. Extend the roof over the southwest corner of the shop to allow for 1, 000 square feet of covered area for large-project construction.
3. Construct a 32-foot X 72-foot pole building on the southeast corner of the high school campus to be used for FFA machinery storage and livestock laboratory area.
4. Over the next five-year period provide land laboratory facilities for forestry, nursery-greenhouse, and animal instructional activities.

#### Advisory Council Recommendations

The Canby Agriculture Advisory Council, after reviewing the



material developed, approved the work done and recommended the material to the Canby Union High School Board of Education. In addition to the work done by this study, the Council recommended the following:

1. An agriculture cruise course be offered at Canby as soon as possible.
2. The first priority of use of present agriculture facilities be given the agriculture cluster.
3. Expansion of the agriculture cluster be given special consideration in new building needs.
4. Additional staff be hired in the agriculture cluster to meet growing demands.
5. Since the agriculture cluster is the only established cluster at Canby, it be given priority ranking in budgetary matters for the school-year 1971-72.

#### Summary

The author developed the purpose of this study in consultation with resource persons in agricultural education in Oregon. A jury was selected to offer advice and approval of the work developed. Very few changes were made by this jury. The material, as approved by the jury, was reviewed by the advisory council, and approved by them and recommended to the Board of Education at Canby Union

High School.

Chapter V will summarize this study, and present the author's proposal for the agriculture cluster.

## SUMMARY AND RECOMMENDATIONS

### Summary

Canby Union High School is implementing five career clusters for school-year 1971-1972. Agriculture, along with business, electronics, health, and construction, is one of the five clusters. In light of the new impetus toward comprehensive career education, much planning needed to be done to assure that the agriculture program at Canby fit into the correct pattern of career education development.

The purpose of this study was to answer the following questions for developing a proposal for the agriculture cluster at Canby Union High School:

1. What should the objectives be of the agriculture cluster at Canby Union High School?
2. What courses should the agriculture cluster offer at Canby Union High School?
3. What should be the student-performance objectives of the agriculture courses?
4. What policies should the agriculture cluster have at Canby Union High School?
5. What are the facility requirements for the agriculture

cluster at Canby Union High School?

The author worked in consultation with members of the State Department of Education, agricultural education staff at Oregon State University, agriculture teachers and vocational administrators in Oregon, and staff and administration of Canby Union High School to develop objectives and policies for the agriculture cluster. These were reviewed by the jury of professional agricultural educators and council scrutiny and adoption for recommendation to the Board of Education at Canby Union High School.

The author developed the course-student-performance objectives in consultation with fellow agriculture instructor, Mr. Bruce Moos, using the State Guide for the agriculture cluster and the Suggested Basic Core for Agricultural Education as a reference. These course objectives were taken to the jury and the final draft was reviewed and accepted by the agricultural advisory council.

The author visited several schools around the state, and made special consultation with Mr. Leno Christensen and the advisory council to make recommendations for facility needs for the next five years.

#### Recommendations

Based upon the study, the following recommendations are made to the Board of Education and administration of Canby Union High

School:

1. Canby Union High School continue to support agricultural education by adopting and following the agriculture cluster objectives and policies developed in this study.
2. Facilities for the agriculture cluster at Canby be developed along the lines as recommended by the agriculture advisory council, with emphasis on development of land laboratory facilities for horticulture, forestry, and livestock.
3. Additional staff be hired to meet the needs of individualized instruction and land laboratory programs.
4. Time be given agriculture staff to develop specific student-performance objectives for each agriculture course.
5. The staff and administration at Canby Union High School develop ways and means to incorporate the interdisciplinary approach in tying the vocational and academic teachers together in a common effort toward comprehensive career education.

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## APPENDICES



## APPENDIX A

Rt. 2, Box 74  
Aurora, Oregon  
\_\_\_\_\_, 1970

Dear \_\_\_\_\_:

A study is presently in progress at Canby Union High School to determine the objectives and policies of the agriculture cluster. The present plan is to expand the vocational agriculture department to the most ideal agriculture cluster for this particular district by school-year 1971-72. This study is being carried out by personal interview with persons, like yourself, knowledgeable about the cluster-concept in the state of Oregon.

This study will also be partial fulfillment of the requirements of a Master of Agricultural Education degree from Oregon State University.

Your help and advice would be an asset to this study. A personal visit with you at your earliest convenience would be desirable. Please use the enclosed postcard to indicate a time for such a visit.

Sincerely,

Ralph H. Anderegg  
Vo-Ag Instructor  
Canby Union High School

## APPENDIX B

Personnel of Jury

1. Mr. Richard Buckovic Vocational Director,  
Molalla High School
2. Mr. Garth Davis Vocational Director,  
Hermiston High School
3. Mr. Jack Dube Vocational Director,  
Phoenix High School
4. Mr. Robert Eldon Agriculture Teacher,  
Crater High School
5. Mr. Burr Fancher Vocational Director  
Lebanon High School
6. Mr. Gordon Galbraith Agricultural Education  
Specialist  
Oregon Board of Education
7. Dr. Curt Loewen Agricultural Education  
Specialist  
Oregon Board of Education
8. Mr. Roger Schoenborn Agriculture Teacher  
Clatsop County I. E. D.
9. Dr. Del Shirley Teacher Trainer  
Agricultural Education  
Oregon State University
10. Mr. Gene Straight Agriculture Teacher  
Cascade High School

## APPENDIX C

Agricultural Advisory Council

- |    |                         |  |
|----|-------------------------|--|
| 1. | Mr. Gerald Brown        | Grain Company Manager                  |
| 2. | Mr. Charles Dietz       | Farmer, Banker                         |
| 3. | Mr. Harold Mickelsen    | Nurseryman                             |
| 4. | Mr. Virgil Montecucco   | Vegetable Farmer                       |
| 5. | Mr. Howard Smith        | Nurseryman                             |
| 6. | Mr. Marion Stewart      | Paper Mill Employee                    |
| 7. | Mr. Donald Sump         | Agricultural Cooperative<br>Salesman   |
| 8. | Mr. George Vanderzanden | Feed Company Manager                   |
| 9. | Mr. Raymond Weygant     | Berry Farmer, Machine<br>Shop Operator |