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The Student Intern Program to Assist Iowa County Extension Staff[1]

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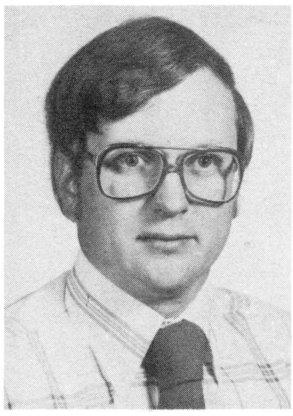
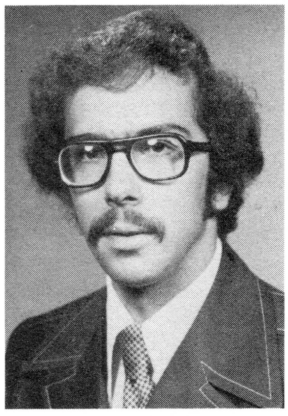


H. G. Taber



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Additional index words. home gardening, education

The 6-month student intern program offered by the Department of Horticulture at Iowa State University assists rural and urban Iowans in home food production through extension programs, mass media, and community projects. Advanced undergraduate horticulture students are granted internships at the county/area level and receive credits and a salary for their work. An extension horticulture associate based in the department provides the overall leadership and coordination.

Intern training sessions concentrate on the type of questions to expect and problem diagnosis methods. More than 50% of homeowner concerns are related to home food production. The intern program has been received enthusiastically and has reduced the summer workload of county staff and state specialists.

Home vegetable gardens are utilized by 34% of Iowa households as a source of nutritious, low-cost produce and as a supplement to family income by marketing the excess through area farmers' markets. Often, the efforts of home gardeners fail to meet their expectations and do not provide a substantial improvement in the family diet or income. A major factor for failure is the lack of basic knowledge of production principles. Home gardeners turn to the local county extension staff for assistance, although many low-income families are not aware that this assistance is available. The Iowa county staff is not prepared to handle garden education because of the lack of horticulturally trained agents.

In response to the need for a better statewide program for home food production, Iowa State University developed the concept of utilizing horticulture students to assist county extension staff. The objectives are to: 1) enhance urban and rural home gardeners' skills, 2) renew value of home garden produce in the family diet and potential supplement to family income, 3) improve the ability of extension staff to solve home gardening problems, and 4) demonstrate the importance of planning in all phases of home food production and utilization.

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[2]Extension associate, extension horticulturist of the Department of Horticulture, Iowa State University, and Instructor, Department of Horticulture, University of Illinois, respectively.

Table 1. Cost analysis for the 1978 Iowa State Horticulture Intern Program.

Item	Extension Associate	Intern[z]
Salary	12,900	3,000
Travel	1,500	200
Expenses and supplies	150	75
Social security, unemployment insurance, etc.	500	170

[z]Average per intern for 6-month working period.

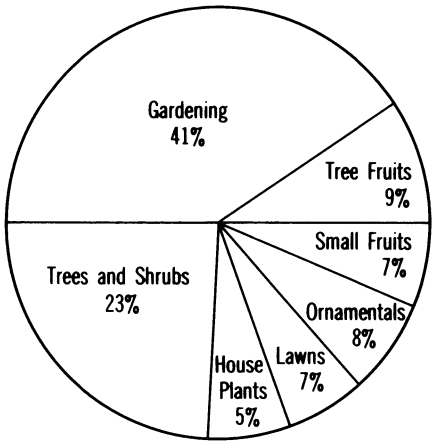

Fig. 1. Subject matter percentage of the telephone and office calls the interns received in 1978.

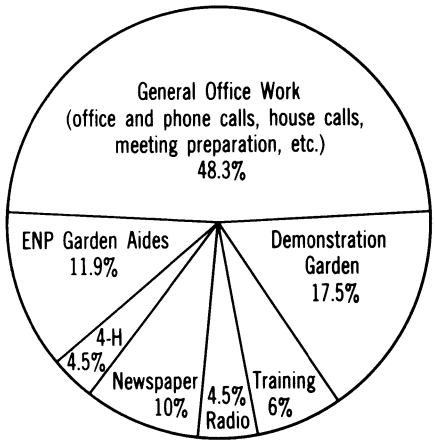

Fig. 2. Intern time utilization percentage based on the time accounting reports of horticulture interns in 1978.

The program

The first year of the program, 1976, a project coordinator (extension horticulture associate) was assigned for planning, implementing, and carrying out an extension program for home gardeners. This staff member provides the leadership for the student intern program and is the liaison between the county-based student interns and the Horticulture Department faculty. The Department Head is administratively responsible for the program. Proposals from counties for a horticulture intern are evaluated by the Department Head, extension horticulturists, and extension administration. The counties that receive the interns are selected population centers throughout the state.

Advanced undergraduate horticulture majors (juniors or seniors) are granted home gardening internships on the basis of scholastic ability and completion of required coursework or work experience. The courses required include: basic horticulture courses, plant pathology, entomology, soil science, weed identification and control, and vegetable crop production. Intern selection is made by the extension associate and the head of the department on the basis of applications and personal interviews. Six interns were hired in 1976, 7 in 1977 and 1978 and 5 in 1979.

The internships begin March 1 and terminate August 31. It is important that the interns start early to teach and assist in the planning of community garden projects. Upon completion of the program, the intern earns 6 quarter credits in Horticulture and 6 quarter credits in Agriculture Extension Education. The interns also receive a salary for a 40-hour work week. Travel expenses are reimbursed, and a small budget is allocated to each intern to cover project expenses (Table 1). The day-to-day supervision of the interns is the responsibility of the county extension director or the extension home economist. The students are responsible to the head of the Department of Horticulture for technical subject matter.

Training sessions are an important part of the intern program. The sessions prepare the student for the type of questions to expect and provide exposure to the overall educational process of extension. For the first 3 days of their internship, students participate in an initial training session. Extension theory and program objectives are outlined, and extension specialists in entomology, plant pathology, and weed control discuss problem diagnosis. Review in horticulture is a major portion of the initial training. Specialists in the areas of vegetables, small fruits, tree fruits, turf, and ornamentals discuss new cultivars and cultural practices. The primary emphasis is placed on problems that home gardeners may encounter. Good journalism techniques are important in the production of quality media materials. An extension specialist provides assistance for the interns in preparing information and educational news releases.

Notebook binders containing numerous selected extension and USDA publications are given to the interns as reference materials. Selected volumes of the Ortho Book series are used as supplemental information sources.

In May, after the interns have been in the county for 2 months, they participate in a 1-day training session. They are asked to bring specimens and questions concerning entomology, pathology, and horticulture. This training session enables the interns to discuss among themselves the programs and activities that are working and those that are not entirely successful.

The urban horticulture interns are more involved with mass media than are the rural interns. All the interns write a weekly news column for the local newspapers, conduct communicator meetings on home food production for public

Fig. 3. Peggy Eisenmayer, Hort Intern at Burlington, Iowa, showing melon disease (fusarium wilt) problem to participants at a 1979 vegetable field day.

and private organizations, and assist in the 4-H gardening program. The urban interns participate in radio and television interviews and regular radio programs.

A large portion of the intern's time is spent answering office and telephone calls pertaining to horticulture. The types of questions vary among the counties, although the average percentage figures show that more than half of the questions in 1978 were in areas related to home food production (Fig. 1).

The urban interns contact clientele and disseminate horticultural information through work with Expanded Food and Nutrition Extension Program and with displays in shopping malls, garden centers, and other public locations. Gardening techniques are taught through community garden programs and demonstration gardens maintained by each intern.

With the cooperation and assistance of city officials and businessmen, most urban and rural interns have helped to organize and establish farmers' markets. These markets provide small and part-time farmers with an outlet for their excess produce and a means of supplementing family income.

The interns utilize their time according to the needs of their assigned counties. Nearly 50% of their time is spent in the extension office preparing materials and in telephone and office consultations, allowing the county extension director time for other program activities (Fig. 2).

The interns conduct a special project as part of the course requirements. The projects are chosen to give the student experience in development of extension materials. Many projects involve preparation of slide sets pertinent to the needs of the state and county extension staff.

Evaluation

The students are evaluated at the conclusion of their 6-month internship. They receive their grade in horticulture on the basis of the final report, evaluation by project coordinator, and, in a large part, on the evaluation submitted by the county extension director concerning the effectiveness of the intern as a county extension worker.

The overall response to the program from the county extension staff and the students has been excellent. In the 3 years of the program, 20 students and 9 counties have participated in the program. More applications for interns are received from counties than can be filled. Further, the horticulture intern program has lightened the heavy summer workload of the county extension staff, allowing them to spend more time on other programs.

REPORTS & NOTES

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Adventive Embryony in Apple[1]

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Additional index words. apomixis, nucellar embryony, *Malus domestica,* tissue culture

Abstract. **Adventive embryos of 'Golden Delicious' apple (*Malus domestica* Borkh.), with differentiated cotyledons and axes, were initiated from micropylar halves of nucellus cultured in darkness on Murashige and Skoog's salts, vitamins, glycine, and sucrose. Embryos were observed 50 days after culture. Reculture of embryos onto the same medium resulted in proliferation of embryo-like structures from their cotyledons.**

Apomixis is a frequent occurrence in *Malus* species (2, 6, 10, 11) but nucellar embryony has not been reported. Embryos have been obtained *in vitro* from nucellar tissue isolated from ovules of both mono- and polyembryonic *Citrus* types (3). The stimulation of monoembryonic *Citrus* to form nucellar embryos *in vitro* suggests that the nucellus of other species might respond similarly when cultured. Formation of adventive embryos from maternal tissue has great potential for clonal propagation of disease-free plants, especially of perennial species difficult to vegetatively propagate (1, 9). In this research we evaluate the embryogenic potential of cultured apple nucellus.

The basal medium, adjusted to pH 5.7 ± 0.1, contained Murashige and Skoog salts (8) and the following additional constituents, in mg/liter: sucrose, 30,000; *myo*-inositol, 100; thiamine·HCl, 0.1; nicotinic acid, 0.5; pyridoxine·HCl, 0.5; glycine, 2.0; and Bacto agar, 8000. Experimental media also contained the following concentrations of naphthaleneacetic acid (NAA) and benzylamino purine (BA) in mg/liter: medium I = NAA, 0 and BA, 0; medium II = NAA, 0.1 and BA, 3.0; and medium III = NAA, 3.0 and BA, 0.3.

'Golden Delicious' apple fruits, 5 cm in diameter, (50 days after anthesis) were collected from the Purdue Horticulture Farm in 1978 and surface disinfested for 2 min in a solution containing 70% ethanol and 0.1% Tween 20. Ovules were removed from the fruit and disinfested in 0.26% NaOCl and 0.1% Tween 20 for 5 min, rinsed 3 times with sterile distilled water, and bisected transversely to yield micropylar and chalazal halves. Cotyledons and embryonic axes were carefully removed from the ovule halves. Using microdissecting forceps, the nucellus was sufficiently separated from the integuments to allow insertion of a surgeon's scalpel between the 2 tissues. A longitudinal incision was made through the integuments and the nucellus isolated by removing the integuments with forceps. Twelve micropylar and 12 chalazal halves were cultured on each experimental medium, 1 nucellus half per tube. Half of the cultures were maintained in darkness; the others in 16-hr of daily illumination at 1.5 klx from Cool White fluorescent lamps. All cultures were maintained at constant 26°C.

The experiment was repeated during fall 1978 using 'Golden Delicious' fruits collected at 25, 32, 39, and 46 days after anthesis in Pelotas, Brazil. Fruits were in transit for 9 to 15 days prior to culture.

One micropylar nucellar half on medium I in darkness produced 3 adventive embryos (Fig. 1a) 50 days after culture of explants from fruit collected at the Purdue Horticulture Farm. These embryos had 2 to 4 cotyledons which were either separated or fused. Nucellar explants on all other treatments callused, except those on medium I in the light which showed no development. The 3 adventive embryos were recultured on medium I, and 2 were placed in the light and 1 in darkness. After 22 days (93 days after initial culture of nucellus), embryo-like structures developed from the cotyledons of the embryos placed in darkness. The 2 embryos in the light did not undergo morphogenesis; however, after

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[2]Undergraduate student
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