Providing home horticulture information for the 14,000,000 citizens of Illinois is a formidable task which requires effective use of available resources, innovation, and cooperation. One innovation utilized by University of Illinois Extension horticultural specialists is tele-lectures delivered via a TeleNet system. The traditional method of providing horticulture programs for homeowners has been for the State Extension Specialist to present a slide lecture in person. Using the tele-lecture system, the specialist sends the slides to the county and presents the lecture via the TeleNet system.

The Illinois TeleNet system consists of leased (dedicated) telephone lines connecting many of the county Cooperative Extension offices with the Urbana-Champaign campus. These lines and phones are separate from, and not connected with, the regular office phones. Amplified phones are installed at each TeleNet location to receive and amplify the incoming signals. County offices on the TeleNet system have the installations in several locations, e.g., board rooms, auditoriums, meeting rooms and staff members' offices. This multiple location arrangement allows the local staff the flexibility of offering a horticulture tele-lecture in the location that is most appropriate for a particular audience.

The specialist can use the network to simultaneously deliver an educational program to many audiences. Any location on the TeleNet is equally capable of being used as a sending or originating station. This arrangement enables communication among the various county locations as well as between county locations and the university.

The expenses of the TeleNet system are shared by the state and county units of the Cooperative Extension Service. Major expenses are leased telephone lines, amplifying equipment and personnel assigned to manage and operate the TeleNet system. Another significant expense item is the development and reproduction of multiple sets of visual materials to support the tele-lectures.

TeleNet does not charge departments or Extension Specialists for use of the system. Counties on the system pay a nominal annual fee but incur no additional use charges. However, counties not on the permanent system may join it by "dial-up" for a specific program. The dial-up mode uses the same types of amplifying equipment as the permanent system thus simplifying equipment arrangements. Counties pay for the use of the regular telephone lines used in the "dial-up" connection.

Installation of the TeleNet system began in 1970 when 17 selected county Extension offices were connected to the Urbana-Champaign campus via leased telephone lines. The system has gradually been extended and now includes 40 of 102 county offices in the state. Theoretically, a specialist could "appear" simultaneously in up to 40 Illinois counties.

Successful TeleNetting requires visual support for the audio portion of the message for more thorough and rapid grasp of the subject and to prevent boredom. Horticulture with its array of specialized techniques is ideally suited for effective supporting visualization. The photographic staff assists in preparation of instructional slide sets by the horticultural specialists. TeleNet staff members coordinate the reproduction, distribution and recovery or sale of the visual support materials and schedule programs and provide technical assistance during program delivery. County Extension personnel decide which, if any, programs they wish to schedule. They handle local publicity and arrangements, act as master of ceremonies, and operate or supervise the operation of the slide projector.

Immediately following the tele-lecture, the audience is invited to ask questions. County personnel may temporarily disconnect from the network and answer the questions themselves, or they may remain on the network and forward questions to the specialist. In the latter case all audiences in all locations still connected hear both the questions and the answers. Frequently county personnel answer some of the questions and refer others to the specialist. This is possible because control of the individual amplified phone is located at each county location.

The tele-lectures usually begin at 7:30 PM and continue for about 60 minutes. After a 10-minute break about 45 minutes are devoted to questions and answers.

Counties with large urban populations use the TeleNet Horticulture Series programs most effectively. Macon County, with a population of 125,000 of which 91,000 live in the county seat, Decatur, scheduled all 19 programs offered in 1976 and the 16 programs

D. B. Meador (left) and E. W. Vernon (right) presenting a tele-lecture. Note the overhead microphones in the upper foreground and the amplified telephones and control panel in the background.

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2 Extension Specialist, Pomology, Department of Horticulture.
3 Instructional Media Specialist, Office of Agricultural Communications.
offered in 1977. Macon County Extension personnel published a brochure for their "Horticulture School." Their facilities accommodate an audience of 85 as an advance enrollment was taken for each program. A nominal enrollment fee was charged to cover the cost of refreshments and reference materials distributed to the "students."

The Horticulture TeleNet Series enabled the Macon County Extension Service to present programs for the homeowner on a wide range of horticultural topics. Without TeleNet this would not be possible. Macon County, like most Illinois counties, does not have a horticulturist on the county Extension Service staff.

The Horticulture TeleNet Series began in 1971 when the landscape design specialist received more requests for county meetings than he could fulfill. After surveying the problem and the possible solutions the specialist decided to try a program on the newly established TeleNet system. The TeleNet system at that time had 17 permanent installations. Other locations were added for the program via a dial-up auxiliary connection.

The specialist in cooperation with TeleNet staff members arranged for the program and duplicated and distributed a slide set to each county participating in the program. The specialist presented the lecture via TeleNet in coordination with slide shows at each location. A question and answer session followed the lecture.

The initial program was well received by the audience. During the question and answer session many questions were asked about pruning and care of ornamental plants, though the lecture was limited to landscape design. The questions encouraged the specialist to design three new programs: Pruning Evergreens, Pruning Deciduous Shrubs, and Pruning Ornamental Trees.

In subsequent years programs have been added by other horticulture specialists in response to requests from county personnel and the audiences. Twelve programs were presented in 1977 discussing the culture of house plants, small fruits, tree fruits, ornamental trees and shrubs, vegetables, annual and perennial flowers, and lawns. Four programs on landscape design completed the series.

For many citizens in the more urban counties the Horticulture TeleNet Series programs are their first contact with the Cooperative Extension Service. Since the audiences are predominately new extension audiences and since programs are available that were not previously available, these audiences tend to accept the tele-lecture method of program delivery. Evaluations reveal a high degree of audience satisfaction. The results of audience surveys indicate that we can accomplish effective extension communication in home horticulture via remote means.

Extension horticulturists design and deliver their tele-lecture home horticulture programs in the manner and style that best fits their material and personal skills. Some specialists talk from notes and deliver live programs. Others prepare a complete script. Lectures or recordings are available for all of the programs. These tapes serve as a record of the program, provide a basis for improvement, and may be used as a part of packaged horticulture learning packets.

Slide sets and tapes are available to county Cooperative Extension personnel for loan or purchase. The programs on tree fruits also have complete scripts available. These materials may be borrowed at any time throughout the year. Garden Clubs, garden and horticulture classes, colleges, high schools and other groups may borrow the materials through their county Cooperative Extension Service offices. Many counties have purchased one or more of the slide sets and have them locally available for loan to interested groups. Counties owning a slide set are notified when revisions are made. The availability of slide sets, tapes and scripts for county use at times other than the scheduled TeleNet program is a side benefit from the Home Horticulture TeleNet Series.


**Incandescent Lamp Maintenance in Plant Growth Chambers**

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Additional index words. controlled environment, light

**Abstract.** The cause of the premature burn-out of incandescent lamps used in plant growth chambers was determined. Group replacement of lamps can be practiced on an annual basis with proper lamp selection.

Plant growth chambers usually contain a few incandescent-filament lamps in addition to the main light source because they result, in most instances, in markedly improved growth (1, 3, 4, 5, 6, 7). Unfortunately, in plant growth chambers the relatively brief (750 hr) life of the incandescent lamp creates a considerable maintenance problem. This is especially true when the chamber is equipped with a barrier between the lamps and the growing area. Thus in many controlled-environment facilities, and especially in phyto-entrans, lamp maintenance can become a serious manpower drain if a conscientious effort is made to provide uniform light quality.

A series of tests were made at the NCSU Phytoentrans to determine the actual life of various kinds of incandescent lamps under growth chamber conditions.

The objective was to select a lamp that would provide the longest life with the least sacrifice in light production.

Generally the amount of light from the incandescent lamps is set at 10% of the total illuminance although there is no experimental evidence that this light level is optimal. Determining how many lamps are needed to produce the 10% illuminance was supposed to have been facilitated when someone determined that it would result from installing 30% of the wattage as incandescent lamps. Unfortunately the 30% figure has been used as a constant whereas it actually depends on the efficiency of the light sources being used. For example, a 25 watt (w) incandescent lamp produces 8.8 lm/w, a 60 w lamp 14.8 lm/w and 100 w lamp 17.4 lm/w. Thus it would seem that eight 25 w lamps would be required to produce about the same light as a single 100 w lamp. Moreover, when the original incandescent lamps are replaced the replacement lamp may be rated for 130 v instead of 120 v because many university and commercial physical plants have begun to use 130 v lamps exclusively. The result is about 285% increase in life but with a 24% reduction in light output.

Preliminary tests using General Service 130 v lamps in 120 v sockets, Extended Service lamps and Westinghouse Super Bulbs indicated that they were failing much faster than calculations (2) and manufacturers' data predicted. Lamp company engineers examined a random sample of the burned out lamps and found that they