

Milk cows fed rations containing distillers feeds produce up to three pounds more milk per day. Why these feeds increase milk production cannot be readily explained. It is postulated by some scientists that they contain unknown substances that stimulate milk flow. Another explanation is that they contain substances that aid in the digestion of the cellulose in hays and silages, thus increasing the total available energy values of rations.

The modern beverage distilling industry recognizes its role in the agricultural economy. In order to find the best use for the feeds produced by the industry, it has formed the Dis-

tillers Feed Research Council, an organization devoted to guiding and supporting nutritional research on the feeds produced by the industry. The Council supports research projects on all classes of livestock and poultry at eleven colleges and universities. Important findings and observations are made available at yearly conferences which attract nutritionists from colleges, universities, government agencies, and the feed industry. Observations that have practical application are adopted by feed manufacturers and the benefits of the research reach the livestock producer through the feed bag.

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## Plant Projects With or Without A Greenhouse

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*Plant Seedlings*—In March or early April germinate seeds in flats. These may be vegetables like tomatoes, cabbage, peppers, and other warm weather crops; or they may be annual flowers like zinnias, petunias, marigolds, and similar summer flowers. For states farther south start plants three to four weeks earlier and for northern states two weeks later. Seedlings should be transplanted at least one before setting them out.

*School Garden*—Lay out and plant a school garden, with the plants grown in the preceding project, for the beautification of your school. Early blooming plants as marigolds and petunias will bloom before school is out; late blooming ones as snapdragons will bloom in the fall. A demonstration school vegetable garden would be a timely community display project.

*Classroom vine*—Secure a sweet potato that has not been kiln dried, (drying kills germination), insert three tooth picks, nails, or splinters about its middle and place one end in a water beaker supporting a portion of the potato above the water level. Place this in the window for strong light and in a few weeks, “voila”—vines.

*School Nursery*—Make hardwood cuttings of trees and shrubs of a number of local varieties in the late summer or early fall. In early spring plant these out in rows in the garden for cultivation. A few years growth will make stock suitable for school plantings.

*Building Improvement*—Use your greenhouse as a reservoir for plants growing in window boxes and other areas as the offices and corridors. Here they may be repotted or replanted, exchanged for a period for a new view of other selections, or for a resting period to revitalize them.

*Narcissus bulbs*—All types can be forced and winter hardy, standing freezing temperatures. The exceptions to this are the paper whites which, in addition, are forced in stones and water. They are not winter hardy.

*Soiless Plant Growth*—Hydroponics, tray agriculture, tank farming, or water culture may be tried with one or more of the chemical sets in the commercial market. Compare the growth of seedlings in screen wire supports, sand, excelsior, and vermiculite immersed in the aqueous chemical solution.

*Vitamin Experiments*—Try fertilizers with and without vitamin additions and check re-

sults. Many facts are still in the experimental stage of tentativeness, but an advanced group of students may find interesting results.

*Hormone Stimuli*—There are several products on the market for stimulating root growth and they can be checked with seedlings or rooting cuttings.

*Albino Corn*—Obtain seed from your supply house and plant in a seed flat. After a period of two weeks seedlings will reveal the presence of the recessive characteristic. Mendel's Law is demonstrated very nicely in this experiment. Pure albinos will not develop as they have a chlorophyll deficiency.

*A Cut Flower Crop*—In the early fall start a cut flower crop in the greenhouse. Your crop might be one or more of the following: sweet peas, calendulas, stocks, snapdragons, violets, marigolds, or carnations. These come into bloom in from three and one half to eight months, according to the season, growth conditions, and other factors.

*Flower Show*—A flower show is an excellent means of selling biology to the rest of the student body as well as making them flower conscious. It nets big returns in good will.

*Soil Sterilization*—Try conditioning some spent soil of the greenhouse, from a crop, by sterilization with steam, hot water, baking, or chemicals. Have the students search for the difference between this process, a standard procedure for greenhouse soil, and that of pasteurization.

*Plant Groups*—Set-up plant habitat-association groups including xerophytic, mesophytic, and hydrophytic conditions. The fleshy succulents and cacti are easy to maintain in a laboratory and always attract considerable attention. They may be grafted easily with a sharp knife; use a tooth pick to hold the parts into place. There are several of the sedges, lilies and arrowheads on the market which may be used in the aquatic groupings. In a bog group you may include the mosses, insectivorous anomalies, with those household plants the sansevieria and philodendron. A woodland group of mosses, lichens, liverworts, club mosses and ferns is an instructive and attractive demonstration. A tropical habitat may be made from some of the smaller palms, citrus fruit seedlings, and other tropicals common as household plants.

*Fertilizer testings*—The next decade will show as much improvement in fertilizers and their application as there was in the development of hybrid field seeds. Set up a few test plots either in the garden or grass of the lawn. The plots should be equal in size with the control. Try a plot of organic fertilizer which includes the manures, sewage disposals, and those new mixtures from fish, tankage, dried blood, cotton seed meal, boron and the trace elements. Use another plot with the commercial fertilizers. The fertilizers mentioned should be applied with a spreader if possible. On another plot try one of the liquid fertilizers coming on the market this year for commercial growers. It may be applied with the ordinary insecticide sprayer.

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## STIP

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STIP is the designation for a program all science teachers will be hearing much more about. It stands for Science Teaching Improvement Program and is the result of a \$300,000 grant from the Carnegie Foundation to the American Association for the Advancement of Science. A pamphlet describing the proposed program may be obtained by writing Dr. John Mayor, AAAS Headquarters, Washington, D. C.

The Cooperative Committee for the Teaching of Science and Mathematics is a standing committee of the AAAS, and NABT is a participating member. At its Fall meeting in Washington, D. C., Oct. 21 and 22, 1955, NABT was represented by Paul Klinge. Chief topic of discussion was STIP. Led by its chairman, Dr. Mayor, the discussion centered around recommendations and advice for future action of STIP. The Committee heard Dr. John Coleman of the National Research Council tell of its program for the school systems of the Washington area for the improvement of science instruction. It was an exciting story of how one person has, by use of local resources, helped to raise the quality of science teaching and teacher morale.