

HYDROPONIC EDUCATION IN SOUTHEAST MISSOURI

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Hydroponic growing methods can be a sustainable alternative over traditional growing methods of specialty horticultural crops. The purpose of this educational programming was to educate students, hobbyists, secondary education ag teachers, and growers about sustainable hydroponic farming through a combination of lecture, demonstration, printed guide sheets, recorded video interviews, and hands-on activities. During 2022, there were 23 events that took place with various topics related to hydroponic production. These included introduction to hydroponic crop production focusing on different types of hydroponic systems, growing, and managing hydroponics crops, understanding pH and EC in nutrient solutions, monitoring and managing diseases, pests and environmental stresses, and career opportunities in hydroponics. In addition to the educational events, numerous PowerPoint presentations, resource guides, schematic drawings and a video was created aide participants with hydroponic growing. In schools, 54 students gained experience operating and growing in three different hydroponic units (NFT, Dutch Bucket, and aeroponics). They grew lettuce, kale, basil and tomatoes through a crop cycle. At one-day events, 396 students learned about hydroponics and watched demonstrations. During workshops, 127 adult learners experienced active hydroponic systems and through lecture and hand-on experiences, learned how to operate the systems. In the evaluations, all participants indicated a knowledge increase. All participants reported an increase in knowledge of hydroponics. All three teachers in the schools continued to teach hydroponics after the program sessions ended. Four students pursued horticulture in college and are considering hydroponics. 37 students tried hydroponics at home after the programs. Four of the high school purchased hydroponic supplies online before the one of the educational events was over.

EMBRACING PAST TECHNOLOGIES – THE USE OF CORRESPONDENCE COURSES TO FULFILL PESTICIDE TRAINING NEEDS

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The Environmental Protection Agency requires anyone applying pesticides to a property not owned or rented by the applicator or intends to purchase and/or apply restricted-use pesticides to become a certified applicator. Once certification is acquired, applicators must obtain update training to maintain their status. Penn State Extension has provided much of this recertification training, mostly through face-to-face meetings, workshops, and conferences. With the COVID pandemic and resulting state limitations on in-person gatherings, Extension had to pivot and provide much of this material through virtual formats. While this worked well for many pesticide license holders, a virtual format posed problems for those who did not feel comfortable participating in video conferences, lacked sufficient bandwidth to participate, or have strong beliefs that prohibited the use of this form of content delivery. The need for correspondence courses (workbooks) was determined as a way for certified applicators to obtain their credits without internet connectivity. A group of extension educators and specialists from across teams created nine workbooks; tomato, pumpkin, soybean, and forage diseases, fumigation, pesticide recordkeeping, pollinators and pesticides, adjuvants and pesticides, and pesticide spill protocol. When in-person presentations were curtailed (2021), 3,269 workbooks were sold. But even after in-person classes resumed in 2022, over 1,620 workbooks were sent out as this learning method remained popular. Returned quizzes, part of the requirement to receive license credits, had a 97.2% passing rate (for those that fail, another quiz is mailed to allow them another attempt to pass and gain their credits). Evaluations were part of the workbook to try and measure changes in participants' perceived levels of knowledge and confidence. Using Likert-style questions (typically ranging from 1 to 4), the statistical analysis of the data indicated a significant increase in knowledge and confidence levels after completing the workbooks. Both the Pennsylvania Department of Agriculture and pesticide applicators have expressed their excitement to have the correspondence courses as another option to get needed credits and keep the workbooks as a source of information on pesticide safety and crop diseases.