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Back to Nature: Native Flora for Wildlife and People. The Lincoln University Native Plants Program

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Abstract

The overall objective of the Lincoln University Cooperative Extension (LUCE) Sprouts and Roots Program (SRP) is to improve the well-being of minorities and other underserved communities through gardening and to promote intergenerational activities in Jefferson City and elsewhere in Missouri. To meet this objective, training is offered on nutrition, wellness, and gardening. The effects of gardening and healthy habits on the physical and psychological health of seniors and youth are being evaluated in an ongoing research study. Recruitment was done in schools, senior centers, Boys and Girls clubs, churches, and other locations with the assistance of the LUCE Paula Carter Center on Minority Health and Aging. Flyers, emails, calls, and personal visits were used to contact potential participants.

Children and seniors attended indoor and outdoor classes in spring and fall, and pretests and posttests were provided to determine their change in knowledge of particular topics. Participants practiced their new knowledge to grow their own food at the community garden located on campus. Sixteen adult seniors and 16 children participated in 2012. The farmers market, also located on campus and adjacent to the garden, is offering the opportunity to SRP participants and area farmers to sell produce, baked goods, and other value-added products. An average of 14 vendors, and a total of 43, attended the market in 2012 where fresh or value-added products were sold on Thursdays and Saturdays during the growing season. Some vendors continued selling their products during the winter months. More than 4,000 people of different ethnicities, ages, and genders attended the market on Saturdays in 2012, compared to 1,305 in 2011. The SRP is providing communities the opportunity to develop their own value-added products by facilitating their access to a commercial kitchen recently opened to the public, located next to the market and community garden.

Keywords: urban agriculture, farmers' market, community gardens

Introduction

Program Description

The Native Plants Program (NPP) at Lincoln University Cooperative Extension (LUCE) was created to make communities in Missouri aware of the uses, abundance, and availability of native plants. The main focus of the NPP is to work with underserved populations including minorities, women, and those of low income. LUCE's mission is to provide educational tools for individuals to improve their way of life. Since 2010, the NPP has offered seminars and field days to increase knowledge about native plants, especially to promote their use as food and to provide habitats for pollinators that indirectly improve food production.

Native Edible Plants

There are more than 3,000 species of native plants in Missouri, many of which are edible. Fruits, greens, and bulbs were gathered in the past for food, fiber, dyes, art, and construction and could offer direct benefits for communities. Native plants can also provide indirect benefits such as beautification and enhanced environmental quality. Native plants can attract birds, pollinators, and butterflies, which can enrich the lives of people, especially children.

A native plant is indigenous to a certain location when records show that it was naturally growing before the arrival of European settlers. Native plants are naturally found in conservation areas and plant community remnants across Missouri. Farms and backyards can often host useful species. Commonly found plants like pokesalad (*Phytolacca americana*) and persimmon (*Dyospiros virginiana*) can be consumed as food and are known by only a few (Kindscher, 1987). Others, like elderberry (*Sambucus canadensis*), with high nutritional and commercial value (Byers et al., 2012) grow in marginal or idle land. Other species with high nutritional value include wild leeks, paw paw, and stinging nettles (*Allium tricoccum*, *Asimina triloba*, *Urtica dioica,* and *Laportea canadensis*). This knowledge that was once a part of the daily life of inhabitants of urban and rural areas in the United States is being lost. By rediscovering this knowledge, food security and income could be improved. Gathering of wild foods is still common in developing countries like El Salvador, where information about edible wild foods is transferred from generation to generation (FAO, n.d.). This knowledge can be a great tool to obtain readily available nutritious foods, materials for crafts, medicine, and items that can generate income. We believe that by learning about uses of native plants and by understanding the natural world, locals and immigrants can be empowered with little or no monetary investment.

Searching for native plants similar to those from the tropics.

The NPP is exploring native plants in Missouri that are familiar to Latino immigrants to help them achieve a sense of belonging in their new surroundings. By learning about the indigenous plants, especially edible plants, the NPP hopes to assist these immigrants to become adapted to Missouri. For example, *Passiflora incarnata*, a passion fruit native to Missouri, has similar flavor and nutrition to Central America's *Passiflora quadrangularis*. Paw paw (*Asimina triloba*), a fruit native to the Midwest, has similar characteristics to tropical relatives of custard apple (*Anona* spp.) (Chizmar Fernandez, 2009). Immigrants may find it rewarding to find edible plants like those from their own countries. Families can enjoy the outdoors and intergenerational activities, helping to maintain ties among members of different generations and promote pride in their heritage.

Methodology

The most commonly used methods to evaluate the impact that the NPP has on communities and individuals are observations, interviews, and surveys during educational events and pretesting and posttesting during training seminars or workshops (Swanson et al., 1997). The NPP works across

the state, especially in Jefferson City at LU's main campus, Kansas City, and in the Bootheel region, with the help of LUCE's satellite offices. In Marshall, the program cooperates with the Martin Community Center, and in Rolla, with the U.S. Forest Service. A full-time Native Plant State Extension specialist manages the program with the assistance of a native plant technician, a landscape designer, an AmeriCorps volunteer, student workers, and volunteers.

For promotion, the NPP has a webpage on the LUCE's website and a Facebook page where information about the program and events is included. Links to publications are also included. Personal communication on the phone or online is done before events. NPP staff also reaches out to their audience via emails, public events, and the LU's Farmers Market. Radio and newspaper interviews and newsletter articles are also done. The NPP collaborates with other institutions (MU Bradford Research Center, MU Extension in several locations, and Missouri Department of Conservation) and organizations (Grow Native! Program of the Missouri Prairie Foundation, Capital Garden Club, Master Gardeners and Master Naturalists, and the Missouri Native Plant Society).

Native Plant Outdoor Laboratories

Native Plant Outdoor Laboratories in Marshall and at the LU campus are completed and used for training. Handouts about plant species and a diagram of the laboratories are available at the sites. Bilingual publications are available in some locations. Native Plant Gardens have been established at LU-Allan T. Busby Farm, Washington Carver Farms, and other areas at LU's campus. In the Bootheel region, a pilot FINCA is being established in Haywood City, and native plant gardens in Caruthersville are being constructed with community participation. These locations offer people opportunities for participating and learning on their own. FINCA is the acronym for the project "Families Integrating Nature Conservation and Agriculture" and is the name given to small, highly diversified farms in Latin America.

Evaluating Outcomes

We evaluate NPP short, medium, and long-term outcomes in communities and individuals (NIFA, 2013). The acquired knowledge (short-term outcome) is evaluated during short-term training, classes, or seminars with pre- and post-examinations. Change in behavior (medium-term outcome) is evaluated by determining if participants are growing or eating native plants as a result of the training. Change in condition (long-term outcome) is evaluated by determining if by growing or eating native plants, participants are saving money or increasing their income and/or improving their way life. Surveys and personal communication are used.

Pre- and post-examinations are done following procedures developed by Aruguete (unpublished) and include the following requirements.

- A short test composed of five multiple-choice questions is administered at the beginning and end of each class.
- Each multiple-choice question has four response options.
- Response options should include one right answer and three wrong answers.
- True/false questions, "all of the above," "none of the above," and "both b & c" should be avoided, as should negative questions.
- All response options should be equally plausible, and the length of each option should be similar.
- The bulk of the content should be included in the question, not in the responses.

See example of pretest and posttest on Figure 1. In addition, the posttest includes eight items assessing participants' satisfaction with the event. These eight questions (including the open-ended question asking for "additional comments") will remain constant on all posttests (Figure 2). For the purposes of this paper, we are presenting a real example of a pre- and post-evaluation and the change of knowledge during one class.

Results/Impacts

In 2011 and 2012, the NPP offered an average

of 20 seminars per year, two to three workshops, three field days, participated in five to 10 field days, and responded to 80 to 100 personal emails or phone inquiries. The NPP reached out directly to more than 1,500 people and indirectly to at least 2,500 people. Roughly 50% had little knowledge about native plants. Of these, 21% were children and 79% were adults. Classes were offered in English and Spanish. In Marshall, Latinos visit the Outdoor Laboratory frequently, and in Haywood City, Caruthersville, and other locations in Southeast Missouri (Bootheel region), at least 80% of our audience is African American.

Some of the primary results and impacts include:

- Brochures, factsheets and other publications are offered in English and Spanish. Special publications include recipe cards with descriptions of species used and growing requirements.
- We found that short-term impact or "change of knowledge" differs highly in most cases. For instance, 17 participants attending the workshop titled 'Native plants for food' on April 25 took the example pretest and posttest shown in Figures 1 and 2. The group averaged 25% at the pretest and averaged 89% at the posttest, suggesting an evident change of knowledge regarding native edible plants. Change of behavior was observed on various occasions. Participants in Caruthersville workshops last year established native wildflowers in their yards. Long-term outcomes were evident when three participants expressed satisfaction and enjoyment from having native plants in their yards.
- Once participants learn that native plants in the nursery trade can cost from $2 to $4.50, they learn that native plants can be economically important.
- During surveys and personal communications, many expressed that native plants have improved their surroundings, and they are enjoying the indirect results of observing wildlife diversity.
- There has been a change of knowledge in that participants learned that native plants are mostly perennial, which means they can live for many years and do not have to be replaced year after year like most non-native species. Student participation has increased, and some members of the community are volunteering during events. In Jefferson City, more than 30 Lincoln University students and more than 50 seniors have been exposed to native plants for the first time.
- Seniors enjoy remembering plants that they used to gather with grandparents, and young adults are often interested in learning about wild edibles. In Haywood City, for example, people are now eating some of their "weedy natives" after trying food samples prepared by NPP staff.
- In Kansas City, participants have learned about the importance of native plants as habitats for pollinators that will help increase fruit and vegetable production in their community gardens. They have also learned about some of the uses of these plants as edible greens, making jellies or jams, decorative arrangements, erosion control, and fibers.
- Based on pretests and posttests done before and after classes, we have seen an increase in knowledge about identification of native plants and their uses. Classes are very popular, especially when food samples prepared with native plants are served.
- General observations show an increase in the number and diversity of birds, honeybees, and other beneficial insects where gardens have been established in Jefferson City, Kansas City, and Haywood City. During a brief monitoring study of three native plants at the Outdoor Laboratory in Jefferson City, done in the fall by Aaron Mbogho (unpublished), honeybees, native bees, and butterflies were observed visiting all species in the fall.

Future Implications/Plans

- To evaluate medium- and long-term impacts, we will continue offering classes about native plants and will conduct surveys twice a year to determine if the participants have adopted native

plants into their lives, and if they are benefiting as a result of that.
- To develop highly diversified urban farms called "FINCAs" with native plants for food and for value-added products. Evaluate growth, development, and nutritional value of at least 10 native plants as alternative crops.
- Continue working closely with underserved communities, especially very small communities in the Southeast region (Bootheel) of Missouri.
- Create a partnership between institutions in El Salvador and Lincoln University that will involve LU students and Salvadoran experts.
- Develop collaborative work with communities, native plant experts, applied anthropologists, sociologists, and community developers to conduct plant inventories in small communities to identify useful plants.

Figure 1. Pretest and posttest example, used to determine change of knowledge during a class about native edibles.

Date and name of Instructor:
Participant's name _____
Please circle the right answer

1) Wild leek is a very popular native plant also known as 'ramps' whose
- **a) Leaves grow all year long**
- **b) Flowers are produced in early spring**
- **c) Need shade to grow**
- **d) Need full sun to grow**

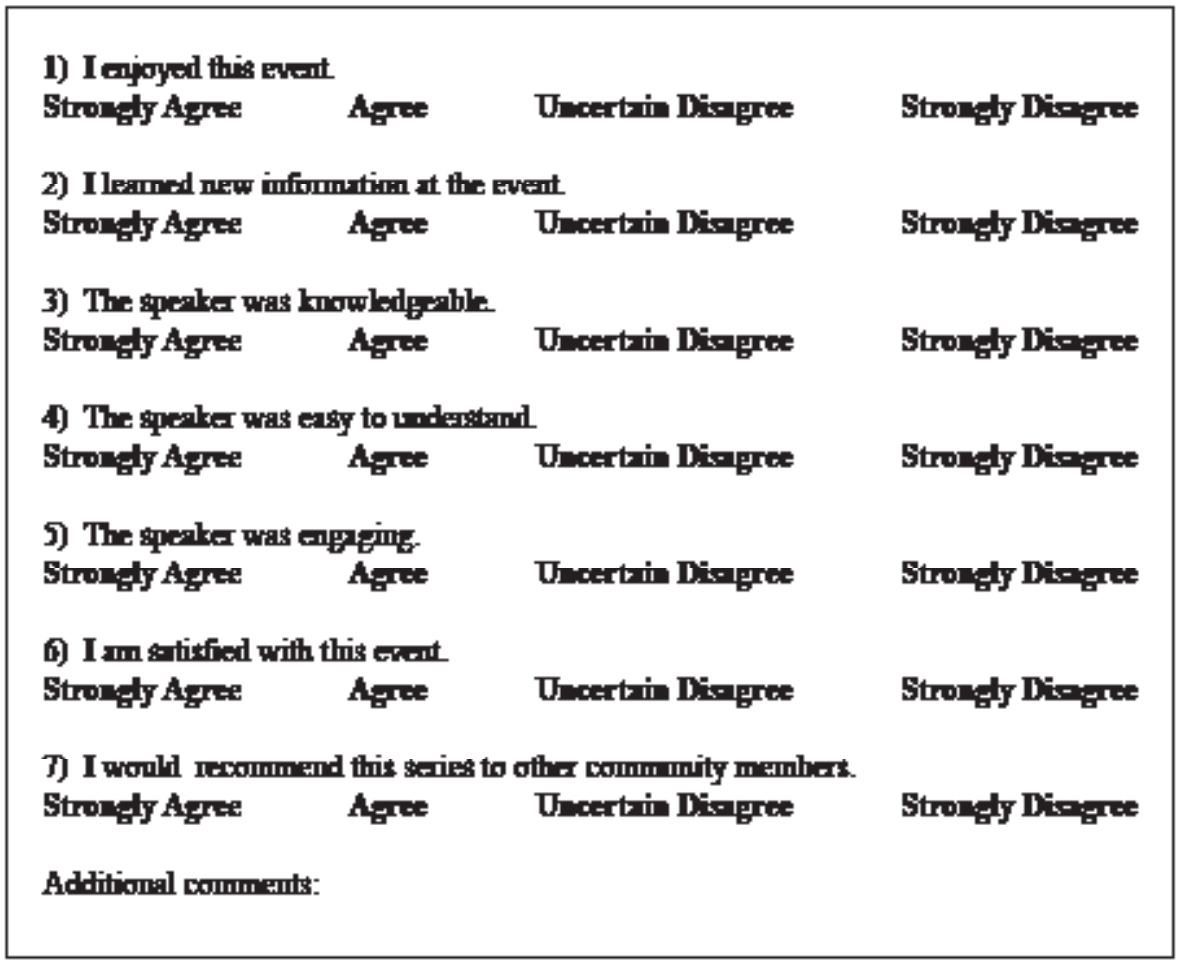
2) Lambsquaters *(Chenopodium album)* is an common plant related to quinoa *(Chenopodium quinoa)*
- **a) Both have high nutritious value**
- **b) Both are native plants**
- **c) Both grow in the shade**
- **d) Both are poisonous**

3) Jerusalem artichoke is commercially available in supermarkets and
- **a) It is native to Israel**
- **b) It is an annual plant**
- **c) It is a plant related to potatoes**
- **d) The plant produces sunflower-like flowers**

4) Passion fruit can be used to prepare a refreshing drink, it _____
- **a) Only grows in the tropics**
- **b) It is a vine**
- **c) It is a tree**
- **d) It grows better in the shade**

5) Wing sumac and smooth sumac with red berries _____
- **a) Are poisonous**
- **b) Some are used to prepared a refreshing drink**
- **c) Sumacs are related to blackberries**
- **d) Sumac berries mature in the spring**

Figure 2. Information included in posttest during training to determine satisfaction with presenter and classes offered.



1) I enjoyed this event.
Strongly Agree Agree Uncertain Disagree Strongly Disagree

2) I learned new information at the event.
Strongly Agree Agree Uncertain Disagree Strongly Disagree

3) The speaker was knowledgeable.
Strongly Agree Agree Uncertain Disagree Strongly Disagree

4) The speaker was easy to understand.
Strongly Agree Agree Uncertain Disagree Strongly Disagree

5) The speaker was engaging.
Strongly Agree Agree Uncertain Disagree Strongly Disagree

6) I am satisfied with this event.
Strongly Agree Agree Uncertain Disagree Strongly Disagree

7) I would recommend this series to other community members.
Strongly Agree Agree Uncertain Disagree Strongly Disagree

Additional comments:

References

Byers, P., Thomas, A., Cernusha, M., Godsey, L., & Gold, M. (2012). Growing and marketing elderberries in Missouri. Agroforestry in Action. AF-1016-2012. University of Missouri Center for Agroforestry. Retrieved from http://www.sare.org/content/download/66997/948171/.../ElderberryGuide.pdf

Chamberlain, J. (2002). The social, economic, and market dynamics of ramps (A*llium tricoccum*) from the southern Appalachian forests. Abstract. Retrieved from http://www.srs4702.forprod.vt.edu/unit/ramps.htm.

Chízmar Fernández, C. (2009). Plantas comestibles de Centroamérica. Instituto Nacional de Biodiversidad, INBio. Costa Rica: Retrieved from http://www.inb io.ac.cr/webca/biodiversidad/regional/PlantasComestiblesCAVE.pdf

FAO. (n.d.). Evaluación de productos forestales no madereros. Departamento de Montes. Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO). Retrieved from http://www.fao.org/docrep/007/ae159s/AE159S04.htm

Kindscher, K. (1987). *Edible wild plants of the prairie: An ethnobotanical guide.* Lawrence, KS: University Press of Kansas.

NIFA -National Institute of Food and Agriculture. (2013). Logic model. Retrieved from: http://www.nifa.usda.gov/about/strat_plan_logic_models.html

Smith, J. K. Urtica dioica. Index of species information. US Forest Service. Retrieved from http://www.fs.fed.us/database/feis/plants/forb/urtdio/all.html

Swanson, B. E., Bentz, R. P., & Sofranko, A. J. (1997). Improving Agricultural Extension. A reference manual. Food and Agriculture Organization of the United Nations. Rome. Retrieved from http://www.fao.org/docrep/W5830E/w5830e00.htm