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Summary of Work

Public outreach is one of many ways that industries and government agencies can improve public relations and recruiting, which can be very beneficial in certain career fields such as agriculture. Most people recognize the United States Department of Agriculture (USDA) whether they are involved in agriculture or not. However, many do not know of the Agricultural Research Service (ARS), the National Plant Germplasm System (NPGS), or the Plant Genetic Resources Unit (PGRU). One mission element of the ARS is to expose more people, mainly the youth, to agriculture and the roles of the agency and the unit. The PGRU already provides guided public tours of the various germplasm which they look after and are quite successful for local residents.

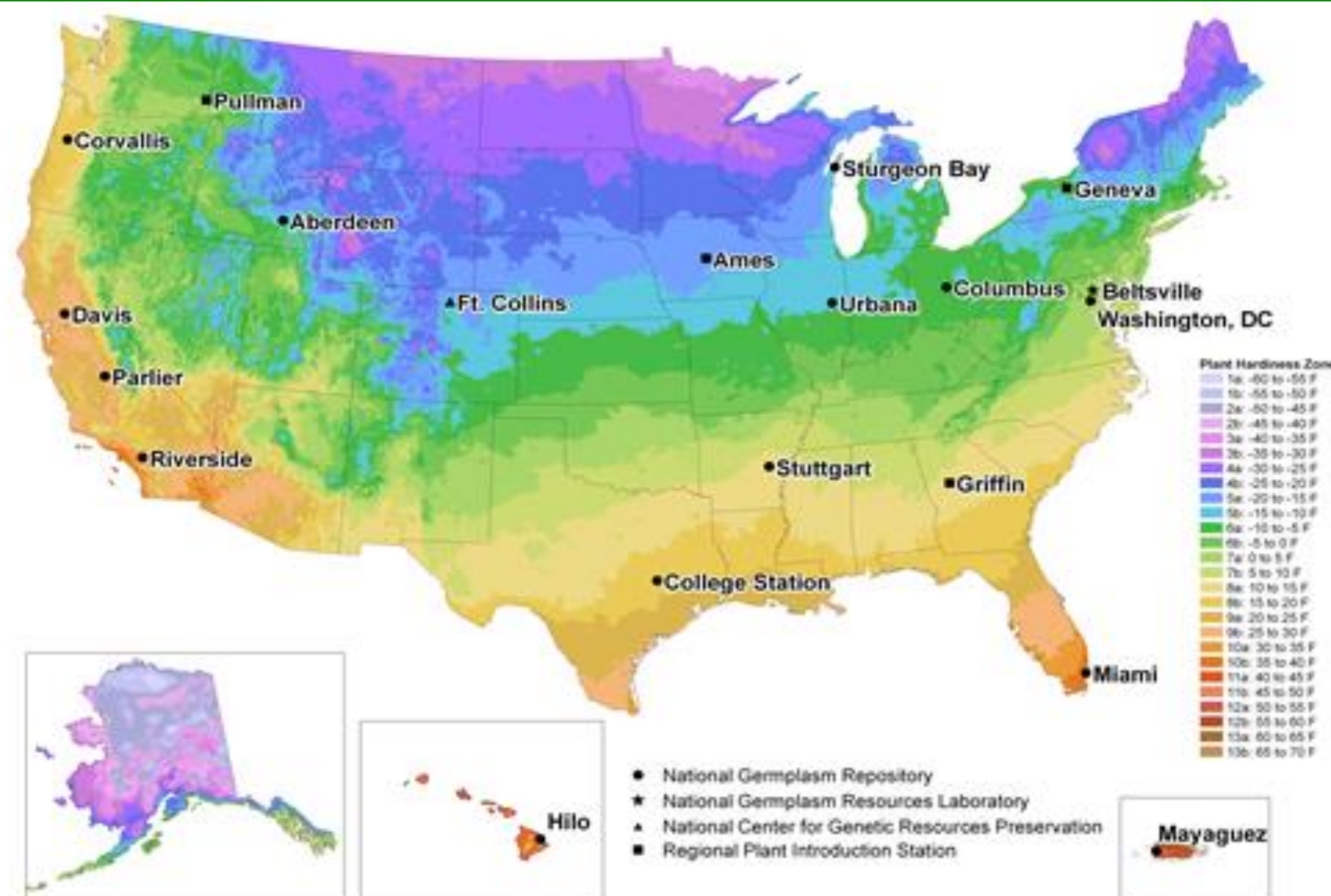
Our project involved making a more widespread form of outreach (the making of trading cards) which showcase the different accessions found throughout the various germplasm which the PGRU looks after and cares for. As an added benefit, the project can inform more people about USDA ARS and lead more people to explore careers in the field of agriculture.

What is the Plant Genetic Resources Unit?

The Plant Genetic Research Unit (PGRU) is part of the United States Department of Agriculture (USDA) Agriculture Research Service (ARS).

The PGRU was formed when the Northeast Regional Plant Introduction Station (NE-9) and the National Clonal Germplasm Repository for Apple, Tart Cherry, and Grape (NGR) combined in 1986 (USDA ARS, N/D). The repository is a part of the NPGS system, which safeguards the genetic diversity of agriculturally important plants.

Today the PGRU oversees and maintains a collection of nearly 20,000 accessions, all of which are genetically distinct from each other (USDA ARS, N/D). The clonal crops, which number to about 8,000, are maintained by the PGRU include the *Apple and Tart Cherry Collection*, and the *Cold-hardy Grapevine Collection*. These crops are all maintained in the field as living specimens, which are currently or historically significant to agriculture, acting as a “plant library”.



Top Image: A map of the USDA Germplasm locations throughout the United States within their respective growing zones.

Bottom Image: An ariel photo of McCarthy Farm, which contains the *Cold-hardy Grapevine Collection* along with the *Apple and Tart Cherry Collection*.

Forms of Public Outreach Already Employed by the PGRU

The PGRU already gives guided tours of the Apple, Grape, and recently Cherry germplasm collections. The Cherry germplasm tour was officially called the *USDA Tart Cherry Tour*. The first *Cherry Day* took place on July 15th, 2023, and the event proved to be a great success, with around 80 attendees.



Above: Dr. Ben Gutierrez (Apple and Tart Cherry Curator) and Victoria Meakem (Molecular Biologist) guiding and engaging visitors on *Cherry Day*.

New Forms of Public Outreach Employed by the PGRU

A new form of public outreach being employed by the PGRU is the making and distribution of so called “Germplasm Trading Cards”. These “trading cards” display cultivars grown and cared for in the different germplasm by the PGRU.

The cards can present information like where the cultivars came from, what do they taste like, and if they have any other uses, like baking or fermenting.

The cards can be given out at events which the PGRU attends and hosts, one example being *Cherry Day*. Another example was handing out germplasm cards to GIESCO attendees, an international conference of viticulturalists, which was held in Ithaca, NY, this year (2023).



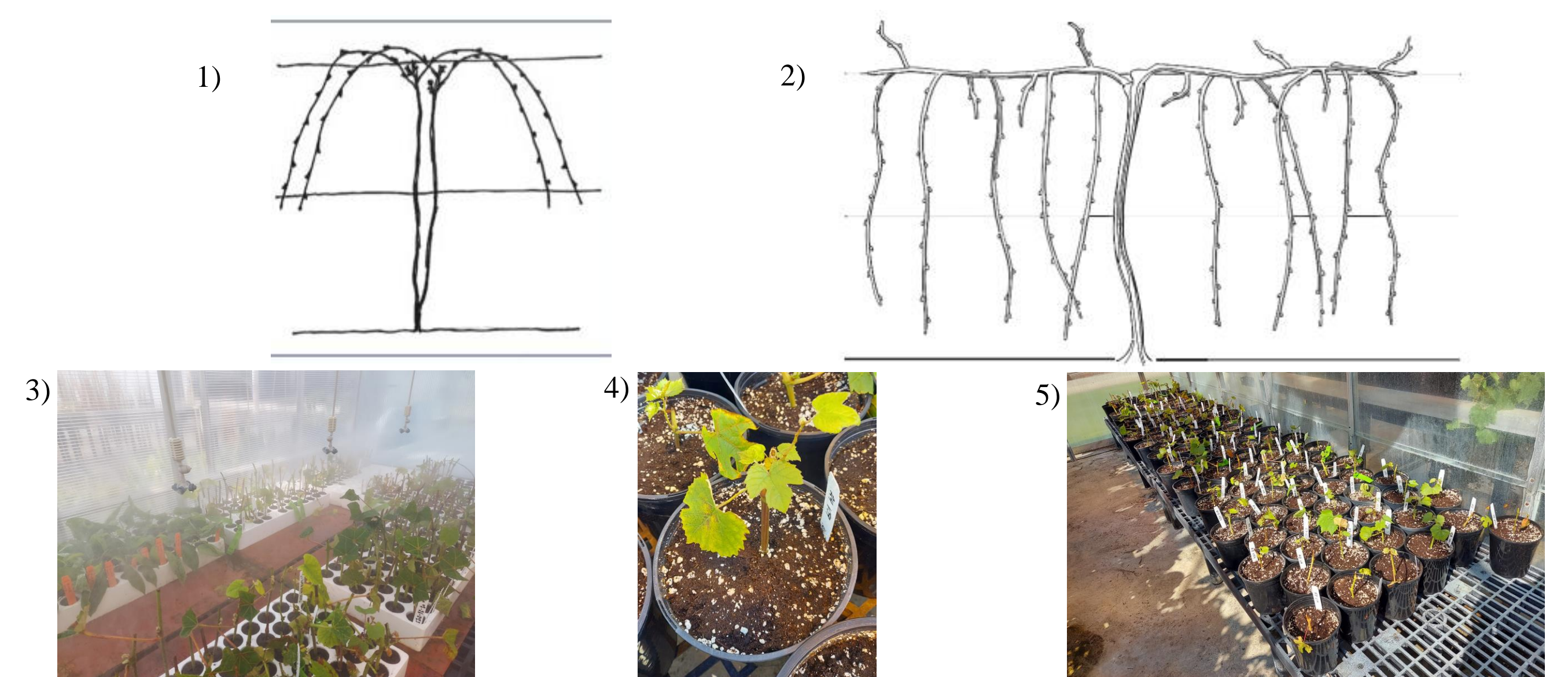
Top Row: From top left to top right: An image of the ‘Concord’ grape trading card, ‘Montmorency’ trading card, and one of the newest cards, the ‘Roberts Crab’ trading card.

Bottom Row: From bottom left to bottom right: An image of the backside of a card in the “Grape Series”, “Cherry Series”, and the “Apple Series”.

Management of the Cold-hardy Grapevine Collection

Currently a focus of the work in the *Cold-hardy Grapevine Collection* involves new management which includes switching the whole collection to a top-wire cordon training system from the Umbrella-Kniffin System. This would enable mechanical pruning and intends to improve the overall health of the vines. Currently this involves a lot of manpower to re-train to this new system.

Another focus for the management of the grapevine repository is regenerating vines clonally. Many species of *Vitis* do not easily root from dormant woody canes (the most common way to regenerate self-rooted vines). Suckers of vines are being re-trained to the top wire to replace weaker vines. Vines that have not suckered or are doing poorly are being regenerated as green cuttings.



Figures 1 & 2: Figure one shows a drawing of the Umbrella-Kniffin training system. Figure two shows an image of a top-wire cordon training system.

Figures 3, 4, & 5: Figure three displays the Mist Bed, which is where all of the new cuttings go to establish new roots with the assistance of a root growth hormone. Figure four shows a healthy potted cutting in the greenhouse. Figure five is of all of the recently potted grapevine cuttings.

What is Grapevine Training?

“Grapevine training” is the act of orientating and manipulating the grapevine in a particular manner in order to make it grow in a desired way.

Grape growers can choose from many options when it comes to grapevine training systems. Each training system can address a certain problem or aspect of the grapevine that the grower wishes to control, like grapevine vigor for example.

No training system is perfect and each one works in a specific way with its own unique drawbacks.



Above: A variety of training systems commonly used around the world. From *Illustrated Grape Vine Training Methods* by Winefolly.com.

Works Cited

About PGRU : USDA ARS. www.ars.usda.gov. [accessed 2023 Jul 19]. <https://www.ars.usda.gov/northeast-area/geneva-ny/plant-genetic-resources-unit-pgru/docs/about-pgru/>.

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