



SCHOOL OF AGRICULTURE

MIDDLE TENNESSEE STATE UNIVERSITY

# INTERNATIONAL GINSENG INSTITUTE

SPRING 2022 NEWSLETTER



## HIGHLIGHTS

- Has your ginseng emerged?
- Ginseng in the amazing microworld
- IGI outreach
- Ongoing research



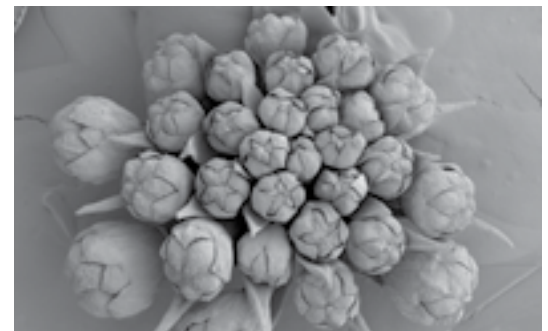
## Has your ginseng emerged?

Spring has sprung for us here in middle Tennessee, and we are busy looking at our research plots for newly emerged plants. We even have a few that have produced double stems! We are quite interested in how your plants fared over the winter. If you received seed from our growers workshop, we would greatly appreciate hearing from you about the emergence and health of the plants.

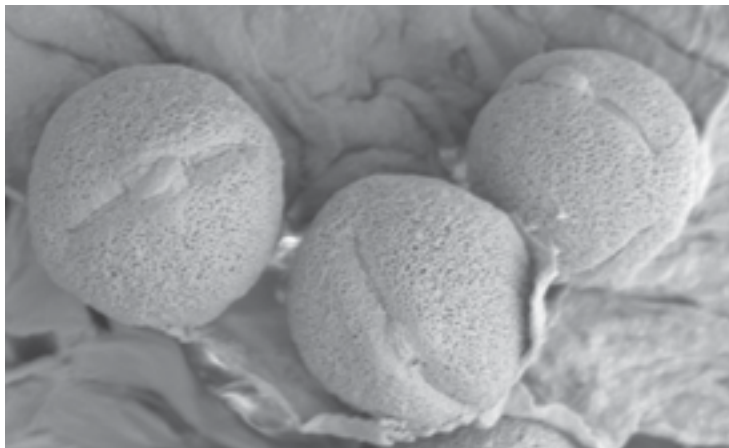
Are your plants sick? We are working hard on novel methods of protecting your ginseng crop from infection and getting some very exciting results using natural botanical extracts. As we continue this process, obtaining more diseased samples is critical. If you notice a plant that appears to be infected, we would like to know about it. (Don't worry, we won't tell anyone!)

## Ginseng in the amazing microworld

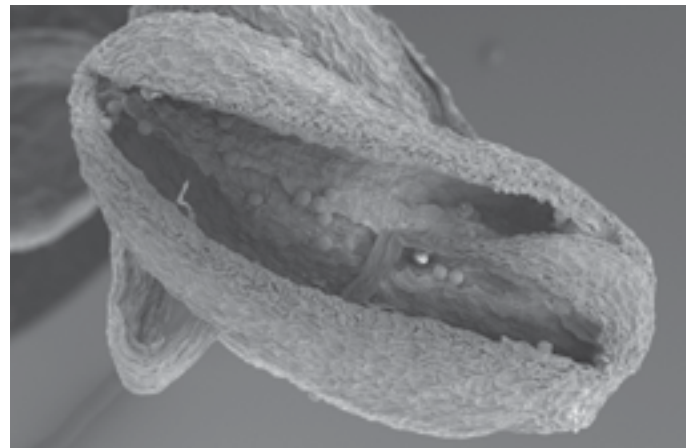
Have you ever seen your beloved plant—American ginseng—at 2,000 times magnification? As curious scientists and ginseng lovers, we have collaborated with **Joyce Miller** here at MTSU to obtain scanning electron microscope (SEM) images of ginseng pollen, flower buds, leaves, and roots. This microscope fires electrons through electromagnetic fields and lenses and aims them at a sample. When the electrons hit the sample, both electrons and X-rays bounce off, and sensors then transform these into an image. We are grateful to have wonderful collaborators like Joyce helping to increase our understanding of American ginseng.



Young flower cluster from three-prong American ginseng



Pollen from mature American Ginseng



Anther containing pollen from mature American ginseng

## IGI Outreach

### IGI participated in Conservation Days event on Earth Day, April 23, 2022

We had such a wonderful time at Barfield Crescent Park Conservation Days, sharing our love of ginseng with anyone who passed by. If you have not yet had a chance to visit the park, please make sure you go to the wilderness station and enjoy their hikes and beautiful trails.



### Let's get into the woods and plant ginseng! IGI organized the fall 2021 ginseng workshop

We previously teamed up with the park to host our growers workshop, where local and national scientists delivered presentations on pathology, planting, harvesting, and local laws and regulations. All participants went home with 2 ounces of American ginseng seed. We are excited to continue to work with the wonderful staff at the park. A story about our fall 2021 ginseng workshop can be found here: [mtsunews.com/students-provide-research-develop-ginseng-interests/](https://mtsunews.com/students-provide-research-develop-ginseng-interests/)

We have sent out a survey about seed germination to participants who received the seeds. Please help us by completing the survey if you can.

**IGI presented at the Organic Growers School spring 2022 conference in North Carolina**

The IGI has been busy traveling around the region sharing everything we know about American ginseng. **Dr. Iris Gao** presented a workshop at the Organic Growers School at Mars Hill, North Carolina, and introduced organic cultivation practices. It was a pleasant surprise to meet growers from Tennessee like Michael Boring in the meeting!



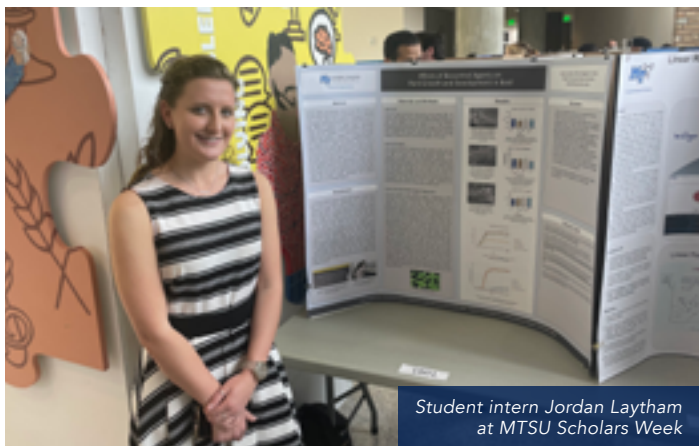
**More is coming!**

We will also be at the Smithsonian Folklife Festival in Washington D.C., June 22-27. There will be many wonderful activities and talks on fields and forests, coastal connections, animals, and community. If you are looking for a wonderful trip this summer, this event is worth it.

More information may be found at [festival.si.edu/2022/earth-optimism](https://festival.si.edu/2022/earth-optimism)

**IGI's ongoing research**

Our undergraduate students have shown an amazing aptitude for research and a willingness to learn difficult subjects. Their hard work has resulted in poster presentations, papers, and many awards! They evaluated novel techniques for rapid extraction of ginsenosides (the active ingredients in American ginseng) and investigated volatile organic compounds' effect on the growth and development of basil.



Student intern Jordan Laytham at MTSU Scholars Week



Sophomores Fatimah Alnassari, Ahmed Alnassari, Khadijah Alnassari, and Zaynab Alnassari at MTSU Scholars Week

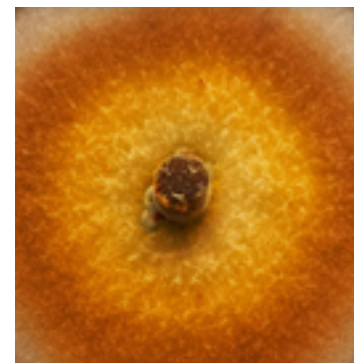
The IGI is collaborating with the University of Tennessee’s plant pest diagnostic lab in Nashville to identify fungal pathogens causing diseases in ginseng in Tennessee. We have summarized the fungicides labeled for use on ginseng in Tennessee. A total of 138 labeled fungicides including organics were summarized and are available for the first time in one place for Tennessee ginseng growers. MTSU student intern Robert Eichas participated in the project under the mentorship of Dr. Eleanor Lopez at the plant pest diagnostic lab. Click here for the summary: [soillab.tennessee.edu/fungal-pathogens-of-american-ginseng-panax-quinquefolius/](https://soillab.tennessee.edu/fungal-pathogens-of-american-ginseng-panax-quinquefolius/)

Does American ginseng reduce greenhouse gas emissions from the soil? Do the gas emissions change when fertilizer is added? We are going to answer these questions because we would really like to know. We have installed Gasmeter sensors into ginseng beds to monitor gas emissions from the soil.



MTSU research assistant Anna Arnold sorting ginseng rootlets for pathology study

We are soldiering on looking for safe and effective ways to control disease. While *Fusarium sp.* (pictured right) can be pretty growing in a petri dish, many of you know how destructive this fungus can be when it infects your plants. Prevention remains the key for keeping American ginseng safe and sustainable. Botanical extracts may provide a powerful tool in your belt.



We have been testing our ideas in the lab and greenhouse, recording positive results that we hope to share with you soon.

IGI researchers and collaborators have presented ongoing research at regional conferences. **Dr. Iris Gao** (MTSU), Dr. Eleanor Lopez (UTK), and Dr. Fulya Baysal-Gurel (TSU) presented their joint research: “Fungal and Oomycete diseases in American ginseng (*Panax quinquefolius L.*) and current project evaluating organic disease control” and “Preliminary examination of *Aphelenchoides sp.* detected from American ginseng, *Panax quinquefolius*” in the 2022 American Phytopathological Society South Division Annual Meeting on March 7–11.

Gao also talked about “Growing American Ginseng in Tennessee” in the New Crops for Southeast Agriculture Conference in Nashville on March 16–18.

As always, remember that the International Ginseng Institute is your resource for all things ginseng. Don’t hesitate to contact us with your thoughts or concerns. We will keep you connected with the community and continue to make this a better experience for all.

Visit us at [mtsu.edu/ginseng](https://mtsu.edu/ginseng), and write to us at [ginseng@mtsu.edu](mailto:ginseng@mtsu.edu)

