impact

University of Idaho Extension programs that are making a difference in Idaho.

Innovative project: microscopic world of botany

AT A GLANCE

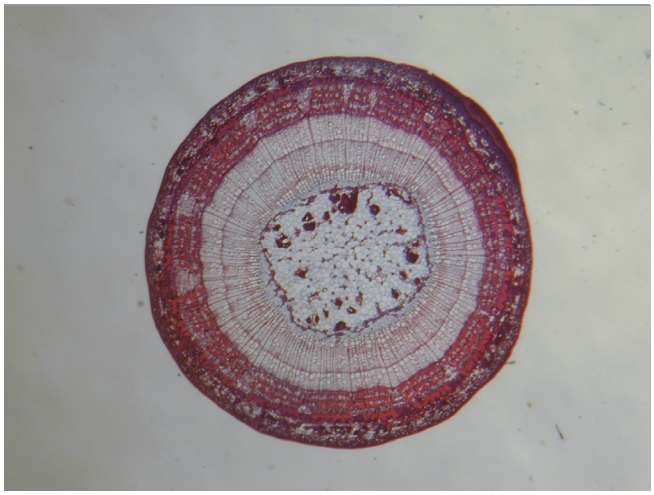
Appreciation of the beauty and complexity of plant life is integral to botany studies. Students used this knowledge to modify planting and harvesting management practices.

The Situation

University of Idaho Extension educators teach basic botany classes to improve student understanding of plant structures and processes. This knowledge gives students the tools necessary to make important management decisions such as planting, watering, fertilizing and harvesting. In the past we have relied on textbook pictures and diagrams to present plant botanical structures. Students requested a more detailed and hands-on approach to learning plant structure.

Our Response

Extension educators received an innovative project grant to support the development and assembly of microscope slide sets of plant botanical parts and structures. Plant structures included in the slide set included: epidermis from an onion bulb, cross section of a basswood stem showing vascular system of a dicot plant, cross section of corn stalk showing monocot vascular bundles, cross section of a buttercup root, corn toot tip showing root cap and growing point, root hairs, privet leaf showing palisade cells and stomata, corn leaf showing vascular system, cross section of a lily bud showing reproductive organs, pollen grains, cross section of corn seed showing monocot seed parts, and cross section of shepherd's purse embryo showing dicot seed parts.



Cross section of a basswood stem showing basic plant structure.

Six botany classes and workshops were offered using microscope slide sets. Each student had the opportunity to inspect and view the slides firsthand with their own equipment. Class discussion centered on plant structure impact and effects on planting depth, movement of water and herbicides through vascular system, and gas exchange with the environment for proper plant respiration and photosynthesis.

Program Outcomes

Botany students gained a visual experience of plant structure that gave them new insights on the size and spatial relationships of botanical plant structures. A

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student commented, “This experience is like seeing the Grand Canyon for the first time in person. You don’t appreciate the world around you until you see it with your own eyes.” Out of the 140 students receiving this training, 90% felt that they gained valuable insight into plant structures that will assist them in making plant management decisions in the future. Five percent of the students felt they gained useful information. The remaining 5% stated that they were previously aware of plant structures through the Idaho Master Gardener course and other lectures.

The Future

Educators are working to develop a set of leaf, stem and root structure sets. These sets will highlight the differences between monocot and dicot plants. The structure sets will be linked to class discussions covering agronomics and the impact of plant structure in proper plant management. The macroscopic plant structure sets will be used with the microscope slide sets in future botany workshops.

FOR MORE INFORMATION

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21-23-rfindlay-botany-world • 7/23