

Graduate Extension Scholars Program *Strengthening Cooperative Linkages Between Land-Grant Universities, School-based Agricultural Education, and 4-H Youth Development*

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& Matthew Spindler**



*Agricultural, Leadership,
and Community
Education*

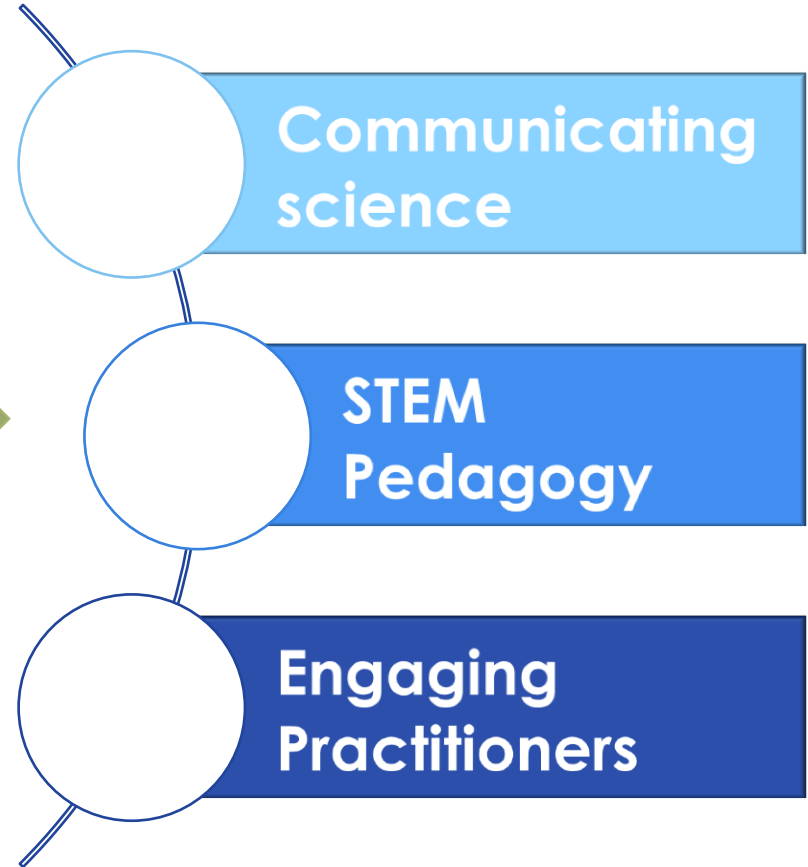


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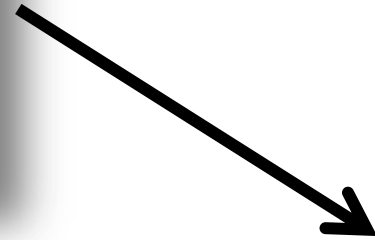
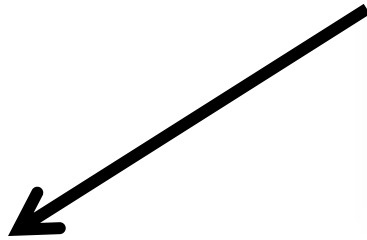
Motivations: graduate student capacity



Quality
outreach

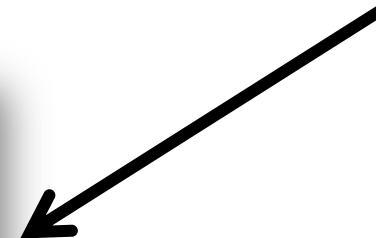
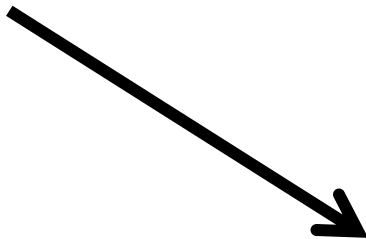
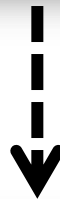


Motivations: connect youth to STEM research in agriculture



Agriculture
teachers

4-H Agents



Motivations: connect youth to STEM research in agriculture



IN ORDER TO FEED A GROWING GLOBAL POPULATION

WE NEED PROFESSIONALS

WITH SKILLS IN THESE SIX AGRICULTURE FIELDS

PLANT / SOIL SCIENCE



LIFE SCIENCES



ECONOMICS,
BUSINESS &
MANAGEMENT



MECHANIZATION /
ENGINEERING



FOOD SCIENCE
& TECHNOLOGY



ANIMAL SCIENCES



Motivations: connect youth to STEM research in agriculture



IN 2012

31,852

STUDENTS GRADUATED
IN THESE FIELDS

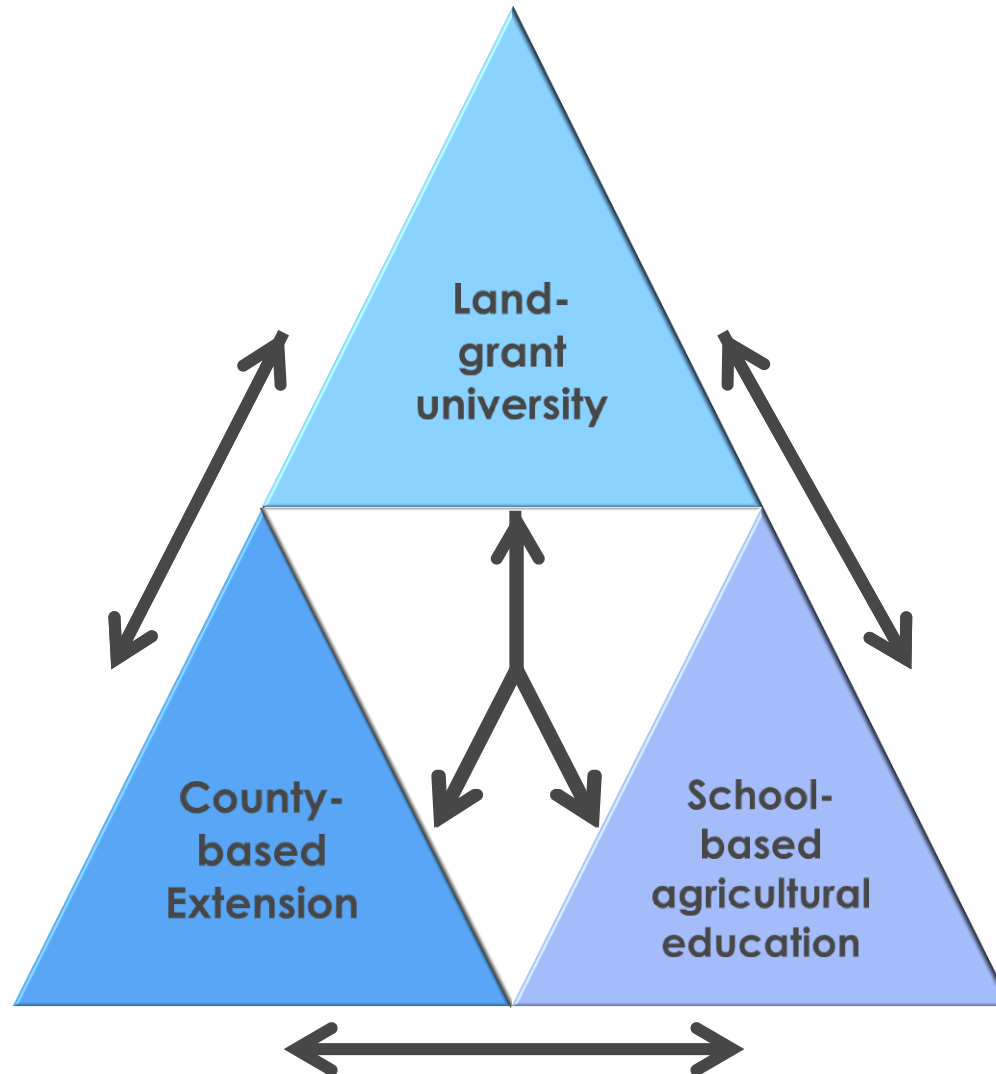
IN 2014

406,320

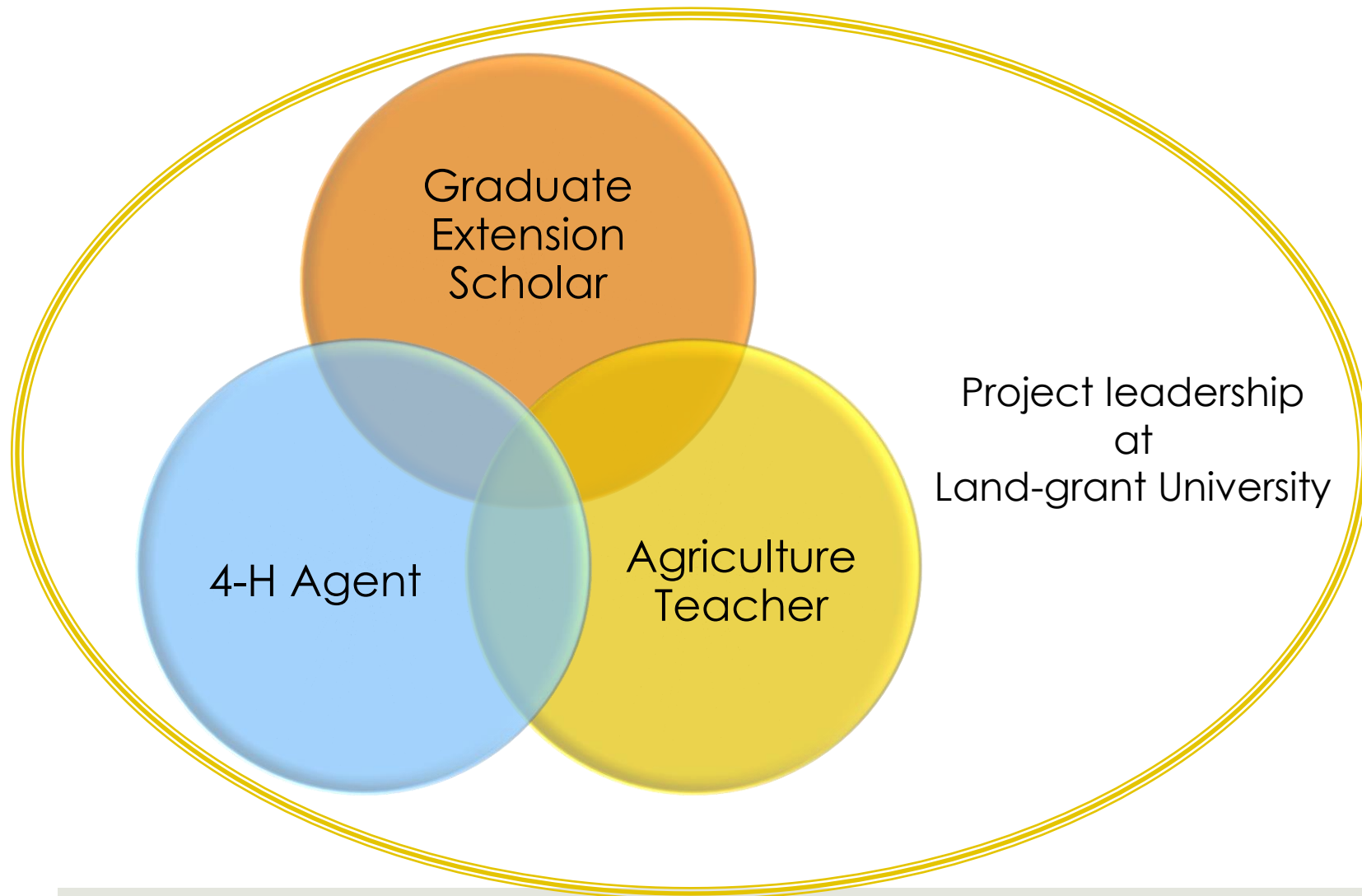
HIRES WILL BE MADE
BY THE INDUSTRY

AG UNIVERSITIES EXPERIENCED A **28.5% ENROLLMENT GROWTH** FROM 2005-2013.
INDUSTRY DEMAND IS 12X MORE THAN WHAT THEY ARE PRODUCING.

Motivations: encourage partnerships



County-based team model promotes cooperative linkages



GES program supports experiential learning for scholars



Education practitioners

Education faculty

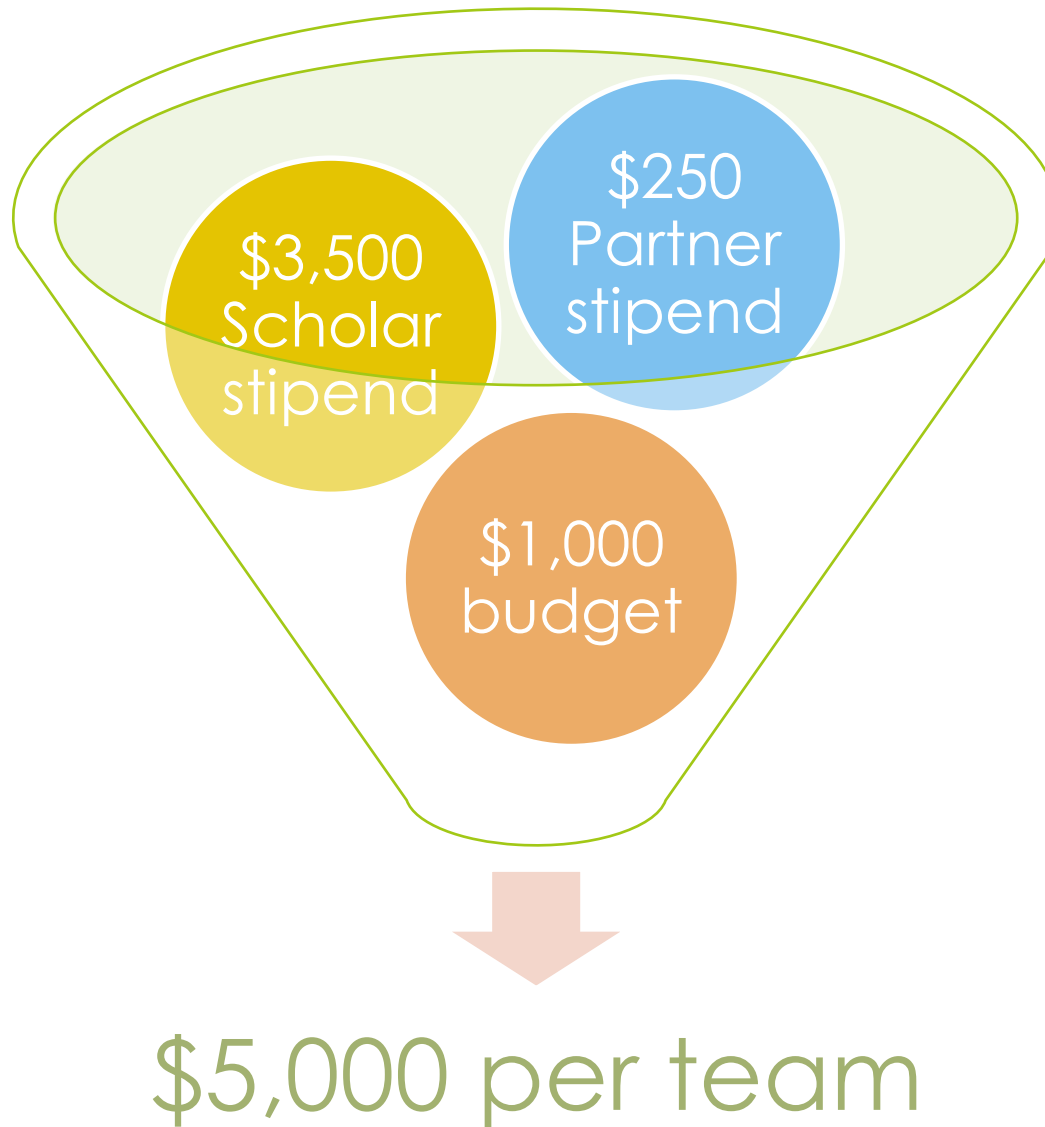
Peers (cohort)

Education graduate student

Program Activities

- Educational module development
- Site visits
- Seminar
- One-on-one meetings

Resources provided to teams support efforts



Overview of program planning timeline

Spring
2014

- Planning team formation & grant writing
- Graduate Extension Scholar recruitment

Fall-Winter
2014

- Development of seminar syllabus
- Partner recruitment

Spring
2015

- Seminar
- Educational module development & piloting

Summer
2015

- Educational module dissemination
- Program evaluation and revision

Shade for cows: What does it take to convert a pine plantation into a silvopasture?

- Consultation and site visit with resource professionals including
 - J. B. Daniels (NRCS grassland agronomist)
 - Miller Adams (DOF area forester)
 - Dr. John Fike (VT CSES associate professor)
- Timber cruising and marking trees for removal
- Soil testing and lime and fertilizer recommendations



Demonstrating the Science Behind the Green Thumb: Bringing Nursery Industry Best Management Practices into the Secondary Classroom

In this module, students:

- Participate in a challenge to grow plants with resource use efficiency.
- Learn about production costs, like seed, fertilizer, and potting soil.
- Apply their new ideas and conclusions to a landscape planting activity.



Inspiring the Next Generation of Agronomists Through New Biofuel and Biochar Educational Resources

Fifth grade students discover:

- What does it mean to be an agronomist?
- What do plants need to grow?

▣ Hands-on activities include:

- Use of research devices (i.e. infiltrometer and lab pipettes)
- Planting different seed species with different levels of treatments.

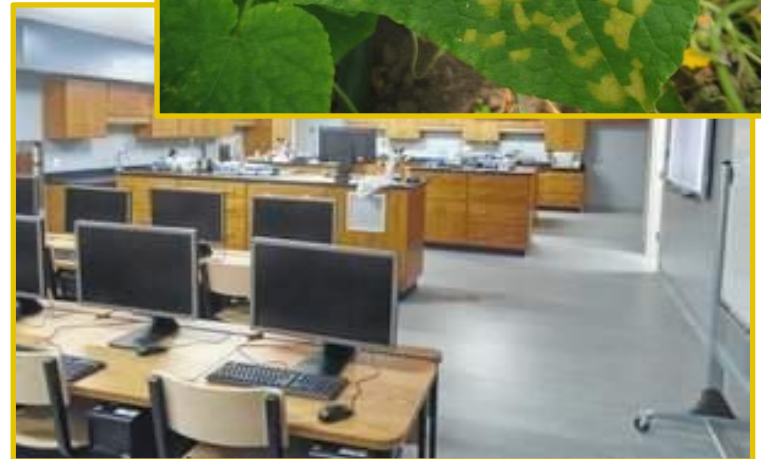
Twelfth grade students conduct a real field-setting experiment with different corn stover removal rates and biochar applications.



Biotech in the Ag Classroom: DNA Based Plant Pathogen Identification

Students will:

- Receive hands-on experience in a biotech lab
- Understand ubiquity of plant diseases and their impact
- Conduct polymerase chain reaction (PCR) to amplify DNA
- Run gel electrophoresis to visualize DNA
- Use computer resources for DNA comparison and organism identification



Successes from pilot year projects

- Modules implemented student-centered pedagogy
- Locally relevant topics shaped by meaningful practitioner input
- Unexpected partnerships increased opportunities for students
- Modules engage students in the practices of scientists in creative ways

Next steps

- ▣ Program evaluation - underway
- ▣ Research on graduate student experience - underway
- ▣ Second cohort Fall 2015 - recruiting
- ▣ Seeking sustained funding

Thank you!

Contact Hannah for more information:

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