

USDA-ARS

# Land Management and Water Conservation Research Unit

## Greetings!

The Land Management and Water Conservation Research Unit (LMWCRU) is committed to advancing agricultural practices and technologies that improve the efficiencies and performance of cropping systems and quality of our natural resources. In this issue of the LMWCRU update, we highlight the activities of the LMWCRU during the past six months as well as spotlight the importance of research in providing agricultural products and environmental services for a changing world. We hope you enjoy this issue of the LMWCRU update.

## Spotlight on Research

The LMWCRU has undergone substantial change while being at the forefront of new USDA research initiatives over the past several years. This change has caused us to reflect on the need for and value of agricultural research.

The need for an adequate and safe food-feed-fiber-fuel and water supply is paramount to the welfare of a global society whose population is expected to exceed 9 billion by 2050. In response, the Agricultural Research Service brings its expertise to the global community to achieve food security for all people and to promote peace and prosperity.

The LMWCRU has been involved in agricultural research for over 40 years, and in partnership with many organizations, has tackled major problems facing agriculture in the Inland Pacific Northwest. The LMWCRU has co-lead multidecadal, multistate projects like Solutions To Environmental and Economic Problems (STEEP), Columbia Plateau Wind Erosion / Air Quality Project, and Ralston Project and is now leading efforts at one of 10 Long Term Agroecosystem Research (LTAR) sites in the United States. The value of the LMWCRU program is apparent from our list of accomplishments (visit our website), among which include improving the performance of an air quality model; discovering a soil bacteria that reduces specific weed infestations; optimizing seeding practices for establishment of winter canola; developing practices that optimize nitrogen and water use of crops; and identified factors that regulate greenhouse gas emission from soils.



Soil Climate Analysis Network (SCAN) installation at the LTAR site in Pullman

The LMWCRU is committed to working with our partners and stakeholders in finding innovative solutions for agriculture amid a changing world.



## LMWCRU News

### Farewell

- **Debbie Bikfasy** will be leaving the USDA-ARS after providing technical support to Jeff Smith for 28 years. Debbie has accepted a position with Washington State University.
- **Carla Miles** has been the LMWCRU program support assistant for nearly six years and has been re-assigned to work for the USDA-ARS Plant Germplasm Introduction and Testing Unit in Pullman, WA.
- **Jeff Smith** has been with the LMWCRU for 28 years. He has been re-assigned to support the Soil Plant Nutrient Research Unit in Ft. Collins, CO.

Our thoughts go with these employees who have contributed so much time and effort to the success of the LMWCRU research program over so many years. We wish them much success in their future endeavors.

### Upcoming Invited Presentations

- **November 2013**  
**Frank Young** is invited to give a presentation on “Feral rye control in winter canola” at the Washington State Weed Control Conference in Wenatchee, WA.
- **December 2013**  
**Frank Young** is invited to give a presentation on “Transitioning from traditional fallow to chemical fallow with the stripper header” at the Far West Agribusiness Association meeting in Pasco, WA.

### Welcome

- Erin Kemp, undergraduate student, is working on weed-suppressive bacteria; and Tessa Redrick, high school student, and Kirsten Stubbs, undergraduate student, are working on soil quality evaluations in the laboratory of **Ann Kennedy**.
- Elena Hennings, undergraduate student, is working on the winter canola project with **Frank Young**.
- **Don McCool** has been appointed as a collaborator with the LMWCRU.

### Graduate students

- **Ann Kennedy** served as an advisor to Yushan Duan who completed a dissertation on “Weed management and soil quality in tulip production “for a Doctorate degree in Crop and Soil Sciences.





## LMWCRU News

### Media News

- In April, 2013, **Ann Kennedy** was interviewed by the Los Angeles Times about a new weapon in the war on cheatgrass; The Washington Wildlifer about a new biological management option against cheatgrass raises hope of western land managers; Western Farm Press regarding a new hope in the fight against cheatgrass; Tri-City Herald about soil bacteria may be answer to cheatgrass battle on Reach; The Lewiston Tribune about a discovery that could cheat cheatgrass; and Ravalli Republic about cheatgrass-eating bacteria.
- In June 2013, **Brenton Sharratt** was interviewed by Capital Press regarding restructuring of the LMWCRU.
- In July, 2013, **Ann Kennedy** was interviewed by US Fish and Wildlife Service Refuge Update about a new tool to combat cheatgrass; Invasive Plant News about cheatgrass still being a challenge but a new biopesticide, ACK55, offers hope; Idaho Statesman regarding a new weapon against an invader being tested near Lake Lowell; and the Spokesman Review about bacteria being recruited for the war on cheatgrass.
- In August 2013, **Ann Kennedy** was interviewed by KTVB on chasing out cheatgrass at Deer Flat.

### Grants

- **Ann Kennedy**, in collaboration with Washington State University scientists, received a grant from the USDA Agriculture and Food Research Initiative to identify biological and molecular mechanisms of resistance to decay in weed seeds.
- **Ann Kennedy**, in collaboration with the US Fish and Wildlife Service, received a grant from Joint Fire Sciences to use cheatgrass-suppressive soil bacteria to break the fire cycle and proactively maintain greater sage-grouse habitats.
- **Ann Kennedy**, in collaboration with Washington State University scientists, received grants from the US Fish and Wildlife Service to identify the suppression of downy brome (cheatgrass) using a soil bacterium and for registration of weed-suppressive bacteria for downy brome.
- **Ann Kennedy**, in collaboration with Washington State University scientists, received a grant from the Department of Defense to examine the performance of cheatgrass-suppressive soil bacteria.
- **Frank Young**, in collaboration with Washington State University scientists, received grants from the Washington State Biofuels Project and the Washington Canola / Rapeseed Commission to accelerate research on growing canola in the low-precipitation zone.



## Recent Publications

*Our Recent Publications are scholarly professional publications that convey information from original research. When available, links are provided to the articles.*

- Dawson, J.C., Murphy, K.M., **Huggins, D.R.**, Jones, S. S. 2011. [Evaluation of winter wheat breeding lines for traits related to nitrogen use under organic management](#). Organic Agriculture. 1:65–80.
- Unger, I.M., Goyne, K. W., Kremer, R. J., **Kennedy, A. C.** 2013. [Microbial community diversity in agroforestry and grass vegetative filter strips](#). Agroforestry Systems. 87:395-402
- Saidi, N., Khiari, L., Kouki, S., Ben Yahmed, A. Ben Rejeb, A., Fumio, M., **Kennedy, A. C.** 2011. [Characteristics and biological treatment of leachates from a domestic landfill](#). Hydrology: Current Research. S3:001.
- **Sharratt, B.S.**, Vaddella, V.K., and Feng, G. 2013. Threshold friction velocity influenced by wetness of soils within the Columbia Plateau. Aeolian Research 9:175-182.
- **Sharratt, B.S.** and van Pelt, R.S. 2012. Erosion by wind: source, measurement, prediction, and control. In: S. E. Jorgensen (ed.) Encyclopedia of Environmental Management, Taylor & Francis.
- Abi-Ghanem, R., **Smith, J.L.**, Vandemark, G.J. 2013. [Diversity of Rhizobium leguminosarum from pea fields in Washington State](#). International Scholarly Research Network (ISRN). Volume 2013, Article ID 786030, 7 pages.
- Gollany, H.T., Fortuna, A., Samuel, M., **Young, F.L.**, Pan, W., Pecharko, M. 2013. [Soil organic carbon accretion vs. sequestration using physicochemical fractionation and CQESTR simulation](#). Soil Science Society of America Journal. 77:618-629.
- Sullivan, L.S., **Young, F.L.**, Smiley, R.W., and Alldredge, J.R. 2013. Weed and disease incidence in no-till facultative wheat in the Pacific Northwest, USA. Crop Protection. 53: 132-138
- **McCool, D. K.**, Dun, S., Wu, J. Q., Elliot, W. J., Brooks, E. S., 2013. [Seasonal change of WEPP erodibility parameters for two fallow plots on a Palouse silt loam](#). Transactions of the ASABE. Vol. 56(2): 711-718.
- Dun, S., Wu, J. Q., Elliot, J. R., **McCool, D. K.** 2013. [Applying online WEPP to assess forest watershed hydrology](#). Transactions of the ASABE. Vol. 56(2): 581-590.

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We're on the web!

<http://ars.usda.gov/pwa/pullman/lmwcru>

### LMWCRU Scientists:

**Brenton Sharratt**, Research Leader,  
Particulate Emissions

**David Huggins**, Nutrient Cycling

**Ann Kennedy**, Soil Quality

**Jeff Smith**, Greenhouse Gas Emissions

**Frank Young**, Cropping Systems