## INSTRUCTIONAL STAFF

Course instructors are drawn from Michigan State University's Plant Breeding and Genetics Program. In addition, molecular plant breeding specialists from private seed companies, government research institutes, and international agricultural research centers will be invited as resource faculty.

Our training team has strong expertise and practical experience in all aspects of biosafety and biotechnology. Members of our training team have participated and conducted a number of training programs in both local and international settings.

## INTERNATIONAL TRAINING PROGRAMS AT MSU

Michigan State University is recognized as a center of excellence in training and capacity building nationally and internationally. The World Technology Access Program (WorldTAP) offers international short courses and internship programs in the following areas:

- Agroecology, Integrated Pest Management (IPM) and Sustainable Agriculture
- Intellectual Property Rights (IPR) and Technology Transfer
- Food Safety
- Food Processing, Packaging and Value-Addition
- Biosafety: Environmental Aspects of Agricultural Biotechnology
- Animal Agriculture: Best Practices in Quality Milk Production and Dairy Value Chain
- Agricultural Biotechnology
- Biofuels
- Science and Technology Communication

WorldTAP

Department of Horticulture
Michigan State University

**http://worldtap.msu.edu/**


**For Registration, Please Contact:**
**Dr. Cholani Weebadde**
**Phone: (517) 355 0271 ext. 1159**
**Fax: (517) 432 1982**
**E-mail: weebadde@anr.msu.edu**


*Application Deadline:*
***July 15, 2013***

Course Fee per Participant:

| | |
|---|---|
| Registration Fee: | $ 250 (non-Refundable) |
| Course Fee: | $ 3,750 |

Course fee includes instruction fee, information packages, local transportation, meals, lodging, and emergency health insurance.

Please make check payable to:
Michigan State University

MICHIGAN STATE UNIVERSITY

# Molecular Plant Breeding

## An International Short Course on Practical Applications of Molecular tools for Plant Breeding

**August 25 - 30, 2013**

Organized by:

**The World Technology Access Program (WorldTAP) and Plant Biotechnology Resource and Outreach Center in collaboration with the**

**Plant Breeding, Genetics and Biotechnology Program**

## COURSE RATIONALE

Developing countries around the world are focusing to increase crop productivity to ensure food and nutritional security and to increase the income levels of rural farming communities. Due to a variety of abiotic and biotic stresses such as drought, insect pests and disease problems as well as weeds and poor plant nutritional conditions, most crops do not reach their full yield potential in the farmers fields.

Although many factors can increase the yield potential of these crops, it is important to realize that the plant breeders can play a significant role by developing newer varieties that can combat various biotic and abiotic limitations. For the resource poor and subsistence farmers who cannot afford chemical pesticides and fertilizers to increase the yield potential of their crops, access to newer and better yielding varieties may remain the only available option.

In order to develop newer and higher yielding varieties faster, it is critical that the plant breeders have access to new tools and technologies to improve the efficiency of their plant breeding programs. One such technology is molecular markers which is currently being used extensively by plant breeders in the developed world to breed newer and better crops faster. Plant breeders and biotechnologists in developing countries are keen to integrate new tools of molecular markers into their crop improvement programs.

## COURSE DESCRIPTION

This course in Molecular Breeding will be designed not only to cover the molecular techniques available to a plant breeder for crop improvement but also to cover marker assisted selection with successful examples from around the world. In addition, this course will introduce the participants on how to develop international collaborations in plant breeding and approach funding opportunities nationally, regionally and internationally.

Using a participatory approach, the course will foster linkages and provide opportunities for networking among participants to exchange their experiences and establish regional collaborations.

## COURSE COMPONENTS

- Overview of Plant Breeding and the Molecular marker technology
- Molecular markers as tools for conventional plant breeding
- Developing molecular markers for traits of interest; Qualitative traits vs. Quantitative traits
- Case studies on practical applications and impacts of molecular breeding tools in crop improvement programs
- Hands-on lab experience with Molecular Marker tools for Plant Breeders (including RAPD, SCAR, AFLP, and SSR markers)
- Hands on experience with freely available molecular marker data analysis software including mapping software programs
- Bioinformatics and Genomics in Plant Breeding
- Visits to Molecular Breeding labs
- Building International Collaborations in Molecular Breeding
- International training and capacity building resources available for Molecular Plant Breeding