

Tiffany R. Sikes

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3127 Ligon Street

Raleigh, NC 27607

Education

- **M.S. Crop and Soil Environmental Sciences, May 2014 Plant Breeding and Genetics, Advisor, Dr. C.A. Griffey**

Thesis: “Validation of Quantitative Trait Loci and Identification of Diagnostic Markers for Adult-Plant Resistance to Powdery Mildew in Wheat Cultivar Massey”

Virginia Polytechnic Institute and State University, Blacksburg, VA

- **B.S. Crop and Soil Environmental Sciences, May 2010 Concentration: Biotechnology, Genetics and Plant Breeding**

Virginia Polytechnic Institute and State University, Blacksburg, VA

- **A.S. Science, May 2007 Concentration: Chemistry**

Northern Virginia Community College, Annandale, VA

Work/Research Experience

Junior Laboratory Technician: BASF, Global Plant Sciences and Technical Marketing, Crop Protection, Research Triangle Park, Durham, NC, **June 2014 – December 2015**, Contract

- Developed protocols for experiments in the greenhouse and field
- Developed Plant Health demos using corn, soybean, wheat, pea, pepper, strawberries, and various weed species
- Worked with Technical Service Representatives throughout the country to help them meet their demonstration needs in order to effectively communicate product benefits to customers
- Prepared seeds for planting, transplanting, spraying, harvesting, sampling and watering
- Maintained healthy plants in greenhouse and/or growth chambers to maintain optimal growing conditions
- Performed high-throughput phenotypic screens of various stress responses to abiotic stress using robotics
- Prepared and executed time lapse photography of trials in the greenhouse
- Photographed plants for image analysis of treatments
- Analyzed data using Excel and presented results of experiments at Technical Marketing Meetings

Graduate Research Assistant: Dr. Carl A. Griffey's Small Grains Breeding and Genetics program, Virginia Polytechnic Institute and State University, Crop and Soil Environmental Sciences, Blacksburg, VA, **June 2010 – May 2014**

- Identified four quantitative trait loci (QTL) and their diagnostic markers to be implemented in marker-assisted selection (MAS) for powdery mildew resistance in wheat
- Developed wheat mapping population of near isogenic lines (NILs) using back cross methods and MAS
- Managed project deadlines with the program breeding nursery
- Developed NILs and recombinant inbred line (RIL) mapping population
- Tissue collection and DNA isolation
- Genotyping using SSR and SNP molecular markers on 96-well and 384-well plate formats
- Capillary electrophoresis using Applied Biosystems® ABI 3130xl and ABI 3730xl Genetic Analyzers
- Analyzed SNPs using FLUOstar Omega plate reader
- Scored molecular markers using GeneMarker® and KlusterCaller™ software
- Constructed linkage maps using MapDisto software
- Experimental design and data analysis using SAS software
- Identification and analysis of QTL using QTL Cartographer
- Selected lines to advance when planting and harvesting for greenhouse and field studies
- Seed analysis post harvest using DICKEY-john GAC®2100 and FOSS near infrared (NIR) XDS™ Rapid Content Analyser
- Emasculation and making crosses with wheat and barley
- Evaluation of plant phenotypes in the field and greenhouses
- Managed and maintained greenhouses and plants to keep optimal growing conditions
- Trained students in laboratory, greenhouse and field settings
- Worked at the USDA Eastern Regional Small Grains Genotyping Laboratory, Raleigh, NC as a visiting graduate student using high throughput genotyping robotics, Spring 2014

Undergraduate Research Assistant: Dr. Carl A. Griffey's Small Grains Breeding and Genetics program, Virginia Polytechnic Institute and State University, Crop and Soil Environmental Sciences, Blacksburg, VA, **January 2008 – May 2010**

- PCR using SSR molecular markers
- Identified traits of interest in parental lines using MAS and supply breeder with data
- Cultured Fusarium head blight (FHB)
- Point inoculation of FHB in the greenhouse and spray inoculation in the field
- Phenotyped seed for Fusarium damaged kernels
- Data entry of greenhouse and field notes
- Assisted in harvest, head and bulk selection of wheat and barley as directed

Additional Skills

- Pesticide Applicator Trained
- GLP trained
- Extensive experience writing scientific laboratory reports pertaining to microbiology, biochemistry and molecular breeding projects
- Emasculation and crossing of wheat, barley, potato, soybean and corn
- Recombinant DNA methods including restriction endonuclease digestion, gel electrophoresis, cloning, sequencing and analysis of reporter gene expression in *Arabidopsis*
- Anther culture of diploid potato clones to yield androgenic embryos and regeneration of plants
- Techniques in biochemistry and biotechnology including the use of buffers, spectroscopy, enzyme assays, chromatography, gel electrophoresis, and immunoassays for the analysis of biological macromolecules
- Experience with sterile microbiology techniques
- Extensive experience with MS Office and Excel