Plant Breeding Efforts at Rutgers University

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Breeding Efforts by Crop (5 Year Summary)

Crop	PY	Cultivars
Apple	0.2	4
Asparagus	0.7	5
Apricots	0.1	1
Basil	0.1	1
Blueberries	0.1	1
Cranberries	0.9	3
Dogwoods	0.4	3
Ethnic Crops	0.1	0
Franklinia	0.1	1
Hazelnuts	0.5	0
Hollies	0.5	5
Lilies	0.5	1
Mints	0.2	2
Peaches	0.7	10
Strawberries	0.7	0
Turfgrasses	1.6	225
Switchgrasses	0.3	0
Total	7.7	262

Institutional Philosophy: Dept. of Plant Biology & Pathology

The faculty of the Department of Plant Biology & Pathology consists of approximately 50 members with research and teaching specializations in broad areas of Plant Breeding, Molecular Biology, Biotechnology, Natural Products, Horticulture, Plant Diversity, Plant Management, Plant Pathology and Horticultural Engineering. Teaching programs important in the department include Plant Breeding, Biotechnology, Agricultural Science, and Plant Science majors; and the Plant Biology Graduate Program. We also have a strong extension component that seeks to provide service to and impact plant industries locally and globally. Department thrust areas include: 1) nursery crops research, 2) turfgrass research, 3) health crops research, and 4) basic plant biology and pathology research. Over the next five years the department seeks to have major impacts in the NJAES areas of Turf and Ornamental Breeding, Sustainable Agricultural and Food Systems; and Food, Nutrition, and Health. For this reason we are working to build research, teaching, and outreach programs in *Nursery and Turf*; and *Health-Enhancing Food Crops and Pharmaceutical Bio-discovery*. There is a broad base of consensus that these are industries that are growing in the state, region, country, and world. We believe that the NJAES and Rutgers are poised to assume an international leadership role in these areas.

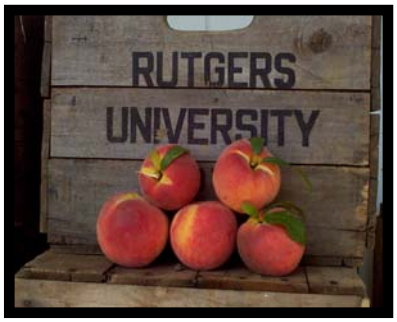
"Making Life Better through Plant Breeding"

Breeding Efforts by Activity (5 year summary)

Activity	PY	%
Plant Breeding Research	0.8	8.5
Germplasm Enhancement	3	31
Cultivar Development	3	31
Biotechnology Research	0.8	8.5
Plant Breeding Education	2	21

Plans (Next 5 Years)

Research: The overriding aim of the Department is to have positive transformative impacts locally, nationally, and internationally in areas of Plant Agriculture, Plant Breeding, Biotechnology, Horticulture, and Plant Biology and Pathology in general. Impacts that relate to Public University as well as Land Grant College and Experiment Station missions are essential to the continued growth of the Department, College, and Experiment Station. Continued impacts will ensure relevance of the College and Experiment Station for our students and stakeholders long into the future. In the nursery crops area we will consolidate ornamental nut, holly, and dogwood breeding programs into a single effort. We have hired a young plant breeder (Tom Molnar, Instructor) to help us in this integration. Because of the importance of nursery crops to New Jersey – we intend to maintain the ornamental breeding program beyond the retirement of Dr. Elwin Orton. This is an extremely important sector of New Jersey agriculture with major economic impacts. NJAES nursery crop products and innovation can have an important influence on this sector of New Jersey agriculture. It is of strategic importance to NJAES that we advance in the area of nursery crops. We hope to add an extension component to this line in the future and increase the responsibilities of the line in some other areas to include oversight of the ornamental nursery crop breeding program. In the turfgrass area we have recently hired an Assistant Professor of turfgrass breeding, Dr. Stacy Bonos. Future development in this area of research involves the increasing application of genomics approaches to grass breeding. We intend to continue exploring genomics applications in turfgrass breeding. It is also critical that we continue to target enhanced disease resistance as a means to produce superior turfgrass cultivars. We are continuing to develop turfgrasses that are enhanced with endophytes to take advantage of the performance enhancements conferred by endophytic fungi.



Recent Graduates

Stacy Bonos, Ph.D. (Turf)
Han Yuan Hong, Ph.D. (Turf)
Eric Watkins, Ph.D. (Turf)
Tom Molnar, Ph.D. (Ornamental)
George Zhang, Ph.D. (Turf)

Current Graduate Students

Jon Bokmeyer, Ph.D. track (Turf)
Laura Cortese, Ph.D. track (Biofuels)
Josh Honig, Ph.D. track (Turf)
Matt Koch, Ph.D. track (Turf)
Robert Shortell, Ph.D. track (Turf)
Paulo Ribiero, Ph.D. track (Basil Breeding)

Job Placement

All recently graduated students from the Rutgers Plant Breeding program have been placed in academic and research positions. Dr. Stacy Bonos is currently an Assistant Professor of turf breeding/ biofuels at Rutgers University.
Dr. Tom Molnar is a nut and ornamental tree breeder at Rutgers.
Dr. Han Yuan Hong is a Research Associate at the Nobel Foundation.
Dr. George Zhang is a Research Associate at the University of Washington. Dr. Eric Watkins is an Assistant Professor at the University of Minnesota.

Plant Breeding Courses

Plant Breeding 11:776:406
(3 credits; undergraduate)
Plant Genetics 11:776:305
(3 credits; undergraduate)
Plant Propagation 11:776:310
(3 credits; undergraduate)
Plant Tissue Culture 11:776:452
(3 credits; undergraduate)
Advanced Plant Breeding 16:765:528
(3 credits; graduate)
Advanced Plant Genetics 16:765:510
(3 credits; graduate)