

Christopher S. Cramer

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Education

Ph.D. in Horticultural Science. Minor in Genetics and Statistics. Department of Horticultural Science, North Carolina State University, Raleigh. May, 1997. Dissertation: "Specific combining ability for fruit yield and shape, yield, and yield components of cucumber (*Cucumis sativus* L.) populations improved using recurrent selection."

M.S. in Plant Science. Department of Plant Science, University of Connecticut, Storrs. May, 1994. Master's Thesis: "In vitro and in vivo studies of *Mussaenda*."

B.S. in Horticulture. Department of Horticulture, The Pennsylvania State University, University Park. Graduated with honors and distinction. May, 1991. University Scholar's Program. Undergraduate Thesis. "Hybridization between diploid and tetraploid *Pelargonium xhortorum* Bailey."

Professional Experience

Professor of Horticulture. 7/08-Present. Department of Plant and Environmental Sciences, New Mexico State University. Teach undergraduate courses in genetics, horticulture, and plant science and a graduate course in genetics. Develop high-yielding, high-quality, disease-resistant, bolting-resistant, onion varieties for southern New Mexico. Released 'NuMex Allure', 'NuMex Fabian Garcia', 'NuMex Grandeur', 'NuMex Quasar', 'NuMex Radiance', 'NuMex Serenade', 'NuMex Silhouette', and 'NuMex Whisper'.

Professor of Exemplary Teaching. 7/17-6/20. Department of Plant and Environmental Sciences, New Mexico State University. Reorganized undergraduate horticulture major. Created PES student liaison program.

Jose Fernandez Memorial Chair of Crop Production. 7/13-6/16. Department of Plant and Environmental Sciences, New Mexico State University. Taught undergraduate courses in genetics, horticulture, and plant science and a graduate course in genetics. Developed high-yielding, high-quality, disease-resistant, bolting-resistant, onion varieties for southern New Mexico. Released 'NuMex Allure', 'NuMex Grandeur', 'NuMex Quasar', and 'NuMex Whisper'.

Associate Professor of Horticulture. 7/03-6/08. Department of Plant and Environmental Sciences, New Mexico State University. Teach undergraduate courses in plant science and horticulture, and graduate courses in genetics. Develop high-yielding, high-quality, disease-resistant, bolting-resistant, onion varieties for southern New Mexico. Released 'NuMex Mirage.' Investigated genetics involved in disease resistance, bolting resistance, firmness, male sterility, and bulb quality of onion.

Assistant Professor of Horticulture. 9/97-7/03. Department of Agronomy and Horticulture, New

Mexico State University. Taught undergraduate courses in plant science, horticulture, vegetable production, and organic vegetable production, and a graduate course in genetics. Developed and released five varieties ('NuMex Camino', 'NuMex Chaco', 'NuMex Crimson', 'NuMex Snowball', 'NuMex Solano') and two germplasm populations (NM 162, NM 172). Investigated genetics involved in disease resistance, bolting resistance, and bulb quality of onion.

Courses Taught

AGRO/HORT 462 (Plant Breeding) is an upper level undergraduate course for undergraduate and graduate agronomy, genetics, horticulture, and plant science majors. 3 credit hours.

AGRO/HORT 670 (Biometrical Genetics and Plant Breeding) is an upper level graduate course that examines quantitative genetics and how it can be used in a plant breeding program. Topics covered in the course included single gene inheritance, gene frequency, inbreeding, identity of alleles by descent, covariance of traits, covariance between individuals, epistasis, mating designs, gain from selection, heritability, heterosis and inbreeding depression, genotype by environment interaction, path analysis, and high throughput phenotyping. 3 credit hours.

GENE 320 (Hereditary and Population Genetics) is an upper level undergraduate core course for genetics and biotechnology majors. Topics covered in the course include Mendelian inheritance, probability, sex determination, epistasis, sex-linked, -influenced, and -limited traits, pedigree analysis, linkage and recombination, quantitative genetics, population genetics. 3 credit hours

Graduate Students Trained

1. Ana Ramirez Licon (M.S.)
2. Stephanie Torres (M.S.)
3. Suman Sharma (Ph.D.)
4. Shahab Nourbakhsh (M.S. - 2021)
5. William Peebles (M.S.)
6. Subhankar Mandal (M.S. – 2016; Ph.D. - 2021)
7. Narinder Singh (M.S. - 2013)
8. Rachael Gibson (M.S. - 2010)
9. Mohsen Mohseni Mohgadam (M.S. - 2010)
10. Neel Kamal (M.S. – 2007; Ph.D. - 2016)
11. Parminder Multani (M.S. - 2007)
12. Jagtar Singh Dullat (M.S. - 2007)
13. Ashish Saxena (M.S. – 2007; Ph.D. - 2009)
14. Troy Larsen (M.S. - 2006)
15. Ramon Molina-Bravo (M.S. - 2006)
16. Jessica Lopez (M.S. - 2003)

Honors and Awards

2019 College of Agricultural, Consumer, and Environmental Sciences Charles Tharp Farms Distinguished Service Award, NMSU

2018 Excellence in Multistate Research Award, W3008, Biology and Management of Iris Yellow Spot Virus (IYSV), Other Diseases, and Thrips in Onions, The Western Association of Agricultural Experiment Station Directors.

2013 North American Colleges and Teachers of Agriculture Teaching Award for the College of Agricultural, Consumer, and Environmental Sciences, NMSU

2011 College of Agricultural, Consumer, and Environmental Sciences Distinguished Research Award, NMSU

Recent Grant Funding

- Reducing costs and improving environmental safety of onion herbicide programs, NMDA Specialty Crop Block Grant Program, \$43,712 (2021-2023).
- Regeneration of short-day onions, National Plant Germplasm System, ARS, USDA, \$97,432 (2019-2023).
- Survey of bacterial rot diseases in New Mexico onion fields, Washington State Univ., \$29,167 (2019-2023).
- Building a transdisciplinary research program for improved pest management in onion, NMSU Agricultural Experiment Station Competitive Operations Award, \$28,367 (2019-2020).
- Identification of steroidal saponins as a potential biochemical marker for *Fusarium* basal rot resistance screening of onions, NMSU Agricultural Experiment Station Competitive Graduate Research Award, \$18,474 (2019-2020).
- NMSU botanical garden, Stanley Smith Horticultural Trust, \$10,000 (2018-2020).
- Characterization of onion phenotypes exhibiting fewer Iris yellow spot (IYS) symptoms and release of onion germplasm for IYS mitigation, Washington State Univ., \$543,555 (2018-2023).
- Screening short-day onion (*Allium cepa* L.) germplasm for *Fusarium* basal rot resistance. National Plant Germplasm System, ARS, USDA, \$21,318 (2018-2020).

Recent Publications

- Sharma, S. and C.S. Cramer. 2023. Selection progress for resistance to *Fusarium* basal rot in short-day onions using artificial inoculation mature bulb screening. *Horticulturae* 9:99. <https://doi.org/10.3390/horticulturae9010099>.
- Cramer, C.S. 2022. Vegetable cultivar descriptions for North America, List 28. Onion. *HortScience* 57:1000-1006.
- Cramer, C.S. 2022. Vegetable cultivar descriptions for North America, List 28. Shallot. *HortScience* 57:1019-1020.
- Shahabeddin Nourbakhsh, S. and C.S. Cramer. 2022. Onion germplasm possess lower early season thrips numbers. *Horticulturae* 8:123. <https://doi.org/10.3390/horticulturae8080123>.
- Shahabeddin Nourbakhsh, S. and C.S. Cramer. 2022. Onion size measurements as predictors for onion bulb size. *Horticulturae* 8:682. <https://doi.org/10.3390/horticulturae8080682>.
- Cramer, C.S., S. Mandal, S. Sharma, S. Shahabeddin Nourbakhsh, I. Goldman, and I. Guzman. 2021. Recent advances in onion genetic improvement. *Agronomy* 11:482. <https://doi.org/10.3390/agronomy110300482>.
- Greenway, G., N. Kamal, S. Shahabeddin Nourbakhsh, and C.S. Cramer. 2021. Estimating potential changes in costs and returns from use of a partially onion thrips-resistant cultivar and action-based spray thresholds in Idaho and Eastern Oregon. *Southwestern Entomologist*. 46:349-356. <https://doi.org/10.3958/059.046.0206>.
- Kamal, N. S. Shahabeddin Nourbakhsh, and C.S. Cramer. 2021. Reduced Iris yellow spot symptoms through selection within onion breeding lines. *Horticulturae* 7:12. <https://doi.org/10.3390/horticulturae7060012>.
- Mandal, S. and C.S. Cramer. 2021. Comparing visual and image analysis techniques to quantify *Fusarium* basal rot severity in mature onion bulbs. *Horticulturae* 7:156. <https://doi.org/10.3390/horticulturae7060156>.
- Mandal, S. and C.S. Cramer. 2021. Improving *Fusarium* basal rot resistance of onion cultivars through artificial inoculation and selection of mature bulbs. *Horticulturae* 7:168. <https://doi.org/10.3390/horticulturae7060168>.

- Mandal, S. and C.S. Cramer. 2021. Screening of USDA onion germplasm for *Fusarium* basal rot resistance. *Horticulturae* 7:174. <https://doi.org/10.3390/horticulturae7060174>.
- Mandal, S. and C.S. Cramer. 2020. An artificial inoculation method to select mature onion bulbs resistant to *Fusarium* basal rot. *HortScience* 55:1840-1847 <https://doi.org/10.21273/HORTSCI15268-20>.
- Mandal, S., A. Saxena, C.S. Cramer, and R.L. Steiner. 2020. Comparing efficiencies of two selection approaches for improving *Fusarium* basal rot resistance in short-day onion after a single cycle of selection. *Horticulturae* 6:26. <https://doi.org/10.3390/horticulturae6020026>.
- Cramer, C.S. 2019. 'NuMex Silhouette' onion. *HortScience* 54:377-379.
- Singh, N. and C.S. Cramer. 2019. Improved tolerance for onion thrips and Iris yellow spot in onion plant introductions after two selection cycles. *Horticulturae* 5:18. doi 10.3390/horticulturae5010018.
- Kamal, N. and C.S. Cramer. 2018. Selection progress for resistance to Iris yellow spot in onions. *HortScience* 53:1088-1094.