Rice

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7. Title

Management of Rice Diseases in Louisiana

12. Investigator Name(s) (Last Name and Initials)

Groth, D. E.

20. Termination Date 12/31/2015	40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011

Outputs:

The project generated several peer-reviewed presentations at professional meetings. Several papers were published on the results of this project. Newsletters, popular press articles, and field day and grower meeting presentations provided disease control information to Cooperative Extension Agents, consultants, and farmers. Disease nursery screening information from the project was used by breeders to select disease-resistant lines for advancement.

Outcomes/Impacts:

New germplasm with resistance to multiple diseases aided breeding efforts and screening identified disease-resistant lines for advancement. Correct fungicide timing and rates for effective control of multiple diseases were re-evaluated. Efforts to determine which diseases are causing specific damage allowed better scouting methods, timing of control agents, and research efforts. Fungicide evaluations provided information to chemical companies, producers and consultants on rates, timings and efficacy. Fungicides were tested on multiple rice varieties and at multiple locations for their ability to control diseases and maximize yield and milling. Tolerance to sheath blight was confirmed in newer rice varieties. Seed treatments were evaluated for effectiveness in increasing stands and decreasing early season sheath blight. Yield reductions of up to 25% and a 2-percentage point decrease in head rice were detected due to sheath blight infection. Coordinated control of diseases using host resistance, cultural management, and chemical control will greatly improve productivity and profitability of rice production.

Publications:

Kumar, K.V.K., Reddy, M.S., Kloepper, J.W., Lawrence, K.S., Yellareddygari, S.K., Zhou, X.G., Sudini, H., Surendranatha, E.C.R., Groth, D.E. and Miller, M.E. 2011. Screening and selection of elite plant growth promoting Rhizobacteria (PGPR) for suppression of Rhizoctonia solani and enhancement of rice seedling vigor. J. Pure Applied Microbiol. 5(2):641-651.

Blanche, S.B., Sha, X.Y., Harrell, D.L., Groth, D.E., Bearb, K.F., White, L.M., Linscombe, S.D., and Henry, B.J. 2011. Registration of 'CL151' Rice. J. Plant Registrations 5:177-180.

Kumar, K.V.K., Reddy, M.S., Kloepper, J.W., Lawrence, K.R., Zhou, S., Groth, D.E., et al. 2011. Commercial potential of microbial inoculants for sheath blight management and yield enhancement of rice. pp. 237-264 In: Bacteria in Agrobiology: Crop Ecosystems. Springer-Verlag, Berlin. 446 pp.

Nelson, J.C., Oard, J.H., Groth, D.E., Utomo, H.S., Jia, Y., Liu, G., Moldenhauer, K.A.K., Correa-Victoria, F.J., Fjellstrom, R.G., Scheffler, B., and Prado, G.A. 2011. Sheath-blight resistance QTLS in japonica rice germplasm. Euphytica. http://www.springerlink.com/content/q63v2h0475002k24/fulltext.html

Rush, M.C., Groth, D.E., and Sha, X. 2011. Registration of 25 sheath blight disease resistant germplasm lines of rice with good agronomic traits. J. Plant Registrations 5:400-402.

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Ham, J.H. and Groth, D.E. 2011. Bacterial panicle blight - an emerging rice disease. Louisiana Agriculture 54(3):16-17.

Shrestha, B.K., Karki, H.S., Groth, D.E., Rush, M.C., and Ham, J.H. 2011. Suppression of bacterial panicle blight of rice by pretreatment with various chemical compounds. Phytopathology 101:S166.

Ham, J.H., Karki, H.S., Shrestha, B.K., Barphagha, I.K., Melanson, R.A Chen, R., Groth, D.E., Sha, X., Utomo, H., Subudhi, P., and Rush, M.C. 2011. Molecular genetic and genomic studies on bacterial panicle blight of rice and its causative agent Burkholderia glumae. Phytopathology 101:S266.

Groth, D.E. 2011. Why are cercospora, bacterial panicle blight and blast are more severe some years. Rice Research Station Newsletter 8(3):6.

Groth, D.E. et al. 2011. Rice disease control studies, 2010. Ann. Res. Rpt., Rice Res. Stn., La. Agri. Exp. Stn., LSU Agricultural Center, 102:226-259.

Groth, D.E. 2011. Why is timing so critical in rice fungicide application? Rice Research Station Newsletter 8(2):3.

Groth, D.E. and Ham, J. 2011. Pest of the quarter bacterial panicle blight. Rice Research Station Newsletter 8(2):4.

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Participants:

Donald Groth (PI), Xueyan Sha, Herry Utomo, Steve Linscombe, and Clayton Hollier, LSU AgCenter.

Target Audiences:

Audiences for this project included rice growers, consultants, rice breeders, and plant pathologist professionals.

Project Modifications:

Nothing significant to report during this reporting period.

Approved (Signature)	Title	Date