

Our Latest Research Results - July 2012

Trapping of Rift Valley Fever (RVF) Vectors Using Light Emitting Diode (LED) CDC Traps in Two Arboviral Disease Hot Spots in Kenya

Authors: D.P. Tchouassi, R. Sang, C.L. Sole, A.D. Bastos, L.W. Cohnstaedt, T. Baldwin

Submitted to: Parasites & Vectors

Understanding the distribution and abundance of mosquito disease vectors is important for determining the timing and extent of a disease epidemic. In the case of Rift Valley Fever mosquitoes in Africa, the mosquito populations fluctuate greatly with the seasons and therefore collecting when few mosquitoes are present is important for predicting epidemics. To maximize trap collections scientists in Africa in collaboration with the USDA-ARS tested the attraction of various species of mosquitoes to colored lights. The advent of energy efficient and super bright light emitting diodes (LEDs) present a logical replacement for incandescent light bulbs. Tested in this study were single color lights (red, green, blue and violet) and combinations of colors incandescent bulbs and a combination of red, green and blue LEDs together. The study found multiple colors of light are more attractive than single colors although light intensity was not considered. Some studies have found higher intensities of light are more attractive. LEDs are better in terms of energy use but about the same as incandescent in terms of mosquito attraction.

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Development of Field-Deployable Instrumentation based on "Antigen-Antibody" Reactions for Detection of Hemorrhagic Disease in Ruminants

Authors: J. Bowen, J.O. Mecham, M. Hamlin, B. Henderson, M. Kim, N. Mirjankar, B.K. Lavine

Submitted to: Microchemical Journal

Rapid diagnostic tests to detect blue tongue virus (BTV) and epizootic hemorrhage disease virus (EHDV) in wild and domestic animals is critical for identification and control of disease outbreaks. A biosensor was designed to detect virus antigen and antibody to virus from animal samples in 20 min. The antigen biosensor was able to detect and differentiate between the two closely related viruses. The antibody biosensor was able to detect antibody but could not differentiate between the two viruses.

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Evaluation of Bulk Density and Vegetation as Affected by Military Vehicle Traffic at Fort Riley, Kansas

Authors: A. Retta, L.E. Wagner, J. Tatarko, T. Todd

Submitted to: Transactions of the ASABE

Field experiments were conducted at Fort Riley, using an M1A1 Abrams tank and a Humvee. Experimental plots were subjected to repeat trafficking by both vehicles. Soil compaction and vegetation loss data were collected, and analyzed using appropriate statistical procedures. The results of the data analysis showed that soil compaction under the M1A1 tracks was detected up to 15 cm depth; under the Humvee soil compaction was relatively small. Vegetative cover loss was similar for both vehicles. Loss of standing biomass was much more severe under the M1A1 tracks than the Humvee tracks. The results of this investigation, in conjunction with similar data from experiments that are planned at various military bases across the U.S.A., will allow the development of appropriate relationships that can be incorporated in WEPS (Wind Erosion Prediction System) model so that the model can be used to aid in evaluating military training programs that minimize adverse impacts on the environment.

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Eugregarines Reduce Susceptibility of the Hide Beetle, *Dermestes maculatus*, to Apicomplexan Pathogens and Retard Larval Development

Authors: J.C. Lord, C.K. Omoto

Submitted to: Journal of Invertebrate Pathology

Insect pathogens and microbial insecticides offer natural pest control and safe alternatives to chemical insecticides, but their impacts are limited. In experiments with hide beetles, which are emerging as pests of a variety of stored commodities, we discovered that nearly ubiquitous gut-inhabiting organisms of insects have two countervailing effects. They have a small retardant effect on growth rate, but when infections are heavy they provide protection from some orally transmitted pathogens. Both effects are thought to be the result of obstruction of access to the gut wall. This research provides a basic understanding of a possible impediment to natural pest suppression and the use of microbial agents and will help to improve the arsenal of non-

chemical approaches to control insect pests in stored commodities.

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Registration of 'Brawl CL Plus' Wheat

Authors: S.D. Haley, J. Johnson, P. Westra, F. Peairs, J. Stromberger, E. Hudson, S. Seifert, R. Kottke, V. Valdez, J. Rudolph, G. Bai, X. Chen, R.L. Bowden, Y. Jin, J.A. Kolmer, M.S. Chen, B.W. Seabourn

Submitted to: Journal of Plant Registrations

'Brawl CL Plus' is a new hard red winter wheat cultivar developed by the Colorado Agricultural Experiment Station and USDA and released August 2011. Brawl CL Plus was selected from the cross Teal 11A/Above//CO99314. Teal 11A is a hard red spring wheat line from BASF Corporation that carries a gene conferring tolerance to imidazolinone herbicides. 'Above' carries another gene conferring tolerance to the herbicides. CO99314 is an experimental line with the pedigree TX91V4931/'Halt'. Brawl CL Plus was selected as an F3:4 line, CO06052. It carries two genes for herbicide tolerance, is adapted to the production conditions in eastern Colorado, has moderate resistance to stripe rust, and good milling and bread baking quality attributes.

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Registration of 'Denali' Wheat

Authors: S.D. Haley, J. Johnson, F. Peairs, J. Stromberger, E. Hudson, S. Seifert, R. Kottke, V. Valdez, J. Rudolph, T.J. Martin, G. Bai, X. Chen, R.L. Bowden, Y. Jin, J.A. Kolmer, M.S. Chen, B.W. Seabourn

Submitted to: Journal of Plant Registrations

'Denali' is a new hard winter wheat cultivar developed by the Colorado Agricultural Experiment Station and USDA-ARS and Co-released with Kansas State University (KSU) August 2011. Denali was selected from the cross CO980829/'TAM 111'. CO980829 is an experimental line from CSU with the pedigree 'Yuma'/PI 372129//CO850034/3/4*Yuma/4/NEWS12. TAM 111 is a hard red winter wheat cultivar released by Texas A&M University. Denali was selected as an F5:6 line, CO050303-2, in 2007. This line has superior grain yield in eastern Colorado, grain test weight, and resistance to stripe rust.

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Registration of 'Byrd' Wheat

Authors: S.D. Haley, J. Johnson, F. Peairs, J. Stromberger, E. Hudson, S. Seifert, R. Kottke, V. Valdez, J. Rudolph, G. Bai, X. Chen, R.L. Bowden, Y. Jin, J.A. Kolmer, M.S. Chen, B.W. Seabourn

Submitted to: Journal of Plant Registrations

'Byrd' is a hard red winter wheat cultivar developed by the Colorado Agricultural Experiment Station and USDA, and was named in honor of Dr. Byrd C. Curtis, former CSU Wheat Breeder and Wheat Program Director of the International Maize and Wheat Improvement Center (CIMMYT). Byrd was selected from the cross 'TAM 112'/CO970547-7. TAM 112 is a hard red winter wheat cultivar released by Texas A&M University. CO970547-7 is a breeding line with the pedigree 'Ike'/'Halt'. Byrd was selected as an F3:4 line, CO06424. It has superior grain yield in eastern Colorado, resistance to stripe and stem rust, and superior milling and bread baking quality attributes.

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