

# Scientific Research Demonstrates Effectiveness of the Sentricon® System

At the foundation of the Sentricon System is a research base unparalleled by any other termite bait technology. Extensive field tests completed by the U.S. Department of Agriculture's Forest Service and research conducted by 30 universities and external research contractors have resulted in the publication of more than 70 scientific articles providing independently produced data on Sentricon and evidence of its ability to eliminate termite colonies. This bibliography includes many of the publications in the scientific literature concerning field and laboratory testing of Sentricon and/or its components.

- Cabrera, B.J. & E.M. Thoms. 2006. Versatility of baits containing noviflumuron for control of structural infestations of Formosan subterranean termites (Isoptera: Rhinotermitidae). *Florida Entomologist* 89 (1): 20-31.
- DeMark, J.J. & J.D. Thomas. 2000. Seasonal activity, wood consumption rates, and response to above-ground delivery of hexaflumuron-treated bait to *Reticulitermes flavipes* (Kollar) (Isoptera: Rhinotermitidae) in Pennsylvania and Wisconsin. *Sociobiology* 36: 181-200.
- DeMark, J.J., R.L. Hamm, E. Chin-Heady, M.P. Tolley & J.E. Eger. Recruit® HD, a new termite bait: laboratory performance characterization. *Proceedings of the 2010 National Conference on Urban Entomology.* Portland, OR, USA, p. 108.
- Eger J.E., J.J. DeMark, J.A. McKern-Lee, M.P. Tolley, M.D. Lees, M.L. Fisher, R.L. Hamm, M.W. Melichar, M. Messenger & E.M. Thoms. Field Validation of subterranean termite (ISOPTERA: RHINOTERMITIDAE) control with Recruit HD, A new termite bait. *Proceedings of the 2010 National Conference on Urban Entomology.* Portland, OR, USA, p. 111.
- Forschler, B.T. & J.C. Ryder. 1996. Subterranean termite, *Reticulitermes* spp. (Isoptera: Rhinotermitidae), colony response to baiting with hexaflumuron using a prototype commercial termite baiting system. *Journal of Entomological Science* 31 (1): 143-151.
- Gambetta, A., V. Zaffagnini & V. De Capua. 2000. Use of hexaflumuron baits against subterranean termites for protection of historical and artistic structures: experiment carried out in selected test areas at the church of Santa Maria della Sanità in Naples. *Journal of Cultural Heritage* 1:207-216.
- Getty, G.M., M.I. Haverty, V.R. Lewis & R.J. Sbragia. 1999. Interfacing basic biology of *Reticulitermes* spp. and the Sentricon Termite Colony Elimination System in northern California, USA. In W. H. Robinson, R. Rettich and G. W. Rambo (eds.), *Proceedings of the 3rd International Conference on Urban Pests*, pp. 601-604.
- Getty, G.M., C.W. Solek, R.J. Sbragia, M.I. Haverty & V.R. Lewis. 2007. Large-scale suppression of a subterranean termite community using the Sentricon® termite colony elimination system: a case study in Chatsworth, California, USA. *Sociobiology* 50 (3): 1041-1050.
- Getty, G.M., M.I. Haverty, K.A. Copren & V.R. Lewis. 2000. Response of *Reticulitermes* spp. (Isoptera: Rhinotermitidae) in northern California to baiting with hexaflumuron with Sentricon Termite Colony Elimination System. *Journal of Economic Entomology* 93: 1498-1507.
- Grace, J.K., C.H.M. Tome, T.G. Shelton, R.J. Oshiro & J.R. Yates III. 1996. Baiting studies and considerations with *Coptotermes formosanus* (Isoptera: Rhinotermitidae) in Hawaii. *Sociobiology* 28 (3): 511-520.
- Grace, J.K. & N.-Y. Su. 2001. Evidence supporting the use of termite baiting systems for long-term structural protection (Isoptera). *Sociobiology* 37: 301-310.
- Haagsma, K. & J. Bean. 1998. Evaluation of a hexaflumuron-based bait to control subterranean termites in southern California (Isoptera: Rhinotermitidae). *Sociobiology* 31 (3): 363-369.
- Hamm, R.L. & E. Chin-Heady. Does Previous feeding by *Reticulitermes* spp. (ISOPTERA: RHINOTERMITIDAE) on blank Recruit HD bait preclude subsequent feeding by other colonies of the same or different species? *Proceedings of the 2010 National Conference on Urban Entomology.* Portland, OR, USA, p. 109.
- Husseneder, C., D.M. Simms & C. Riegel. 2007. Evaluation of Treatment Success and Patterns of Reinfestation of the Formosan Subterranean Termite (Isoptera: Rhinotermitidae). *Journal of Economic Entomology* 100 (4) 1370-1380.
- Karr, L.L., J.L. Sheets, J.E. King & J.E. Dripps. 2004. Laboratory Performance and Pharmacokinetics of the Benzoylphenylurea Noviflumuron in Eastern Subterranean Termites (Isoptera: Rhinotermitidae). *Journal of Economic Entomology* 97(2), 593-600.
- King, J.E., J.J. DeMark & A.J. Griffin. 2005. Comparative laboratory efficacy of noviflumuron and diflubenzuron on *Reticulitermes flavipes* (Isoptera: Rhinotermitidae). *Sociobiology* 45 (3): 779-785.
- Kistner, D.H. & R. Sbragia. 2001. The use of the Sentricon™ Termite Colony Elimination System for controlling termites in difficult control sites in northern California. *Sociobiology* 37: 265-280.
- Lee, C.-Y. 2002. Control of foraging colonies of subterranean termites, *Coptotermes travians* (Isoptera: Rhinotermitidae) in Malaysia using Hexaflumuron baits. *Sociobiology* 39: 411-416.
- Lenz, M., P.V. Gleason, L.R. Miller & H.M. Abbey. 1996. How predictive are laboratory experiments for assessing the effects of chitin synthesis inhibitors (CSI) on field colonies for termites? - A comparison of laboratory and field data from Australian mound-building species of termite. *International Research Group on Wood Preservation. 27th Annual Meeting* 1-10.
- McKern-Lee, J.E. Eger, J.J. DeMark, M.P. Tolley, M.D. Lees, M.L. Fisher, R.L. Hamm, M.W. Melichar, M. Messenger & E.M. Thoms. Preliminary field evaluation of Recruit HD, a new durable bait. *Proceedings of the 2010 National Conference on Urban Entomology.* Portland, OR, USA, p. 110.
- Messenger, M.T., N.-Y. Su, C. Husseneder & J.K. Grace. 2005. Elimination and reinvasion studies with *Coptotermes formosanus* (Isoptera : Rhinotermitidae) in Louisiana. *Journal of Economic Entomology* 98:916-929.
- Pawson, B.M. & R.E. Gold. 1996. Evaluation of baits for termites (Isoptera: Rhinotermitidae) in Texas. *Sociobiology* 28 (3): 485-510.
- Peters, B.C. & C.J. Fitzgerald. 1999. Field evaluation of the effectiveness of three timber species as bait stakes and the bait toxicant hexaflumuron in eradicating *Coptotermes acinaciformis* (Froggatt) (Isoptera: Rhinotermitidae). *Sociobiology* 33: 227-238.
- Potter, M.F., E.A. Eliason, K. Davis & R.T. Bessin. 2001. Managing subterranean termites (Isoptera: Rhinotermitidae) in the Midwest with a hexaflumuron bait and placement considerations around structures. *Sociobiology* 38:565-584.
- Prabhakaran, S.K. 2001. Eastern subterranean termite management using baits containing hexaflumuron in affected University of Iowa structures (Isoptera: Rhinotermitidae). *Sociobiology* 37:221-234.
- Riegel C., M. Gilberg, E. Freytag, N.Y. Su & E.S. Bordes. 2005. Long-term protection of Madame John's Legacy House from subterranean termites using hexaflumuron. *Studies in Conservation* 50 (4): 267-274.
- Ripa, R., P. Luppichini, N.Y. Su & M.K. Rust. 2007. Field Evaluation of Potential Control Strategies Against the Invasive Eastern Subterranean Termite (Isoptera: Rhinotermitidae) in Chile. *Journal of Economic Entomology* 100 (4): 1391-1399.
- Rust, M.K., D.A. Reiersen, E.O. Paine, D. Kellum & K. Haagsma. 1998. Ravenous Formosan subterranean termites persist in California. *California Agriculture* 52 (2): 34-37.
- Sajap, A.S., S. Amit & J. Welker. 2000. Evaluation of hexaflumuron for controlling the subterranean termite *Coptotermes curvignathus* (Isoptera: Rhinotermitidae) in Malaysia. *Journal of Economic Entomology* 93: 429-433.
- Sajap, A.S., M.A. Jafaar & D. Ouimette. 2002. Above-ground baiting for controlling the subterranean termite, *Coptotermes travians* (Isoptera: Rhinotermitidae) in Selangor, Peninsular Malaysia. *Sociobiology* 39:345-352.
- Sajap, A.S., L.C. Lee & Z.M. Shah. 2009. Elimination of subterranean termite colonies with hexaflumuron in an improved bait matrix. Preferred Textured Cellulose (PTC). *Sociobiology* 53: (3) 891-902.
- Sheets, J.J., L.A. Karr & J.E. Dripps. 2000. Kinetics of uptake, clearance, transfer, and metabolism of hexaflumuron by eastern subterranean termites (Isoptera: Rhinotermitidae). *Journal of Economic Entomology* 93: 871-877.
- Smith, M., J. DeMark, J. Eger, M. Fisher, R. Hamm, M. Lees, J. McKern, E. Thoms & M. Tolley. 2010. Design and development of an "Always Active" termite baiting system. *Abstracts of Papers, 239th ACS National Meeting, San Francisco, CA, United States, March 21-25, 2010.*
- Spomer, N.A. and S.T. Kamble. 2005. Effect of Temperature on Noviflumuron Performance Against the Eastern Subterranean Termite (Isoptera: Rhinotermitidae). *Sociobiology* 46(2):335-348, 2005.
- Su, N.-Y. 1994. Field evaluation of a hexaflumuron bait for population suppression of subterranean termites (Isoptera: Rhinotermitidae). *Journal of Economic Entomology* 87 (2): 389-397.
- Su, N.-Y. 2003. Managing Subterranean Termite Populations for Protection of the Historic Tzu-Su Temple of San-Shia, Taiwan (Isoptera: Rhinotermitidae). *Sociobiology* 41(3): 529-546.

37. Su, N.-Y. 2005. Response of the Formosan subterranean termites (Isoptera: Rhinotermitidae) to baits or nonrepellent termiticides in extended foraging arenas. *Journal of Economic Entomology* 98 (6):2143-2152, 2005.
38. Su, N.-Y., P.M. Ban & R.H. Scheffrahn. 1997. Remedial baiting with hexaflumuron in above-ground stations to control structure-infesting populations of the Formosan subterranean termite (Isoptera: Rhinotermitidae). *Journal of Economic Entomology* 90 (3): 809-817.
39. Su, N.-Y., P.M. Ban & R.H. Scheffrahn. 2000. Control of *Coptotermes havilandi* (Isoptera: Rhinotermitidae) with hexaflumuron baits and a sensor incorporated into a monitoring and baiting program. *Journal of Economic Entomology* 93: 415-421.
40. Su, N.-Y., P.M. Ban & R.H. Scheffrahn. 2002. Control of subterranean termite populations at San Cristobal and El Morro, San Juan National Historic Site. *Journal of Cultural Heritage* 3: 217-225, 2002.
41. Su, N.-Y., E.D. Freytag, E.S. Bordes & R. Dycus. 2000. Control of the Formosan subterranean termite infestations in historic Presbytere and the Creole House of the Cabildo, French Quarter, New Orleans, using baits containing an insect growth regulator. *Studies in Conservation* 45: 30-38.
42. Su, N.-Y. & R.H. Scheffrahn. 1996a. Comparative effects of two chitin synthesis inhibitors, hexaflumuron and lufenuron, in a bait matrix against subterranean termites (Isoptera: Rhinotermitidae). *Journal of Economic Entomology* 89 (5): 1156-1160.
43. Su, N.-Y. & R.H. Scheffrahn. 1996b. Fate of subterranean termite colonies (Isoptera) after bait applications – an update and review. *Sociobiology* 27 (3): 253-275.
44. Su, N.-Y. & R.H. Scheffrahn. 1996c. A review of the evaluation criteria for bait-toxicant efficacy against field colonies of subterranean termites (Isoptera). *Sociobiology* 28 (3): 521-530.
45. Su, N.-Y. & R.H. Scheffrahn. 1998. A review of subterranean termite control practices and prospects for integrated pest management programs. *Integrated Pest Management Reviews* 3: 1-13.
46. Su, N.-Y. & R.H. Scheffrahn. 2001. Control of subterranean termites (Isoptera: Rhinotermitidae) using commercial prototype aboveground stations and hexaflumuron baits. *Sociobiology* 37 (1):111-120.
47. Su, N.-Y., J.D. Thomas & R.H. Scheffrahn. 1998. Elimination of subterranean termite populations from the Statue of Liberty National Monument using a bait matrix containing an insect growth regulator, hexaflumuron. *Journal of the American Institute for Conservation* 37: 282-292.
48. Su, N.-Y., E.M. Thoms, P.M. Ban & R.H. Scheffrahn. 1995. Monitoring/baiting station to detect and eliminate foraging populations of subterranean termites (Isoptera: Rhinotermitidae) near structures. *Journal of Economic Entomology* 88 (4): 932-936.
49. Thoms, E.M., J.E. Eger, M.T. Messenger, E. Vargo, B. Cabrera, C. Riegel, S. Murphree, J. Mauldin & P. Scherer. 2009. Bugs, Baits, and Bureaucracy: Completing the First Termite Bait Efficacy Trials (Quarterly Replenishment of Noviflumuron) Initiated after Adoption of Florida Rule, Chapter 5E-2.0311. *American Entomologist* 55 (1): 29-39.
50. Tolley, M.P. Innovation history of the Sentricon Termite Colony Elimination System. *Proceedings of the 2010 National Conference on Urban Entomology, Portland, OR, USA*, pp. 103-108.
51. Tsunoda, K., H. Matsuoka & T. Yoshimura. 1998. Colony elimination of *Reticulitermes speratus* (Isoptera: Rhinotermitidae) by bait application and the effect on foraging territory. *Journal of Economic Entomology* 91: 1383-1386.
52. Tsunoda, K., H. Matsuoka, T. Yoshimura & K. Yamauchi. 1997. Colony elimination of *Reticulitermes speratus* (Kolbe) (Isoptera: Rhinotermitidae) by bait system. *The International Research Group on Wood Preservation*, 28. Pages: 1-3.
53. Tsunoda, K., Y. Hikawa & T. Yoshimura. 2001. Efficacy of hexaflumuron as a bait-toxicant in the field using a transferred nest of *Coptotermes formosanus* (Isoptera: Rhinotermitidae). *Sociobiology* 37: 261-263.
54. van den Meiracker, K.G., P. A. Zungoli, E.P. Benson & W.C. Jr. Bridges. 2005. Temperature Effect on Survival and Cellulose Consumption of Noviflumuron- or Hexaflumuron-Fed *Reticulitermes flavipes* (Isoptera: Rhinotermitidae). *Sociobiology* 45[1], 185-194.
55. Vargo, E.L. 2003. Genetic structure of *Reticulitermes flavipes* and *R. virginicus* (Isoptera: Rhinotermitidae) colonies in an urban habitat and tracking of colonies following treatment with hexaflumuron bait. *Environmental Entomology* 32[532], 1271-1282.
56. Weissling, T.J. & E.M. Thoms. 1999. Use of an acoustic emission detector for locating Formosan subterranean termite (Isoptera: Rhinotermitidae) feeding activity when installing and inspecting above ground termite bait stations containing hexaflumuron. *Florida Entomologist* 82: 60-71.
57. Yates, J.R. & J.K. Grace. 2000. Effective use of above-ground hexaflumuron bait stations for Formosan subterranean termite control (Isoptera: Rhinotermitidae). *Sociobiology* 35: 333-356.
58. Yudin, L. 2002. Termites of Mariana Islands and Philippines, their damage and control. *Sociobiology* 40 (1): 71-74.



Solutions for the Growing World



Dow AgroSciences LLC • 9330 Zionsville Road • Indianapolis, IN • 46268-1054