

# Norman C. Leppla

Professor



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## Contact

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(50% Research, 45% Extension, 5% Teaching)

## Education

- B.S., Arizona State University (Zoology), 1968
- M.S., Arizona State University (Zoology), 1970
- Ph.D., University of Arizona (Entomology/ Biological Sciences), 1972

## Relevant Employment History

- Professor and IPM Coordinator (2001-present), University of Florida.
- Professor (1999-2001), University of Florida.
- Professor and Center Director (1997-1998), University of Florida.
- Associate Director (1995-1996), USDA, APHIS, National Biological Control Institute.
- Chief (1992-1994), USDA, APHIS, Plant Protection and Quarantine, Methods Development.
- Director (1989-1992), USDA, APHIS, Science and Technology, Methods Development.
- Research Leader (1988-1989), USDA, ARS, Biological Control of Pests Research Lab.
- Research Entomologist (1972 - 1988), USDA, ARS, Insect Attractants, Behavior, and Basic Biology Research Laboratory.

## Faculty Position Description

- Conduct integrated pest management (IPM) and biological control research, extension and education
- Identify, develop and implement new pest management technologies in collaboration with public and private organizations
- Establish partnerships among international, national, state and private sector organizations to resolve technical problems in implementing IPM and biological control
- Develop entrepreneurial initiatives that advance IPM and biological control, particularly among private sector producers and suppliers
- Provide consultation on IPM, biological control, insect rearing and quality control, regulatory entomology, and related subjects
- Apply knowledge to help improve Florida's agricultural productivity and profitability, protect human health and property, and preserve natural resources

### **Research**

- Commercialize natural enemies for pests of agriculture, communities, and natural environments
- Coordinate development of IPM systems based on sustainable practices

### **Extension**

- Accelerate the implementation of new pest management technologies in collaboration with public and private organizations
- Improve the productivity, profitability and safety of agriculture in Florida by expanding augmentation and conservation approaches to the biological control of pests
- Provide education and training in IPM to manage pests in urban and natural environments

### **Teaching**

- Mentor graduate students, chair and serve on Ph.D., M.S. and D.P.M. committees, and direct graduate research and extension projects
- Deliver lectures in IPM and biological control (ENY 5241), and supervise Selected Studies in Entomology (ENY 6934)
- Develop interdisciplinary curricula for the Entomology and Nematology Department, and Plant Medicine Program

### **Accomplishments**

- Designed, established and served as Director of the first comprehensive statewide IPM program for the University of Florida
- Led consolidation of the Mid-Florida Research and Education Center and supervised construction of a new facility
- Cooperatively established the Mole Cricket Task Force to commercialize and widely distributed a nematode for mole cricket biological control
- Led methods development support for USDA, APHIS to respond to serious pest outbreaks that threatened American agriculture, including collaboratively designing and establishing the National Biological Control Institute
- Established the first research laboratory specifically to develop arthropod rearing technology in support of the commercial biological control industry and served as Research Leader
- Conducted research in insect colonization, mass production and quality control that cooperatively established this sub-discipline of entomology

### **Honors and Awards**

- 2008 UF/IFAS, Extension Gold Image Award (IPM Guide)
- 2007 IOBC, Certificate of Appreciation (AMRQC co-chairman)
- 2007 ESA, Certificate of Appreciation, Environmental Entomology Editorial Board
- 2006 Florida Entomological Society, Entomologist of the Year Award
- 2006 Association of Natural Bio-control Producers, Honorary Appointment, Liaison
- 2006 IOBC, Workshop on Rearing Quality Insects, Certificate of Appreciation
- 2006 UF/IFAS, Extension Gold Image Awards
- 2005 Entomological Society of America, Southeastern Branch, Award for Excellence in IPM
- 2003 Florida Entomological Society Team award for mole cricket biological control
- 2003 Certificate of Appreciation, Co-leader, Tropical Fruit Fly Workshop, Grenada
- 2002 UF/IFAS, Jim App Award for Outstanding Design Team in Extension
- 2001 International Master Gardener Conference, Certificate of Appreciation
- 1999 4th Caribbean Conference of Entomology, Certificate of Appreciation
- 1999 Association of Natural Bio-control Producers, Award for Leadership
- 1999 ESA, Award for Service, Committee on Public Information
- 1998 Association of Natural Bio-control Producers, Certificate of Appreciation
- 1997 U.S. Vice-President's National Award for Transgenic Arthropod Regulation
- 1995 ESA, Award for Contributions as Director of Certification
- 1995 USDA Group Honor Award for Excellence, leadership in whitefly management
- 1993 U.S. President's Commendation, Special Representative to the Northern Mariana Islands
- 1993 USDA Achievement Award for Gypchek virus development
- 1993 USDA Achievement Award, Implementing the National Biological Control Institute

### **Publications**

#### Books Edited

- Leppla, N.C. 1970. The Ecology and Behavior of *Cysteodemus armatus* LeConte (Coleoptera: Meloidae). M.S. Thesis, Arizona State University. 68 p.
- Leppla, N.C. 1972. Reproductive Behavior of the Pink Bollworm Moth. Ph.D. Dissertation, University of Arizona. 99 p.
- Leppla, N.C., and T.R. Ashley. 1978. Facilities for Insect Research and Production. USDA Tech. Bull. 1576. 86 p.
- Leppla, N.C. 1979. Sociobiology of Sex. Florida Entomologist Vol. 62. 34 p.
- Dickerson, W.A., J.D. Hoffman, E.G. King, N.C. Leppla, and T.M. O Dell. 1980. Arthropod Species in Culture in the United States and Other Countries. Entomol. Soc. Amer. Monograph. 93 p.
- King, E.G., and N.C. Leppla. 1984. Advances and Challenges in Insect Rearing. Agric. Res. Serv., USDA, U.S. Government Printing Office. Washington, DC. 306 p.
- Edwards, D.R., N.C. Leppla, and W.A. Dickerson. 1986. Arthropod Species in Culture. Entomol. Soc. Amer. 49 p.
- Leppla, N.C., and D.H. Habeck. 1988. Caribbean Fruit Fly Eradication in Florida: Supportive Research and Technology. 36 p.
- Anderson, T.E., and N.C. Leppla. 1992. Advances in Insect Rearing for Research and Pest Management. Westview Press. Boulder, Colorado. 519 p.
- Leppla, N.C., and A. Malavasi. 1994. Fruit Flies of the Western Hemisphere, Proc. of the First Meeting of the IOBC Working Group. San Jose, Costa Rica. November 1992. 32 p.
- Nicoli, G., M. Benuzzi, and N.C. Leppla. 1994. Proceedings, Seventh Workshop of the IOBC Global Working Group on "Quality Control of Mass Reared Arthropods." IOBC, Rimini, Italy; September 13-16, 1993. 237 p.
- Parker, A.G., D.A. Dame, U. Feldmann, I. Kabore, N.C. Leppla, J. Hendrichs, I. Malele, G. Mutika, and D. Orozaco. 2002. Developing Product Quality Control for Standardization of Tsetse Mass Production. FAO, IAEA, Vienna. 60 p.
- Grenier, S., P. De Clercq, and N.C. Leppla . 2003. Arthropod Mass Rearing and Quality Control, the 10th Workshop, IOBC Working Group. Montpellier, Fr., IOBC, WPRS. 54 p.
- Leppla, N.C., K.A. Bloem, and R.F. Luck. 2003. Quality Control for Mass-Reared Arthropods, the 8th and 9th Workshops of the IOBC Working Group on Quality Control of Mass-Reared Arthropods. Santa Barbara, CA & Cali, Colombia. IOBC, WPRS. 171 p.
- Gillett, J.L., H.N. HansPetersen, N.C. Leppla, and D.D. Thomas. 2006. Grower's IPM Guide for Florida Tomato and Pepper Production. University of Florida, Extension. 206 p.

### Book Chapters

- Leppla, N.C., and E.W. Hamilton. 1977. Actographic monitoring of *Anastrepha suspensa* colonies, pp. 39-40. In D.L. Chambers and E.F. Boller (Eds.), Quality Control: An Idea Book for Fruit Fly Workers. International Organization for Biological Control of Noxious Animals and Plants Bulletin SROP-WPRS, 1977/5. 162 p.
- Leppla, N.C. 1977. "Introduction," Monitoring production, pp. 123-124. Ibid.
- Leppla, N.C. 1977. Life history measurements of *Anastrepha suspensa*, pp. 133-135. Ibid.
- Leppla, N.C., and W.K. Turner. 1977. Respirometric monitoring of *Anastrepha suspensa* colonies, pp. 156-158. Ibid.
- Leppla, N.C., D.L. Chambers, and E.F. Boller. 1977. A proposed system for implementing quality control in a pest management program, pp. 159-162. Ibid.

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- Leppla, N.C., S.L. Carlyle, C.W. Green, and W.J. Pons. 1978. A custom insect rearing facility, pp. 66-70. *Ibid.*
- Leppla, N.C., W.R. Fisher, J.R. Rye and C.W. Green. 1982. Lepidopteran mass rearing: An inside view, pp. 123-133. In *Sterile Insect Technique and Radiation in Insect Control*. International Atomic Energy Agency SM-255/14.
- Leppla, N.C., P.V. Vail, and J.R. Rye. 1984. Mass rearing the cabbage looper, *Trichoplusia ni*, pp. 248-254. In E.G. King and N.C. Leppla (Eds.), *Advances and Challenges in Insect Rearing*. Agric. Res. Serv., USDA, U.S. Govt. Printing Office. Washington, D.C. 306p.
- Leppla, N.C. 1984. Systems management of insect population suppression programs based on mass production of biological control organisms, pp. 292-294. *Ibid.*
- Fisher, W.R., and N.C. Leppla. 1985. Insectary design and operation, pp. 167-183. In P. Singh and R.F. Moore (Eds.), *Handbook of Insect Rearing*, Vol. 1. Elsevier Science Publishers, Amsterdam. 488 p.
- Leppla, N.C. 1985. *Anticarsia gemmatilis*, pp. 189-196. Vol. 2, *Ibid.* 514 p.
- Guy, R.H., N.C. Leppla, J.R. Rye, C.W. Green, S.L. Barrette, and K.A. Hollien. 1985. *Trichoplusia ni*, pp. 487-494. Vol. 2, *Ibid.* 514 p.
- Leppla, N.C. 1989. Laboratory colonization of fruit flies, pp. 91-103. In A.S. Robinson and G. Hooper (Eds.), *World Crop Pests*, Vol. 3 B, *Fruit Flies, Their Biology, Natural Enemies and Control*. Elsevier, Amsterdam. 447 p.
- Koehler, P.G., N.C. Leppla, and R.S. Patterson. 1990. Circadian rhythm in the cat flea *Ctenocephalides felis* (Siphonoptera: Pulicidae), pp. 661-665. In *Chronobiology: Its Role in Clinical Medicine, General Biology, and Agriculture*, Part B. Wiley-Liss, New York.
- Leppla, N.C., and A.A. Guerra. 1990. Aplicaciones de la colonizacion y produccion masiva de insectos en control biologico, pp. 114-124. In *Miscelanea Sociedad Colombiana de Entomologia*, No. 17.
- Dickerson, W.A., and N.C. Leppla. 1992. The Insect Rearing Group and the development of insect rearing as a profession, pp. 3-7. In T.E. Anderson and N.C. Leppla (Eds.), *Advances in Insect Rearing for Research and Pest Management*. Westview Press. Boulder, CO. 519 p.
- Leppla, N.C., E.S. Delfosse, and R.S. Soper. 1995. Technical and regulatory constraints to international cooperation in biological control, pp. 385-395. In D. Gerling (Ed.), *Bemisia 1995: Taxonomy, Biology, Damage, Control and Management*. Intercept Lt., Andover, Hants., UK. 702 p.
- Leppla, N.C., and W.G. Eden. 1999. Facilities and Procedures to Prevent the Escape of Insects from Large-Scale Rearing Operations, pp. 186-190. In R.P. Kahn and S.B. Bathur (Eds). *Plant Protection and Quarantine Concepts, Containment Facilities*. Amer. Phytopath. Soc. Press, St. Paul, Minnesota. 213 p.
- Leppla, N.C. 2002. Rearing of Insects, pp. 975-979. In V.H. Resh and R. Cardé (Eds.) *Encyclopedia of Insects*. Academic Press, San Diego, California. 1266 p.
- Leppla, N.C. 2003. Aspects of total quality control for the production of natural enemies, pp. 19-24. In J.C. van Lenteren (Ed.), *Quality Control of Natural Enemies Used in Biological Pest Control: Theoretical Background and Development of Testing Procedures*. CABI Publishing. Wallingford, UK. 327 p.
- Leppla, N.C. 2004. The Basics of Insect Rearing, pp. 1862-1868. In J.L. Capinera (Ed.), *Encyclopedia of Entomology*, Vol. 3. Kluwer, Boston. 2580 p.
- Leppla, N.C., and B.C. Larson. 2004. Quality Control Methods for the Production of Natural Enemies. *Encyclopedia of Pest Management*. Marcel Dekker, NY. 4 p.

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- Leppla, N.C. 2006. Introduction, Chapter 1. *Grower's IPM Guide for Florida Tomato & Pepper Production*. UF, IFAS, Extension, IPM Florida.
- Frank, J.H., and N.C. Leppla. 2008. Mole Crickets (Orthoptera: Gryllotalpidae) and Their Biological Control, pp. 2442-2449. In J.L. Capinera (Ed.), *Encyclopedia of Entomology*, 2nd Edition. Springer, Dordrecht, The Netherlands.
- Leppla, N.C. 2008. The Lovebug, pp. 2243-2249. In J.L. Capinera (Ed.), *Encyclopedia of Entomology*, 2nd Edition. Springer, Dordrecht, The Netherlands.
- Leppla, N.C., and F.M. Davis. 2009. Introduction, Chapter 1. *Principles and Procedures for Rearing High Quality Insects*, Mississippi State University Press. (in press)
- Leppla, N.C. 2009. *The Foundation of Quality Control for Insect Rearing*. Ibid. (in press).

#### Refereed Publications

- Leppla, N.C., and H.G. Spangler. 1971. A flight-cage actograph for recording circadian periodicity of pink bollworm moths. *Annals of the Entomological Society of America* 64:1431-1434.
- Leppla, N.C. 1972. Calling behavior during pheromone release in the female pink bollworm. *Annals of the Entomological Society of America* 65:281-282.
- Leppla, N.C., S.L. Carlyle, and T.C. Carlisle. 1974. Effects of surface sterilization and automatic collection on cabbage looper eggs. *Journal of Economic Entomology* 67:33-36.
- Leppla, N.C., and W.L. Nutting. 1974. Circadian rhythms and the influence of photoperiod on mating frequency in pink bollworm moths. *Journal of the Georgia Entomological Society* 9:54-58.
- Leppla, N.C., L.N. Standifer, and E.H. Erickson, Jr. 1974. Culturing larvae of blister beetles on diets containing different pollens collected by honeybees. *Journal of Apicultural Research* 13:243-247.
- Leppla, N.C., J.L. Sharp, W.K. Turner, E.W. Hamilton, and D.R. Bennett. 1974. Rhythmic activity of *Plecia nearctica*. *Environmental Entomology* 3:323-326.
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- Sharp, J.L., N.C. Leppla, D.R. Bennett, W.K. Turner, and E.W. Hamilton. 1974. Flight ability of *Plecia nearctica* in the laboratory. *Annals of the Entomological Society of America* 67:735-738.
- Leppla, N.C., J.D. Solomon, and R.E. Doolittle. 1975. Culturing the carpenterworm. *Annals of the Entomological Society of America* 68:683-685.
- Carlyle, S.L., N.C. Leppla, and E.R. Mitchell. 1975. Cabbage looper: A labor reducing oviposition cage. *Journal of the Georgia Entomological Society* 10:232-234.
- Leppla, N.C., S.L. Carlyle, W.J. Pons, and E.R. Mitchell. 1975. Use of a rodent rearing container for culturing insects. *Journal of the Georgia Entomological Society* 10:326-327.
- Leppla, N.C., and W.K. Turner. 1975. Carbon dioxide output and mating in adult cabbage looper moths exposed to discrete light regimes. *Journal of Insect Physiology* 21:1233-1236.

- Antonio, A.Q., J.R. McLaughlin, N.C. Leppla, and C.W. Green. 1975. Culturing the lesser peachtree borer. *Journal of Economic Entomology* 68:309-310.
- Leppla, N.C., T.C. Carlysle, and R.H. Guy. 1975. Reproductive systems and the mechanics of copulation in *Plecia nearctica* Hardy (Diptera: Bibionidae). *International Journal of Insect Morphology and Embryology* 4:299-306.
- Leppla, N.C. 1975. Habits of the hypertrophic blister beetle, *Cysteodemus armatus*. *Southwestern Naturalist* 21:49-54.
- Leppla, N.C. 1976. Circadian rhythms of locomotion and reproductive behavior in adult velvetbean caterpillars. *Annals of the Entomological Society of America* 69:45-48.
- Leppla, N.C., and W.K. Turner. 1976. Circadian rhythms of locomotion in adult Caribbean fruit flies. *Florida Entomologist* 59:61-62.
- Leppla, N.C. 1976. Starch compounds as adjunct gelling agents in larval diet of the cabbage looper. *Journal of the Georgia Entomological Society* 11:251-254.
- Greene, G.L., N.C. Leppla, and W.A. Dickerson. 1976. Velvetbean caterpillar: A rearing procedure and artificial medium. *Journal of Economic Entomology* 69:487-488.
- Spencer, N.R., N.C. Leppla, and G.A. Presser. 1976. Sodium alginate in cabbage looper diet. *Entomologia Experimentalis et Applicata* 20:39-42.
- Leppla, N.C., M.D. Huettel, D.L. Chambers, and W.K. Turner. 1976. Comparative life history and respiratory activity of "wild" and colonized Caribbean fruit flies (Diptera: Tephritidae). *Entomophaga* 21:353-357.
- Leppla, N.C., T.R. Ashley, R.H. Guy, and G.D. Butler. 1977. Laboratory life history of the velvetbean caterpillar. *Annals of the Entomological Society of America* 70:217-220.
- Turner, W.K., N.C. Leppla, V. Chew, and F.L. Lee. 1977. Light quality influences on carbon dioxide output and mating of cabbage looper moths. *Annals of the Entomological Society of America* 70:259-263.
- Buschman, L.L., W.H. Whitcomb, R.C. Hemenway, D.L. Mays, N. Ru, N.C. Leppla, and B.J. Smittle. 1977. Predators of velvetbean caterpillar eggs in Florida soybeans. *Environmental Entomology* 6:403-407.
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- Leppla, N.C., J.D. Solomon, and W.J. Pons. 1979. Sexing carpenterworm larvae. *Journal of the Georgia Entomological Society* 14:144-148.
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- Ashley, T.R., E.R. Mitchell, N.C. Leppla, and E.E. Grissell. 1980. Parasites attacking fall armyworm larvae, *Spodoptera frugiperda*, in late-planted field corn. *Florida Entomologist* 63:136-142.
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