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Affiliation:
Administrative/Physical Location: Texas A&M AgriLife Research, Corpus Christi
Academic Unit: Department of Entomology, Texas A&M, College Station

Current Academic Title: Professor of Entomology/Field Crops Entomologist

Appointment: Expectation and Effort are 75% Research & Outreach, 15% Teaching, and 10% Service

Research & Outreach. Work with entomology and agricultural research, extension, education, grower, and industry partners on priority and emerging pest management issues relevant to fiber and grain crops and regional and national goals in pest management. Apply research findings generated from applied insect ecology questions to the development of IPM approaches for field crop pest and beneficial insects. Publish in regional, national, and international outlets. Lead and participate in technology transfer and outreach functions.

Teaching. Develop and sponsor student learning experiences such as graduate assistantships, undergraduate internships, and other outside of the classroom experiences. Provide lectures in entomology and related disciplines.

Service. Provide professional service, including editorial services, committee work, professional reviews, and other service to societies and institutions.

Recent Research and Outreach: In my most recent thrust in economic entomology and applied insect ecology and as related to career-length efforts, collaborations have been essential in the *Development of Compatible Integrated Pest Management Tactics of Sugarcane Aphid on Sorghum*. Research on sorghum susceptibility to sugarcane aphid (2017: JEE 110: 2109-18) and within-field aphid distribution (2017: Southwest Ent. 42: 27-35) have yielded research-based thresholds (2016: AgriLife pub ENTO-035; 2019: JEE in press) and sampling protocols for growers (2015: AgriLife pub ENTO-043). Research on sorghum resistance to aphids and their compatibility with natural enemies benefitted from collaborations from sorghum breeders and fellow entomologists (2015: JEE 108: 576-82), insect systematists (2017: one Entomology MS thesis; 2017: JEE 110: 2109-18), and geneticists (2017: Crop Sci: 57: 2064-72, 2018: Crop Sci. 58: 2533-2541). These findings are applicable regionally, as supported by grower associations, industry, and several federal grants (USDA Southern IPM, USDA NIFA CPPM, USDA Risk Management). Transformation of this work to specific field crop applications continues, as exemplified by sugarcane aphid decision-making management tools (2016: J. Integr. Pest Manage. 7: 12; doi.org/10.1093/jipm/pnw011) as also disseminated through web sites, webinars, and society and grower-sponsored presentations (2018: J. Integr. Pest Manage. 9: 2; doi: 10.1093/jipm/pmx030). Continuing studies augmented with a recent USDA ARS Areawide Pest Management Program cooperative agreement are geared to research and application of the area-wide concept in managing sugarcane aphid (2019: Ann. Rev. Ent. 64: 73-93).

Agricultural impact of sugarcane aphid research and outreach is indicated by increasing grower success in managing sugarcane aphid. In my South Texas area of primary effort, there

has been no grain sorghum acreage reduction since the first outbreaks of 2013, use of aphid-resistant hybrids has increased to about 50% of the acreage, and remaining acreage is managed with research-based economic thresholds that result in no greater than one insecticide spray for this aphid needed on average annually.

Career-length scholarly impact includes research and review of aphid ecology and management, and IPM implementation, as synthesized in three Annual Review of Entomology articles (2004, 49: 219-42; 2012, 57: 41-59; 2019, 64: 73-93). These have contributed to the advancement of IPM and applied insect ecology through study of aphid invasions affecting cereal crops focusing on the North American Great Plains. Most recently this effort has been integrated with ecological modeling of sugarcane aphid population dynamics in the Great Plains as affected by weather-driven long-distance movement and local population growth moderated by natural enemy and host plant regulation (2019: submissions to Annals ESA and Ecological Modelling with Brewer as co-author).

Recognition of this effort includes recent local (Texas A&M AgriLife Extension), regional (USDA Southern IPM Center, USDA Southern Risk Management Education Center), and national (ESA, Plant-Insect Ecosystem IPM Award) team awards. I was also the *2019 SW Branch nominee for the Entomological Society of America Excellence in IPM award* for the work on sugarcane aphid. It was also a joy being recognized by the Entomology Graduate Students Assn. as the *2017 Outstanding Mentor in Research,* which includes guidance of five graduate students in my laboratory.

Educational Background

Aug. 1990	Ph. D. Entomology, University of California, Riverside, California
Dec. 1986	Master in Applied Statistics, Louisiana State University, Baton Rouge
Aug. 1985	Master of Science, Entomology, Louisiana State University, Baton Rouge
Dec. 1981	B.S. Entomology, University of California, Davis, California.
July 1979	A.A., San Joaquin Delta College, Stockton, California.

Relevant Employment:

2009-current. Field Crops Entomologist/Assistant Professor (2009-2015), Associate Professor (2015-current), Texas A&M AgriLife Research, Department of Entomology (75% research & outreach, 15% teaching, and 10% service), Texas A&M University.

2002-2009. Pest Management Coordinator, Assoc. Professor, Entomology (0.50 admin, 0.25 extension, 0.25 research). Michigan State University.

1991-2002, Assistant/Associate Professor/ Extension Specialist, Entomology (0.60 extension, 0.30 research, 0.10 teaching). University of Wyoming.

Memberships and Affiliations:

Entomological Society of America, 1983-present
Society of Southwestern Entomologists, 1993-2000, 2010-present
South Carolina Entomological Society, 1995-2001
Central States (Kansas) Entomological Society, 1995-2001
International Organization of Biological Control, 1996-1999, 2005

Awards and Honors

Awards (since 2013, with selected previous awards):

Sugarcane Aphid IPM Team. Plant-Insect Ecosystem IPM Award. Entomol. Soc. Amer. 2019.

Southwest Branch Award for Excellence in Integrated Pest Management. Entomol. Soc. Amer.. 2019.
Outstanding Mentorship in Research. Entomology Graduate Student Organization. 2017.
Project of Excellence, team member. Risk management and economic thresholds for sugarcane aphid on sorghum. USDA NIFA Southern Region Risk Management Education Center, 2017.
Pulling Together Award, Sugarcane Aphid team member. Southern IPM Center. 2016.
Superior Service Team Award, Sugarcane aphid. Texas A&M AgriLife Extension. 2015.
Grower Incentives for IPM Team Project, International IPM Recognition Award, 2009.
EPA Region VIII Outstanding Achievement Team Award, 1995.
National FFA Organization, Distinguished Service Award, 1995.
New Employee Cooperative Extension Award, U. Wyoming, 1994.

Elected Positions:
Council of Principle Investigators, Texas A&M, Texas A&M AgriLife Research rep) (2017-2020).
Faculty Advisory Committee, Entomology, Texas A&M , elected (2012-14), re-elected (2015-17).
Faculty Senate, U. Wyoming, Department of Plant, Soil, & Insect Sciences rep (1997-1998).

Highlighted National and International Research and Outreach Recognition (selected)
Invitation to write scientific reviews:
Three Annual Review of Entomology articles in 2004, 2012, and 2019, contributing to advancement of IPM and study of aphid invasions affecting cereal crops.
Co-author of Cotton insect pest management, in 2nd edition of 'Cotton', Agronomy Society.

Organizer of symposia (selective)
Ecology and management of cereal aphid invasions, crossing the Great Plains borders from Mexico to Canada. Entomol. Soc. Amer. Annual Meeting, 2018 (organizer with F. Peairs).
An Integrated Regional Response to an Invasive Aphid Pest of Sorghum, Symposium, SW Branch Entomological Society of America meeting, 2015 (organizer).
Making it work on-the-ground: increased sponsorship of IPM adoption in USDA conservation programs. 5th National IPM Symposium, St. Louis, 2006 (organizer).
Implementing IPM through Conservation Programs: Opportunities, Experiences, and Strategies to Move Forward. Entomological Society of America Annual Meeting, 2007 (organizer).

Research

1. Research Publications

Overview

Publication Type	Career	Since 2013
Journal article (peer reviewed)	94	41
Chapters in Books	7	1
Abstracts and proceedings papers	67	26
University Pubs	47	9

Refereed journal articles (since 2013 and selected prior publications).. Listings beginning here in reverse chronological order**,** Superscripts are used to identify my contribution: [1] led investigation and writing, [2] provided guidance for lead graduate student, [3] conducted a component experiment, [4] data collection, organization, and/or analyses, [5] consulted on project, input on design, data management and/or analyses, [6] guidance for lead post-doc, [7] guidance for lead undergraduate student, [8] shared writing. [+] indicates student or post-doc in my program. Et al. used when authorship is extensive.

Pruter, L. S. [+], **M. J. Brewer** [2], M. A. Weaver, S. C. Murray, T. S. Isakeit, and J. S. Bernal. 2019. Association of insect-derived ear injury with yield and aflatoxin of maize hybrids varying in Bt transgenes. Environ. Entomol. in press.

Glover, J. P. [+], G. A. Sword, and **M. J. Brewer** [2]. Photoperiod-specific within plant distribution of the green stink bug (Hemiptera: Pentatomidae) on cotton. Environ. Entomol. 2019.

Koralewski, T. E., H.-H. Wang, W. E. Grant, **M. J. Brewer** [5], N. C. Elliott, J. K. Westbrook, A. Szczepaniec, Knutson, K. G. Giles, and J. P. Michaud. Integrating models of atmospheric dispersion and crop-pest dynamics: linking detection of local aphid infestations to forecasts of region-wide invasion of cereal crops. Ann. Entomol. Soc. Amer. in press.

Brewer, M. J. [1], L. Deleon.[+], and I. L. Esquivel.[+]. 2019. GIS-based mapping and spatial analyses applied to risk assessment and resource allocation for boll weevil detection. Ann. Entomol. Soc. Amer. in press.

Maxson, E.L., **M.J. Brewer**, W.L. Rooney, and J.B. Woolley. 2019. Species composition and abundance of the natural enemies of sugarcane aphid, *Melanaphis sacchari* (Zehnter) (Hemiptera: Aphididae), on sorghum in Texas. Proc. Wash. Entomol. Soc. in press.

Wang, H.-H., W.E. Grant, N.C. Elliott, **M.J. Brewer** [5], T.E. Koralewski, J.K. Westbrook, T.M. Alves, and G.A. Sword. 2019. Integrated modelling of the life cycle and aeroecology of wind-borne pests in temporally-variable spatially-heterogeneous environment. Ecol. Modelling 399: 23-38.

Gordy, J.W. [+], **M.J. Brewer** [2], R.D. Bowling, , G.D. Buntin, N.J. Seiter, D.L. Kerns, F.P.F. Reay-Jones, and M.O. Way. 2019. Development of economic thresholds for sugarcane aphid (Hemiptera: Aphididae) in susceptible grain sorghum hybrids. J. Econ. Entomol. doi.org/10.1093/jee/toz028.

Glover, J.P. [+], **M.J. Brewer** [2], M.N. Parajulee, et al. 2019. A boll-feeding sucking bug complex on cotton: fruit retention, boll injury, cotton boll rot, and economic injury levels derived from yield—insect density relationships. J. Econ. Entomol. doi.org/10.1093/jee/toz018.

Brewer, M.J. [8], and J.P. Glover [+]. 2019. Boll injury caused by leaffooted bug in late-season cotton. Crop Protect. 119: 214-218.

Brewer, M.J.[8], F.B. Peairs, and N.C. Elliott. 2019. Invasive cereal aphids of North America: ecology and pest management. Ann. Rev. Entomol. 64: 73-93.

Backoulou, G.F., N.C. Elliott, L.L. Giles, **M.J. Brewer** [4], et al. 2018. Detecting change in a sorghum field infested by sugarcane aphid. Southwest. Entomol. 43: 823-832.

Thomas, J.L. [+], R. Bowling, and **M.J. Brewer** [2]. 2018. Learning experiences in IPM through concise demonstrational training videos. J. Integrated Pest Manage. 9(1): 2; 1–6; doi: 10.1093/jipm/pmx030.

Pugh, N.A., D.W. Horne, S.C. Murray, et al., **M.J. Brewer** [3], and W.L. Rooney. 2018. Temporal estimates of crop growth in sorghum and maize breeding enabled by unmanned aerial systems. Plant Phenome J. 1:170006; doi:10.2135/tppj2017.08.0006.

Elliott, N.C., **M.J. Brewer** [5], and K.L. Giles. 2018. Landscape context affects aphid parasitism by *Lysiphlebus testaceipes* in wheat fields. Environ. Entomol. 47: 803-811.

Backoulou, G.F., N.C. Elliott, L.L. Giles, T.M. Alves[+], **M.J. Brewer** [4], et al. 2018. Using multispectral imagery to map spatially variable sugarcane aphid infestations in sorghum. Southwest. Entomol. 43: 37-44.

Chu, T., M. J. Starek, **M. J. Brewer** [3], S.C. Murray, and L. S. Pruter[+]. 2018. Characterizing canopy height with UAS structure-from-motion photogrammetry—results analysis over multiple factors in a maize field trial. Remote Sensing Letters 9: 753-762.

Peterson, G.C., J.S. Armstrong, B.B. Pendleton, M. Stelter, and **M.J. Brewer** [4]. 2018. Registration of Tx3410 through Tx3428 sorghum germplasm resistant to sugarcane aphid [M*elanaphis sacchari* (Zehntner)]. J. Plant Registrations 12: 391-398

Karp, D.S., et al. (including **M. Brewer**[4] among multiple authors). 2018. Crop pests and predators exhibit inconsistent responses to surrounding landscape composition. Proc. Nat. Acad. Sci. 201800042; doi: 10.1073/pnas.1800042115.

Anderson, D.J., **M.J. Brewer** [2], R.D. Bowling, and J.A. Landivar. 2018. Recording within cotton distribution of plant bug injury using plant mapping computer-based tools. Crop Protect. 112: 220-226.

Harris-Shultz, K.R., **M.J. Brewer** [4], P.A. Wadl, X. Ni, and H. Wang. 2018. A sugarcane aphid 'super-clone'predominates on sorghum and johnsongrass for four US States. Crop Sci. 58: 2533-2541.

Elliott, N., **M. Brewer** [3], N. Seiter, et al. 2017. Sugarcane aphid spatial distribution in grain sorghum fields. Southwestern Entomologist 42: 27-35.

Stanton, C.[+], M. J. Starek, N. Elliott, **M. Brewer** [2], et al. 2017. Unmanned aircraft system-derived crop height and normalized difference vegetation index metrics for sorghum yield and aphid stress assessment. J. Applied Remote Sensing 11: 026035, doi:10.1117/1.JRS.11.026035.

Weaver, M.A., H.K. Abbas, **M.J. Brewer** [3], L.S. Pruter [+], et al. 2017. Integration of biological control and transgenic insect protection for mitigation of aflatoxin in corn. Crop Protect. 98:108-115.

Harris-Shultz, K., X. Ni, P.A. Wadl, et al., **M.J. Brewer** [3], and X. Yang. 2017. Microsatillite markers reveal; a predominant sugarcane aphid (Homoptera: Aphididae) clone is found on sorghum in seven states and one territory of the USA and one territory of the USA. Crop Sci. 57: 2064-2072.

Deleon, L.[+], **M. J. Brewer** [7], I. L. Esquivel[+], and J. Halcomb. 2017. Use of a geographic information system to produce pest monitoring maps for south Texas cotton and sorghum land managers. Crop Protect. 101: 50-57.

Brewer, M.J. [1]**,** J.W. Gordy[+], D.L. Kerns et al. 2017. Sugarcane aphid population growth, plant injury, and natural enemies on selected grain sorghum hybrids in Texas and Louisiana. J. Econ. Entomol. 110: 2109-2118.

Chu, T., M. J. Starek, **M. J. Brewer** [3], S.C. Murray, and L.S. Pruter[+]. 2017. Assessing crop lodging over an experimental maize (*Zea mays* L.) field using UAS images. Remote Sensing 9: 923; doi:10.3390/rs9090923.

McLoud, L.A., S. Hague, A. Knutson, C. W. Smith, and **M. Brewer** [5]. 2016. Cotton square morphology offers new insights into host plant resistance to cotton fleahopper (Hemiptera: Miridae) in upland cotton. J Econ Entomol: 109: 392-398.

Brewer, M.J. [1]**,** D.J. Anderson, and M.N. Parajulee. 2016. Cotton water-deficit stress, age, and cultivars as moderating factors of cotton fleahopper abundance and yield loss. Crop Protect: 86: 56-61.

Reay-Jones, F.P.F., R.T. Bessin, **M.J. Brewer** [3], et al. 2016. Impact of Lepidoptera (Crambidae, Noctuidae, and Pyralidae) pests on corn containing pyramided Bt traits and a blended refuge in the southern United States. J. Econ. Entomol. 109: 1859-1871.

Bowling, R**., M.J. Brewer** [5], D.L. Kerns, et al. 2016. Sugarcane aphid (Homoptera: Aphididae): a new pest on sorghum in North America. J. Integr. Pest Manage. 7: 12; doi.org/10.1093/jipm/pmw011.

Reisig, D.D., D.S. Akin, R.T. Bessin, **M.J. Brewer** [3]**,** et al. 2015. Lepidoptera (Crambidae, Noctuidae, and Pyralidae) injury to corn containing single and pyramided Bt traits, and blended or refuge, in the southern United States. J. Econ. Entomol. 108: 157-165.

Armstrong, J.S., W.L. Rooney, G.C. Peterson, R.T. Villanueva, **M.J. Brewer** [3], et al. 2015. Sugarcane aphid (Hemiptera: Aphididae): host range and sorghum resistance including cross-resistance from greenbug sources J. Econ. Entomol. 108: 576-582.

Elliott, N.C., G.F. Backoulou, **M.J. Brewer** [5], and K.L. Giles. 2015. NDVI to detect sugarcane aphid injury to grain sorghum. J. Econ. Entomol. 108: 1452–1455; DOI: 10.1093/jee/tov080.

Elliott, N., **M.J. Brewer** [3], K.L. Giles, et al. 2014. Sequential sampling for panicle worms (Lepidoptera: Noctuidae) in grain sorghum. J. Econ. Entomol. 107: 846-853.

Brewer, M.J. [1]**,** G.N. Odvody, D.J. Anderson, and J.C. Remmers. 2014. A comparison of Bt transgene, hybrid background, water stress, and insect stress effects on corn leaf and ear injury and subsequent yield. Environ. Entomol. 43: 828-839.

Farias, C.A.[+], **M.J. Brewer** [2], D.J. Anderson, et al. 2014. Native corn resistance to corn earworm, *Helicoverpa zea*, and fall armyworm, *Spodoptera frugiperda.* Southwest. Entomol. 39: 411-425.

Backoulou, G.F., N.C. Elliott, T.A. Royer, et al., and **M.J. Brewer** [5]. 2014. Web-based decision support system for managing panicle caterpillars in sorghum. Crop Management 13:1-6.

Armstrong, J.S., **M.J. Brewer** [3], R.D. Parker, and J.J. Adamczyk, Jr. 2013. Verde plant bug (Hemiptera: Miridae) feeding injury to cotton bolls characterized by boll age, size, and damage ratings. J. Econ. Entomol. 106: 189-195.

Brewer, M.J. [1], J.S. Armstrong and R.D. Parker. 2013. Single and multiple in-season measurements as indicators of at-harvest cotton boll damage caused by verde plant bug (Hemiptera: Miridae). J. Econ. Entomol. 106: 1310-1316.

Brewer, M.J. [1], D.J. Anderson, and J.S. Armstrong. 2013**.** Plant growth stage-specific injury and economic injury level for verde plant bug, *Creontiades signatus* (Hemiptera: Miridae), on cotton: effect of bloom period of infestation. J Econ. Entomol. 106: 2077-2083.

Selected relevant journal articles prior to 2013:

Brewer, M.J. [1], and P.B. Goodell. 2012. Approaches and incentives to implement integrated pest management that address regional and environmental issues. Ann. Rev. Entomol. 57: 41-59.

Brewer, M.J. [1], and T. Noma[+]. 2010. Habitat affinity of resident natural enemies of the invasive *Aphis glycines* on soybean, with comments on biological control. J. Econ. Entomol. 103: 583-596.

Noma, T.[+], C. Gratton, M. Colunga-Garcia, **M.J. Brewer** [6], et al. 2010. Relationship of soybean aphid (Hemiptera: Aphididae) to soybean plant nutrients, landscape structure, and natural enemies. Environ. Entomol. 39: 31-41.

Noma, T.[+], and **M.J. Brewer** [7]. 2008. Fungal pathogens infecting soybean aphid and aphids on other crops grown in soybean production areas of Michigan. Great Lakes Entomol. 40: 41-49.

Brewer, M.J. [1], T. Noma[+], N.C. Elliott, et al. 2008. A landscape view of cereal aphid parasitoid dynamics reveals sensitivity to farm- and region-scale vegetation. Eur. J. Entomol. 105: 503-511.

Kaiser, M.E.[+], T. Noma [+], **M. J. Brewer** [2], et al.· 2007. Hymenopteran parasitoids and dipteran predators found utilizing soybean aphid after its midwestern United States invasion. Ann. Entomol. Soc. Amer. 100: 196-205.

Noma, T.[+], **M. J. Brewer** [6], K. S. Pike, and S. D. Gaimari. 2005. Hymenopteran parasitoids and dipteran predators of *Diuraphis noxia* in the west-central Great Plains of North America: species records and geographic range. BioControl 50: 97-111.

Brewer, M. J. [1], T. Noma[+], and N. C. Elliott. 2005. Hymenopteran parasitoids and dipteran predators of the invasive aphid *Diuraphis noxia* after enemy introductions: temporal variation and implication for future aphid invasions. Biol. Control 33:315-323.

Brewer, M. J. [1] and N. C. Elliott. 2004. Biological control of cereal aphids in North America and mediating effects of host plant and habitat manipulations. Ann. Rev. Entomol. 49: 219-242.

Ahern, R. G.[+] and **M. J. Brewer** [2]. 2002. Effect of different wheat production systems on the presence oftwo parasitoids (Hymenoptera: Aphelinidae; Braconidae) of the Russian wheat aphid in the North American Great Plains. Agric., Ecosys. & Environ. 92: 201-210.

Brewer, M. J. [1], D. J. Nelson, R. G. Ahern[+], et al. 2001. Recovery and range expansion of parasitoids (Hymenoptera: Aphelinidae and Braconidae) released for biological control of *Diuraphis noxia* (Homoptera: Aphididae) in Wyoming. Environ. Entomol. 30: 578-588.

Chapters in Books (selected, all economic entomology and applied insect ecology themed):

Luttrell, R. G., T. G. Teague, and **M. J. Brewer**. 2015. Cotton insect pest management, pp. 509-546. In D. D. Fang and R. G. Percy (Eds.) Cotton, 2nd Edition, Monograph 57. Madison, WI.

Brewer, M. J. [8], and M. Ishii-Eiteman . 2009. Integrated pest management, with special focus on sustainability and risk: Principles, policy and practice, p. 33-52. In: L. Phoenix (ed.). Critical food issues: problems and state-of-the-art solutions worldwide, Vol. 1: Environment, agriculture, and health concerns. Praeger, Santa Barbara, CA.

Brewer, M. J. [8], T. Noma[+], and N. C. Elliott. 2008. A landscape perspective in managing vegetation for beneficial plant-pest-natural enemy interactions: a foundation for area-wide pest management, p. 81-96. In: Koul, O., G.W. Cuperus, and N.C. Elliott. Area-wide pest management: theory to implementation. CABI Pub., Oxfordshire, UK.

Elliott, N. C., D. W. Onstad, and **M. J. Brewer** [8]. 2008. History and ecological basis for areawide pest management, p. 15-33. In: Koul, O., G. W. Cuperus, and N. C. Elliott. Area-wide pest management: theory to implementation. CABI Pub., Oxfordshire, UK.

Brewer, M. J. [8], and M. Ishii-Eiteman. 2009. Integrated pest management, with special focus on sustainability and risk: Principles, policy and practice, p. 33-52. In: L. Phoenix (ed.). Critical food issues: problems and state-of-the-art solutions worldwide, Vol. 1: Environment, agriculture, and health concerns. Praeger, Santa Barbara, CA (refereed).

Research Support

Overview of Competitive grants and awards: Career total: 110 funded, 58 as PI and 52 as co-I

Career cumulative across awards, $ 3,633,837 directed to my program effort, as part of multi-investigator awards totally $ 10,186,570.

Since 2013: 44 funded, 24 as PI and 20 as a co-I. Cumulative of $ 1,287,393 directed to my program, as part of a multi-investigator awards totally $ 3,076,522.

Overview of non-competitive funding: Career total: 74 agreements, 65 as PI and 9 as co-I.

Career cumulative across awards, $ 1,301,695 directed to my program effort, as part of multi-investigator awards totally $ 1,391,865.

Since 2013: 37 funded, 32 as PI and 5 as a co-I. Cumulative of $ 602,582 directed to my

program, as part of a multi-investigator awards totally $ 705,082.

Competitive Grants/Contracts since 2013 (selected related to economic entomology and applied insect ecology):

My contribution in multi-investigator support: [1] led investigation, primary role in writing/ experiments or outreach, [2] primary role in supporting student, [3] secondary role in writing, primary role in conducted an experiment or outreach, [4] secondary role in writing/experiments or outreach, [5] minor role in writing/ experiments or outreach. Grants with outreach component indicated parenthetically.

Brewer, M.J. [2]**,** and I.L. Esquivel. 2019-2020. Reciprocal benefits to cotton yield and bee pollinators in a cotton/sorghum agroecosystem. Southern IPM Center Emerging Issues Program. USDA NIFA (external competitive, $30,000, $30,000 allocated to Brewer).

Brewer, M. 1 2016-2019. Areawide pest management of the invasive sugarcane aphid in grain sorghum, Texas, areawide pest management demonstration, first three years. USDA ARS Areawide IPM Program (with outreach) ($289,137, Brewer $289,137)

Brewer, M. [1]**,** R. Bowling, A. Knutson et al. 2016-2018. Sugarcane aphid management based on hybrids. Texas Grain Sorghum Producers Board (with outreach) ($72,000, Brewer $57,250).

Peterson, G., **M. Brewer** [3], and B. Rooney. 2015-2017. Technology to mitigate loss in sorghum to sugarcane aphid. Texas A&M AgriLife Research Monocot Improvement ($80,000, Brewer $20,000).

Brewer, M. [1]**,** R. Bowling, et al. 2015-2016. Sugarcane aphid on sorghum: control, decision-making, evaluation, and outreach education. Texas Grain Sorghum Producers Board (with outreach) ($57,000, Brewer $30,000).

Brewer, M.[1], D, Kerns, G. Peterson, J. Woolley, R. Villanueva, and W. Rooney. 2014-2017. An IPM response to the invasive sugarcane aphid on sorghum: developing and integrating thresholds, plant resistance, and biocontrol tactics. USDA NIFA Crop protection and pest management CGP, Applied Research and Development ($250,000, Brewer $58,591).

Brewer, M. [1], M. Way, R. Villanueva, and J. Woolley. 2014. Initiation of an integrated regional response to an invasive aphid pest of sorghum. Southern Region IPM Enhancement Grant (with outreach) ($30,000, Brewer $8,190).

Brewer, M. [1]**,** R. Bowling, and M. Young. 2014-2015. Management of sugarcane aphid on sorghum in Texas. Texas Grain Sorghum Producers Board (with outreach) ($33,247, Brewer $16,180).

Brewer, M. [1], and M. Way. 2013-2014. Occurrence, distribution, damage potential, and management of the sugarcane aphid. Texas Grain Sorghum Producers (with outreach) ($14,000, Brewer $ 7,000).

Research Talks and Posters

Overview:

	Career		Since 2013	
Type	Invited	Submitted	Invited	Submitted
Seminars/key notes:				
International	3		1	
National	17		4	
State	15		6	
Symposium papers				
International	10		6	
National	24		11	
Research papers/poster				
International	9	12	2	11
National	28	115	10	56
State	30	31	14	18
Total	135	157	53	85

Seminars since 2013.

Brewer, M.J. 2019. Sugarcane aphid on sorghum of the North American Great Plains: invasion characteristics and scale-sensitive management approaches. Instituto Federal Goiano, Rio Verde, GO, Brazil.

Brewer, M.J. 2018. Toward contemporary sugarcane aphid management, based on integrated tactics. Department of Entomology, Texas A&M.

Brewer, M.J. 2018. Insect injury, yield, and aflatoxin taken from corn of diverse genetic backgrounds. Texas A&M R&E Center, Dallas.

Esquivel, I, and **M. Brewer**. 2017. Spatial ecology of cotton pests: relevance of edge, ecotone, biodiversity, and deliverables for managers. USDA ARS, Stoneville, MS.

Brewer, M. 2017. Toward contemporary sugarcane aphid management, based on integrated tactics and monitoring. Department Entomology and Plant Pathology, Oklahoma State.

Brewer, M. 2015. Response to an invasive aphid pest of sorghum: first steps to management and an eye to the future. Department of Agricultural and Environmental Sciences, Clemson.

Brewer, M. 2014. Outbreak of sugarcane aphid on sorghum. Texas A&M AgriLife R&E Center, Corpus Christi.

Symposium presentations since 2013, $^{+}$ indicates student or post-doc:

Brewer, M.J., T. M. Alves^{+} J. Gordy^{+}, A. Faris^{+}, et al. 2018. The latest cereal aphid invader of the Great Plains: Sugarcane aphid on sorghum. Entomol. Soc. Amer./Entomol. Soc. Canada/Entomol. Soc. British Columbia Joint Annual Meeting. Vancouver, Canada.

Elliott, N., **M. Brewer** and K. Giles. 2018. Area-wide cereal aphid management: Appropriate and essential to large-scale cereal production systems. Entomol. Soc. Amer./Entomol. Soc. Canada/Entomol. Soc. British Columbia Joint Annual Meeting. Vancouver, Canada.

Brewer, M., and R. Bowling. 2016. Variation in sorghum hybrid sensitivity and yield response: opportunities for integrated management. Sugarcane aphid management symposium. Entomol. Soc. Amer., SW Branch, Tyler, TX.

Woolley, J., E. Maxson[+], and **M. Brewer**. 2016. Natural enemies of sugarcane aphid on sorghum in Texas: the most important species. Sugarcane aphid management symposium. Entomol. Soc. Amer., SW Branch, Tyler, TX.

Brewer, M., J.P. Michaud, and E. Maxson[+]. 2016. Natural enemy activity in sorghum hybrids varying in susceptibility to sugarcane aphid: opportunities for integrated management of sugarcane aphid on sorghum. Invasion biology and biological control symposium. Entomol. Soc. Amer., NC Branch.

Kerns, D.L., **M.J. Brewer**, R.D. Bowling, et al. 2016. Sugarcane aphid on grain sorghum. Joint Internat. Congress of Entomol./Entomol. Soc. Amer Annual Meeting, Orlando, FL.

Elliott, N., T.A. Royer, **M.J. Brewer**, N.J. Seiter et al. 2016. Towards efficient multi-scale methods for monitoring sugarcane aphid infestations in sorghum. Joint Internat. Congress of Entomol./Entomol. Soc. Amer Annual. Meeting, Orlando, FL.

Brewer, M.J. E. Maxson[+], J. Gordy[+], et al. 2016. Variation in sorghum hybrid sensitivity and natural enemy activity provides opportunities for integrated management of sugarcane aphid. Joint Internat. Congress of Entomol./Entomol. Soc. Amer Annual, Orlando, FL.

Brewer, M. 2015. Initiation of an integrated regional response to an invasive aphid pest of sorghum: from near-term control to long-term management. National Invasive Species Awareness Week. Regional IPM Centers.

Brewer, M. and D. Kerns. 2015. Regional thresholds for IPM decision-making: balancing aphid control, costs, and natural enemy potential. Entomol. Soc. Amer. SW Branch, Tulsa.

Bowling, R., and **M. Brewer**. 2015. Identification, spread, and region-wide perspective on sorghum damage to sugarcane aphid. Entomol. Soc. Amer. SW Branch, Tulsa.

Brewer, M. 2015. Sampling strategies and economic thresholds for sugarcane aphid on grain sorghum. Entomol. Soc. Amer. SE Branch, Gulfport, MS.

Brewer, M., M. Way, D. Ragsdale, et al. 2014. Outbreak of sorghum/sugarcane aphid on sorghum, first detections, distribution, and notes on management. Entomol. Soc. Amer. SW Branch Meeting.

Elliott, N., G.Backoulou, **M. Brewer**, and K. Giles. 2014. Preliminary evaluation of parasitic wasps parasitizing the sugarcane aphid. Entomol. Soc. Amer. SW Branch.

Brewer, M., D. Kerns, M.O. Way, et al. 2014. An integrated regional response to an invasive aphid pest of sorghum. Entomol. Soc. Amer. Annual meeting.

Other selected oral/poster presentations since 2013, [+] indicates student:

Wang, H.-H., W.E. Grant, J.K. Westbrook, **M.J. Brewer**, et al. 2018. Modeling the life cycle and aeroecology of wind-borne crop pests in temporally-variable spatially-heterogeneous environments. Internat. Congress Environ. Modelling & Software. Ft. Collins (invited, oral)

Garcia, I.[+], M. J. Starek, and **M. J. Brewer**. 2018. Assessing separability of UAS-derived vegetation indices for detecting plant stress due to iron chlorosis. American Geophysical Union, Washington, DC, December 2018 (oral, submitted, national).

Esquivel, I.[+], **M. Brewer**, and R. Coulson[1], 2018 . Spatial relationships of cotton fleahopper and verde plant bug: implications for management. Entomol. Soc. Amer./Entomol. Soc. Canada/ Entomol. (submitted, oral, international).

Esquivel, I.[+], R. Coulson[1] and **M. Brewer**. 2018. Biodiversity, ecosystem services, and pollinator benefits associated with native bees in a cotton agroecosystem. Entomol. Soc. Amer./Entomol. Soc. Canada/Entomol. (submitted, poster, international).

Glover, J.[+], **M. Brewer**, T. Isakeit[3] and Enrique Medrano. 2018. Pathogenicity and transmission of cotton seed and boll rotting bacteria vectored by the verde plant bug. Entomol. Soc. Amer./ Entomol. Soc. Canada/Entomol. (submitted, oral, international).

Park, J.[+], J. A. Thomasson, Z. Gorman, **M. Brewer**, et al. 2018. Analysis of sorghum volatiles in response to sugarcane aphid herbivory. Texas Plant Protection Conf., Bryan, TX.

Brewer, M.J., and T.M. Alves[+]. 2018. Areawide pest management of the sugarcane aphid in grain sorghum. USDA ARS annual project meeting, Dallas, TX (invited, oral).

Brewer, M.J., R. Bowling, and J. Gordy[+]. 2018. Outbreak risk factors and factors reducing outbreak risk. United Sorghum Sugarcane Aphid Workshop, St. Louis, MO (invited, oral).

Wang, H.-H., W.E. Grant, J.K. Westbrook, **M.J. Brewer**, et al. 2018. Modeling the life cycle and aeroecology of wind-borne crop pests in temporally-variable spatially-heterogeneous environments. Internat. Congress Environ. Modelling & Software. Ft. Collins (invited, oral).

Faris, A. [+], N. Elliott and **M. Brewer**. 2018. Relative parasitoid and predator suppression of sugarcane aphid on susceptible and resistant sorghum hybrids. Entomol. Soc. Amer./Entomol. Soc. Canada/Entomol. Soc. British Columbia Joint Annual Meeting. Vancouver, Canada (submitted, oral).

Gordy, J.[+], **M. Brewer** and M. Way. 2018. Comparison of tally-based thresholds and density-based thresholds for sugarcane aphid management. Entomol. Soc. Amer./Entomol. Soc. Canada/ Entomol. Soc. British Columbia Joint Annual Meeting. Vancouver, Canada (submitted, oral).

Elliott, N., **M. Brewer**, K. Giles, and M. Phoofolo. 2017. Modeling effects of landscape context on parasitism of cereal aphids in wheat by *Lysephlebus testaceipes*. Entomol. Soc. Amer., SW Branch. April, Austin, TX (submitted, oral).

Masiane, T.[+], M. J. Starek, and **M. J. Brewer**. 2017. UAS-derived pest management solution to sorghum crop production. Ann meeting of the Amer. Soc. Photogrammetry and Remote Sensing: Imaging Geo-spatial Technology Forum. Mar. 12-16, Baltimore (submitted, poster).

Harris-Shultz, K., **M. Brewer**, P. Wadl, and X. Ni. 2017. Sugarcane aphid diversity on sorghum and johnsongrass. Ann. Meeting, Georgia Entomol. Soc. (submitted, oral).

Gordy, J.[+], M**. Brewer**, D. Kerns, et al. 2017. Development of thresholds for management of sugarcane aphid on sorghum. Entomol. Soc. Amer Annual (submitted, poster).

Alves, T.[+], W. Ahrens, **M. Brewer**, and N. Elliott. 2017. Host plant and winter survival affects sugarcane aphid overwintering. Entomol. Soc. Amer Annual. Denver (submitted, poster).

Elliott, N., **M. Brewer**, and K. Giles. 2017. Parasitism of cereal aphids by *Lysiphlebus testaceipes* in wheat field edges and interiors. Entomol. Soc. Amer Annual meeting. Denver (submitted, oral).

Garcia, I.[+], M. J. Starek, and **M. J. Brewer**. 2017. UAS-Based multispectral imaging for detecting plant stress due to iron chlorosis in grain sorghum. American Society of Photogrammetry and Remote Sensing and International Lidar Mapping Forum Conf. & Society for the advancement of Chicanos/Hispanics and Native Americans in Science Conf. Salt Lake City (submitted, oral).

Brewer, M. J. Gordy[+], D. Kerns, et al. 2016. Sorghum-sugarcane aphid research exchange meeting, New Orleans, LA (invited, oral).

Thomas, J.[+], R. Bowling, and **M. Brewer**. 2016. Entomology extension learning methods: competency differences between video and slide show presentations. Entomol. Soc. Amer., SW Branch, Tyler, TX (submitted, poster).

Gordy, J.[+], **M. Brewer**, D. Anderson, et al. 2016. Development of thresholds for management of sugarcane aphid on sorghum. Entomol. Soc. Amer., SW Branch. Tyler, TX (submitted, poster).

Elliott, N., K. Giles**, M. Brewer**, and G. Backoulou. 2016. Parasitism of cereal aphids in wheat by *Lysiphlebus testaceipes* is affected by landscape context. Entomol. Soc. Amer., SW Branch, Tyler, TX (submitted, oral).

Maxson, E.[+], **M. Brewer**, and J. Woolley. 2016. Species composition and seasonality of the natural enemies of sugarcane aphid on susceptible and resistant sorghum. Entomol. Soc. Amer., SW Branch. Tyler, TX (submitted, poster, 2nd place student award).

Bowling, R. **M. Brewer**, S. Biles, and J. Gordy[+]. 2016. 2015 Occurrence of sugarcane aphid, *Melanaphis sacchari* (Zehntner), in the U.S. and Mexico with reference to occurrence in 2013 and 2014. Entomol. Soc. Amer., SW Branch Meeting. Tyler, TX (submitted, poster).

Russell, L., et al.**, M. Brewer**, and J. McGinty. 2016. Economic decision aid for treating sugarcane aphid on sorghum. Entomol. Soc. Amer., SW Branch. Tyler, TX (submitted, poster).

Maxson, E.[+], **M.J. Brewer**, and J. Woolley. 2016. Species composition and seasonality of the natural enemies of sugarcane aphid on susceptible and resistant sorghum. Joint Internat. Congress of Entomol./Entomol. Soc. Amer Annual Meeting, Orlando, FL (submitted, oral)

Thomas, J.L.[+], R. Bowling, and **M.J. Brewer**.2016. Entomology extension learning methods: competency differences between video and slideshow presentations. Joint Internat. Congress of Entomol./Entomol. Soc. Amer Annual Meeting. Orlando, FL (submitted, poster).

Gordy, J.[+], **M. Brewer**, and D. Kerns. 2016. Environmental variables and observed field differences in aphid population change across geographic locations. Texas Plant Protection Conf., Bryan, TX. (submitted, poster, 1st place student award).

Brewer, M., and R. Bowling. 2016. Sugarcane aphid on grain sorghum: update and proposed work. Annual meeting of the Texas Grain Sorghum Producers Board, Dec. Amarillo, TX (invited, oral).

Brewer, M. 2016. Sugarcane aphid: damage, distribution, detection, and decision-making. Joint Annual Meeting: Texas Sorghum Assoc. and Texas Sorghum (invited, oral).

Brewer, M. 2015. Sugarcane aphid update: distribution, sampling strategies, thresholds, and impact. Texas Seed Trade Assn. Austin, TX (invited oral).

Brewer, M. 2015. Pest management strategies to control sugarcane aphid in grain and forage sorghum. Agriculture Technology Conf., Commerce, TX (oral paper, state, invited).

Brewer, M., and R. Bowling. 2015. Sugarcane aphid on grain sorghum: distribution, thresholds, and hybrid sensitivity. Texas Plant Protection Conf.., Bryan, TX (invited, oral).

Gordy, J.[+], **M. Brewer**, D. Anderson, et al. 2015. Development of thresholds for management of sugarcane aphid on sorghum. Texas Plant Protection Conf., Bryan, TX (submitted, poster).

Bowling, R., **M. Brewer**, S. Biles, and J. Gordy[+]. 2015. Occurrence of sugarcane aphid in the U.S. and Mexico. Texas Plant Protection Conf., Bryan, TX (submitted, poster).

Deleon, L.[+], **M. Brewer**, I. Esquivel[+], and J. Halcomb. 2015. Geographic information systems to produce pest risk maps for South Texas cotton and sorghum land managers. Society for Advancement of Chicanos/Hispanics and Native Americans in Science Conf, Washington D.C. (submitted, poster).

Bowling, R., **M. Brewer**, L. Russell, and M. Young. 2015. Evaluation and economic assessment of multiple insecticide strategies for managing pest complexes in sorghum. Entomol. Soc. Amer., Annual. Minneapolis, MN (submitted, poster).

Brewer, M., and R. Bowling. 2015 Sugarcane aphid on grain sorghum. Annual meeting of the Texas Grain Sorghum Producers Board, Nov. Amarillo, TX (invited, oral).

Brewer, M. 2014. Sugarcane aphid on sorghum: update on sampling & economic thresholds, with notes on IPM. Sorghum Improvement Conf..of North America. Corpus Christi, TX (invited, oral).

Ahrens, T.[+], et al., **M. Brewer**, and M. Way. 2014. Efficacy of insecticides for management of sugarcane aphid on sorghum in Texas. Texas Plant Protection Conf., Bryan, TX (submitted, poster).

Brewer, M. 2014. Sugarcane aphid on sorghum: distribution, damage, thresholds, and insecticides. Texas Plant Protection Conf., Bryan, TX (paper, regional, invited).

Bowling, R., and **M. Brewer**. 2014. Occurrence of sugarcane aphid on sorghum in the United States. Texas Plant Protection Conf., Bryan, TX (submitted, poster).

Ahrens, W.T.[+], et al., and **M. Brewer.** 2014. Setting an economic threshold for sugarcane aphid on sorghum. Texas Plant Protection Conf., Bryan, TX (poster, submitted).

Brewer, M., M. Way, S. Armstrong, et al. 2013. Outbreak of sorghum/sugarcane aphid on sorghum. Texas Plant Protection Conf., Bryan, TX (submitted, poster).

Teaching

Number of Graduate Students and Postdoctoral Associates Trained

Post-doctoral: 3 visiting scholar trainees (Sabbatical guest), 3 post-doctoral research associates.

Graduate Students as Advisor: 10 M.S. chair, 2 M.S. as co-chair, 6 Ph.D. chair

Graduate Student Committees as member: 24; 5 related to sugarcane aphid IPM, 1 Ph.D. Bio-engineering, 1 Ph.D. Sorghum Breeding, 1 Ph.D. and 2 M.S. Geospatial Sciences (TAMUCC).

Courses

Directed studies courses (since 2013): 2.

Writing a scientific review. Taught for four graduate students (2 credits, 2016).

Ecology and Management of Sugarcane aphid on sorghum. Taught for five graduate students who are using sugarcane aphid in their research (2 credits, 2017-2019), offered for formal credit or as part of research hours at two Universities.

Other Teaching Activities

Guest classroom lectures: 24 related to IPM given at TAMU College Station and TAMU Kingsville.

Undergraduate Experiential Learning: 19 Internship projects at TAMU, 15 since 2013 from 4 colleges with 10 related to sugarcane aphid IPM.

Other short courses developed prior to 2013:

Current topics in entomology: advanced agricultural entomology (ENTO 5689, 2 credits graduate, 2000-2002, taught twice), University of Wyoming, approximate 6 students per term.

Insect-plant interactions (ENTO 4685/5685, 2 credits upper division/graduate level, offered biennially, 1996-2000, taught three times), University of Wyoming. Approximately 10 students per term.

Teaching Improvement Grants: International travel award to improve student experiential learning, visit to agricultural university in Brazil to explore undergraduate and graduate student exchanges. Neuhaus-Shepardson Faculty Development Award for Teaching Improvement. 2018-2019 ($2,000).

Teaching Evaluation. My teaching is oriented toward undergraduate and graduate student experiential learning, consistent with my appointment expectation of 15% contribution to teaching inclusive of graduate and post-doc training. Therefore, evaluation primarily takes the form of student accomplishments. Graduate and undergraduate students I have mentored have gained recognition in the form of awards (7 meeting presentation awards, 3 professional awards including ESA's Larry Lawson Graduate Student Award in Applied Entomology and 2 students

receiving the annual Ph.D. award given by the Texas Plant Protection Assn), scholarships (5 scholarships including two 3-yr TAMU Foundation and AgriLife Research-sponsored research assistantships), and employment in industry, a state regulatory agency, and academics.

Extension/Outreach

Publications

Extension and Research Agency Publications: 49 (7 since 2013).

Popular Press Publications: 18. **Electronic media (extension)**: 16 (4 since 2013).

Misc. workbooks, video tapes, and slide sets: 9

Extension publications since 2013, * related to sugarcane aphid IPM.

Vyavhare, S.S., D. Kerns, C. Allen, R. Bowling, **M. Brewer**, and M. Parajulee. 2018. Managing cotton insects in Texas, 38 pp. ENTO-075. Texas A&M AgriLife Ext., College Station.

Bowling, R., J. Thomas, and **M. Brewer**. 2017. Common aphid identification in Texas grains, 2 pp. ENTO-070. Texas A&M AgriLife Extension, College Station.

Bowling, R, **M. Brewer**, A. Knutson, S. Biles, M. Way, and D. Sekula-Ortiz. 2016. Scouting sugarcane aphids in south, central, and west Texas, 2 pp. ENTO-043/ENTO-043S (Spanish), Texas A&M AgriLife Extension, College Station.

Knutson, A., R. Bowling, **M. Brewer**, E. Bynum, and P. Porter, 2016. The sugarcane aphid: management guidelines for grain and forage sorghum in Texas, 6 pp. ENTO-035. Texas A&M AgriLife Extension, College Station.

Brewer, M.J., R. Bowling, J.P. Michaud, and A.L. Jacobson. 2016. Sugarcane aphid: a new sorghum pest in North America, 2 pp. ENTO-056. Texas A&M AgriLife Extension, College Station, TX.

Bowling, R, **M. Brewer**, A. Knutson, M. Way, P. Porter, E. Bynum, C. Allen, and R. Villanueva. 2015. Scouting sugarcane aphids. ENTO-043, Texas A&M AgriLife Extension, College Station.

Bowling, R., **M. Brewer**, and S. Biles. 2015. The sugarcane aphid: a review and scouting recommendations. Texas A&M AgriLife Extension, Corpus Christi.

Villanueva, R.T., **M. Brewer**, M.O. Way, S. Biles, D. Sekula, E. Bynum, J. Swart, C. Crumley, A. Knutson, P. Porter, R. Parker, G. Odvody, C. Allen, D. Ragsdale, W. Rooney, G. Peterson, D. Kerns, T. Royer, and S. Armstrong. 2014. Sugarcane aphid: a new pest of sorghum, 4 pp. Texas A&M AgriLife Extension, College Station.

Additional Outreach Educational Products

Web sites: The web site 'South Texas Field Crop Entomology' provides access to field crop insect pest management resources (https://betteryield.agrilife.org/), as adapted from an original sugarcane aphid orientation. Publications, webcasts, newsletters, and videos are provided, with focus on sugarcane aphid on grain sorghum. Cotton insect pest management has been the most recent addition. Concise educational videos are a growing outreach tool, and example videos on sugarcane aphid are accessible at this web site. A full archive of published materials, meeting posters and presentations (webinars) is available at https://ccag.tamu.edu/entomology/.

Minicourses for outreach audience prior to 2013:

Insects on the farm and ranch (ENTO 2001), 1 credit undergraduate, team-taught, University of Wyoming Extended Studies & Public Service program, 1993-1998), ca. 10 students per term.

Insects in the urban environment (ENTO 2000, 1 credit undergraduate, team-taught, University of Wyoming Extended Studies & Public Service program, 1993-1998), ca. 12 students per term.

International outreach:

Educational materials in Spanish on Management of Sugarcane Aphid on Sorghum. Print (1) and video (2) materials are available, special focus on sorghum pest managers in South Texas and Mexico.

Host of two visiting scientists (Brazil and China).

Host of one graduate student trainee (France).

Extension/outreach selected presentations since 2013 related to economic entomology:

Brewer, M., and R. Bowling. 2017. Research and Extension working together to help manage sugarcane aphid in south Texas. AgriLife Advanced Leaders Program, Texas A&M AgriLIfe Research & Extension Center, Corpus Christi (invited, oral, administrative).

Brewer, M. 2017. Sugarcane aphid hybrid resistance. Texas A&M AgriLife Research and Extension Center, Corpus Christi (invited oral presentation, local).

Brewer, M. 2016. Sugarcane aphid: damage, distribution, detection, and decision-making. Milo Insulation Board meeting, Feb 27, Fort Worth, TX (invited oral presentation, state).

Brewer, M., and J. Gordy. 2016. Sugarcane aphid economic threshold and sampling update. Texas A&M AgrLife Research and Extension Center webinar series. Corpus Christi (invited, oral).

Bowling, R., **M. J. Brewer**, J. Gordy. 2016, Sugarcane aphid (Hemiptera: Aphididae): a new pest on sorghum in North America. Sugarcane Aphid Management Symposium. Guadalajara, Jalisco.

Brewer, M. 2015, 2016. Consultant update on sorghum and cotton insect pest management. Top Consultants Meeting, Seadrift, TX (invited, oral).

Brewer, M. 2015. Sampling strategies and economic thresholds for sugarcane aphid on grain sorghum. Jan. 12, 2015, Texas A&M AgriLife Research and Extension Center, Corpus Christi, Texas (webinar).

Brewer, M. 2014. Outbreak of sorghum/sugarcane aphid on sorghum. Feed Grain and Cotton Conference. Wharton, TX, Jan. (invited, oral).

Brewer, M. 2014. Outbreak of sorghum/sugarcane aphid on sorghum. Coastal Bend Crop Symposium. Corpus Christi, Jan. (invited, oral).

Outreach Support. Outreach financial support has been integrated into a number of contracts and grants listed in Research support. Please see grants with outreach component indicated parenthetically.

Service

Professional Societies

Meeting service (moderator and judging) since 2013 moderated 6 student paper competitions at Entomological Society of America meetings (branch and national).

Organizer of meetings and symposia (related to nomination)**:**

An Integrated Regional Response to an Invasive Aphid Pest of Sorghum, Symposium, SW Branch Entomological Society of America meeting, 2015 (co-organizer).

Ecology and management of cereal aphid invasions, crossing the Great Plains borders from Mexico to Canada. Entomol. Soc. Amer. Annual Meeting (co-organizer).

Editorial service: Co-Editor in Chief, Journal of Economic Entomology. 2019-current.
Subject Editor, Journal of Economic Entomology. 2002-2019.
Editorial Board Member (chair 2017), J. Integrated Pest Management. 2014-2019.

Organizations. Since 2013. Texas Department of Agriculture & USDA EPA, Part of team addressing sugarcane aphid insecticide registration issues for the state of Texas.

Texas A&M

Committee service: member of 37 committees prior to 2013, Since 2013: 11 with 2 elected).
Member: Awards and Scholarships Committee, Department of Entomology (2017-2019).
Elected Membership (2): Faculty Advisory Committee, Department of Entomology, Texas A&M, elected (2012-2014), re-elected (2015-2017); Council of Principle Investigators (Texas A&M AgriLife Research representative), 2017—2020.
Member: Six faculty searches (chair of one). Dep. Entomology, Texas A&M (2012-2017).
Member: Dep. Entomology Head search. College of Ag. & Life Sciences, Texas A&M (2019).
Adjunct Affiliations: Dep. of Agriculture, Agribusiness, and Environmental Sci., Texas A&M, Kingsville; Department of Computing and Geospatial Sci., Texas A&M, Corpus Christi.

Scholarships, Fellowships, and Awards to Mentored Students and Post-docs (since 2013)

Esquivel, I. C. Everett Slayer Cotton Fellowship (2014-2017), mentors M. Brewer and R. Coulson
Maxson, E. Excellence Fellowship, College of Agriculture and Life Sciences (2015-2016), mentors J. Woolley and M. Brewer
Thomas, J. Excellence Fellowship, College of Agriculture and Life Sciences (2015-2016), mentors R. Bowling and M. Brewer
Gordy, J. Texas Plant Protection Conference, Bryan, TX. 1st place award in poster competition. 2015.
Deleon, L. Del Mar Community College Board of Trustees Recognition. 2016.
Glover, J., Beltwide Cotton Conf., New Orleans. 1st place Ph.D. oral competition. 2016.
Esquivel, I. Entomological Society of America, Southwest Branch Meeting. Feb 24, Tyler, TX 2nd place Ph.D. poster competition, 2016
Maxson, E., Entomological Society of America, Southwest Branch Meeting. Feb 24, Tyler, TX 2nd place M.S. poster competition, 2016
Pruter, L Texas Plant Protection Conference, Bryan, TX. 1st place award in poster competition. 2016.
Chu, T. SPIE—Autonomous Air and Ground Sensing Systems, Agriculture Section, Best paper award, 2017 (lead mentor is M. Starek, I am co-author.
Pruter, L Southwest Branch Ento. Soc. Amer. annual meeting, Austin, TX. 1st place award in poster competition. 2017.
Gordy, J. Larry Lawson Graduate Student Award for Leadership in Applied Entomology. Entomological Society of America. 2017.
Gordy, J. Ph.D Annual Graduate Student Award. Texas Plant Protection Assoc.. 2017.
Glover, J., Beltwide Cotton Conf., New Orleans. 1st place Ph.D. oral competition. 2018.
Elkins, B. Texas A&M AgriLife Research Strategic Initiative Assistantship (2018-2021), mentors M. Brewer and M. Eubanks

Esquivel, I. J.H. Benedict Memorial Graduate Student Scholarship (2018-2019), mentors M. Brewer and R. Coulson.
Pruter, L. Ph.D, Annual Graduate Student Award. Texas Plant Protection Assoc. 2018.

I acknowledge that this CV is the most current and is correct as of September, 2019.

Michael Brewer