

Host Plants of the Tarnished Plant Bug (Heteroptera: Miridae) in Central Texas

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ABSTRACT The tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois), has taken on added importance as a pest of cotton in the Cotton Belt after successful eradication efforts for the boll weevil (*Anthonomus grandis grandis* Boheman). Because the Southern Blacklands region of Central Texas is in advanced stages of boll weevil eradication, blooming weeds and selected row crops were sampled during a 3-yr study to determine lygus species composition and associated temporal host plants. *L. lineolaris* was the sole lygus species in the region. Thirteen previously unreported host plants were identified for *L. lineolaris*, of which 69% supported reproduction. *Rapistrum rugosum* L. Allioni and *Ratibida columnifera* (Nuttall) Wootton and Standley were primary weed hosts during the early season (17 March to 31 May). *Conyza canadensis* L. Cronquist variety *canadensis* and *Ambrosia trifida* L. were primary weed hosts during the midseason (1 June to 14 August) and late-season (15 August to 30 November), respectively. *Sisymbrium irio* L. and *Lamium amplexicaule* L. sustained *L. lineolaris* populations during the overwintering period (1 December to 16 March). The proportion of females and numbers of nymphs found in *R. rugosum*, *C. canadensis*, *A. trifida*, and *S. irio* suggests these weeds supported reproductive adults during the early, mid-, and late season and overwintering period, respectively. *Medicago sativa* L. was the leading crop host for *L. lineolaris*; *Glycine max* L. Merrill did not yield *L. lineolaris*. Few *L. lineolaris* were collected in *Gossypium hirsutum* L. These results provide a more comprehensive assessment of host plants contributing to *L. lineolaris* populations in central Texas.

KEY WORDS tarnished plant bug, host plants, *Lygus lineolaris*, cotton

Lygus bugs spend the winter as adults in ground litter and emerge in the spring to feed and reproduce on wild host plants. Members of the *Lygus* genus are generalist feeders, and >300 wild host plants have been reported as foraging resources (Young 1986). As these wild hosts senesce, adults move to other suitable hosts including cotton (Snodgrass et al. 1984). In cotton, lygus bugs infest developing floral buds (squares) and fruit (bolls), causing abscission and yield loss. Additionally, lygus bugs have been reported as plant disease vectors (Wheeler 2001b) and may potentially transmit cotton diseases (J.F.E. and Alois A. Bell, unpublished data).

Only three studies address the host plants for the lygus bug complex in Texas (Anderson and Schuster 1983, Womack and Schuster 1987, Armstrong and Camelo 2003). Womack and Schuster (1987) identified the temporal occurrence of host plants for *Lygus lineolaris* [(Palisot de Beauvois); Heteroptera: Miridae] in the northern Blackland Prairies but only

briefly addressed the southern Blackland Prairies of Central Texas. Thus, we do not have an accurate assessment of the diversity of the lygus bug complex or the temporal distribution of lygus species and associated host plants in the southern Blackland Prairies.

The plant bug complex has gained importance as pests of cotton in recent years. Reports attribute this elevated status to the adoption of transgenic cotton varieties, absence of traditional early-season insecticide sprays to control boll weevils (*Anthonomus grandis grandis* Boheman) and coincidentally control plant bugs, and pest-specific insecticides for lepidopteran control (Armstrong and Camelo 2003, Layton et al. 2003). Thus, *Lygus* sp. has become a pest throughout much of the Cotton Belt (Snodgrass 1993, Goodell 1998, Layton 2000). Because the Southern Blacklands region of Texas is in the advanced stages of boll weevil eradication efforts, lygus bugs could potentially become a posteradication pest in central Texas as well. Host plant data will be instrumental in determining sources of lygus bug populations that may subsequently infest cotton. The objectives of this study were to determine the species of lygus bugs in the southern Blackland Prairies of Central Texas and sur-

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vey weed species to identify host plants sustaining these lygus populations.

Materials and Methods

Between 17 March 2003 and 17 March 2006, blooming herbaceous weeds, alfalfa (*Medicago sativa* L.), soybeans (*Glycine max* L. Merrill), and cotton (*Gossypium hirsutum* L.) were sampled for lygus bugs in Burleson and Robertson counties (Central Texas). As blooming weed species were identified along right-of-ways, turn-rows, and ditches, these species were subject to sampling. Pneumatic air samplers and beat sheets were evaluated in preliminary observations of row crops, but these tools were not conducive to sampling in weed hosts. Because of inconsistent plant densities and variable plant architecture in weed species, sweep nets (38.1 cm diameter) were used for sampling weed hosts. For similar reasons, the sweep net has been used in previous plant bug host plant studies (Cleveland 1982, Anderson and Schuster 1983, Womack and Schuster 1987, Armstrong and Camelo 2003). Unlike these previous plant bug host plant studies that used variable sample sizes within each study (Cleveland 1982, Snodgrass et al. 1984, Fleischer and Gaylor 1987), a uniform protocol of three samples (50 sweeps/sample) for each sample site was implemented in this study. Because of this sampling protocol, plant species that were in bloom but not in sufficient quantity were not sampled. Plants were sampled twice per week at 3- to 4-d intervals unless precluded by inclement weather. In some instances, multiple sites of the same plant species were sampled because of the overall abundance of these species.

Materials sampled by sweep nets were placed in 3.79-liter zip-close bags, returned to the laboratory, and placed in a freezer to facilitate processing of samples. Adults and nymphs of lygus species were recorded. Dr. J. Schaffner (Texas A&M University, Retired) identified reference samples of mirid species encountered in this study. Voucher specimens of wild host plant species were collected and sent to the S.M. Tracy Herbarium at Texas A&M University, College Station, TX, for identification and cataloging.

To determine the presence of lygus species in Central Texas and assess the temporal occurrence of associated host plant species, sampling continued throughout the year beginning on 17 March 2003. Temporal occurrence of plant species was categorized into the following: early season (17 March to 31 May), midseason (1 June to 14 August), late season (15 August to 30 November), and overwintering (1 December to 16 March). These categories coincided with local farming and production practices. Host plants were defined as those species where *L. lineolaris* adults and/or nymphs were present. Weed species yielding nymphs were considered likely reproductive hosts. In total, 76 sites of weed species and 9 sites of cultivated species (*G. max*, *G. hirsutum*, and *M. sativa*) were sampled during the 3-yr study. Although some weed species were only sampled 1 yr, these data were in-

cluded to show the range of plant use by identified lygus species in the region.

The PROC MEANS statement (SAS Institute 2004) and the SUM and BY options were used to generate descriptive statistics of the number of lygus species adults and nymphs in temporal host plants. Similarly, the mean proportions of adults that were female were determined using the MEAN and BY options of the PROC MEANS statement.

Results and Discussion

The tarnished plant bug, *L. lineolaris*, was the sole lygus species detected in this study. The mirids *Polymerus basalis* (Reuter) and *Taylorilygus apicalis* (Fieber) have previously been found in association with lygus (Snodgrass et al. 1984, Armstrong and Camelo 2003), and these mirids were also detected in our samples. These latter species typically are not cotton pests but have been reported to cause lesions on developing cotton fruit (Wheeler 2001a).

The range of temporal plant hosts and nonhosts for *L. lineolaris* in central Texas are shown in Table 1. In total, 31, 23, and 13 plant species were sampled during 2003, 2004, and 2005, respectively. *L. lineolaris* were detected in 23, 20, and 12 plant species during 2003, 2004, and 2005, respectively (Table 1). Of the plant species yielding *L. lineolaris*, 13 were previously unreported hosts in the region (Table 1). This is likely the result of our year-long sampling periods versus the 1-wk sampling period in the area by Womack and Schuster (1987).

Cyclic plant and rainfall patterns likely influenced plant availability and insect populations because an overall reduction of plant species and insect abundance was observed during the course of the study. Below average rainfall during 2005 reduced the availability of plant species. Nevertheless, virtually all plant species sampled during 2005 yielded *L. lineolaris*.

The hosts yielding *L. lineolaris* varied seasonally. During the early-season period of 2003, the highest numbers of *L. lineolaris* were collected from *Ratibida columnifera* (Nuttall) Wootton and Standley (Table 1). Coincidentally, vegetative *Conyza canadensis* L. Cronquist variety *canadensis* was adjacent to the *R. columnifera* site, and presumably *R. columnifera* contributed to the large population of *L. lineolaris* observed in *C. canadensis* during midseason. High numbers of *L. lineolaris* on *C. canadensis* continued through the late season, but more adults and nymphs were collected on *Ambrosia trifida* L. during the late season. More *L. lineolaris* were collected from *Sisymbrium irio* L. than other plant species during the overwintering period for 2003. *Rapistrum rugosum* L. Allioni also sustained lygus populations during the overwintering period and continued to sustain populations into the early season of 2004 (Table 1).

During the early season of 2004, *R. rugosum* was the leading host of *L. lineolaris*, and the substantial numbers of nymphs collected suggest that this plant is a reproductive host (Table 1). Additionally, captures of *L. lineolaris* in *M. sativa* and *Dracopis amplexicaulis*

Table 1. Total no. *L. lineolaris* adults and nymphs collected seasonally in identified plants of central Texas (including plant species where lygus were not present)

Season	Plant species	2003 [adults (nymphs; n)]	2004 [adults (nymphs; n)]	2005 [adults (nymphs; n)]	
Early season (17 Mar. to 31 May)	<i>Amaranthus retroflexus</i> L.	3 (0; 18)	—	—	
	<i>Capsella bursa-pastoris</i> L. Medikus	—	12 (80; 6)	0 (2; 9)	
	<i>Chaerophyllum tainturieri</i> Hooker	1 (1; 18)	—	—	
	<i>Conyza canadensis</i> L. Cronquist var. <i>canadensis</i>	—	9 (0; 12)	—	
	<i>Dracopis amplexicaulis</i> (Vahl) Cassini	7 (1; 15)	47 (19; 15)	33 (10; 21)	
	<i>Lamium amplexicaule</i> L.	0 (0; 17)	0 (0; 3)	—	
	<i>Medicago polymorpha</i> L.	11 (8; 75)	7 (1; 30)	94 (28; 30)	
	<i>Medicago sativa</i> L.	143 (73; 147)	46 (13; 48)	163 (21; 36)	
	<i>Melilotus indicus</i> L. Allioni	8 (1; 27)	—	6 (1; 18)	
	<i>Oenothera speciosa</i> Nuttall	1 (0; 15)	13 (3; 30)	2 (0; 18)	
	<i>Pyrrhopappus carolinianus</i> (Walter) de Candolle	3 (0; 27)	—	—	
	<i>Rapistrum rugosum</i> L. Allioni	11 (9; 69)	56 (382; 54)	10 (17; 24)	
	<i>Ratibida columnifera</i> (Nuttall) Wootton and Standley	265 (29; 15)	40 (16; 12)	—	
	<i>Senecio glabellus</i> Poiret	13 (0; 15)	—	17 (2; 3)	
	<i>Sisymbrium irio</i> L.	—	4 (35; 6)	—	
	<i>Solanum elaeagnifolium</i> Cavanilles	7 (0; 3)	—	—	
	<i>Trifolium incarnatum</i> L.	0 (0; 12)	9 (8; 21)	—	
	<i>Trifolium repens</i> L.	—	5 (33; 15)	—	
	<i>Xanthium strumarium</i> L.	—	0 (0; 21)	—	
	Midseason (1 Jun. to 14 Aug.)	<i>Amaranthus hybridus</i> L.	18 (0; 21)	3 (0; 12)	—
<i>Ambrosia trifida</i> L.		—	1 (0; 21)	—	
<i>Cassia fasciculata</i> Michaux		—	15 (5; 18)	—	
<i>Chrysopsis pilosa</i> Nuttall		0 (0; 12)	—	—	
<i>Cirsium texanum</i> Buckland		0 (0; 3)	—	—	
<i>Convolvulus equitans</i> Bentham		0 (0; 6)	—	—	
<i>C. canadensis</i>		824 (930; 30)	267 (109; 42)	—	
<i>Croton capitatus</i> Michaux		—	0 (0; 24)	—	
<i>D. amplexicaulis</i>		0 (0; 9)	—	—	
<i>Gaura coccinea</i> Pursh		—	2 (0; 21)	—	
<i>Glycine max</i> L. Merrill		0 (0; 48)	0 (0; 42)	0 (0; 6)	
<i>Helianthus annuus</i> L.		—	3 (0; 18)	—	
<i>M. sativa</i>		179 (49; 105)	960 (393; 48)	135 (34; 30)	
<i>Monarda citriodora</i> Cervantes ex Lagasca y Segura		—	—	5 (0; 9)	
<i>Phyla incisa</i> Small		2 (0; 39)	—	—	
<i>R. columnifera</i>		3 (6; 33)	34 (26; 18)	—	
<i>Ruellia nudiflora</i> (Engelmann and Gray) Urban		0 (0; 9)	—	—	
<i>S. elaeagnifolium</i>		2 (1; 48)	4 (4; 27)	0 (0; 6)	
<i>Verbena neomexicana</i> (Gray) Small var. <i>hirtella</i> Perry		31 (22; 39)	—	—	
Late season (15 Aug. to 30 Nov.)		<i>A. hybridus</i>	—	5 (0; 15)	—
	<i>A. trifida</i>	442 (469; 39)	45 (70; 39)	—	
	<i>C. canadensis</i>	337 (429; 33)	—	—	
	<i>C. capitatus</i>	0 (0; 45)	0 (0; 33)	—	
	<i>L. amplexicaule</i>	—	37 (0; 3)	—	
	<i>M. sativa</i>	34 (1; 63)	175 (5; 45)	36 (3; 45)	
	<i>Parthenium hysterophorus</i> L.	14 (2; 36)	34 (15; 18)	7 (3; 18)	
	<i>P. incisa</i>	1 (0; 39)	—	—	
	<i>R. rugosum</i>	0 (0; 15)	—	—	
	<i>S. elaeagnifolium</i>	0 (0; 6)	—	2 (1; 57)	
	<i>Solidago</i> sp.	3 (3; 30)	32 (3; 15)	—	
	<i>V. neomexicana</i>	6 (2; 30)	—	—	
	<i>Verbesina encelioides</i> (Cavanilles) Bentham and Hooker ex Gray	0 (0; 30)	—	—	
	Overwintering (1 Dec. to 16 Mar.)	<i>C. bursa-pastoris</i>	7 (3; 6)	—	—
		<i>L. amplexicaule</i>	18 (0; 66)	73 (4; 30)	—
<i>M. polymorpha</i>		—	26 (22; 15)	—	

Table 1. Continued

Season	Plant species	2003	2004	2005
		[adults (nymphs; n)]	[adults (nymphs; n)]	[adults (nymphs; n)]
	<i>M. sativa</i>	9 (0; 63)	348 (5; 36)	12 (1; 36)
	<i>P. hysterophorus</i>	2 (0; 6)	—	—
	<i>R. rugosum</i>	19 (28; 18)	4 (16; 12)	28 (116; 15)
	<i>S. irio</i>	48 (8; 24)	28 (18; 15)	94 (0; 21)
	<i>T. repens</i>	2 (0; 6)	—	—
Total		2,474 (2,075; 1,415)	2,344 (1,285; 840)	644 (239; 402)

Plant species not sampled because of insufficient plant stand or completely absent.

Previously unidentified host for the region are in bold text.

n represents no. 50-sweep samples.

(Vahl) Cassini closely resembled that of *R. rugosum*. The highest numbers of *L. lineolaris* were collected from *M. sativa* during the midseason. During midseason, captures of *L. lineolaris* were substantially lower than in 2003 for *C. canadensis* and *R. columnifera*. The decrease in numbers for these hosts was affected by real estate development in the vicinity of these plots. The weed species at this site were completely absent during 2005. Late-season hosts were led by *M. sativa*, *Lamium amplexicaule* L., and *A. trifida*. Although sampling of *L. amplexicaule* continued into the overwintering period, *L. lineolaris* populations in *L. amplexicaule* peaked during the late season. Although *M. sativa* and *L. amplexicaule* yielded more *L. lineolaris* during the overwintering period (Table 1), *S. irio* was also a key host and helped sustain the overwintering population.

During 2005, *M. sativa* was the key host during all sampling periods except the overwintering period (Table 1). As evident by overwintering samples during 2004, *L. lineolaris* was present in *Medicago polymorpha* L., and this plant species was the second leading host during the early season of 2005. *C. canadensis* and *A. trifida* were nonexistent during the mid- and late seasons of 2005. The available weed species seemed to be minor sources of *L. lineolaris* (Table 1). However, *S. irio* again seemed to be a suitable overwintering host. *R. rugosum* and *M. sativa* also sustained developing *L. lineolaris* during the overwintering period.

Overall, the proportion of adults that were female was similar in all years (Table 2). During 2003, sex ratio data, the high numbers of adults collected, and low nymph captures for *R. columnifera* suggests that this host is not an optimal early-season reproductive host. *M. sativa* yielded a higher number of nymphs and has been shown to be a preferred host for *L. lineolaris*. Females comprised approximately one half of adults collected in *C. canadensis* and *A. trifida*, and nymph captures suggested these weed species were reproductive hosts during the mid- and late seasons, respectively, of 2003. Despite having the highest overall proportion of females of the primary hosts, *Verbena neomexicana* (Gray) Small variety *hirtella* Perry yielded few nymphs, and is likely not an optimal reproductive host. Similarly, a lower proportion of females was observed in *R. rugosum* during the 2003 overwintering period, yet these females managed to

produce more offspring than in other subsequent early-season hosts. This suggests that *R. rugosum* can be an optimal reproductive host in the region.

The proportion of adults that were female ranged from ≈ 0.25 to 0.70 in seasonal hosts during 2004 (Table 2). Females comprised about one half of the adults collected in *M. sativa* and *R. rugosum* during the early season. Females in *R. rugosum* were apparently able to reproduce on *R. rugosum* as indicated by the number of nymphs collected during the early season (Table 1). *M. sativa* was a key reproductive host during the midseason. During this same period, *C. canadensis* yielded fewer adults and nymphs than *M. sativa* despite having

Table 2. Overall mean proportions of *L. lineolaris* adults that were female collected from identified plants in central Texas from 17 Mar. 2003 through 17 Mar. 2006

Plant taxa	Year		
	2003 (n)	2004 (n)	2005 (n)
<i>Amaranthus hybridus</i>	0.59 (6)	0.42 (6)	—
<i>Amaranthus retroflexus</i>	0.00 (2)	—	—
<i>Ambrosia trifida</i>	0.47 (39)	0.50 (19)	—
<i>Capsella bursa-pastoris</i>	0.50 (4)	0.53 (3)	0.00 (0)
<i>Cassia fasciculata</i>	—	0.45 (10)	—
<i>Chaerophyllum tainturieri</i>	1.00 (1)	—	—
<i>Conyza canadensis</i>	0.51 (54)	0.57 (44)	—
<i>Dracopis amplexicaulis</i>	0.40 (5)	0.25 (10)	0.40 (17)
<i>Caura coccinea</i>	—	0.50 (2)	—
<i>Helianthus annuus</i>	—	0.67 (3)	—
<i>Lamium amplexicaule</i>	0.43 (10)	0.36 (19)	—
<i>Medicago polymorpha</i>	0.65 (10)	0.56 (17)	0.42 (25)
<i>Medicago sativa</i>	0.50 (129)	0.50 (126)	0.56 (73)
<i>Melilotus indicus</i>	0.25 (6)	—	0.50 (5)
<i>Monarda citriodora</i>	—	—	0.63 (4)
<i>Oenothera speciosa</i>	0.00 (1)	0.30 (10)	0.50 (2)
<i>Parthenium hysterophorus</i>	0.69 (13)	0.55 (10)	0.06 (4)
<i>Phyla incisa</i>	0.33 (3)	—	—
<i>Pyrrohappus carolinianus</i>	0.50 (2)	—	—
<i>Rapistrum rugosum</i>	0.43 (16)	0.53 (31)	0.46 (15)
<i>Ratibida columnifera</i>	0.52 (17)	0.39 (20)	—
<i>Senecio glabellus</i>	0.50 (9)	—	0.46 (3)
<i>Sisymbrium irio</i>	0.57 (18)	0.51 (16)	0.63 (16)
<i>Solanum elaeagnifolium</i>	0.73 (5)	0.67 (3)	1.0 (2)
<i>Solidago</i> spp.	0.00 (1)	0.28 (12)	—
<i>Trifolium incarnatum</i>	0.00 (0)	0.45 (5)	—
<i>Trifolium repens</i>	1.00 (1)	0.60 (5)	—
<i>Verbena neomexicana</i>	0.54 (19)	—	—
Overall	0.51 (371)	0.49 (371)	0.51 (166)

n represents the no. of 50-sweep samples yielding adults.

Previously unidentified host for the region in bold.

—, plant species not sampled.

a higher proportion of females. In the late-season, females comprised over one half of the adults collected in *M. sativa*, yet produced few nymphs, and this trend continued into the overwintering period (Table 1). The proportion of females in *L. amplexicaule* during the late-season in 2004 was ≈ 0.40 . A similar ratio was observed the previous overwintering period, and few, if any, nymphs were collected during these sampling periods. This concurs with a previous report indicating *L. amplexicaule* does not support optimal reproduction by *L. lineolaris* (Womack and Schuster 1987). The proportion of adults that were female in *M. sativa* was 0.53 during the overwintering period but the high capture of adults and minimal captures of nymphs suggests that not all females were in reproductive status.

The proportions of adults that were female ranged from 0.06 to 1.0 during 2005 (Table 2). The proportion of females in *M. sativa* was consistent during the early and midseasons (≈ 0.55). Furthermore, the production of nymphs was similar in *M. sativa*. The proportion of adults that were female in *D. amplexicaulis* and *M. polymorpha* were slightly lower than *M. sativa* during the early season (≈ 0.40). Nonetheless, nymphs were produced in *M. polymorpha*. *D. amplexicaulis* produced low numbers of nymphs during this period as well as during the early season of the previous year (Table 1), suggesting this is not an optimal reproductive host. Only *M. sativa* and *Monarda citriodora* Cervantes ex Lagasca y Segura produced adults during the midseason, and females comprised >0.50 of the adults in each species. However, nymphs were not collected in *M. citriodora* (Table 1). *L. lineolaris* were not collected in *S. elaeagnifolium* during the midseason, but two female adults and one nymph were collected in the late season. Our data concur with Womack and Schuster (1987), who reported that *S. elaeagnifolium* is a nonreproductive host. The proportion of adults that were female approached or exceeded 0.50 in the three primary overwintering hosts. Similar to previous years, *R. rugosum* yielded nymphs. *S. irio* did not yield any nymphs during this period, unlike previous years. Nonetheless, sufficient data are presented to suggest that *S. irio* can be a suitable host for reproduction.

Medicago sativa was the only cultivated species that consistently produced adults; *G. max* did not yield any *L. lineolaris* (Table 1). *G. hirsutum* was sampled on 47 dates during 2004 but yielded only 11 adults and 1 nymph. Because of ongoing boll weevil eradication efforts in cotton, it is likely that weekly insecticide applications influenced the number of *L. lineolaris*.

Our data showed that key weed hosts for *L. lineolaris* in central Texas vary throughout the year. Based on a 1-wk sample period in the region, Womack and Schuster (1987) reported *Oenothera speciosa* Nuttall as the primary host for *L. lineolaris* in this study area. However, in our study, *O. speciosa* yielded ≤ 13 adults each year (Table 1). Primary weed hosts in the early season include *R. rugosum* and *R. columnifera*. *C. canadensis* and *A. trifida* are primary hosts during the mid- and late season. Probably more importantly, *S. irio* and *L. amplexicaule* are capable of sustaining populations

during the overwintering period. Of the primary seasonal weed hosts, *R. rugosum*, *C. canadensis*, *A. trifida*, and *S. irio* were optimal reproductive hosts during the early, mid-, and late season and overwintering periods, respectively.

It is likely that our sweep net sampling did not sample all adults because of plant phenology and plant architecture. Indeed, Wilson and Gutierrez (1980) suggested that sweep nets only sample a small percentage of insects on cotton plants, and efficiency was influenced by plant phenology. Similarly, Ellington et al. (1984) reported sweep net samples yielded fewer insects than absolute samples or vacuum devices. Nonetheless, Smith et al. (1976) indicate sweep net sampling can be adjusted to represent the actual populations. Absolute sampling was not conducted in this study, but this does not negate the findings of *L. lineolaris* in the plant species identified here. Determining the preferred weed hosts of *L. lineolaris* would require more study and was outside the scope of this survey.

Despite the limitations of our sampling method, our results yielded significant information regarding new weed species supporting *L. lineolaris*. Overall, $\approx 69\%$ of the 13 previously unreported hosts supported reproduction by *L. lineolaris* (Table 1). These findings show the importance of identifying hosts to monitor developing *L. lineolaris* populations.

Areawide management of weed hosts has been proposed as a tool for early-season control of *L. lineolaris* populations (Fleischer and Gaylor 1987, Snodgrass et al. 2000). However, the variability of seasonal hosts, identification of 13 previously unreported weed hosts, and logistics (viz. weed densities, weed distribution, and ongoing boll weevil eradication efforts) encountered in our study region suggests that weed suppression as a management tool in central Texas would require further study. Nonetheless, identification of *L. lineolaris* as the sole lygus species, our more complete host plant database, and the sex ratio data presented here provide a substantial foundation for such studies in central Texas.

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