

***Lamium amplexicaule* L.-A New Host Record for *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae)¹**

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The polyphagous nature of *Helicoverpa zea* (Boddie) contributes to the difficulties in managing this economically-important pest. Quaintance and Brues (1905, U.S. Dept. of Entomol., Bur. of Entomol.—Bull. 50. 155 pp.) listed 70 wild host plants for the pest. Stadelbacher et al. (1982, Theory and Tactics of *Heliothis* Population Management: I—Cultural and Biological Control. Southern Coop. Series Bull. 316, pp. 54-74) outlined the temporal distribution of *H. zea* on wild host plants and cultivated crops in Texas and the southeastern United States. Neither of these reports identified *Lamium amplexicaule* L. (Lamiales: Lamiaceae) as a potential host for *H. zea*.

Lamium amplexicaule, commonly known as henbit or dead-nettle, is an annual and can be found flowering throughout the year in cultivated areas and along roadsides in most of Texas (Correll and Johnston 1970, Manual of the Vascular Plants of Texas. 1,881 pp.). In the spring of 2003, two *H. zea* eggs and one third-instar larva were identified on *L. amplexicaule* vegetation near College Station, TX. Both eggs were located within 5 cm of each other on the underside of a leaf whorl with one egg possessing a distinctive colored band, while the other was a uniform white color. The uniform white color persists for ~15 h after oviposition, with the distinctive band appearing after ~36 h (Quaintance and Brues 1905). Thus, the presence of a larva and eggs of presumably different ages suggests that a female *H. zea* visited this same plant on multiple occasions, or multiple individuals visited this plant to oviposit. Given the limited availability of other blooming wild hosts during this time period and lack of previous reports identifying *L. amplexicaule* as a host plant for *H. zea*, *L. amplexicaule* was subsequently sampled to document the occurrence of *H. zea* on this previously unreported potential host.

Lamium amplexicaule was sampled from a fallow field margin and within a field planted to corn in Burleson Co. near College Station, TX, during April 2003. Stems of blooming *L. amplexicaule* were collected on 2 to 3 sample dates per week and

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transported to the laboratory for examination. Because the original observations of *H. zea* on *L. amplexicaule* were incidental, the numbers of stems examined ranged from 22 to 47 stems on each sample date. Lepidopteran eggs and larvae were removed from *L. amplexicaule* leaves and placed on artificial diet (ARTHRO Feeds, Stonefly Industries, Inc., Bryan, TX). Eggs and larvae were maintained under controlled conditions ($29.4 \pm 1^{\circ}\text{C}$; 13:11 h [L:D] photoperiod). Larvae were examined microscopically for species determination. Visual examination of reared moths confirmed species determination. *Lamium amplexicaule* completed blooming by 9 and 25 April along the field margin and within the cornfield, respectively. During early April, corn in surrounding fields was in the V2 stage (Ritchie et al. 1997, Special Report No. 48. Iowa State Univ. Science and Tech., Coop. Ext. Serv., Ames, IA. 21 pp.).

In total, 14 lepidopteran eggs and 18 *H. zea* larvae were collected from *L. amplexicaule* between 7 and 25 April (Table 1). Larvae were primarily second instars. One fourth instar also was collected suggesting *L. amplexicaule* can support development of *H. zea* near College Station. Nine larvae and two eggs yielded *H. zea* adults. However, some eggs did not hatch and some larvae died. Only one larva appeared to be parasitized and died after 6 d on diet.

Helicoverpa zea activity near College Station was evident based on moth captures in sex pheromone-baited traps (J.D. Lopez, USDA, ARS, pers. commun.). The local corn crop had recently emerged, and the presence of *H. zea* eggs and larvae on *L. amplexicaule* indicates the early-season moth population was utilizing this alternate host. The temporal occurrence of *H. zea* eggs and larvae on *L. amplexicaule* agrees with previous alternate host plant studies in Central Texas (Parencia 1964, J. Econ. Entomol. 57: 757-758; Eger et al. 1982, Environ. Entomol. 11: 327-333). Parencia (1964) collected *H. zea* eggs from bluebonnets (*Lupinus texensis* Hook.) during mid-to late-March near Waco, TX. Near College Station, Eger et al. (1982) reported *H. zea* on Indian paintbrush (*Castilleja indivisa* Engelm.) and bluebonnets growing along right-of-ways during early April.

Table 1. Occurrence of lepidopteran eggs and *Helicoverpa zea* larvae on blooming *Lamium amplexicaule* near College Station, TX

Date	No. of stems examined	No. of eggs	No. of <i>H. zea</i> larvae	Instars	No. of reared <i>H. zea</i> moths
7 Apr 03	32	2	0	—	0
9 Apr 03	33	3	3	II, II, IV	5
14 Apr 03	47	2	2	II, II	2
16 Apr 03	31	0	4	All II	2
17 Apr 03	22	4	1	I	1
21 Apr 03	24	2	6	All II	1
23 Apr 03	42	0	1	II	0
25 Apr 03	46	1	1	II	0

Larvae fed artificial diet and maintained at 29.4°C, 13:11 h [L:D] photoperiod.

Recent management efforts for *H. zea* have focused on the use of transgenic crops, and insecticide resistance management techniques have been imposed in the form of refugia (Matten and Reynolds 2003, Proc. 2003 Beltwide Cotton Conferences, pp. 1111-1123.). Alternate host plants have been proposed as components of the required refuge (Hardee et al. 2001, USDA, ARS, ARS-154. 40 pp). However, Matten and Reynolds (2003) note that additional research is required to determine the suitability of wild hosts as refugia. Given that *L. amplexicaule* is naturalized throughout North America and can be found flowering throughout the year (Correll and Johnston 1970), this newly reported potential host plant may contribute to developing *H. zea* populations in other corn and cotton production regions. Information is currently unavailable regarding the impact of *L. amplexicaule* on *H. zea* populations, and further studies will be required to gain a better understanding of this ecological relationship. This information would be critical for production areas considering this newly reported potential host as a component of insecticide resistance management.

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