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NEW RECORDS OF LEAF-FEEDING FOR ADULT *DIABROTICA BARBERI* (COLEOPTERA: CHRYSOMELIDAE)

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ABSTRACT

The first records of leaf-feeding on *Iva xanthifolia* (marsh elder) and *Helianthus annuus* (common sunflower) by adult *Diabrotica barberi* are reported. During September 1992, beetles were observed feeding on leaves of these plants, despite the availability of alternate flowering hosts. Beetles confined to clip cages in the laboratory fed readily on leaves of *I. xanthifolia* and *H. annuus* but not on those of *Solidago missouriensis* (goldenrod).

Diabrotica barberi Smith & Lawrence (northern corn rootworm, Coleoptera: Chrysomelidae) develop as larvae principally on the roots of maize (*Zea mays*) (Branson & Krysan 1981). Upon emergence from the soil, adults feed on maize tassels, silks, and ear tips. Maize leaves are not preferred food of adult *D. barberi* (Ludwig & Hill 1975) and are less suitable to their fecundity and longevity (Lance & Fisher 1987). As the floral structures of maize dry and deteriorate, adult *D. barberi* become increasingly abundant on the flowers of weeds, prairie forbs, and crops other than maize (Forbes 1882, Cinereski & Chiang 1968, Krysan & Branson 1983, Ludwig & Hill 1975, Riley & Enns 1979, Fisher et al. 1984, Mullin et al. 1986). Adult *D. barberi* also feed on fungal spores (Forbes 1882, Ludwig & Hill 1975) and on apples, especially where the skin has been broken by other insects (Forbes 1882). The literature is devoid of any reference to adult *D. barberi* feeding on leaves of plants other than maize.

During September 1992, however, I observed leaf-feeding by adult *D. barberi* at several sites throughout Brookings County, South Dakota. First, individuals were frequently observed throughout the month feeding on leaves of *Iva xanthifolia* (marsh elder), a composite widely distributed throughout North America. Beetles were seen less frequently on the floral parts of *I. xanthifolia*, and they could be found on the leaves of individual plants after floral parts had dried. At three of four sites (1–2 km W of Aurora), plants were growing adjacent to or within fields of maize, and plants at the remaining site (1 km N of Brookings) were in a field of soybeans (*Glycine max*). Other host plants of adult *D. barberi* (besides maize) were present, though not abundant, near patches of *I. xanthifolia*. Several of these alternate hosts (e.g., *Cirsium* spp., *Helianthus annuus*, *Solidago missouriensis*) were flowering, and *D. barberi* were present on them.

In a second instance (23 Sept.), I observed seven *D. barberi* adults feeding on the leaves of a single *H. annuus* (common sunflower) plant growing adja-

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cent to a maize field (located immediately NE of Bushnell). Flower buds were present but had not yet opened on this plant. Several flowering aster plants (*Erigeron* sp., another host of adult *D. barberi*) were growing across a grassy access road, and only one beetle was observed on these flowers. Finally, I did not observe beetles feeding on the leaves of flowering *H. annuus* growing in nearby areas, although beetles were quite abundant on flower heads.

Field-collected beetles confined in clip cages (2.8 × 2.8 × 1.5-cm hinged, plastic cages with eight 3-mm diameter, mesh-covered holes) fed readily on leaves of *I. xanthifolia* (n = 14) or *H. annuus* (n = 3) in the laboratory (two beetles per cage per leaf). I estimated that beetles consumed up to 30 and 20%, respectively, of the *I. xanthifolia* and *H. annuus* leaf tissue present in clip cages during a 48-h period. By comparison, beetles fed only slightly on maize leaves (n = 2 and previous observations) and not at all on *S. missouriensis* (goldenrod) leaves (n = 5). Voucher specimens of field-collected *D. barberi* have been deposited at the Northern Grain Insects Research Laboratory, Brookings, SD.

These observations represent the first records of leaf-feeding on *I. xanthifolia* and *H. annuus* by adult *D. barberi*. However, Lance & Fisher (1987) have noted that, although adult *D. barberi* can be observed to feed on numerous plant species, the relative quality of different food plants varies significantly in terms of beetle fecundity and longevity. Nevertheless, leaf-feeding by beetles on *I. xanthifolia* when other favored flowering hosts are available suggests that the foliage of this plant is a preferred food. Leaves of *H. annuus* appear to be much less preferred than flower heads, but apparently are preferable to aster flowers. Additional detailed studies comparing the quality of *I. xanthifolia* and *H. annuus* leaves with other plant tissues are needed for understanding the ecological implications of the host-utilization patterns of *D. barberi* (Lance & Fisher 1987).

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