

**PHYSIOLOGICAL BEHAVIOR OF POSTEMERGENCE-APPLIED CGA 362622
IN COTTON, PEANUT, SICKLEPOD, AND JIMSONWEED**

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Abstract

Experiments were conducted to evaluate absorption, translocation, and metabolism of ^{14}C -CGA 362622 when foliar applied to cotton (*Gossypium hirsutum*), peanut (*Arachis hypogaea*), jimsonweed (*Datura stramonium*), and sicklepod (*Senna obtusifolia*). Differential metabolism is the basis for tolerance in cotton and jimsonweed. In addition, cotton absorbs less herbicide than the other three species, thus aiding tolerance. Only jimsonweed translocated appreciable herbicide (25%) out of the treated leaf and acropetally to meristematic tissue where the herbicide was quickly metabolized. No plant species translocated over 2% of applied radioactivity below the treated leaves. Most of the metabolites formed by the four plant species were more polar than CGA 362622 and averaged 51, 48, 30, and 25% of the radioactivity detected in treated leaves of cotton, jimsonweed, peanut, and sicklepod, respectively. The half-life of CGA 362622 was estimated at 0.8, 1.9, 4, and 6 days in treated leaves of cotton, jimsonweed, sicklepod, and peanut, respectively. In addition to metabolism, jimsonweed tolerance is based on acropetal translocation of the herbicide to the apical meristem. This translocation concentrates the herbicide and kills the apical meristem. The death of the apical meristem serves to compartmentalize the herbicide and death of this region releases apical dominance. As a result, axillary bud formation lower on the jimsonweed plant allows regrowth.