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LEAFLESS®: PERFORMANCE OF A NEW COTTON DEFOLIANT

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Abstract

Cotton (*Gossypium hirsutum)* defoliation typically entails removal of mature and juvenile leaves, boll opening (if needed), control of regrowth and in many instances desiccation of troublesome weeds such as morningglory (*Ipomea sp.*). Due to these aspects of the defoliation process, a producer would normally have to tank mix two or more harvest aid products to obtain satisfactory performance. With the registration of Leafless® in September, 2000, a cotton producer now has the convenience of one product which is capable of mature and immature leaf removal, regrowth control and weed desiccation . Leafless® is a novel liquid co-formulation of two plant growth regulators dimethipin and thidiazuron. Dimethipin causes irreversible cell water loss leading to ethylene production and leaf drop and also causes weed desiccation. Thidiazuron affects plant hormones such as auxins and IAA leading to plant-leaf abscission and inhibition of new growth.

Leafless® is formulated as a 4 lb/gal suspension concentrate (Flowable) with use rates of 10 – 12 fl. oz. per acre with a maximum use rate per season of 20 fl. oz. per acre. A crop oil concentrate adjuvant or equivalent is required for optimum defoliation performance. Night temperatures below 60-65°F can significantly reduce performance of Leafless® so the product is best suited to warm weather during the defoliation process.

Field testing of Leafless® began in 1999 at St. Paul, TX in a small plot trial. Subsequent large plot testing and demonstration plots have been conducted primarily in south Texas with limited testing in Arkansas, Louisiana, Mississippi and other Cotton Belt states in 2000 and 2001. Leafless® applied at 10 or 12 fl. oz. per acre gave defoliation performance comparable or superior to Dropp®, Dropp® combinations with Def® and/or Prep® and Ginstar® in south Texas field trials. Cotton leaf desiccation with Leafless® was similar to Dropp® and Dropp® plus Prep® and lower than Dropp® plus Def® and Ginstar® treatments. In Louisiana and other Mid-South defoliation trials, Leafless® has shown defoliation and juvenile regrowth activity similar to Dropp® plus Def® and Dropp® combinations with Def® plus Prep®. Under difficult defoliation conditions caused by rank mature foliage and excessive juvenile growth such as occurred in areas of Louisiana and Mississippi in 2001, sequential applications of Leafless® at 8 or 10 fl. oz. per acre followed by 6 fl. oz. per acre provided excellent defoliation and regrowth control 14 – 22 days after treatment compared to other commercial harvest aids.