EFFICACY OF NOVARTIS CGA248757 (ACTION) HARVEST-AID IN THE TEXAS HIGH PLAINS

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Abstract

CGA248757 (Action, proposed common name Fluthiacet-methyl) is a new herbicide defoliant being developed by Syngenta (previously Novartis). The active ingredient inhibits the protoporphyrinogen oxidase enzyme thereby causing an accumulation of protoporphyrins. This accumulation of protoporphyrins subsequently results in the destruction of cell membranes of cotton leaves causing desiccation. Damage to the leaves also triggers the production of ethylene which initiates premature leaf abscission or defoliation. Two small plot replicated studies were conducted in 1999 and one in 2000 to determine the efficacy of Action as a cotton harvest-aid (defoliant/desiccants). The 1999 sites were located in Parmer and Lubbock counties. The 2000 location was in Crosby County. Objectives were to determine if Action could perform satisfactorily as a defoliant and as a desiccant when compared to traditional harvest-aid treatments in the Texas High Plains. Action at 0.4 and 0.6 oz per acre, as a stand alone treatment and tank mixed with equivalent rates of ethephon, was compared to Super Boll (Ethephon) at 1.3 and 1.0 pts/acre plus Folex (Tribufos) at 1.0 pts/acre and Cotton Quik (Ethephon and AMADS) at 3.0 pts/acre plus Ginstar (Thidiazuron and Diuron) at 3.0 and 4.0 oz/acre for defoliation. Action was also compared to Cyclone (Paraquat) at 1.0 pt/acre as a sequential desiccant application. Initial and sequential treatments were applied at all locations using a self propelled, Lee Spyder Sprayer with a 4-row multi-boom attachment set to deliver 15 gallons per acre spray volume through Tee-Jet 11002VS nozzles set on 20" spacing. Sprayer ground speed was 3 mph and CO_2, set at 24 psi, was utilized as a propellant. Sequential treatments were applied approximately 7 days after initial treatments (DAIT). Site designs were randomized complete blocks with 4 replications for the 1999 locations and 3 replications for the 2000 location. Plot sizes were four 40-inch rows with variable row lengths. Visual observations for percent open boll, percent defoliation, and percent desiccation were targeted for 7 and 14 DAIT. Actual observation intervals varied slightly among locations. Results from these studies indicate that Action used as a defoliant with sequential applications was competitive with traditional harvest-aid treatments at later evaluation dates. As a sequential desiccant treatment, at higher rates (0.8 oz/a), Action performed equally as well as traditional desiccants. Use of crop oil with Action is crucial for optimum results. Acceptance of Action as a harvest-aid in the Texas High Plains depends highly upon effectiveness.

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