Efficacy of weed control in cotton (*Gossypium hirsutum*) in no-tillage system of agriculture

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A field study was conducted to assess the efficacy of weed control in cotton planted by no-tillage system in agricultural research station of Gonabad, Khorasan-Razavi province, Iran, in 2015 growing season. The layout was factorial on the basis of completely randomized block design with nine treatments and three replications. Treatments were crop residue (left on the ground from barley planted a year before in rotation) in three levels (1-no residue, 2-30% residue (1200 kg/ha), and 3- 60% residue (2400 kg/ha)) and weed control methods in three levels (1- no control, 2- hand weeding, and 3-application of trifluxysulfuron-sodium (invoke®) (at dose of 15 g/ha) plus cittowate adjuvant (0.2% v/v). Cotton (variety of Khordad) planted by direct seeding equipment with no tillage. Plot size was 3m * 5m. Trifluxysulfuron-sodium plus cittowate adjuvant (0.2% v/v) sprayed as post emergence at 2-4 leafy stage of the cotton by Matabi® rechargeable sprayer calibrated to deliver 330 l/ha. Sampling of the dominant weed species (density and dry matter) were conducted four weeks after herbicide treatment and at the harvesting time. Seed-cotton weight was measured at the end of the season. Results showed *Acroptylon repense* at the early season and *Acroptylon repense* and *Alhaji pseudalhagi* at the end of the season, were the dominant weed species in the field. Four weeks after spraying the effect of weed control method was significant on decreasing the density and dry matter of *Acroptylon repense*. At the end of the season the effect of trifluxysulfuron-sodium plus cittowate adjuvant (0.2% v/v) was also significant on decreasing the density and dry matter of the weeds as well. This is because these weeds are perennials and were exposed to the herbicide at spraying time. Effect of residue levels was not significant on the density and dry matter of *Acroptylon repense* at the early season and not on the density and dry matter of the weeds at the end of the season as well. Trifluxysulfuron-sodium plus cittowate adjuvant (0.2% v/v) significantly increased seed-cotton weight compare to the weedy check (no control). Dry weight of seed-cotton in weed free and application of trifluxysulfuron-sodium plus cittowate adjuvant (0.2% v/v) treatments were significantly higher than that of untreated control. Residues showed no significant effect on seed-cotton weight of the cotton. In conclusion, there was no significant effect of barley residues remained on the soil surface from previous year, on the density and dry matter of dominant weed species in the field and seed-cotton weight at harvest in no-tillage system of agriculture.

Keywords: No tillage, Weed control, Residue managements.