

EFFECT OF VARIETIES AND WEED CONTROL TREATMENTS ON WEEDS, GROWTH CHARACTERS, YIELD AND YIELD COMPONENTS OF PEANUT (*Arachis hypogaea* L.)

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ABSTRACT

The present study including two field experiments were carried out in sandy soil in Ismailiah Agriculture Research Station during 2004 and 2005 successive summer seasons. The first experiment laid in split plot design was aimed to study the response of two peanut varieties Giza 6 and Gregory and ten weed control treatments being (1) Pendimethalin at 850 g/fed (2) Pendimethalin at 850 g/fed + hand hoeing (3) oxyfluorfen at 125 g/fed (4) oxyfluorfen at 125 g/fed + hand hoeing (5) Butralin at 1200 g/fed (6) Butralin at 1200 g/fed + hand hoeing (7) Fluazifop butyl at 187 g/fed (8) Clethodim at 125 g/fed (9) Hand hoeing (10) Unweeded check; on weeds, growth characters, yield and its components of peanut (*Arachis hypogaea* L.). In the second experiment complete randomized block design was used to study the effect of fourteen weed control treatments using the recommended rates and reduced rates (with TK1 nozzle) of herbicides on weeds, yield and its components of peanut. The treatments were (1) Pendimethalin at 850 g/fed (2) Pendimethalin at 425 g/fed (TK1) (3) Pendimethalin at 425 g/fed (TK1) + hand hoeing (4) Oxyfluorfen at 125 g/fed (5) Oxyfluorfen at 62.5 g/fed (TK1) (6) Oxyfluorfen at 62.5 g/fed + hand hoeing (7) Fluazifop butyl at 187.5 g/fed (8) Fluazifop butyl (TK1) at 93.75 g/fed (9) Fluazifop butyl (TK1) at 93.75 g/fed + hand hoeing (10) Clethodim at 125 g/fed (11) Clethodim at 62.5 g/fed (TK1) (12) Clethodim at 62.5 g/fed (TK1) + hand hoeing (13) Hand hoeing (14) Unweeded check.

The main findings from the first experiment concerning the effect of peanut varieties there were no significant response on weeds, yield and yield components. Butralin was considered as alternative for oxyfluorfen and pendimethalin against annual weeds which decreased dry weight by 85-92%.

Clethodim or fluazifop butyl were effective against grasses and decreased the dry weight by 84-99%. These herbicides minimized weed/peanut competition and consequently increased pod yield and yield components. Pendimethalin, butralin + hand hoeing and oxyfluorfen increased pod yield (ardab/fed.) by 376.7, 332.6 and 327.6% , respectively in the first season, while, oxyfluorfen, pendimethalin and butralin + hand hoeing increased pod yield by 300.0, 290.2 and 254.9%, respectively in the second season compared to the unweeded check.

The capacity of Giza 6 variety or Gregory for weed competition is very low, thus the yield of peanut was reduced by 71 and 73% under weed infestation by 1.168 and 2.033 t/fed of weed dry weight. Such reduction in the yield can be avoided with using different weed control treatments such as butralin, oxyfluorfen, pendimethalin which become more effective by adding hand hoeing after one month from sowing.

For the second experiment reducing the full recommended rates either for soil or post emergence herbicides for grasses with the use TK1 nozzle failed to give effective weed control similar to the full recommended rates and consequently reduced peanut yield and its components. Adding hand hoeing to the reduced rates improved weed control and increased pod yield to be equal or more than the full recommended rates. Thus, The highest pod yield was obtained from clethodim (TK1) + hand hoeing, fluazifop butyl (TK1) + hand hoeing and hand hoeing twice which

Moshtohry, M.R. et al.

increased pod weight by 336.0, 319.4 and 294.4%, respectively in the first season, while hand hoeing twice, fluazifop butyl (TK1) + hand hoeing and oxyfluorfen (TK1) + hand hoeing gave the highest pod yield/fed. which was increased by 300.0, 266.0 and 242.4%, respectively in the second season, compared to unweeded check.

Thus, it is recommended for farmers to sustain peanut crop production by minimizing weed competition to use the full rates of herbicides such as butralin at 1200 g/fed applied post sowing or clethodim at 125 g/fed or fluazifop butyl at 125 g/fed. which should be applied in an integral approach. Also the results indicated that adding hand hoeing to the reduced rate (half rate) with TK1 nozzle improved weed control and increased seed yield of peanut as well as reducing pollution.