

Sustainable Management of Water and Soil Resources for Agriculture in Dry Areas

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Abstract : Investigators have reported that mulches increase production potential in arid and semi arid lands. Mulches are covering materials that are used on soil surface for efficiency irrigation, erosion control, weed control, evaporation decrease and improvement of water perpetration. Our aim and local situation determine the kind of material that we can use. In this research we used different mulches including chemical mulch (M1), Aquasorb polymer, manure mulch (M2), Residue mulch (M3) and polyethylene mulch (M4), with control treatment (M0), without usage of mulch, on germination, biomass dry matter and cottonseed yield (Varamin variety) in Kashan area. Randomized complete block (RCB) design have measured the cotton yield with 3 replications for measuring the biomass dry matter and 4 replication in tow irrigation periods as 7 and 14 days. Germination percentage for M0, M1, M2, M3 and M4 treatment were receptivity 64, 65, 76, 57 and 72% Biomass dry matter average for M0, M1, M2, M3 and M4 treatment were receptivity 276, 306, 426, 403 and 476 gram per plot. M4 treatment (polyethylene Mulch) had the most effect, M2 and M3 had no significant as well as M0 and M1. Total yield average with respect to 7 days irrigation for M0, M1, M2, M3 and M4 treatment were receptivity 700, 725, 857, 1057 and 1273 gram per plot. Dunken ne multiple showed no significant different among M0, M1, M2, and M3, but M4 ahs the most effect on yield. Total yield average with respect to 14 days irrigation for M0, M1, M2, M3 and M4 treatment were receptivity 535, 507, 690, 957 and 1047 gram per plot. These were significant difference between all treatments and control treatment. Results showed that used different mulches with water decrease in dry situation can increase the yield significantly.

Keywords : mulch, cotton, arid land management, irrigation systems

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