

"Effect of Mulches and Antitranspirants on the Growth and Yield of Sunflower EC-68414 under Limited Water Supply."

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Investigations were conducted during the *rabi* seasons of 1974-75 and 1975-76 to study the effect of mulches and antitranspirants on the growth and yield of sunflower EC-68414 under limited water supply. The experiment was laid out in split-split plot design with three replications. The irrigation levels included "no irrigation during the crop growth period" and "one irrigation during the crop growth period". Mulch treatments included sawdust, wheat husk (chopped straw), black polythelene and soil mulch. Antitranspirant levels used were Kaoline 2%, PMA 10^{-4} M and control.

Seed yield was increased by using black ployethylene mulch. The mean seed yield increments under black polyethylene, wheat husk and saw dust were in order of 15.34, 4.72 and 2.02 per cent repectively as compared with those under soil mulch.

On an average the treatments black polythylene, wheat husk, saw dust and soil mulch yielded 735, 671, 654 and 461 kg per hectare of oil.

Of the three antitranspirants, PMA 10^{-4} M resulted in significantly higher seed yield as compared to those from Kaolin 2% and check.

The oil yield was significantly influenced by the application of antitranspirant PMA 10^{-4} M.

Black polyethylene mulch conserved soil mositure to a greater extent as compared to other mulches during both the years in both the soil depth (0—15 and 15—30 cm). Wheat husk mulch was found to be the best next to black polyethylene mulch in this respect. Studies connected with mulches showed that mulches other than soil mulch not only maintained uniform thermal regime during noon time at surface but also reduced the soil temperature as compared to soil mulch. Morning soil temperature remained almost uniform in all the mulched plots duing both the years.

Among the two levels of irrigation, the treatment "one irrigation during the crop growth period" produced on the basis of average of two seasons 13.02 per cent higher seed yield than that of "no irrigation" during the crop growth period. The mean oil yield with "one irrigation" during the crop growth period was higher than that of "no irrigation during the crop growth period."

The study of correlation between 10 characters of sunflower was taken up, it was observed that seed yield was found to have very high correlation with the oil yield.

Thus on the basis of two seasons results, it can be concluded that "one irrigation" during the crop growth period use of black polyethylene mulch and application of PMA 10^{-4} M appear to be beneficial for high seed yield as well as oil yield per hectare under soil and climatic conditions of Middle Gujarat.