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IMPACT OF SHELTERBELTS ON PEARL MILLET CROP

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The climatic endowments in the extremely arid region preclude the possibility of stable crop productivity. The higher solar incidence, coupled with strong wind velocity, makes it impossible for providing even reasonably conducive growth period for crops. The situation is specially precarious for kharif crops.

The provision of shelterbelts to lessen exposure risks or to reduce exposure effects, is an attempt to mitigate or modify the major crop environment in the particular habitat.

The present note deals with results of studies conducted in the summer of 1978 on millet yield attributed to shelterbelts of predominantly *Accacia tortilis*, *Cassia siamea* and *Prosopis juliflora* at Central Research Farm, Jodhpur. The combined effect was to create more equitable growing conditions which place plants under reduced stress.

This study reveals that major shelter effect extends to over twenty five times the belt height on leeward side. The major manifestations of shelterbelt effect include reduction in wind velocity and evaporation giving rise to effective conservation of moisture and fertility of soil. Studies of Muthana et al. (1984) have since shown that there is sizeable increase in consumptive water use efficiency by crop under shelterbelt effects. Since there was a series of 3-m wide 3-row shelter belts (av tree height 5m) at 165 m intervals as the protective distance, about 3% of land was lost under belt area and, additionally, 25% of the area under the trees would compete for moisture (Fig. 1). Sheltered crops could thus be profitably raised in about 60 to 65 per cent of the area. Optimum distance protection of shelter belts was taken as times their height in length (Tanaka et al., 1956) as multiples. In the present context we considered upto 30 multiples (H).

The data on the consumptive use (Table 1) indicated that the water use was less just near the first shelter belt on the leeward side and it increased gradually away from the shelterbelt. The consumptive water use increased to 174 mm just near 5H of the shelterbelt to 223, 216, 216 and 227 mm at 10H, 15H, 20H and 25H of the shelterbelts, respectively, However, plots close to the second shelterbelt, that is at 30H, the water use slightly declined (193.7 mm). The trend of results was similar