

Correlation with climatic factors and regression models on yield of rabi sunflower (*Helianthus annuus* L.)

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ABSTRACT

The field experiment was conducted for five years on sunflower by using four different sowing windows to study the relationship between weather parameters and yield in rabi season. The minimum temperature had highly significant positive association with grain yield at all the phenological phases. However, pan evaporation had significant negative association with grain yield at emergence to 4th leaf (P₁), 4th leaf to button (P₂) and hard dough to physiological maturity (P₆) stage. Relative humidity had significant positive association with grain yield at 4th leaf to 50 % flowering (P₂ P₃) stage. Bright sunshine had significant positive association with grain yield. Significant negative association with grain yield by pan evaporation indicates that at early growth stages rabi sunflower not favour moisture stress condition. Significant positive association with grain yield at all stages of growth by minimum temperature indicates rabi sunflower responds well to the low temperature condition throughout growth period.. The crop sown at MW 36 (first fortnight of September) and hybrid MSFH-17 produced maximum grain yield and total monetary returns. The Stepwise multiple regression model of different phenophasewise weather parameters with yield of Rabi sunflower sown in MW 36 is $\text{Yield} = 134.2301 - 99.6017 X_1 - 45.8576 X_2 - 2.0473 X_3 + 30.2477 X_4$, $r^2 = 0.95$ and the Stepwise multiple regression model of different phenophasewise weather parameters with yield of Rabi sunflower for hybrid MSFH-17 is $\text{Yield} = -2710.4106 + 86.3693 X_1 + 20.2087 X_2 + 76.8775 X_3$, $r^2 = 0.75$. However, the weather parameter influence their contribution and performance of rabi sunflower crop sown at different dates of sowing were assessed and the model on combined effect was developed using stepwise multiple regression for predicting grain yield as $\text{Yield} = -3015.2008 + 54.9388 X_1 + 0.4848 X_2 + 50.8648 X_3 + 4.3952 X_4 + 26.8468 X_5 + 19.0967 X_6 - 24.4833 X_7$, $r^2 = 0.70$

Key words : Sunflower, Weather parameter, Correlation, Stepwise regression.

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