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ABSTRACT: Studies were undertaken on the development of weather based prediction models to forewarn incidence of sorghum shoot fly, *Atherigona soccata* during kharif 2011-13 at the Main Agricultural Research Station, Dharwad in early, normal and late sown conditions. Two varieties viz., DSV-3 and CSH-14 were selected and attempt was made to determine the relationship of egg load with weather factors. The analysis comprising of correlations between the dead hearts with prevailing weekly meteorological parameters during 1, 2, 3 and 4 weeks lead time (prior) and same week of the observations revealed the following results. Increase in minimum temperature along with morning RH would lead to increase in number of shootfly eggs, while morning RH in case of late sown condition exerted significantly negative correlation with egg laying. In all the aforesaid correlated weeks, the combined weather parameter, evening relative humidity (3 weeks before) was consistently positively and significant association with deadhearts of sorghum shootfly in case of crop sown during second week of June month. Negative and significant association with maximum temperature in case of crop sown during July month was observed. There was no significant influence in normal sown crop.

Key words: *Atherigona soccata*, weather parameters, deadheart, correlation, regression and forecasting model.