Abstract A wide gap exists between potential and actual yields of mustard in India. Mustard is highly sensitive to weather variables and thus attempts need to be focused on determining the most yield limiting weather parameters oa sto bridge the yield gap. To accomplish this task, mustard (c.v. RH-30) yields recorded for 26 rabi seasons (1984-85 to 2009-10) at Hisar, Haryana state were related with weather parameters during crop period. Maximum temperature during 1-6 week after sowing (WAS), minimum temperature during 1-5 WAS and again 16-20 WAS were found to influence mustard yields significantly. The mustard yields were less than 2000 kg ha -1 when maximum temperature was less than 30°C during 1-6 WAS and minimum temperature was less than 12°C during 1-5 WAS. Higher yields (2400 to 3000 kg ha -1) was obtained when minimum temperature during 16-20 WAS was less than 6°C.