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# Optimization of Agronomic Combinations to Mitigate Drought Impact on Safflower (*Carthamus Tinctorius L.*) Productivity under Receding Soil Moisture Conditions

**Sudhakar Chourat**

Jayashankar Telangana State Agricultural University, India

**A** field experiment was conducted during the year 2017-18 to study the effect of preceding Greengram/Soybean on Safflower in terms of Yield, economics and drought mitigation and also to identify the suitable Agronomic combination of Fertilizer doses and Plant spacings for Safflower in relation to drought mitigation on Vertisol under rainfed conditions. Accordingly, the experiment was planned with three Kharif (rainy season) crop options viz., fallow, Greengram and Soybean; and in Rabi (post-rainy season) three plant spacing viz., 30 x 20, 45 x 20 and 60 x 20 cm; and four fertility levels viz., 50% NPK (20-12.5-0), 100% NPK (40-25-0), SSNM (16-66-0) and 50% SSNM (8-33-0 kg N, P and K/ha). During kharif (rainy season), three crop options laid as main plot treatments and the treatment combinations of three plant spacings and four fertility levels as sub plot and sub-sub plots, respectively were tested against Safflower during Rabi in a double split plot design and replicated twice. Seed yield of safflower was significantly higher when fallow was maintained (1231 kg/ha) as compared to that of greengram (1061 kg/ha) and soybean (992 kg/ha) grown during preceding season. Crop geometry of 45x20 cm was found to be optimum for safflower as it resulted in significantly higher seed yield of 1203 kg/ha which was 19.4 and 28.3% higher than that of 30x20 cm and 60x20 cm, respectively. Supply of nutrients through Site specific nutrient management (SSNM) in safflower not only gave highest seed yield (1314 kg/ha) but it was also significantly

higher by 11% over supply of 100% NPK (1002 kg/ha) and 50% SSNM (1157 kg/ha) and 50 % NPK (905 kg/ha). Irrespective of plant spacings, supply of nutrients through 100% SSNM resulted in significantly higher seed yield as compared to other fertilizer levels. Available soil moisture (%) was highest in rainy season fallow at different crop phenophases of Safflower viz., elongation (24.05%) and 50% flowering (13.70%) which accounts to 6.5% and 9.8% higher over Greengram- Safflower and Soybean-Safflower systems, respectively.

## Biography

Sudhakar Chourat has completed his master's and Ph. D (Agronomy) from Acharya N. G. Ranga Agricultural University, Hyderabad, India during 1997 and 2011, respectively. He has been working as Principal Scientist (Agronomy) at Agricultural Research Station, Tandur (PJTSAU), Telangana State under All India Co-ordinated Research Projects on Sorghum and Safflower since 1998. He has more 13 years of research experience in Safflower crop. He has published about 25 research articles in reputed journals and conference papers to his credit of which, 3 papers being International conference Oral presentations. Besides, he authored 3 book chapters. His innovative research on transplanted in Pigeonpea has gained lot of popularity among the farming community. The ICRISAT is being utilizing his services as a subject matter specialist on Pigeonpea Production Technology during various occasions. He held the responsibility of Editor for the UvyMyFMz "Vyasaayam" for a period of one year during 2009-10.

chouratsudhakar@yahoo.com