

## IDT6-005 | Performance of some sorghum varieties as affected by heat stress under irrigation in Northern Nigeria

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Exposure of sorghum (*sorghum bicolor*) during flowering time for a period of 10-15 days to high temperature stress (>36-38°C) reduced pollen germination, failure of fertilization and flower abortion. A number of improved varieties of sorghum have recently been released for the Sudan and Sahel zones of Nigeria, with their dissemination limited by seed availability. In order to improve the supply of Breeder and Foundation seeds for production of certified, these varieties; SAMSORG 45 and SAMSORG 46 with two old but popular varieties SAMSORG 41 and SAMSORG 17 were grown under irrigation at Dadinkowa (10.18N, 11.27S) to assess their productivity during the dry season at two planting dates (October and January) for 2 seasons (2015 &

2016). Result showed that October planting which flowering and seed set coincided with the average maximum temperature of 27°C recorded in January produced good seed while December/January planting which flowering and seed set coincided with average maximum temperature of 42°C recorded in April had poor or no seed set on panicles especially in 2016. Rise in the average maximum temperature (2016) in the month of March (35°C) and April 2016 (41°C) resulted to 90-100% no seed set on SAMSORG 17, SAMSORG 45 and SAMSORG 46 as it coincided with the flowering time thus producing sterile panicle. This suggest that planting date and temperature significantly affect seed production of sorghum in the dry season.

## IDT6-006 | Influence of severe drought on oleic acid content and seed yield of high oleic Indian safflower varieties

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High-oleic safflower (*Carthamus tinctorius* L.) oil is desired by industry because of its high oxidative stability for broader uses in food, fuel, and other sectors. Demand for oleic oils is increasing recently. Three high-oleic cultivars, ISF-1, ISF-2 and ISF-3, were developed for the first time in India at the ICAR-Indian Institute of Oilseeds Research, Hyderabad. The objective of this investigation was to test the influence of drought on oleic acid content of high oleic cultivars. During 2015-16, ISF-1, ISF-2 and ISF-3 and 13 non-oleic varieties were grown in RBD with three replications at 10 locations in India. Experiments were conducted under severe drought conditions at four locations and under irrigated (1or 2 irrigations) conditions at six locations. The mean rainfall received during safflower crop period (October-April) was 35 mm. ISF-1,

ISF-2 and ISF-3 had high mean oleic acid content (75%-76%) as compared to non-oleic varieties (14%-17%) across locations. High oleic varieties had 3%-5% lower oleic content (72%-73%) under dry conditions than that (76-78%) recorded in irrigated conditions. High temperatures and severe moisture stress that prevailed at dry locations might have caused reduction in oleic acid levels. Oleic acid content of oleic varieties has not changed when grown in warmer-irrigated and cooler-irrigated locations. This suggests that the effect of temperature was mitigated when irrigation was provided. Drought has severely reduced seed yield in all varieties, however, ISF-1 and IFS-2 recorded 15% and 9% higher seed yield; and 23% and 27% higher oil yield than the best check variety, A1 over the locations.