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## Performance Evaluation of Sesame Varieties Suitable for Hill Agriculture

Badapmain Makdoh<sup>1</sup>, \*Letngam Touthang<sup>1</sup>, Ampee Tasung<sup>2</sup>,  
Rajesh Khan<sup>1</sup> and Raghuvveer Singh<sup>2</sup>

<sup>1</sup>ICAR-Research Complex for NEH Region, Umiam -793103, Meghalaya, India

<sup>2</sup>ICAR-Research Complex for NEH Region, Arunachal Pradesh Centre, Basar, India

\*Corresponding Author's email: [letngam111@gmail.com](mailto:letngam111@gmail.com)

Sesame (*Sesamum indicum* L.) is known as 'Queen of oilseeds due to high oil content of 45-63 percent. Ranging from using oil cake as cattle feed to nutritional and medicinal values with immense antioxidants and other health benefits, sesame seeds are also known as 'the seeds of immortality'. Keeping in view its importance for sustainable hill agriculture, a set of 11 improved varieties of sesame with two local checks were evaluated for identification of suitable varieties in mid hill of NEH region. Out of which, the released variety Prachi was found to be most promising.

### Introduction

Sesame (*Sesamum indicum*) the poor man's ghee is an oilseed crop that is being adopted in hill agriculture in the recent decade due to its adaptability and market demand. The crop is widely cultivated in the foothill plains (<300 m msl) and the mid hills (500-700 m msl) in NEH Region. Generally, the crop is sown from fortnight of May to fortnight of August based on local climatic conditions. However, in jhum field sesame is sown from April onwards in same sowing window of jhum rice. Sesame oil and foods fried in sesame oil have a long shelf-life because the oil contains an antioxidant called sesamol. The oil also finds its place in the manufacture of soaps, paints, perfumes, pharmaceuticals and insecticides.

### Materials and Methods

A set of 11 varieties of sesame was evaluated for their performance in mid hill climatic conditions at ICAR Basar, Arunachal Pradesh Centre. Also, two local varieties as check have been included for comparison viz. Namsai local and Khasi local. So, a total of 13 varieties namely VRI-3, TMV-7, VRI (SV)-1, VRI (SV)-2, Prachi, Amrit, Swetha, DS-5, DS-9, GT-10, CUMS-17, Namsai local and Khasi local. Namsai local is a popular variety grown in Namsai District and Khasi local grown in Meghalaya. The crop was sown with a spacing of 30 cm x 10 cm and fertilizer dose 30:30:20 N: P<sub>2</sub>O<sub>5</sub>: K<sub>2</sub>O with FYM @ 10t/ha. Primary tillage was done 3 weeks before final land preparation. The monthly average weather during the growing season was shown in fig.1.

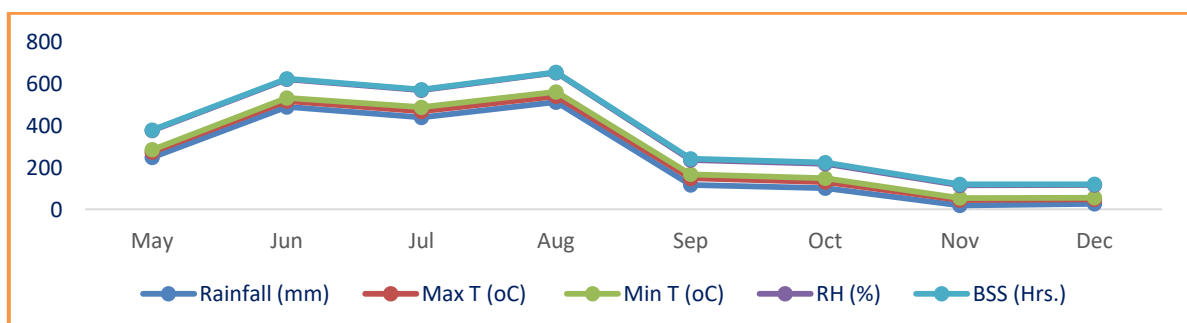


Fig.1: Monthly average weather data during growing season

## Results and Discussions

The performance of the genotypes is being shown in Fig. 2 wherein wide mean variations for yield and its contributing traits were observed.

**Days to 50% flowering:** Among the varieties, Prachi (51.67 days) achieved the earliest to 50% flowering, which was followed by Namsai local (52.33 days), Amrit (52.67 days) and CUMS-17 (53.33 days) and they were par to each other. Khasi local (103 days) took the longest to 50% flowering which was followed by DS-5 (81.33 days), DS-9 (81 days) and Swetha (76 days) (Fig.3)

**Days to maturity:** Similarly, among the varieties, DS-5 (160.67 days) which was at par with DS-9 (160.33 days) and Swetha (159.67 days) took the longest time to mature. Whereas, Amrit, Prachi, CUMS-17 took only 108, 110.67 and 112 days to mature respectively.

**Plant height:** The plant height of five plant was taken at harvest where average of each plot was taken. It was observed that among the varieties, Khasi local with a height of 163.2 cm is the tallest and significantly taller than the rest of the varieties which is then followed by DS-9 (137.4 cm), DS-5 (129.6 cm) and Swetha (126.67 cm). Amongst the varieties TMV-7 (94.73cm) and Amrit (95.53) are the shortest.

**No. of pods/plant:** The highest number of pods/plants was observed in Khasi local (45.33) which was at par with Prachi (41.80).



Fig. 2: Field view of different varieties of sesame in mid hill conditions

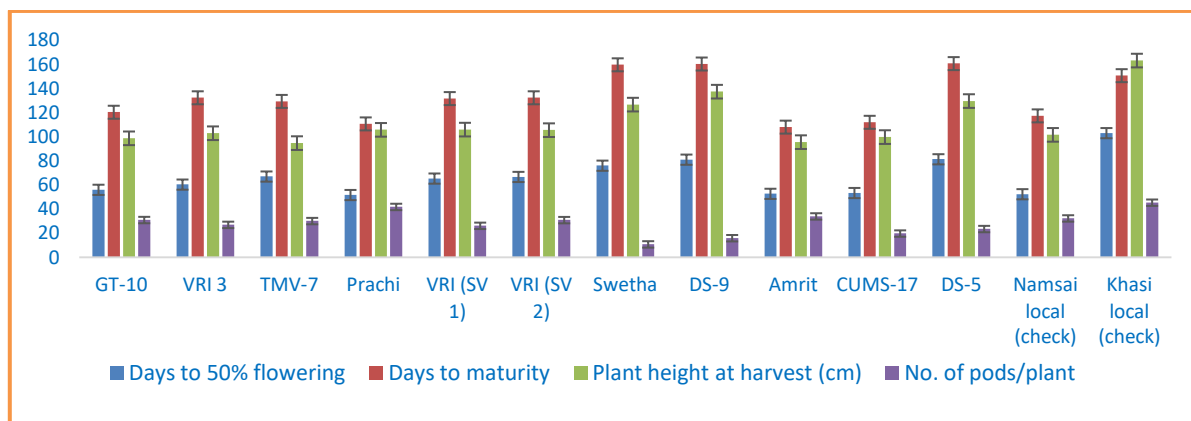
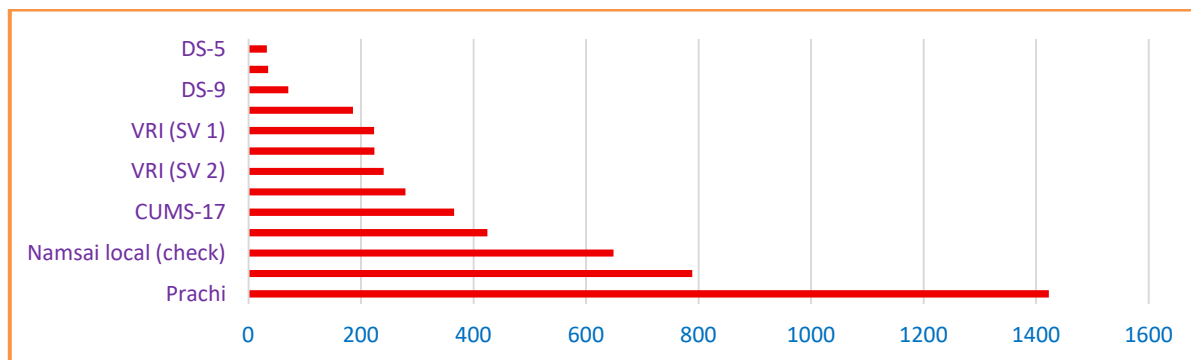


Fig. 3: Mean variations of flowering, maturity, plant height and number of pods per plant

**Seed yield (kg/ha):** Prachi seed yield was the highest (1422.33 kg/ha) which was followed by Khasi local, Namsai local and Amrit. Very poor seed yield was observed in variety Swetha, DS-5, DS-9 and TMV-7 in Basar condition (Fig. 4). Hence, popularization of Prachi might serve to augment the production and productivity oilseeds in the NEH Region.

**Disease infestation:** There has been observation on the infestation of Alternaria leaf blight at maximum vegetative stage and wilting at initial crop stage which may be due to rotting at collar region which might have been due to continuous rainfall. This has affected adversely on the final crop stand. It was observed that the PDI value was found to be highest in TMV-7, VRI (SV 2) and Swetha with PDI value of 82.22, 80.49 and 76.67, respectively. Interestingly, local variety Khasi Local found to be showing no disease infestation at all with a very low

PDI value of 9.26. Sesame is the oldest indigenous oilseed crop and one of the highest oil containing crops. The seed is used in confectionery and other food industries. Commercial cultivation in the plains adjoining Assam is seen for oil and condiment purpose. Introduction of suitable varieties in the prevailing mid hill climatic conditions could fetch additional farms returns with nutritional security among the local farmers in the region. In place like NEH region adjustment of sowing window is crucial for successful cultivation of sesame. The crop is sensitive to high rainfall or moisture in the soil. Thus, if high rainfall coincided with sowing time, nursery preparation and transplanting method can also be adopted for successful sesame cultivation.



**Fig. 4: Mean seed yield per plant of 13 sesame genotypes in mid hill climatic conditions**

## Conclusion

Sesame is a good catch crop and ideal components for crop rotation as its roots improve soil structure and water percolation. The NEH region has a massive edible oil deficit, with an estimated regional deficit of above 80 %. The crop has promising potential to improve income and livelihood of small and marginal farmers. Therefore, identification and popularization of improved high yielding varieties suitable for local climatic conditions could help in increasing acreage and production and productivity.