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# *Suitability of Turmeric Varieties Against Fungal Diseases in Cuddalore District - Tamil Nadu*

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The turmeric crop is affected by three major fungal diseases and the yield of rhizome varied due to the incidences of disease and variety performance. A study was conducted to assess the suitability of varieties against fungal diseases in Cuddalore district of Tamil Nadu. Three varieties viz., CO<sub>2</sub>, IISR pragathi and Attur ruling variety were used to assess the performance against the fungal diseases under field condition. The growth parameters and incidence of rhizome rot in turmeric was recorded from the on farm trial and the results indicated that rhizome rot incidence was low in CO<sub>2</sub> variety (2.12 %) and which was followed by IISR pragathi (4.51%). The highest yield of rhizome was recorded by CO<sub>2</sub> variety and which was followed by attur local variety. In the experiments, IISR pragathi matured very earlier than other variety used in the study. The CO<sub>2</sub> variety given higher net profit and B: C ratio in the study. The disease incidence viz., rhizome rot, leaf blotch and leaf spot were noticed in all the three varieties; however, rhizome rot incidence was very low in CO<sub>2</sub> variety and followed by IISR pragathi. The incidence of leaf blotch and leaf spot were comparatively less in IISR pragathi when compared to CO<sub>2</sub> variety.

**INTRODUCTION**

Turmeric is a popular spice crop in Tamil Nadu; however it is susceptible to fungal diseases such as rhizome rot, leaf blotch, and leaf spot. Among the diseases, *Pythium aphanidermatum* (Edson) Fitz

rhizome rot is a serious limitation on agricultural productivity. Local variations cover about 85 percent of the land. Only 15% of growers use high-yielding cultivars developed by State Agricultural Universities and the Indian Institute of Spice Research. BSR 1, BSR 2, and Attur local are the kinds grown in the Cuddalore district.

The lack of awareness and the scarcity of seed rhizomes are the main causes for the poor adaptation of released types. Farmers are repeatedly employing their own seed rhizomes. They are not selecting seed rhizomes from rhizome-free areas, treating seed rhizomes, or using biocontrol chemicals in the right manner. During field visits by KVK scientists and inquiries from farmers, issues such as continued use of indigenous varieties, inappropriate fertiliser application, and indiscriminate use of pesticides for pest and disease management were noted by growers. Based on the information's, performance of newly introduced varieties of turmeric was assessed through on farm trials for large scale adoption of the variety.

about 0.40 ha. Each variety, seven replications were maintained in each location. Each replication had plot size of 5x 6 feet. Besides, the following technologies viz., rhizome treatment with *Pseudomonas fluorescens* 10 g/L, soil application of each *P. fluorescens* and *Trichoderma viride* @ 2.5 kg/ha, recommended dose of NPK - 25:60:108 per ha, foliar spray of IISR micronutrient mixture @ 0.5% on 60 and 90 days were also demonstrated in the trial.

## RESULTS AND DISCUSSION

In order to introduce newly released turmeric varieties for large-scale cultivation in Cuddalore district, the appropriateness of newly released turmeric varieties was examined at ten locations as part of an on-farm trial. Farmers were taught about the advantages of newly released varieties over the dominant local variety, how to employ bio-control agents for disease management, how to apply the necessary NPK dose, and how to spray foliar with an IISR micronutrient mixture.

**Table 1. Growth parameters and fungal disease incidence of varieties of Turmeric**

Sl.No	Variety	Plant height (cm)	No of tillers/plant	Days of maturity	Rhizome Yield (q/ha)	Net profit (Rs.)	B: C ratio	Rhizome rot incidence (%)	Leaf blotch (per cent disease index)	Leaf spot (per cent disease index)
1	CO <sub>2</sub>	82.50	2.21	224	29.25	323484	4.14	4.12	10.94	7.01
2	IISR Pragati	62.45	1.21	178	22.79	240810	3.40	7.51	7.05	8.04
3	Attur local-Check	79.25	1.76	204	27.56	311890	4.05	12.81	11.85	9.25
	CD (p=0.05%)	2.13	0.56	--	1.2	--	--	1.62	1.34	0.86
	SEd	0.89	0.25	--	0.72	--	--	0.43	0.34	0.12

\*values are mean of ten locations. Each location, seven replications were maintained for each variety.

## MATERIALS AND METHODS

On farm trials were conducted at ten farmers' field in the Reddakurichi cluster of Cuddalore district to assess the performance of new varieties CO<sub>2</sub> (released by Tamil Nadu Agricultural University) and IISR Pragati (released by Indian Institute of Spice Research, Calicut). Initially the selected farmers were sensitized on the importance of high yielding varieties, crop management practices and use of biocontrol agents and importance of integrated nutrient and plant protection strategies. The trials were taken up in ten farmers' field each in an area of

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variety's higher yield cannot be attributed to a single reason, but rather to integrated crop management approaches. Increased rhizome yield, on the other hand, could be attributed to varietal character and variation (Kandiannan *et al.*, 2015, Chaudhary *et al.*, 2006). According to Indhumathi *et al.* (2018), foliar application of micronutrients in the form of IISR micronutrient mixture tailored to turmeric improves turmeric yield significantly. In our research, the CO<sub>2</sub> variety outperformed all other varieties in the Cuddalore region when all crop management measures were followed, including foliar spraying with an IISR micronutrient mixture. The disease incidence *viz.*, rhizome rot, leaf blotch and leaf spot were noticed in all the three varieties; however, rhizome rot incidence was very low in CO<sub>2</sub> variety and followed by IISR pragati. The incidence of leaf blotch and leaf spot were comparatively less in IISR pragati when compared to CO<sub>2</sub> variety. Similarly, combined applications of *P. fluorescens* + *T. viride* and *P. fluorescens* + *T. harzianum* reduced the rhizome rot disease incidence up to 62 – 65 per cent in CO<sub>2</sub> and BSR 2 turmeric varieties (Indhumathi *et al.*, 2018)

### CONCLUSION

The turmeric variety CO<sub>2</sub> suitable for cultivation in Cuddalore district and the crop management

practices should be followed in the crop in order to get more return from crop cultivation.

### REFERENCES

- Chaudhary, A.S., Sachan, S.K. & Singh, R.L. (2006). Studies on varietal performance of turmeric (*Curcuma longa* L.) *Indian J. Crop Science*, 1, 189-190.
- Indhumathi K., Shanmugam P.S., Vennila M.A. & Sangeetha M. (2018). Yield and economic analysis of turmeric variety Co 2 in Dharmapuri district. *International Journal of Agriculture Sciences*, 12, 5073-5075
- Kandiannan, K. Anandaraj, M., Prasath, D., John Zachariah, T., Krishnamurthy, K.S. & Srinivasan, V. (2015). Evaluation of short and tall true turmeric (*Curcuma longa*) varieties for growth, yield and stability. *Indian Journal of Agricultural Sciences*, 85, 718-720
- Naram Naidu L. & Purushotham, K. (2013). Evaluation of turmeric (*Curcuma longa* L.) varieties for rainfed cultivation, *J. Hortl. Sci.*, 8, 118-120
- Shanmugam, P.S. Indhumathi, K., Sangeetha, M. & Tamilselvan, N. (2015). Evaluation of different pest management modules against major insect pests and diseases of turmeric, *Current Biotica*, 9, 17-24