

# Inhibitory Effect of Sorghum and Pearl Millet Pollen on Urediniospore Germination and Germtube Growth of Groundnut Rust

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Rust, caused by *Puccinia arachidis* Speg., is an economically important disease of groundnut (*Arachis hypogaea* L.) Rust can reduce pod yield by over 50% in susceptible cultivars (Subrahmanyam and McDonald 1983). Incidence and severity of the disease were lower in groundnut intercropped with sorghum and pearl millet than in sole crop groundnut. Deposition of sorghum and pearl millet pollen was observed on the leaves of intercropped groundnut. A laboratory study was conducted to examine the influence of the pollen on urediniospore germination and germtube growth of groundnut rust.

Urediniospores from infected groundnut leaves and fresh pollen from sorghum and pearl millet were collected and suspended independently in distilled water. The spores and pollen concentrations were adjusted to  $10^5 \text{ mL}^{-1}$  using a haemocytometer. Pearl millet and sorghum pollen suspensions were separately mixed with rust spore suspension in equal volumes, and 2–3 drops of these mixtures were placed on clean glass slides. Drops of the urediniospore suspension mixed with an equal volume of water served as control. Four replications were maintained for each treatment. The slides were placed in petri dishes lined with moist filter paper and incubated in the dark at  $25^\circ\text{C}$  for 4 h in a percival incubator. A drop of formaldehyde was added to each drop of the suspension on the slides to prevent further spore germination and germtube growth. Two-hundred spores were examined from each slide to estimate the percentage of germination, and 20 germtubes were measured to estimate the germtube length in each replication. The experiment was repeated twice and the pooled data were analyzed.

Urediniospore germination and germtube lengths were significantly lower in the presence of pollen (Table 1). Spore germination was 46% in the sorghum-pollen-urediniospore mixture, 57% in the pearl millet-pollen-urediniospore mixture and 76% in urediniospore-water suspension. Germtube length was 76.8 $\mu\text{m}$  in the sorghum-pollen-urediniospore mixture, 84 $\mu\text{m}$  in the pearl millet-pollen-urediniospore mixture, and 121.5 $\mu\text{m}$  in the urediniospore-water suspension. Inhibitory effect of sorghum pollen on rust urediniospore germination and germtube growth was higher than that of pearl millet pollen.

**Table 1. Inhibitory effect of sorghum and pearl millet pollen on urediniospore germination and germtube length of groundnut rust.**

Treatment	Urediniospore germination <sup>1</sup> (%)	Germtube length <sup>1</sup> ( $\mu$ )
Sorghum-pollen-urediniospore mixture	45.4	76.9
Pearl millet-pollen-urediniospore mixture	57.3	84.2
Urediniospore distilled water suspension	76.4	121.6
SE (pooled)	$\pm 1.7$	$\pm 0.26$
CV (%) (pooled)	5.8	5.1

1. Mean of three tests with four replications.

The inhibitory effect of sorghum and pearl millet pollen could contribute to the reduced rust severity in intercropped groundnut.

## Reference

**Subrahmanyam, P., and McDonald, D.** 1983. Rust disease of groundnut. Information Bulletin no. 13. Patancheru, A.P. 502 324, India: International Crops Research Institute for the Semi-Arid Tropics. 16 pp.