

Seed quality of soybean in relation to Phomopsis seed decay in Malaysia.

ABSTRACT

Phomopsis Seed Decay (PSD) is detrimental for seed quality in soybean. In this study, three varieties of soybean were evaluated to determine their sensitivity to PSD and its influence on seed quality. These varieties were planted in a factorial experiment with three replication in two plant densities and two seasons in University Putra Malaysia. The incidence of Phomopsis was determined using culture plate method. Seed quality was tested using standard germination test, tetrazolium test and electrical conductivity. Most colonies were morphologically similar with Phomopsis longicolla. Infection to Phomopsis and seed viability was significantly different between soybean varieties and plant densities in two seasons. The AGS 190 with 46% showed the most percentage of Phomopsis in higher plant density in the second season. Pershing had 10% infection in lower plant density in the first season and showed more tolerance to Phomopsis in this study. Higher plant density caused higher infection to PSD, lower percentage of seed viability and more electrical conductivity. Standard germination and tetrazolium test were 76 and 72% in higher plant density respectively. Electrical conductivity was 83 $\mu\text{S cm}^{-1} \text{g}^{-1}$ in higher plant density whereas it was 68 $\mu\text{S cm}^{-1} \text{g}^{-1}$ in lower plant density. Phomopsis incidence showed negative correlation with seed viability and it was positively correlated with electrical conductivity. Based on these relationships, Pershing with its low Phomopsis infection showed the highest seed viability. The values for viability were 84 and 82%. This study indicates that the incidence of Phomopsis seed decay is usually dependent on field environments and planting densities. The severity of infection is also dependent on the variety.

Keyword: Soybean; Phomopsis; Phomopsis seed decay; Seed germination; Plant density.