

Allelochemical effect of Papaya on bacterial wilt and yield of tomato

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Abstract

Pawpaw (*Carica papaya*) has been reported to have allelopathic effect on other plants. The study investigated effects of pawpaw and pigweed intercropped with tomato at different spacing on disease incidence, severity of bacterial wilt, growth and yield of tomato. Laboratory study on the inhibitory effect of allelochemicals extracted from the roots of pawpaw, pigweed and tomato at 0.03 g/mL, 0.04 g/mL and 0.05 g/mL on the growth of *Ralstonia solanacearum* was also carried out. The results showed that that intercropping tomato with pawpaw at a spacing of 100 cm (T-Pw 100) significantly ($P < 0.005$) reduced disease incidence and severity by 46.6%, and 61.4 % respectively when compared with sole tomato (ST). Plant height (38.9cm), number of fruit/plant (26.5) and fruit yield (26.5 t/ha) of T-Pw 100 were significantly higher than ST with plant height (17.2 cm), number of fruit/plant (8.0) and fruit yield (1.2 t/ha) respectively. In vitro study also showed that aqueous extract of root of pawpaw inhibited growth of *R. solanacearum* at 0.03 g/mL (34.0%) and 0.05g/mL (60.0%) while no inhibition was observed in root extracts of pigweed and tomato. The followings were concluded: the root of pawpaw contained chemicals which were not present in pigweed and tomato that can inhibit growth of *R. solanacearum*. This allelochemicals in the intercropping of tomato and pawpaw at 100cm spacing effectively reduced disease incidence and severity of bacterial wilt, with increased growth and yield of tomato. It was recommended that intercropping of tomato at 100cm spacing with pawpaw will reduce the incidence of bacterial wilt in tomato with increase in the growth and yield of tomato.

Biography:

Dr. Lawal Sulaimon Abidemi has completed B.Sc. Agric Crop; M.Sc. Agric (Environmental Biology), Ph.D. Agriculture and Forestry.