Frequency distribution of sesame phyllody infected by phytoplasmas in Antalya, Turkey

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Sesame (Sesamum indicum L.) is one of the most important oilseed crops in Turkey and it is cultivated especially in southern regions. However its production in Turkey has fallen about 40% in the last decade (FAO, 2010). Major factors that limit its production are instability in yield, non-mechanized harvesting, non-synchronous maturity, and susceptibility to diseases and pathogens. Sesame phyllody, known as a viral disease earlier, is a very serious and destructive disease and it is now associated with phytoplasmas that are uncultured wall-less bacteria (class Mollicutes) that live in the phloem of host plant and in the emolinph of insect vectors. The sesame infected plants become stunted and the floral parts are modified in to leafy structures bearing no fruits and seeds resulting in significant yield losses. Various symptoms occur according with different growing stages and time of infection.

During 2008 to 2010 growing seasons, lots of sesame plants infected with phyllophy disease were observed in Antalya province located in the southern of Turkey (Figure 1). The major sesame growing areas in Antalya (Aksu, Boğazkent, Denizyaka, Beşkonak and Düşemealtı) were visited twice in two different developmental stages of plants in the farmer fields and monitored for the disease distribution and frequency (Figure 1). The disease symptoms were observed in all the farmer fields visited (Figure 2). The disease distribution is mainly located in the borders of the fields. In order to identify the severity of phytoplasma disease on sesame, the plants showing witches’ broom symptoms were counted in 100 m² of each field. According to calculations from the data obtained from farmer fields, the frequency distribution of sesame phyllody was recorded as 62%, 59%, 42%, 37% and 56% for Aksu, Boğazkent, Denizyaka, Beşkonak and Düşemealtı, respectively. Visual overall surveys of sesame fields in Antalya province indicated a disease incidence of up to 50%.

Figure 1. The farmer fields visited in the several parts of Antalya province, Turkey: Aksu (1), Boğazkent (2), Denizyaka (3), Beşkonak (4) and Düşemealtı (5).
Figure 2. Phyllody symptoms in sesame plants collected in different fields of Antalya province.