Fungicide resistance of *Fusarium oxysporum* f. sp. *niveum* isolates from watermelon in Egypt

Taha, N.[1] -El-Kazazz, M.[2] - Khoniem, K.[2] - El-Naggar, M.[2]
[1]Plant Pathology Research Institute, Agricultural Research Center, Giza, Egypt
[2]Agricultural Botany Department, Faculty of Agriculture, Kafrelsheikh University, Kafr El-Sheikh, Egypt
magdyelnaggar77@hotmail.com

Difficulties in obtaining high disease control efficacy by spraying applications of several fungicides enhanced the concerns regarding the presence of fungicide-resistant strains of *F. oxysporum* f. sp. *niveum*. Therefore, the baseline sensitivity distribution established in this study for *F. oxysporum* f. sp. *niveum* to the four commercial fungicides (toldfos-methyl, carbendazim, carboxin and pencycuron) used in control to watermelon wilt disease could serve as the basis for monitoring the sensitivity shift of the *F. oxysporum* f. sp. *niveum* populations as well as detection of any change in pathogen sensitivity. This information will be useful for successful to control of watermelon wilt disease by providing alternative fungicide options to the growers and delaying resistance development by limiting the number of applications.

The development of tolerance to fungicides is mainly due to selection pressure exerted on resistant populations of the pathogen by heavy application of a single fungicide ingredient. When fungal populations are subjected to fungicides, sensitive individuals are selectively killed. Those individuals that harbour a mutation for tolerance may multiply without computation from the normal population. This new tolerant population then becomes dominant, and crop losses can occur despite of continued fungicide application. In the present study, the fungicides tolerance of toldfos-methyl, pencycuron, carboxin and carbendazin by *F. oxysporum* f. sp. *niveum* usually develops over time. Usage of single fungicide is discouraged because *Fusarium* rapidly develops tolerance. The present results revealed an increase in frequency percentage of isolates resistant to fungicides against mycelial growth. The frequency percentages of moderately resistant isolates (MR) and highly resistant ones (HR) against mycelial growth were 34.5 and 11.9%, respectively and the highest percentage of susceptible isolates was 53.6%.

The present research has an economical aspect as well. The economical importance of the crops threatened by *F. oxysporum* f. sp. *niveum* makes effective plant protection extremely important, because it could help to increase the yield and the quality of the product while simultaneously decreasing the cost of production. The latter issue has a significant economic importance of its own. Other benefits, such as using more simple plant protection technology, decreasing the environmental risk of fungicide pollution and the possibility of extended use of the fungicides without the risk of loosing their effectiveness will also be obtained.