



Investigation of Fusarium pathogens infecting sugarcane in Khuzestan, Iran

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Abstract



During 2006-07, infected stems with knife-cut symptoms were collected from sugarcane agro- industries of Khuzestan. 270 isolates of fusarium were isolated from knife-cut symptoms and after identifying, were categorized in three species as: *F. verticillioides*(moniliforme) %30, *F.proliferatum* %57 and *F.subglutinans* %13. The results show that *F.subglutinans* is dominant species in north of Khuzestan agro-industries and *F.verticillioides* in south. Pathogenicity test were conducted for all isolates through detached stem technique that indicate all the isolates were pathogen to sugarcane setts.

Introduction



Sugarcane and by product plan was established near the old sugarcane agro-industries(karoon, Haft-Tappe) to supply the balance/shortage of sugar (about 700 thousands tons per year) in Khuzestan because of its climatic situation and Khuzestan history as a main center of sugarcane planting.

So there are about 84 thousands hectares of saline soil ready for planting sugarcane and a main part of them is operated For several years. According to increasing the sugarcane planting area and its economic importance, identify and control its limited factors is very essential. One of the main factors of crop damage is sugarcane disease such as phytoplasma, viruses, bacteria and fungi diseases.

Materials and Methods



Sampling was conducted from oct. 2006 till jun.2007 at the north and south agro-industries of Khuzestan. The pathogen agent fungi was isolated from the knife-cut scars of sugarcane internodes. Isolates were identified according to morphological parameters such as: macro and micro conidia forms, terminal cell and macro conidium base form, appearance or absence of clamidospore, phyalid type(monophyalid or polyphyalid), appearance or absence of microconidium chain and false head, color of colony(specially from down side and colony grow ratio.

It is an important characteristic to have monophyalid or polyphyalid and is valuable in the case of phylogenetic. The color and grow value of colony are less important, because they, re dependent to environment variation.

Isolates were identified through Nelson et all and Bouse, Bergis et all Fusarium identification keys.

This survey was conducted through random perfectly design with five replicates. The variance analyze and compare the mean of charecters were estimate by dancaan($p \leq 0.01$) and spss ver.11.5 software.

Discussion



In this research 270 fusarium isolates were isolated from sugarcane stem(knife cut site) at the different agro-industries of Khuzestan province. The isolates were exactly identified and categorized as three speices: *F.proliferatum*, *F. subglutinans*, *F.verticillioides*, consequently 154,81,35 isolate and with %57, %30 , %13 distribution percent. The dominant speices in the north agro-industries of Khuzestan(karoon& Haft-tappeh) was *F. subglutinans* and in other agro – industries is *F.verticillioides*. All the isolates were studied in the case



Knife-cut disease symptom on sugarcane stem



Micro and Macroscopic picture of three speices of fusarium

Fusarium speices	Fusarium verticillioides	Fusarium proliferatum	Fusarium subglutinans
Agro-industry			
Karun Agro-industry	(%25)	(%30)	(%45)
Haft-Tappeh	(%20.8)	(%25)	(%54.2)
Imam khomeini	(%41.7)	(%41.7)	(%16.7)
Mirza kuchak khan	(%72.4)	(%24.1)	(%3.4)
Amir kabir	(%67.5)	(%25)	(%7.5)
Debel Khozaee	(%68.6)	(%27.5)	(%3.9)
Salman Farsi	(%66)	(%29.8)	(%4.3)
Hakim Farabi	(57.1)	(%40)	(%2.9)

Efficiency of Fusarium speices isolation, the causal agent of sugarcane knife-cut disease in Khuzestan agro-industries

Conclusion



This survey showed that the dominant speice in the karun and Haft-tappeh agro-industries was *F.subglutinans* and in other agro-industries was *F. verticillioides*. Karoon and Haft-tappeh agro- industries are located in northeast area of planting sugarcane in khuzestan province and other agro – industry are in the southern area, the *F. subglutinans* preference low temperature in the compare with *F.verticillioides* so temperature could be effective in spiceas distributions, but it need more study.

The result of pathogenicity test (detached stems technique) show that all the isolates were pathogen on the sugarcane. This test couldn't determine the type of symptoms that appearance in natural infection on sugarcane. So it was conducted because of saving time in compare with field condition.

The causal agent was isolated from the end of necrosis site for the second time, So it shows that thess symptoms is because of the isolated fungus. There was no necrosis and discoloration in inoculated site in control samples.(The stems that inoculated with PDA).

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