Occurrence of Melanosis in citrus orchards of Tonekabon that located in western of Mazandaran province

Seyed Esmaeil Mahdavian

Plant Protection Research Department, Mazandaran Agricultural and Natural Resources Research and Education Center Sari, Iran, Agricultural Research, Education and Extension Organization (AREEO), Tehran, Iran

Corresponding author E.mail: ali2003_in@yahoo.com

Abstract

In the years 2013 - 2015, various cultivated areas of Thomson navel orange culture were visited and 10 contaminated specimens from the dried branch and infected fruit collected from Tonekabon, Nashkord and Abbas Abad. During this study, Diaporthe citri was recognized and the symptoms and elements of this disease corresponded with foreign resources.This disease is more common in trees garden which included weak trees and due to lack of proper understanding of the principles of gardening, soil management and nutrition management and integrated management of pests and diseases damage to citrus garden. Most of inoculums material produced on dead and waterless branches

Introduction

In 2015, about 780,000 out of 2.68 million hectares of gardens were planted for tropical fruits (fertile and unfertile); 84.4% of these amounts related to the fertile level and 15.2% related to the unfertile level. The citrus level consisted 36.3% of the total area of the tropical fruits (including fertile and fertile). 7.31 out of 19.38 million tons of horticultural products that produced per year of 2015 which equivalent to 36.76% related to the tropical region fruits. 7.11 million tons of tropical fruits produced in 1394 and orange produced amount was 50.2% of total tropical produced fruits (Statistics of Agricultural, 2015). Citrus fruits in Mazandaran province compared to Brazil and United States with average performance from 20-30 tons per hectare was very low, which means an average of 15 tons per Hectare. Low yield and quality of fruit mainly are due to attack of many parasitic and non-parasitic diseases. Citrus Melanose occurs in many citrus growing regions of the world and infects many citrus species. This is one of the most commonly observed diseases of citrus fruits worldwide. All commercial citrus varieties

grown in Tonekabon are susceptible to melanose and also we observed this symptoms on lemon. The disease reduces the aesthetic quality of fresh fruits

for the market, although it does not affect edibility.

In different regions of the world citrus is similar to other agricultural products and affected by attack of diseases and a large number of researchers from different countries reported the presence of this disease on citrus (Agostini et al. 2003., Amyet al 2013; Bach & Wolf 1928, Chen et al 2010; Crous 2005, Farr et al. 2002a, b, Fawcett 1912,1922,1932; Fisher 1972; Gomes et al 2013; Gopal et al 2014; Jiaying et al 2014; Jiang et al 2012; Kucharek et al. 1983., Kucharek 2000; Kuhara 1999., Mondal et al. 2007, Nelson 2008; QIN et al 2012; Rossman 2007; Rossman et al 2013; Santos et al 2009;Tan et al 2013; Timmer & Fucik 1976, Timer et al 1998;Timmer 2000, Timmer & Kucharek 2001 ,Timmer et al 2004;Timmer 2012 Whiteside 1977., Whiteside 1980,1988,1993 ,2000;Whiteside & Timmer 2000a, Udayanga et al. 2011).

Material and Methods

In the years 2013 - 2015, various cultivated areas of Thomson navel orange culture were visited and 10 contaminated specimens from the dried branch and infected fruit collected from Tonekabon, Nashkord and Abbas Abad.

In order to Isolation, purification and identification of fungi causing disease collected from tissue parts of 4 to 6 mm, dead branch and after surface washing, disinfected with Ethanol solution 57% for 1 minute, and a solution of sodium hypochlorite 5% for 30 seconds and sterile with distilled water for 1minute. The parts are dried with sterilized paper towel and then put in Petri dishes containing potato agar dextrose (ampicillin 0.1 g) and incubated at 26 ° C. To purify the fungus single-colonies or tip methods used.

Results

Disease Symptom

No symptom was seen on citrus leaves in west region of Mazandaran. This disease has been seen for the first time in past year. Infection occurs in leaves that have not completely expanded. After the contamination, leaves of dark cork sticks appear. Cork may be surrounded by yellow leaves

or shadow of it. Therefore, yellow color may be change to green. The severely polluted branch may become damaged or dry. Adult and fully developed leaves were resistant to contamination. In infections of fruits, dark-color corks appear in different sizes. Cork may contaminate pathogen of young fruit and they appear in larger size and this cant influence on quality of fruit. In fruit, leaves and small branches, brown spot change into the black. Spots are superficial and you can ellipsis them. Melanosis can increase by age of trees and amount of dead wood in crown cover (figure 1-4)

Figure 1-3. Citrus fruit with tear-stain melanose, caused by *Diaporthe citri*.

Citrus fruit with mud cake melanose, caused by Diaporthe citri.

The agent of the disease

Diaporthe citri fungus causes melanosis in citrus.

Discussion

This disease is more common in trees garden which included weak trees and due to lack of proper understanding of the principles of gardening, soil management and nutrition management and integrated management of pests and diseases damage to citrus garden. Most of inoculums material produced on dead and waterless branches. In the years with a lot of wet weather,

diseases and symptoms of fungi such as Melanosis has been seen. This disease in 2013 - 2015 has been seen a number of citrus gardens of Nashtarood, Abbas Abad and Tonekabon which located in the west of Mazandaran Province. Signs of illness appeared in near-surface branches and in the gardens where the trees are poorly ventilated and appeared in gardens with shades of trees. Also, it occurred in gardens that has not good diet plan. In above-mentioned region, most of sign appeared in waterless branches and it seldom watch in leaves. Lack of knowledge about disease that created by inexperienced technicians and lack of proper control measures may cause Melanosis disease and can damage fresh fruit that produced in wet region. Maximum inoculum content produced in dead branches of trees; Melanosis caused by the production of wounds that are black and Brown-red and boils on leaves, branches and fruits citrus trees have been raised and citrus has been damaged and produced some lesion in citrus and loses its market value. But this disease usually does not affect performance; all citrus species are sensitive but grapefruit and lemon are heavily influenced and more sensitive. Melanosis can produce red brick wound on citrus fruit, leaves and branches (Whiteside 2000). The disease is very severe in the humid, semi-tropical areas; In tropical and humid areas has lower value and is unimportant. This cannot influence growth of trees or fruits. But it can reduce benefit of fruit to the market. In Florida, Timmer and et. al, reported that melanosis decreased by 10% per cent in fresh grapefruit.

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