potato tuber rots caused by fusaria

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Potato 1s considered one of the most important export vegetable crop in Egypt. Unfortupate1~ this crop is affected many diseases in the field, storage and during transport. Potato tuber rot caused by different species of Fusarium causes great economielosses during storage, transportation and during the growing season. This study was carried out to : a) determine the causal agents of potato tuber rots,b) to study factors affecting the disease incidence and spread, c) to study parasitic behaviour and chemicalchanges occurring during this period, and d) disease control methods under laboratory, storage and field conditions. The most important results obtained in this study are summarized as follows : 1. Seven different species of the genus Fusarium, causing potato tuber rots, were isolated and identified. The most prevalent were F. oxysporum and F. sambucinum. The latter is considered as the first record of this species on potatoes in Egypt. Also, l. 1ateritium and l. reticulatum were first recorded on potatoes. 2. The most virulent species, causing tuber rots and seed piece decay were F. sambucinum,!. solani and F. avenaceum, while F. reticulatum and F. later.-tiumwere the least virulent. 3. Potato tuber stem-end was the most sensitivesite for Fusarium spp. entrance and infection. While, rose-end and tuber sides were less susceptible. 4. ~. eambucinum was the most virulent causingsprout rot on all varieties Arr~n Banner and Claudia variety were z-ea Lstan t to F. solani, F. avenaceum, F. oxysporum, F. reticulatum and F. latertium, while Arr”an and Grata was resistant to l. semitectwn. On the other hand, Spollnta was the most susceptible variety to all Fusarium spp.5. During storage infection with F. sambucinum increased gradually at 10-25°C. then decreased at 30°0. and 35 C. Infection of Alpha and King Edward varieties with F. avenaceum increased at 10-20°0., while, l. solani was more virulent at 30 and 35°0. 6. Potato tuber rots increased consequently till80 % R.H. and there was no significant differences between 90, 95 and 100 % relative humidity. 7. Slice rot, caused by!. sambucinum, decreased by elongate curing period for all potato varieties.It was found that placing tuber wounded slices in -”H:;5 - good ventilated areas for 1-4 days gained best resultsagainst the infection by F. sambucinum. Potato varieties differed in their sensitivity to infectio depending on their ability for wound suberization.Arran Banner and Alpha were resistant, while King Edward and Spounta were susceptible. 8. Degree of maturity has significant effect on potato tuber rots during storage period. Tuber rot increased by increasing tuber maturity. 9. Increasing inspection intervals during storage period increased tuber rots in Nawalla compared with examination one time at the end of storage period. 10. Alpha, Arran Banner and Rosalai varieties were resistant, Claustar, Claudia and Dimont were lessresistant, while Grata, Spounta and King Edward were susceptible. On the other hand, Baraka, Clada and Cara were highly susceptible to Fusarium potatotuber rot in Nawalla. 11. Change in growth period affected chemical constituents in tubers tissues Fusarium rotsl a) Increasing growth period caused reduction of total and non-reducing sugars in King Edward variety. Reducing and non-reducing sugars increased susceptibility to tuber rot. Reducing sugars decreased in Alpha tubers by prolonging growth period. It was ·also found that total, reducing and non-reducing sugars increased in tubers inoculated with l·sambucinumexcept in Alpha tubers 110, 120 and 130 days old when reducing sugars decreased after inoculation. b) Total and free phenols decreased by increasingplant age. Rate of reduction in King Edward was more than in Alpha cultivar. Total and free phenols increasedafter inoculation with the causal agent.c) Amino acid content was higher in 80 days old tubers than in 90, 100, 110, 120 and 130 days old. InoculatingAlpha tubers increased all amin~acids compared with non-inoculated ones except Alanine, Leucine, and Iso-leucine which

were higher in non-inoculated tubers. In King Edward tubers, non-inoculated tubers containedhigher amounts of amino acid than in inoculated ones, except Arginine and Aspartic at 80 and 90 days old, Tyrosine at 80 days old and Proline and Valine at all ages.