Studies on some seed borne fungal diseases of lemgumes

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The current study was conducted for studying some fungal diseases of toxigenic fungi and mycotoxins contamination in three legume seeds (i.e. beans, pea and soyabean) in great Cairo governorate.Examination of legume seed decay showing that infected legume seeds caused several external symptoms as shriveling or shrunken, discoloration, pigmentation and reduction in seed size in comparing healthy ones (normal seeds) these results were reported by Neergard, (1977) and Agarwal and Sinclair, (1993).In the current study, we used both blotter method and PDA method for isolation fungi. In the current study, total fungal count isolated on PDA media was found to be higher in both disinfected and non disinfected seeds. The result showed that pea seeds were found to be highly infected with different fungal species followed by bean and soyabean respectively. Total fungal count recorded in disinfected legume seeds was lower than non disinfected seeds in both applied methods. The average of seedbrone fungi in bean were Aspergillus niger (7.1%), A. parasiticus (3.2%), A. flavus (6.3%), Fusarium moniliforme (0.8%) Fusarium oxysporum (3.9%), Fusarium spp (6.3%) , Penicillium spp (3.9%) Sclerotinia sclerotiorum(0%), and The fungi isolated from pea seeds were Aspergillus niger (3.2%), A. parasiticus (1.6%), A. flavus (7.1%), Fusarium moniliforme (3.2%) Fusarium oxysporum (1.6%), Fusarium spp (4.7%), Penicillium spp (0.8%) Sclerotinia sclerotiorum (4.7%), The frequency of isolated fungi from soybean seeds were 14.2, 3.9, 7.8, 0.8, 5.5,4.7 and 4.7 % of A.niger, A. parasiticus, A. flavus, Fusarium moniliforme, F. oxysporum, Fusarium spp and Penicillium spp, respectively. The ability of some isolated fungi for production of mycotoxins was studied; aflatoxins were detected with one isolate of Aspergills parasiticus (NO.59) which isolated from bean, but fumonisin were detected with isolate (NO.8) of Fusarium moniliforme in infected soyabean seeds. The total aflatoxins concentration was 196.58 µ/kg whereas, fumonisin concentration was198 mg/kg seeds. It is of interest to mention that A. flavus isolated from the legume seeds was not able to produce aflatoxin. Biochemical analysis of artificially infected of some legume seeds with mycotoxin produced isolate of Aspergillus parasiticus decreased the percentage of protein, carbohydrates, fat, fibers and ash content compared with the healthy of legume seeds in all the three tested crops. The same results were obtained with infected the three tested legume seeds by Fusarium moniliforme. In current study Aspergillus parasiticus reduced the percentage of all biochemical content with all legume seeds tested, Percentage of biochemical losses were 8.7%

loss of protein, 20.3% in carbohydrate, 20.4% in fat, 3.8% in ash in infected bean seeds. Loss percent in infected pea seeds gave 2.0%, 18%, 2.2% and 2.7% in protein, carbohydrate, fat, and ash respectively. The average of loss percent in infected soybean seeds were 3.4%, 6.1%, 11.9%, and 4.7% in protein, carbohydrate, fat, and ash respectively. Fusaruim infection caused 4.3% loss of protein, 17.7% loss of carbohydrates, 19.2% loss of fat and 2.1% loss of ash in infected bean seeds. The average of loss percent in infected soybean seeds was 4.1% in protein, 5.5% in carbohydrates, 6.3% in fat and 0.8% in ash content. Loss of infected pea seeds record 9.5% in proteins, 13.5% in carbohydrates, 1.9% in fat, and 0.8% in ash.Conclusion: Infected legume seeds with one or more fungi can be reduced the percentage of seed germination when seeds are sown which resulted in seed decay and pre or post emergence damping of causing less in germinationSome pathogens may result in biochemical deterioration and change in quality of seed nutrient.Finally, some pathogens are such that if the infected seeds are consumed they cause disease to man and domestic animal, even in small quantities cause food poisoning.