

Impact of *Fusarium* dry rot on physicochemical attributes of potato tubers during postharvest storage

Rahul Kumar Tiwari, Bishnu Maya Bashyal, V. Shanmugam, Milan Kumar Lal, Ravinder Kumar, Sanjeev Sharma, Vinod, Kishor Gaikwad, Brajesh Singh and Rashmi Aggarwal

Postharvest Biology and Technology, Volume 181, November 2021, 111638

Abstract

Fusarium is a major spoilage fungus of potato tubers during post-harvest storage. The dry rot disease caused by *Fusarium* species severely affects the harvested potatoes and impose a critical loss to processing industries and consumers. In our experiment, we investigated the occurrence of *Fusarium sambucinum* (FS) and *Fusarium oxysporum* (FO) as major storage fungus causing *Fusarium* dry rot in potato tubers. Further, we performed morpho-molecular identification of both the fungi and confirmed their pathogenicity on potato tuber during storage. We evaluated the susceptibility parameters and quality attributes during infection in two popular cultivars namely 'Kufri Pukhraj' (table purpose) and 'Kufri Chipsona 3' (processing purpose). Out of two cultivars, 'Kufri Pukhraj' was shown to have greater susceptibility as compared to 'Kufri Chipsona 3' in terms of lesion diameter, fungus penetration and rot volume during periodic observation of 20, 40 and 60 d of storage. FS was highly aggressive as compared to FO. However, a mixed inoculum of *Fusarium* species caused higher damage irrespective of cultivars. The physicochemical analysis revealed that fungus infection (individual or mixed inoculum) leads to a reduction in starch and amylose content in both the cultivars after 60 d of storage. Moreover, amylopectin, reducing sugars, sucrose and total soluble sugar content were increased in response to fungal infection in both cultivars. Pearson correlation analysis indicated that lesion diameter and rot volume was negatively correlated ($R < -0.80$) with starch and amylose content. However, amylopectin, reducing sugar, sucrose and total soluble sugar was positively correlated with susceptibility parameters. This study highlights the impact of storage fungus infection on the nutritional quality parameters of potato tubers which is a critical concern for consumers and processing industries.