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Verbesserung der Lagerfähigkeit von Obst und Gemüse durch Vorernte-Behandlungen mit Luna®

Luna®: The fungicide solution in pre-harvest crop protection for an improved shelflife

Fruits and vegetables represent a group of commodities highly susceptible to waste and losses: according to the FAO, between 15 % and 50 % of the initial production is lost at different stages of the food chain. Among the multiple causes between field production and consumption, fungi are responsible for the majority of losses in field and in storage. Postharvest decays of fruits and vegetables mainly originate from latent and quiescent fungal infections occurring in orchard or field. Such infections by fungal pathogens are common on a wide range of fruits and vegetables. Small berry crops (e.g. grapes, strawberry and raspberry) are often quiescently infected by *Botrytis cinerea* established in their floral parts (Bristow et al. 1986, Dashwood und Fox 2007, Williamson et al. 2007). B. cinerea can cause postharvest decays due to quiescent infections in apple calyx (Biggs 1995). *Monilinia fructicola* and *B. cinerea* are described to establish latent or quiescent infections in stone fruits (e.g. peach, apricot, cherry), and *Sclerotinia sclerotiorum* is quiescent in many vegetables causing postharvest losses (Adaskaveg et al. 2000, Jarvis 1994, Wade und Cruickshank 1992).

To preserve fruits and vegetables from problematic fungal diseases, Bayer CropScience develops Luna® solutions based on fluopyram; a fungicide from the new chemical class of the succinate dehydrogenase (complex II) inhibitors. Fluopyram affects the fungi at all stages of development and shows a unique spectrum of activity with an outstanding activity against ascomycetes, in particular against fungal pathogens described to cause latent and quiescent infections such as *Botrytis* spp., *Monilinia* spp. and *Sclerotinia* spp.. In stone fruits, pre-harvest applications of Luna® solutions at flowering, fruit growth and ripening stage decreased postharvest disease development of *Monilinia* spp., thereby increasing the percentage of marketable fruits at harvest and after storage by 22 % and 47 %, respectively. After seven days of storage of apparently healthy bean pods in plastic bags, 96 % of pods harvested from Luna®-treated beans were still marketable, whereas 36 % of untreated beans were now visually infested by *S. sclerotiorum*. Field experiments carried out on nectarines showed that about 50 % of the visually healthy fruits stored were colonized with *Monilinia* spp. after several days of storage. Under the same conditions, more than 85 % of the produce coming from Luna®-protected orchard plots showed no fruit decays. This protection was also measured on crops with shorter shelf life (e.g strawberries, lettuce, and cherries) or produces with a longer storage period (e.g. apples, onions).

The significant higher number of marketable fruits and vegetables at harvest and after storage in multiple crops indicates the potential of Luna® solutions to reduce the occurrence of latent and quiescent fungal infections taking place in orchards and fields. By controlling those infections of fungal pathogens, Luna enables producers to enlarge the period of safe storage increasing the shelf life of fruits and vegetables. Additional field studies are on-going to track the onset of latent and quiescent fungal infections in fruits and their development during the vegetation period using molecular methods.

Literature

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