

[6-1130-P] Other Categories (6th)

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[6-1130-P-17] Application of Palm Oil Based Wax as a Coating Material on the Quality of Cucumber Seed

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Keywords: Palm oil based wax, Cucumber seeds, Coating material

Colouring the seeds enhances physical appearance which is necessary for commercial purposes. The colouring agents are synthetic chemical dyes and film coating polymers. Palm oil wax is a by-product of palm oil industry. It is used to prepare palm oil-based wax as a coating material. Therefore, this research aimed to study the effects of palm oil-based wax as an alternative synthetic coating material. There were three formulas of the palm oil-based wax designated as A, B and C. These were used as coating on cucumber seeds using the top-spray fluidized bed coating technique. The experimental conditions were carried out through atomization air pressure of 150 kPa, inlet air velocity of 2 mm/sec, inlet air temperatures at 40°C, spray rate of coating solution of 125 mL/min, spraying time for 2 min, and drying after spraying for 15 min. The surface appearance and uniformity of palm oil based wax coating were evaluated under the stereomicroscope. Moisture content, germination percentage, days to emergence (DTE), germination index and free fatty acid content were also determined. Results showed no difference in the appearance and uniformity of the three formulas of palm oil based wax coating on seed coat surface. The moisture content and free fatty acid of the coated seeds increased, while germination percentage and germination index were lower than the control. Moreover, the formula A, consisted of 99.51% wax ester with the carbon chain lengths of 32-34 atoms, obtained similar seed quality with the control. Therefore, the properties of formula A palm oil based wax coating could be improved to minimize the impact on cucumber seed quality. Further studies can be done on the experimental conditions used during the application of the coating material.

Application of Palm Oil Based Wax as a Coating Material on the Quality of Cucumber Seed

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Abstract

Colouring the seeds enhances physical appearance which is necessary for commercial purposes. The colouring agents are synthetic chemical dyes and film coating polymers. Palm oil wax is a by-product of palm oil industry. It is used to prepare palm oil-based wax as a coating material. Therefore, this research aimed to study the effects of palm oil-based wax as an alternative synthetic coating material. There were three formulas of the palm oil-based wax designated as A, B and C. These were used as coating on cucumber seeds using the top-spray fluidized bed coating technique. The experimental conditions were carried out through atomization air pressure of 150 kPa, inlet air velocity of 2 mm/sec, inlet air temperatures at 40°C, spray rate of coating solution of 125 mL/min, spraying time for 2 min, and drying after spraying for 15 min. The surface appearance and uniformity of palm oil based wax coating were evaluated under the stereomicroscope. Moisture content, germination percentage, days to emergence (DTE), germination index and free fatty acid content were also determined. Results showed no difference in the appearance and uniformity of the three formulas of palm oil based wax coating on seed coat surface. The moisture content and free fatty acid of the coated seeds increased, while germination percentage and germination index were lower than the control. Moreover, the formula A, consisted of 99.51% wax ester with the carbon chain lengths of 32-34 atoms, obtained similar seed quality with the control. Therefore, the properties of formula A palm oil based wax coating could be improved to minimize the impact on cucumber seed quality. Further studies can be done on the experimental conditions used during the application of the coating material.

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