The Effect of Coating on Groundnut Seed Viability during Storage

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Abstract

The objective of this research was to determine the effect of seed coating with gum arabic and curcuma powder or ascorbic acid on shelled peanuts seed viability during storage. This research was conducted in Laboratory of Seed Science and Technology, Department of Agronomy and Horticulture IPB from February to July 2011. A Split Plot Design was used in the experiment with six levels of store period as main plots: 0, 4, 7, 10, 13, and 16 weeks. Subplot is the treatment of seed coating, which consists of ten treatments: podded seeds, peeled seeds without coating, peeled seeds with gum arabic coating, peeled seeds with gum arabic coating + benomil 0.5 g/l, peeled seeds with gum arabic coating + curcuma powder 100 ppm, peeled seeds with gum arabic coating + curcuma powder 150 ppm, peeled seeds with gum arabic coating + powder curcuma 200 ppm, peeled seeds with gum arabic coating + ascorbic acid 150 ppm, peeled seeds with gum arabic coating + ascorbic acid 250 ppm, peeled seeds with gum arabic coating + ascorbic acid 350 ppm. The seeds are used in this study were Varieties Kelinci.

The result showed that viability of peanut seed increased at 4 weeks after store and then decline that began since 13 weeks after store. Treatment that have best germination and vigour index is benomyl 0.5 g/l and ascorbic acid 350 ppm. Treatment benomyl 0.5 g/l is able to maintain seed viability until 13 weeks after store with germination 98.7% and vigour index 21.3%. Ascorbic acid 350 ppm able to maintain seed viability until 13 weeks after store with 97.3% for germination and vigour index 26.7%. Both of these treatment give significant effect in vigour index better than treatment peeled seed without coating. The mean of index vigour during 16 weeks after storage for benomyl 0.5 g/l is 40.2%, ascorbic acid 350 ppm is 45.8%, whereas in peeled seeds without coating is only 32.9% and in the treatment of podded seeds is 28.2%. Benomil 0.5 g/l is able to replace the function of seed pods in peanuts, not only based on germination and vigour index but also by the speed of growth. At 16 weeks after store, the speed of growth for benomyl 0.5 g/l is 12.3%/etmal and the speed of growth for podded seed is 11.5%/etmal.

Treatment of curcuma 100 ppm has chance as organic fungicide to replace the function of benomyl. The mean of germination for curcuma 100 ppm at 16 weeks after store is 90.7% was not significantly different with treatment benomyl 0.5 g/l that have mean of germination 95.8%. Curcuma 100 ppm is also able to maintain seed viability until 13 weeks after store with germination 85.3%.

Key words : groundnut, seed coating, peeled seed, ascorbic acid, curcuma powder, benomil