

CORN GRAIN STORAGE: THE ROLE OF SEEDS COATING IN ALTERING CORN VIGOR

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Pre-sowing coating of corn seeds with a complex bioregulator minimizes viability loss, stabilizes cell membranes, activates antioxidant defenses, and prevents nutrient hydrolysis, thereby maintaining high germination rates and seed viability during long-term storage. Popcorn endosperm has a unique anatomical and chemical structure, and preserving corn vigor during seed storage determines their ability to produce uniform, viable seedlings under stressful field conditions. The aim of this study was to evaluate the effect of storage on the vigor of popcorn seeds coated with a complex composition containing a bioregulator.

Materials and method. The study was conducted on popcorn hybrids Porumbeni 396 (P396) and Porumbeni 398 (P398), coated with a biodegradable complex composition based on carboxymethylcellulose (CMC) and containing the bioregulator JS, obtained in concentrated form from the above-ground part of the *Juniperus sabina* plant. Overall germination, root length and seedling length were measured, and corn vigor was calculated using the formula: vigor = (root length + seedling length) × germination percentage. Coated seed were stored in a laboratory at 18±2°C for 4 months.

The results showed that before storage, coated seeds of P369 and P398 hybrids demonstrated the significant decrease in vigor index compared to control - uncoated seed samples. This fact can be explained by limited access of oxygen to the horny endosperm of popcorn as a result of the formation of CMC polymer film on the seeds surface. After storage, corn vigor increased in both control and coated seeds. Howev-

er, in control seeds vigor was 1.28 and 1.54 times higher, and in coated seeds – 2.32 and 2.02 times higher, respectively for the P396 and P398 hybrids, in comparison with the vigor indexes of seeds before storage. After storage, the length of roots and seedlings increased significantly that reflected in augmented vigor of the corn. The high vigor of coated seeds after storage $1039.50 \pm 208,99$ (P396) and $1158.55 \pm 404,86$ (P398) indicated the beneficial effects of the bioregulator JS contained in the coating composition, which contributed to the protection of the growth characteristics of the seeds.

Conclusions. The biodegradable complex composition based on CMC and containing the JS bioregulator improved the growth characteristics of coated corn seeds, especially their vigor. Nevertheless, given the inhibitory effect of the coating composition on popcorn hybrids before storage, it is probably necessary to change the concentration of the CMC polymer film, making the protective film thinner and more porous.

Keywords: *Juniperus sabina*, corn seed, coating, storage, vigor

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