

## INTISARI

Umumnya hasil panen benih padi hitam lokal musim sebelumnya disimpan untuk digunakan pada pertanaman selanjutnya. Deteriorasi atau kemunduran benih pada saat penyimpanan benih merupakan proses yang pasti terjadi dan tidak dapat balik. Invigorasi osmoconditioning dengan kalsium klorida ( $\text{CaCl}_2$ ) diketahui mampu meningkatkan aktivitas  $\alpha$ -amilase yang berperan dalam perkecambahan dan mendukung pertumbuhan bibit. Penelitian ini bertujuan untuk mengetahui perbedaan mutu fisiologis benih padi hitam lokal lama yang diberi perlakuan *osmoconditioning* kalsium klorida dengan benih hitam baru, mengetahui lama perendaman dan konsentrasi kalsium klorida yang optimal serta kombinasi perlakuan terbaik terhadap mutu fisiologis benih padi hitam lokal yang telah dilakukan penyimpanan. Penelitian ini dilaksanakan di Laboratorium Teknologi Benih dan Rumah Kaca Kebun Tridharma Banguntapan, Universitas Gadjah Mada pada bulan Maret — Mei 2018. Penelitian ini menggunakan benih yang telah disimpan 1 bulan (baru) dan 7 bulan (lama) rancangan acak lengkap (RAL) faktorial. Faktor pertama yaitu lama perendaman 6, 12, dan 24 jam. Faktor kedua konsentrasi  $\text{CaCl}_2$  (kontrol; 1,5; 3; 4,5; dan 6 %), dengan kontrol benih baru dan lama tanpa perlakuan. Hasil penelitian menunjukkan bahwa mutu fisiologis benih baru seperti indeks vigor, daya berkecambah, panjang akar, bobot kering kecambah normal, serta tinggi bibit lebih baik daripada benih lama. Konsentrasi  $\text{CaCl}_2$  pada kisaran 1,887-3,161 % optimal terhadap parameter bobot segar bibit, bobot kering bibit, dan meningkatkan indeks vigor hipotetik bibit pada benih padi hitam lokal lama, serta lama perendaman 12 jam dengan 1,5 %  $\text{CaCl}_2$  memberikan nilai panjang akar terbaik, sedangkan lama perendaman 12 jam dengan 3 %  $\text{CaCl}_2$  memberikan nilai terbaik pada diameter batang.

Kata kunci : benih padi lokal,  $\text{CaCl}_2$ , invigorasi, *osmoconditioning*

## ABSTRACT

*Generally farmers of upland black rice used the seed that were harvested and stored from the previous season. Seed deterioration is a process that always occur and cannot be reversed. Osmoconditioning with calcium chloride ( $\text{CaCl}_2$ ) is known to increase  $\alpha$ -amylase activity which plays a role in germination and supports seedling growth. This research aimed to determine the differences in physiological quality of upland black rice seeds which were treated and untreated with osmoconditioning calcium chloride with new black seed, to determine the immersion time and the optimal concentration of calcium chloride and the best combination of treatments for the physiological quality of local black rice seeds that have been stored. The research was conducted at Teknologi Benih Laboratorium and Greenhouse in Tridharma Banguntapan Experimental Farm, Universitas Gadjah Mada on March — May 2018, used 1 month (new seed) and 7 months stored seed. The experiment were arranged in factorial completed randomized design. The first factor was the soaking time of 6, 12 and 24 hours. The second factor was the concentration of  $\text{CaCl}_2$  (control, 1.5, 3, 4.5, and 6 %), with 1 month and 7 months stored seed as control without treatment. The results showed that physiological qualities of new seed (1 month stored) such as vigor index, germination, root length, normal seedling dry weight, and seed height were better than the 7 months stored seed. Calcium chloride 1,887-3,161% was optimum for fresh and dry weight of seedling, increasing the hypothetical seed vigor index of stored local black rice seed and 12 hours immersion time with 1.5 %  $\text{CaCl}_2$  were the best for root length and 12 hours with 3 %  $\text{CaCl}_2$  were the best on stem diameter.*

*Key words :  $\text{CaCl}_2$ , invigoration, osmoconditioning, upland rice seed*