Background: Fire is an important ecological factor in the Cerrado (Brazilian savanna). However, comparative studies on the effect of high temperatures experienced during fires on seed germination of native and invasive grass species are few.

Aims: To assess germination responses to simulated fire temperatures by seeds of invasive and native Cerrado grasses.

Methods: Heat-shock treatments (50 °C, 70 °C, 90 °C, 110 °C, 130 °C or 150 °C) were applied to seeds of 10 species of native and invasive grasses. For each temperature, the seeds were heated in a dry-air flow for 2 or 5 min. This combination of temperatures and exposure times simulated the soil conditions during typical Cerrado fires.

Results: Temperature treatment was significantly related to germination, and the effect varied according to species. Heat shock did not increase germination in either the native or the invasive species. Exposure time was important for only two species, and four species showed a significant increase in mean germination time.

Conclusions: Species showed different tolerances to high temperatures. It was not possible to differentiate the native and invasive grasses only by their tolerance to high temperatures, suggesting that fire alone may not be an efficient management tool to control the invasive species studied here.