Abstract

The soil seed bank is the basis for community establishment and permanence and plays a primary role in natural restoration of degraded or altered ecosystems. As part of a restoration project, this study aimed to quantify the soil seed bank and to evaluate the effect of the needle litter layer on seedling emergence. Soil samples from a pine plantation were collected at random in the field and set to germinate in a greenhouse. Half of them were covered by a 6cm layer of dead pine needles simulating field conditions in the field, 20x20cm plots were established, half were left intact and half were cleaned from the litter needles. All four treatments had 15 replicates and seedling emergence was recorded during six months. Soil seed bank density was 1 222/m² from 17 morphotypes. in the field, the number of morphotypes and seedlings was only 9% and 6% respectively, of those emerged in the greenhouse, possibly due to watering and lack of predation in the latter. in both cases, herbs and graminoids were the dominant emerging seedlings, making up to 70-90% of the total. The needle layer didn't prevent seeds from reaching the soil but strongly reduced (>50%) seedling emergence, although high variability within treatments resulted in no statistically significant differences. These results show that the needle layer hinders germination and/or emergence of seedlings from the seed bank. its removal may be a recommended technique to accelerate natural restoration in pine plantations.

Keywords

Germination, pinus caribaea, restoration, seedlings, soil seed bank.