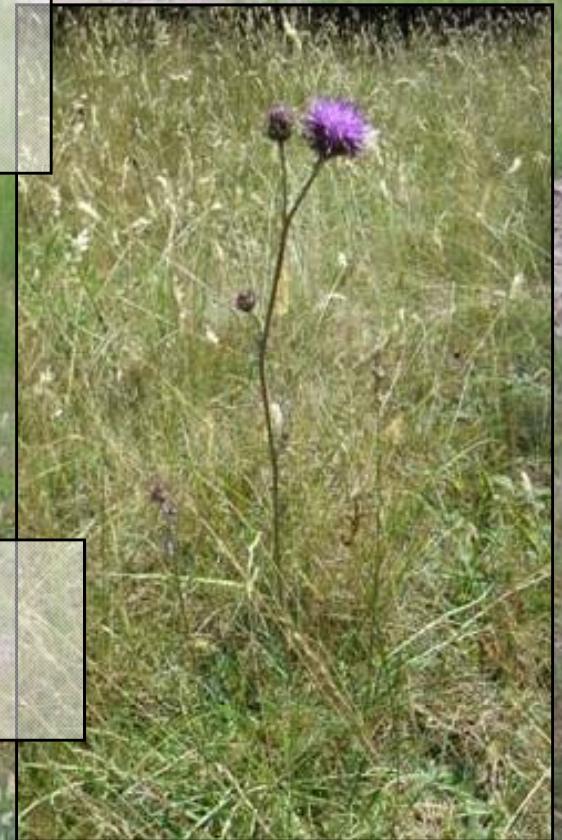




The impact of different restoration-
methods to *Jurinea cyanooides*

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Jurinea cyanooides - Sand-Silberscharte



- FFH-guideline lists 2* and 4
- continental distribution (Russia, Ukraine)
- Central Europe: Germany and Czech Republic
 - needs sandy, dry soil
 - deep roots, small leaves

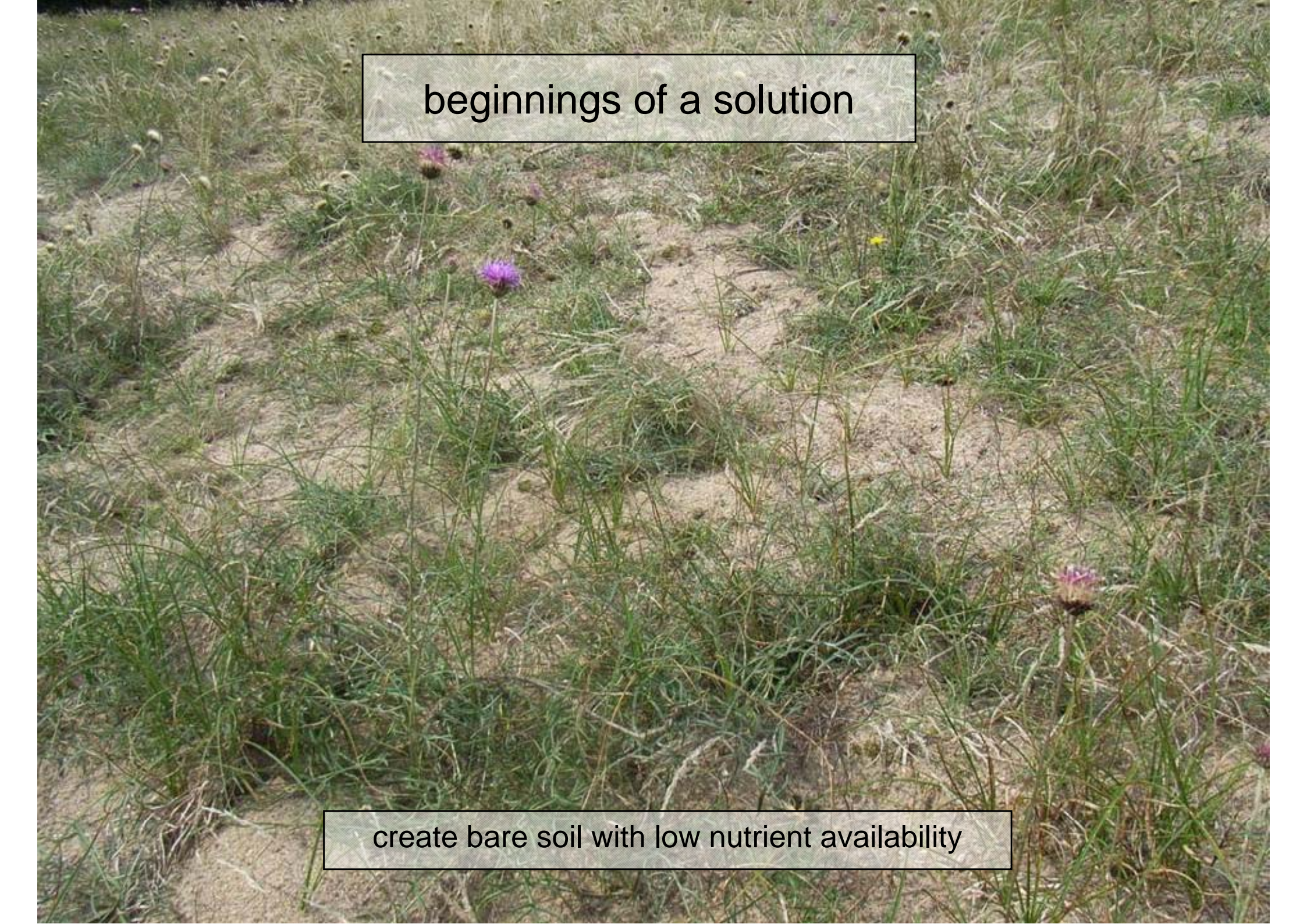
Saxony-Anhalt

- only 16 populations
- minimum of 47 extincted populations
- many populations with very few shoots
- decrease of shoots



dangers

- abandonment of cultivation (sheep farming),
 - higher nitrogen depositions
- highly competitive grasses:
Carex arenaria, *Calamagrostis epigejos*
+ shrubs and trees

A photograph of a field with sparse green grass and patches of bare, light-colored soil. Several purple thistle-like flowers are scattered throughout the scene. The overall appearance is that of a natural, uncultivated area.

beginnings of a solution

create bare soil with low nutrient availability

Steckby

2 populations at the biosphere reserve „Mittlere Elbe“
100 shoots

2008/5/

Steckby



soil-inversion - january february

A photograph of a field with a dirt path and a fence, used for a Latin Square design experiment. The field is divided into sections by a fence, and there are patches of grass and bare soil. The background shows a dense forest of tall trees.

Steckby

Latin Square-design with 5 methods
and 4 replications
1000+ 500 achenes each location

Gödnitz




sandy, less humus, dry




Gödnitz


cut down *Pinus sylvestris* and *Robinia pseudoacacia*




method 1: soil-inversion
each replication with 4 m² and
50 achenes of *Jurinea cyanoides*



method 2: soil-inversion and topsoil with seeds
(*Corynephorus canescens*, *Teesdalia nudicaulis*)

A photograph of a grassy field with a mix of green and brown grasses. Two thin white lines are stretched across the field, one near the top and one near the bottom. In the top left corner, there is a patch of bare, sandy soil. At the bottom center, there is a white rectangular box with a black border containing the text "method 3: mowing".


method 3: mowing



method 4: unthreated with achenes of *Jurinea cyanoides*
method 5: unthreated without achenes (controll)

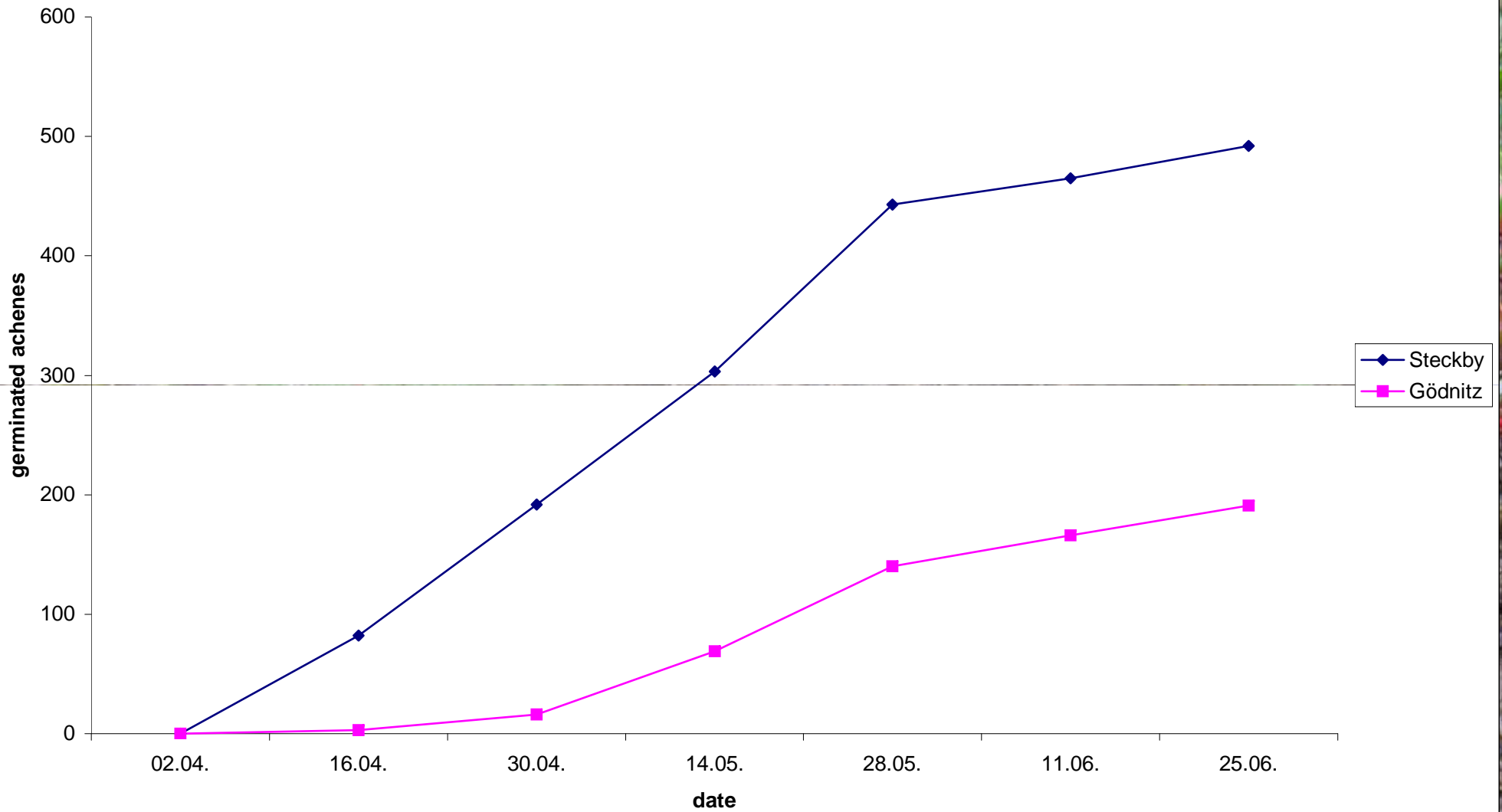


method 6: near trees – shadow and moisty

A close-up photograph of a field with small green plants. A wooden stick is placed vertically in the soil, marking a small green seedling. The ground is dark and appears to be soil or sand. There are other plants with red stems and green leaves in the background.

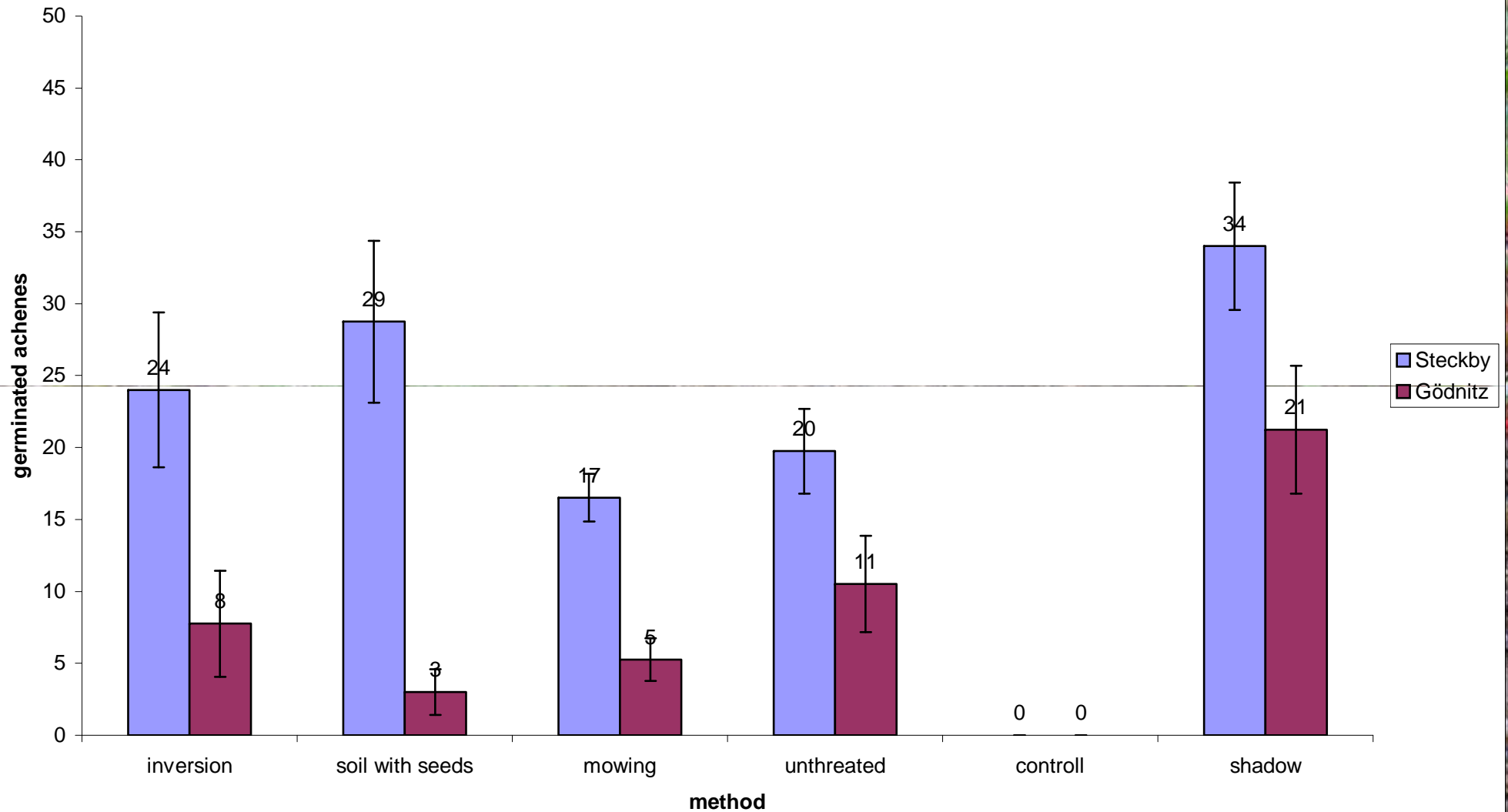
seeding of *Jurinea cyanoides* at the end of march
every achene marked with a stick
counting every two weeks

germination at the loctions



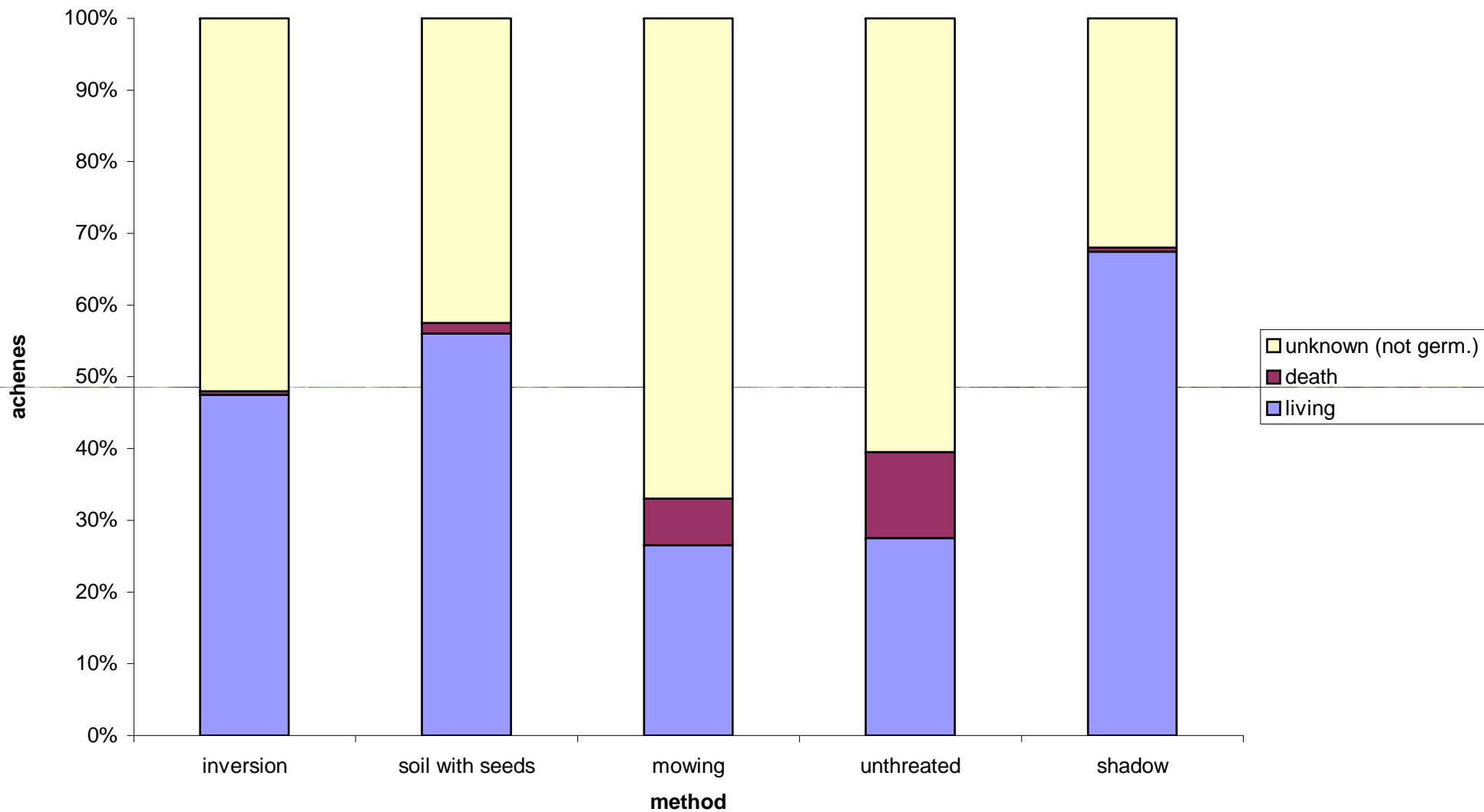
higher germination rate at Steckby (humus & moist)
still germinating, late seeding

germinated achenes at the locations



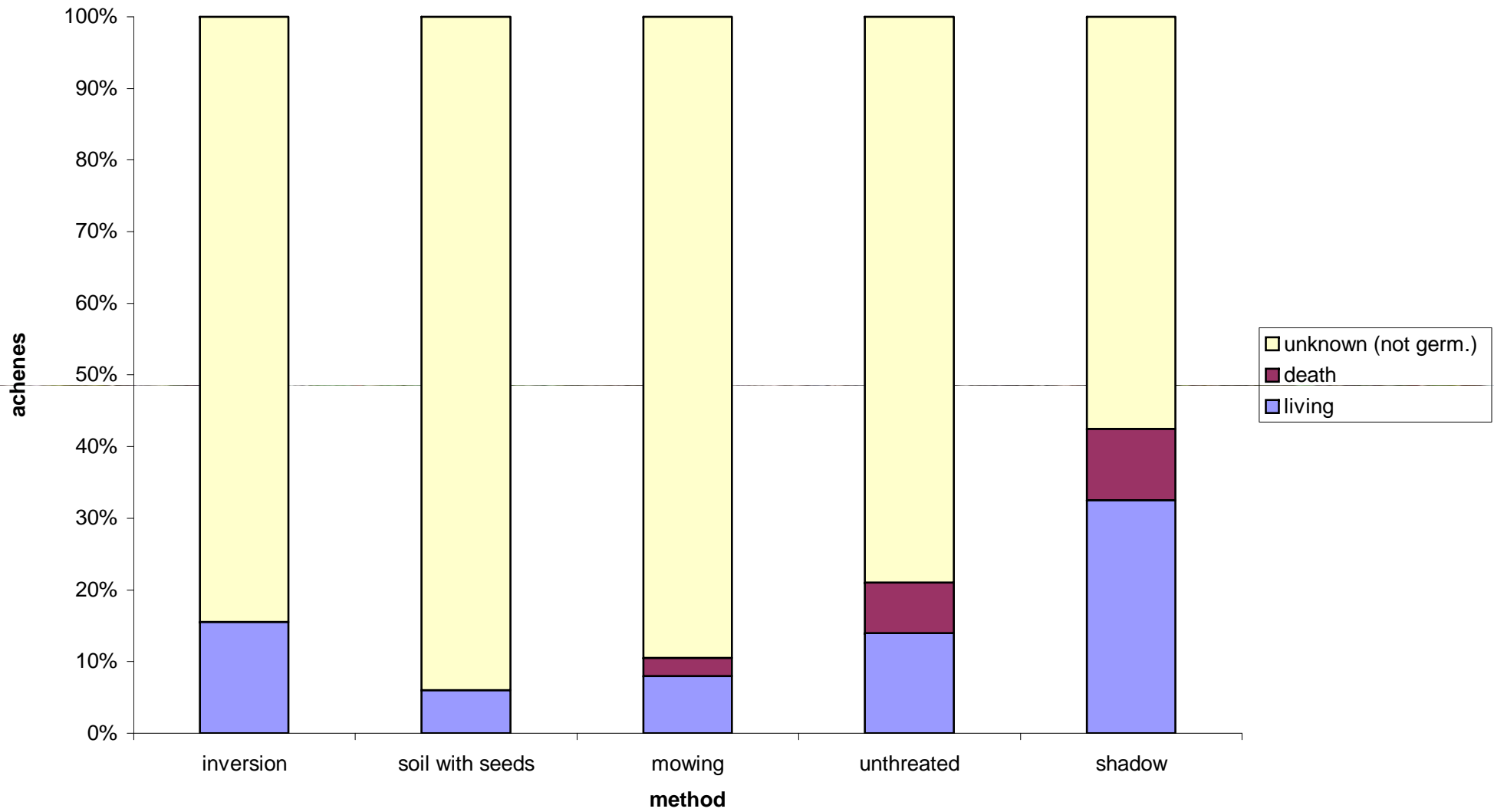
highest rates in the shadow, difference between the locations:
Steckby: soil with seeds & inversion, Gödnitz: untreated & inversion

Steckby



most seedlings die: unthreated & mowing (shadow)


Gödnitz



most seedlings die: untreated & mowing
summer: counting

vital achenes





achenes without embryo
no generative reproduction (self-incompatible)
one population - one clone?



further research:
effects of management measures

A close-up photograph of a purple thistle flower. The flower is in full bloom, showing numerous long, thin, purple petals that radiate from the center. The background is a soft, out-of-focus green field. Three text boxes are overlaid on the flower: 'the end' at the top, 'thank you!' in the middle, and 'questions?' at the bottom.

the end

thank you!

questions?