

STUDY SITES

Study Site	Average First Frost Date	Cover Crop Seeding Date	Cover Crop Termination Date
Columbus, NM	Nov. 1 – Nov. 10	Nov. 10, 2018	Feb. 14, 2019
Deming, NM	Oct. 21 – Oct. 31	Sept. 29, 2018	Feb. 22, 2019
Las Uvas, NM	Oct. 21 – Oct. 31	Oct. 29, 2018	March 5, 2019
NMSU Leyendecker	Nov. 1 – Nov. 10	Oct. 11, 2018	March 15, 2019

TREATMENTS

- Brassicaceae Cover Crop (“BCC”)
- Site-Specific Alternative
- No Cover Crop

BCC: Mixture of Caliente ‘Rojo’ (*Brassica juncea* cv ‘rojo’) and arugula (*Eruca sativa*)

Site-Specific Alternatives:

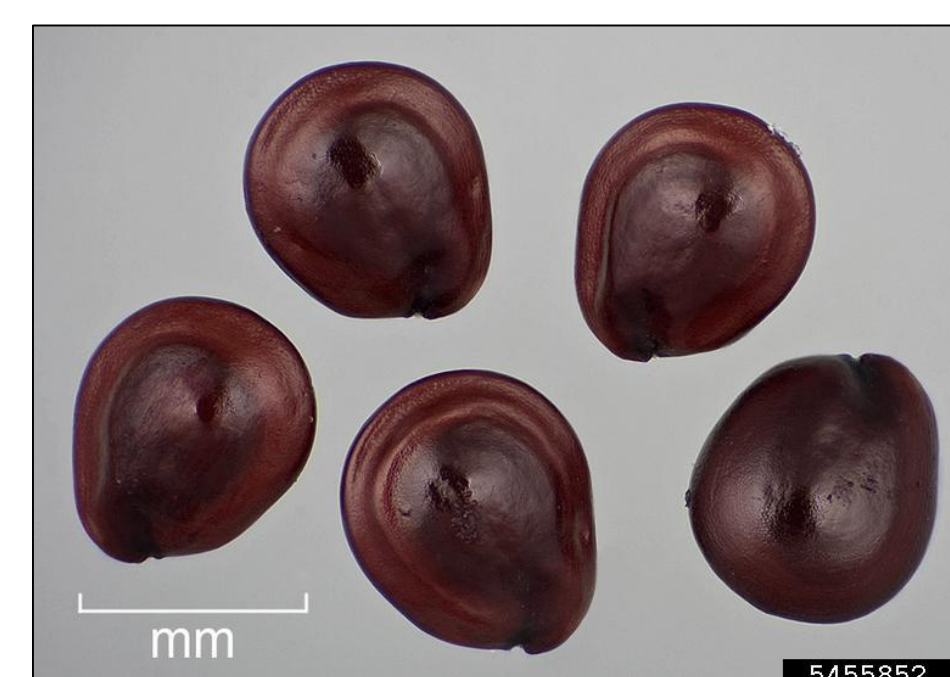
- Columbus: Barley
- Deming: BCC with wheat
- Las Uvas: Barley

COVER CROP MEASUREMENTS

- Biomass at BCC termination
- Weed biomass at BCC termination (*data not shown*)
- BCC glucosinolate content (*data not shown*)

CARRYOVER EFFECTS ON WEED SEEDBANKS

- Palmer amaranth seed persistence in buried packets
- Germination of persistent Palmer amaranth seeds (laboratory)



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COVER CROP BIOMASS AT BCC TERMINATION

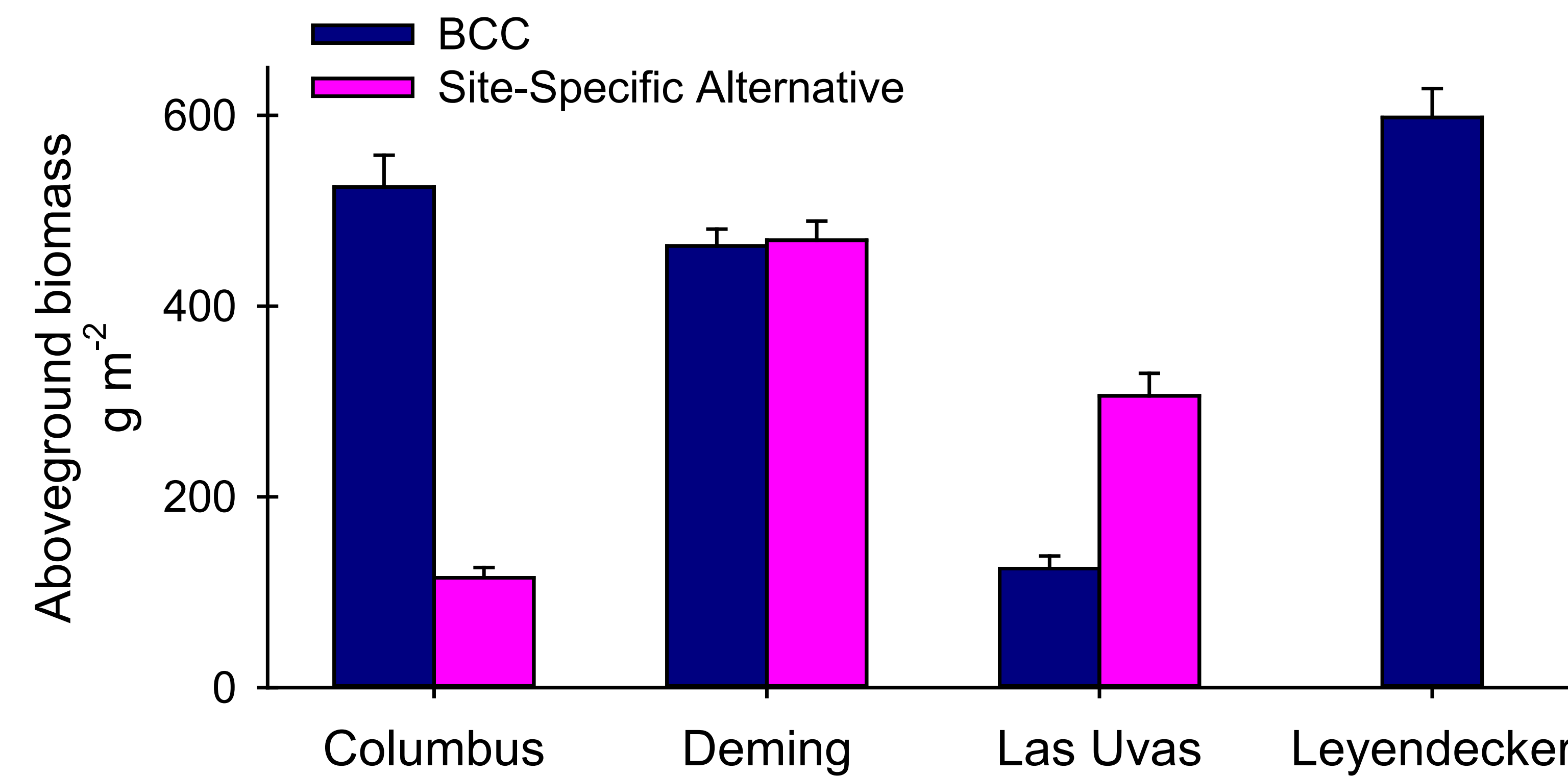
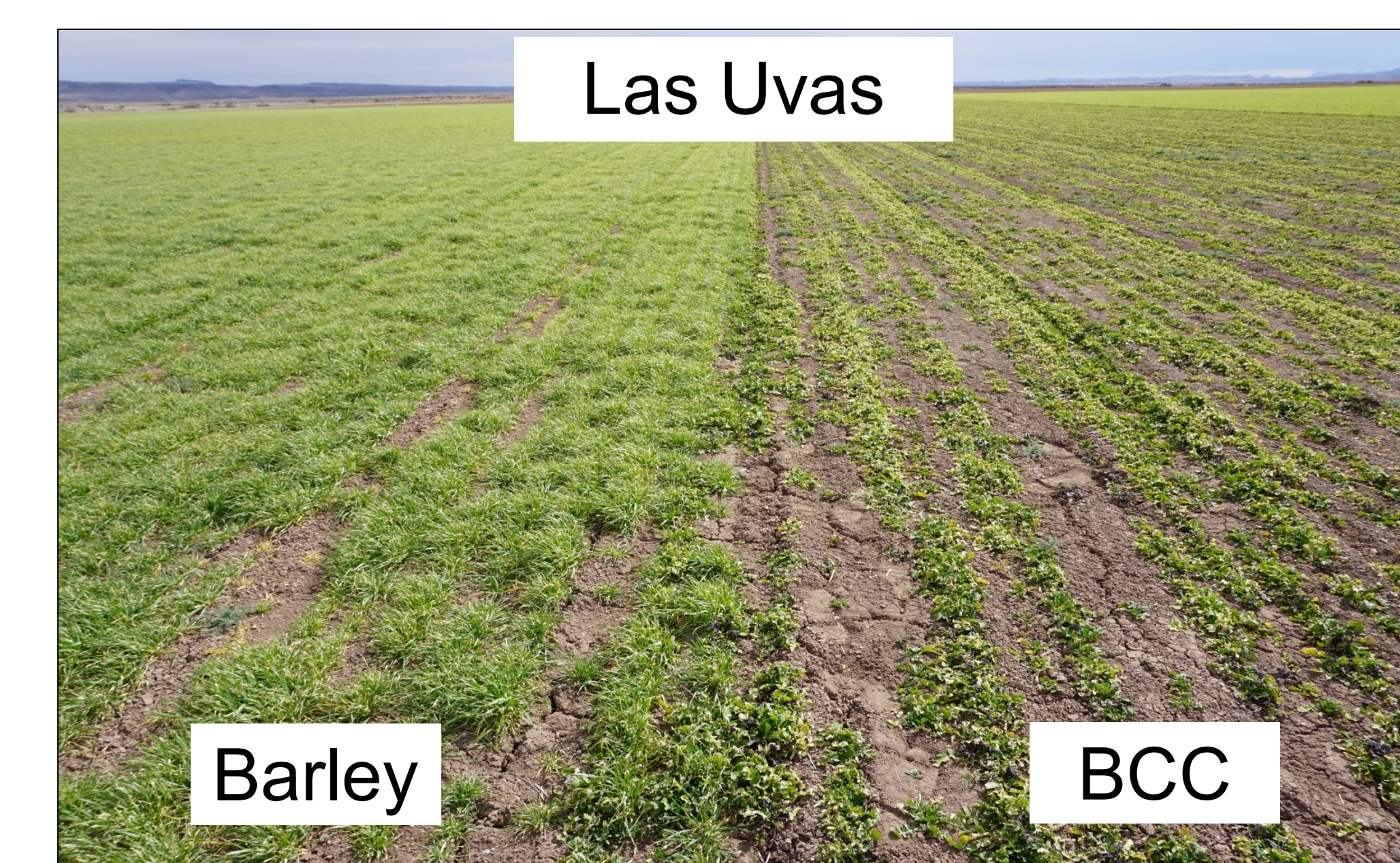
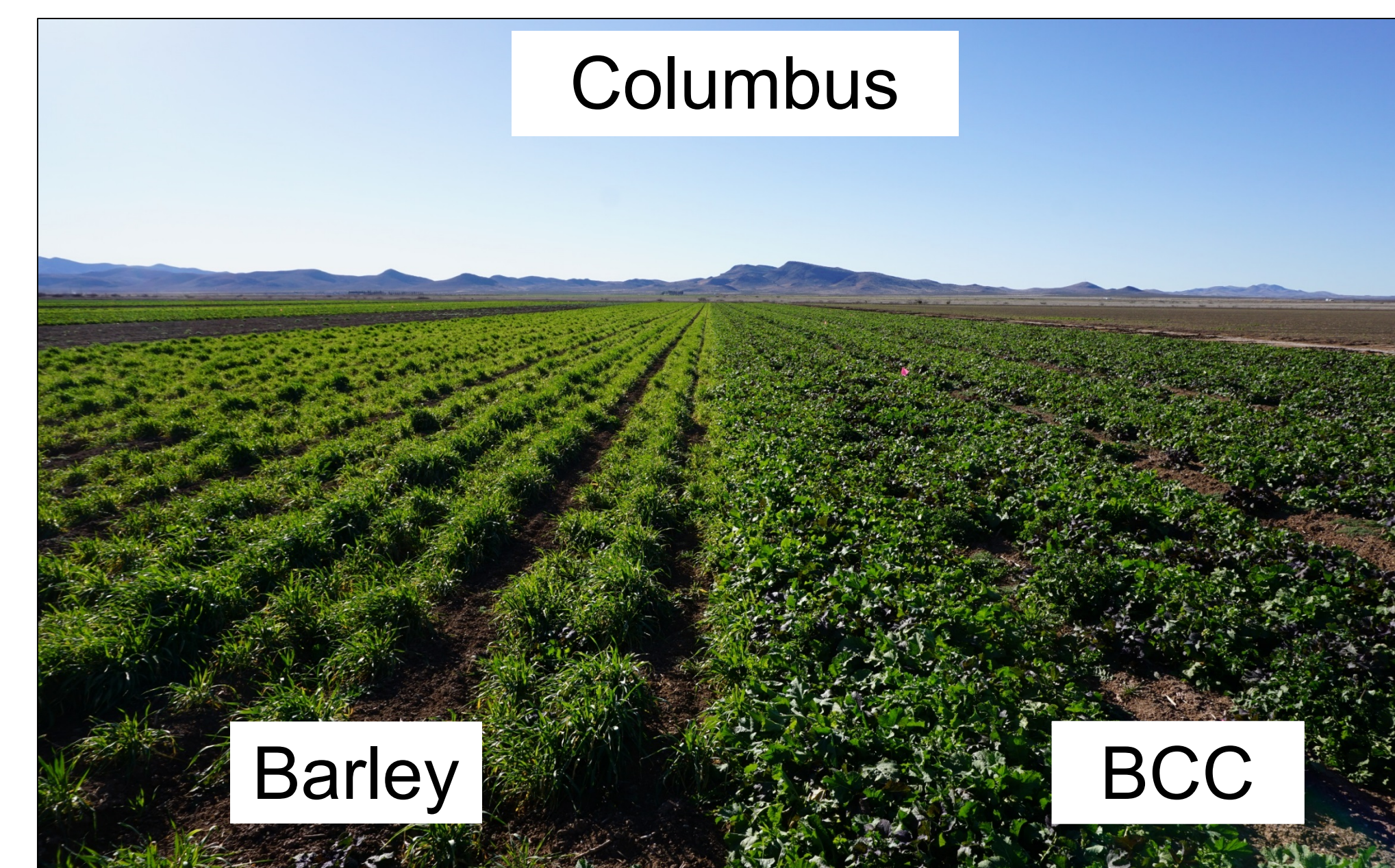


Figure 1. Cover crop biomass for Brassicaceae cover crop (“BCC”) and site-specific alternative cover crops grown at commercial farms (Columbus, Deming and Las Uvas) and a university research farm (Leyendecker) in southern New Mexico. Bars are means with standard errors ($N = 18$).



CARRYOVER EFFECTS ON WEED SEEDBANK

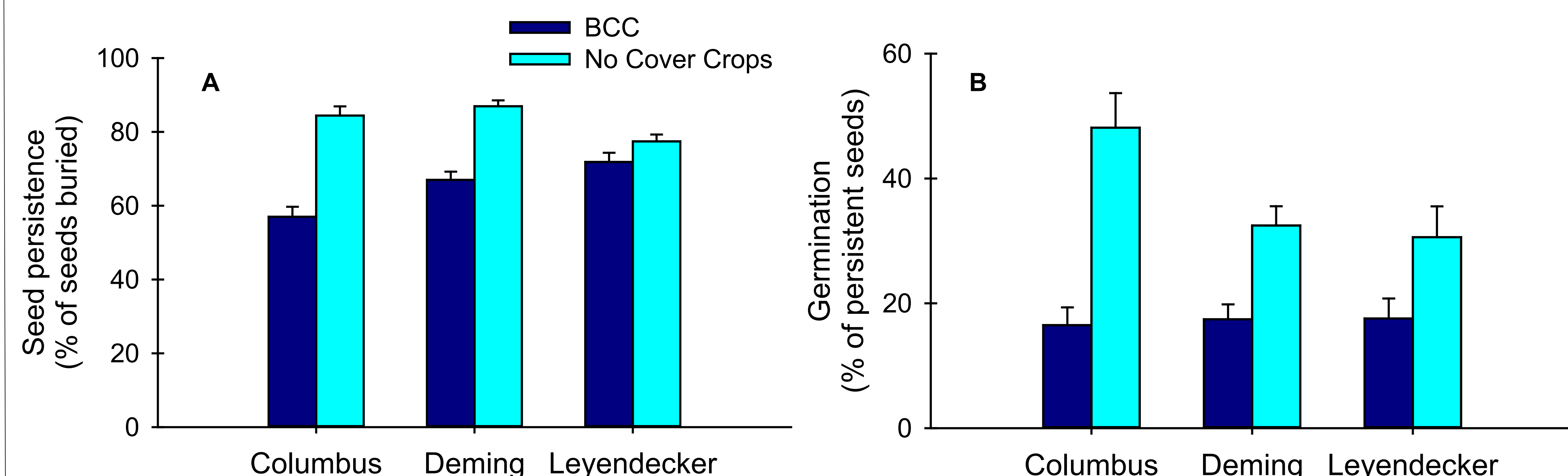


Figure 2. Brassicaceae cover crop (“BCC”) effects on (A) persistence and (B) germination of Palmer amaranth seeds. Bars are means with standard errors ($N = 18$).

CONCLUSIONS

- BCC seeding near time of first frost increases risk of poor establishment. BCC appears more susceptible to frost than barley.
- If established, BCC suppresses winter weeds.
- BCC potentially reduces weed densities in subsequent cash crop — chile pepper.

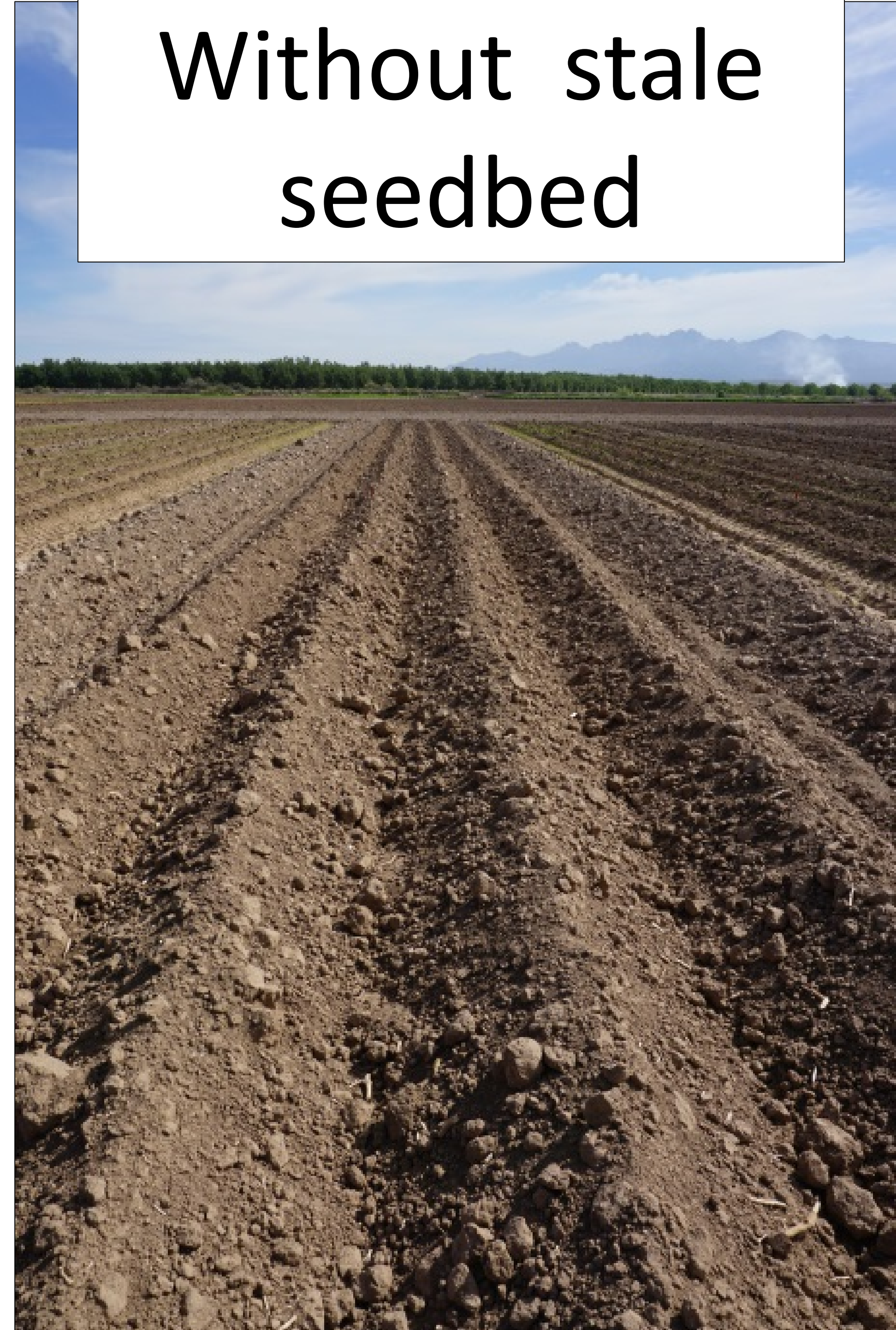
Targeting Chile Weed Seedbanks

With stale
seedbed

Without stale
seedbed

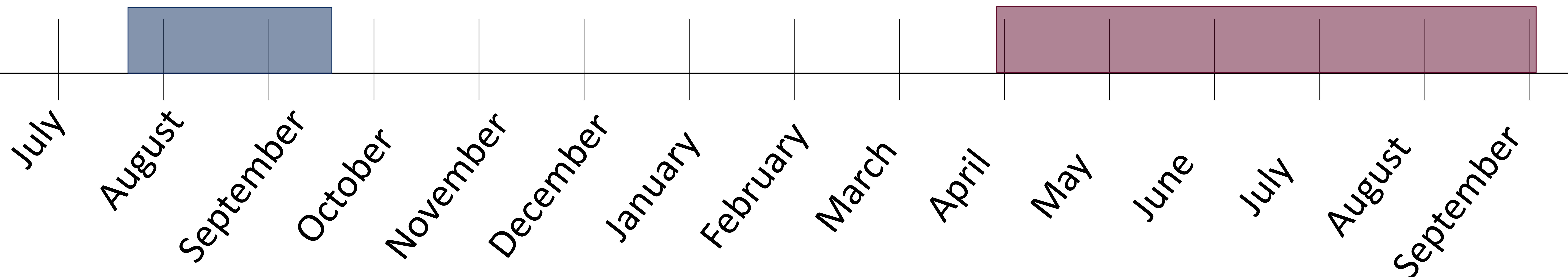
With stale
seedbed

Without stale
seedbed



Stale seedbeds

Chile season



Green Manures for Suppressing Weeds and Soil-Borne Diseases

