

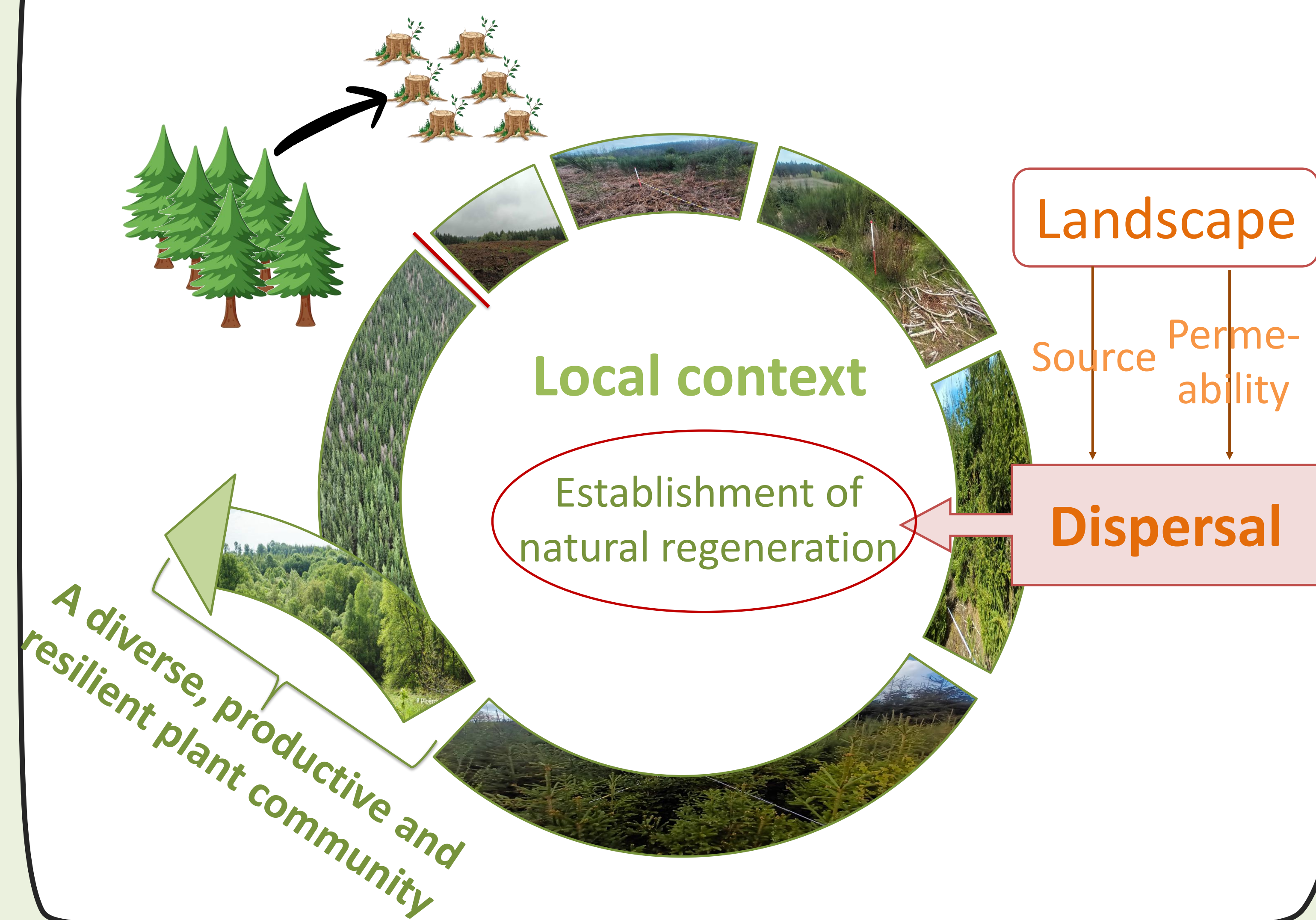
Estimating Seed Production Using Drone Imagery

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Context: Clear-cutting and spruce plantation cycle



Promoting **natural regeneration** through a better understanding of seed production

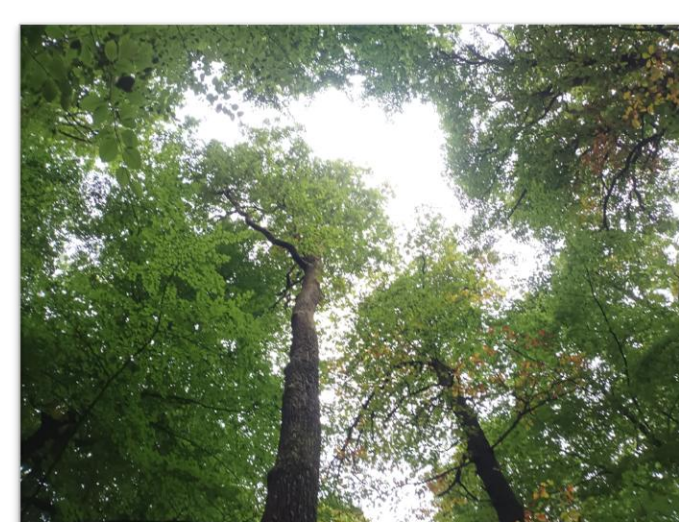
Focus on the **silver birch**

- Large ecological range
- A **fast** and **easily** regenerating species
- An increasingly sophisticated **forestry management plan**



Ground-based measurements

- Time-consuming
- Measurement error



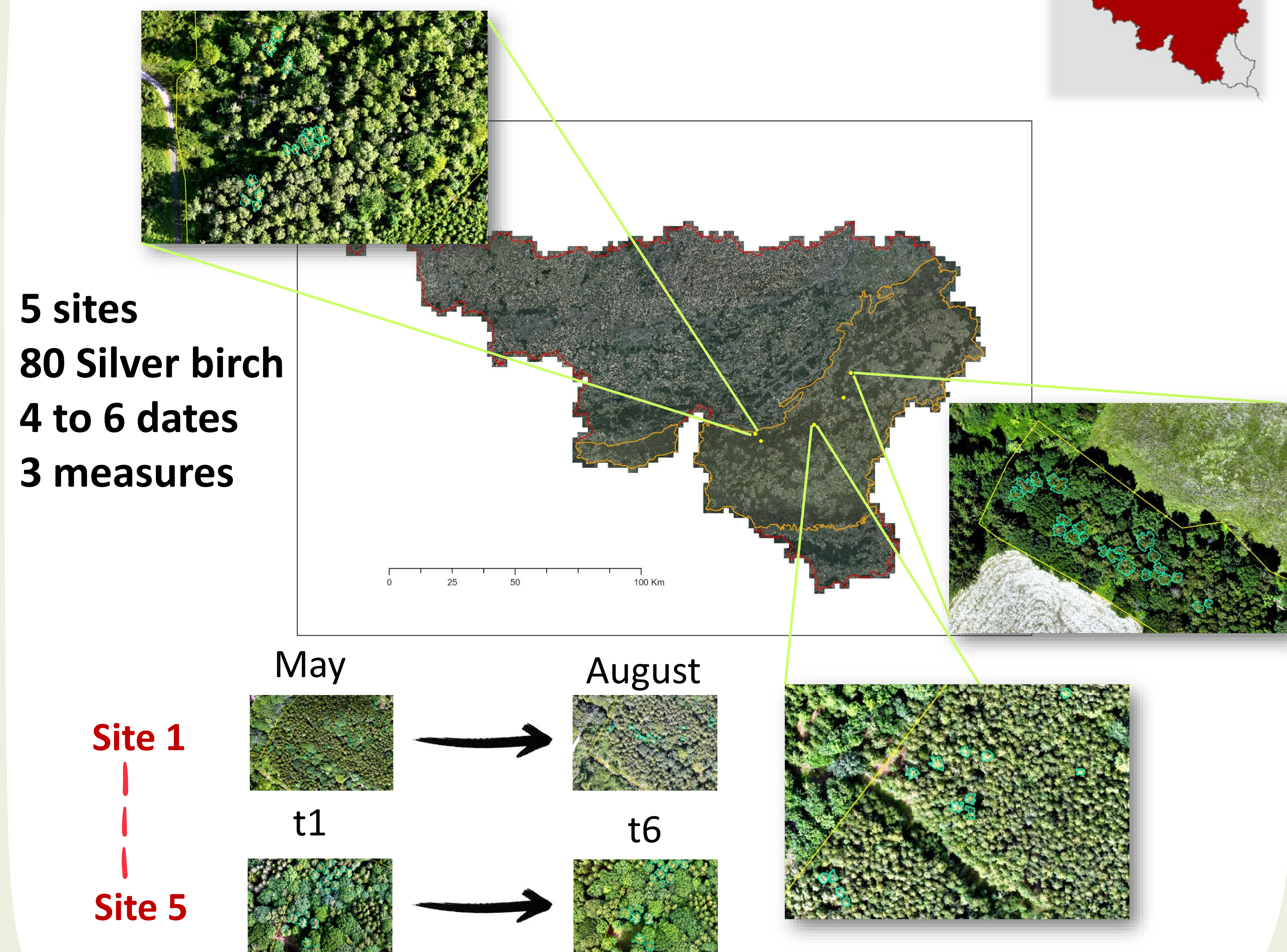
Drone-based remote sensing

- Time/cost efficiency
- « More accurate measurements»



The relationship between drone imagery and seed production remains to be demonstrated

Sampling design

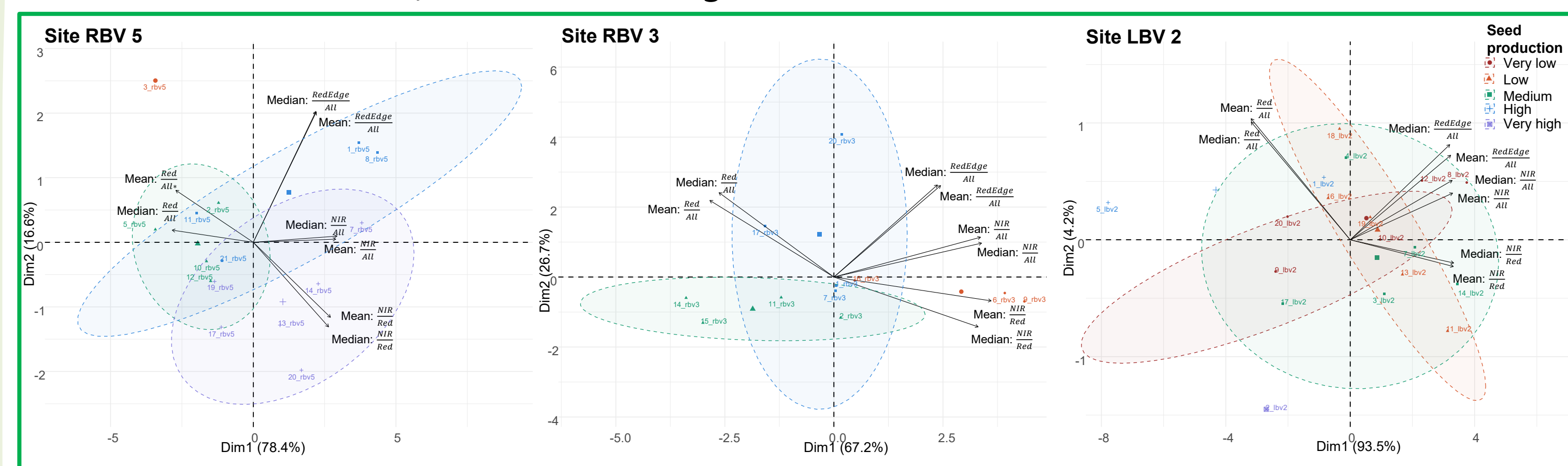


Preliminary analyses

Hypothesis 1: Change in physiological status

PCA suggests a **relationship** between seed production and spectral indices based on NIR and RedEdge.

**All includes the RGB, NIR and RedEdge bands.*

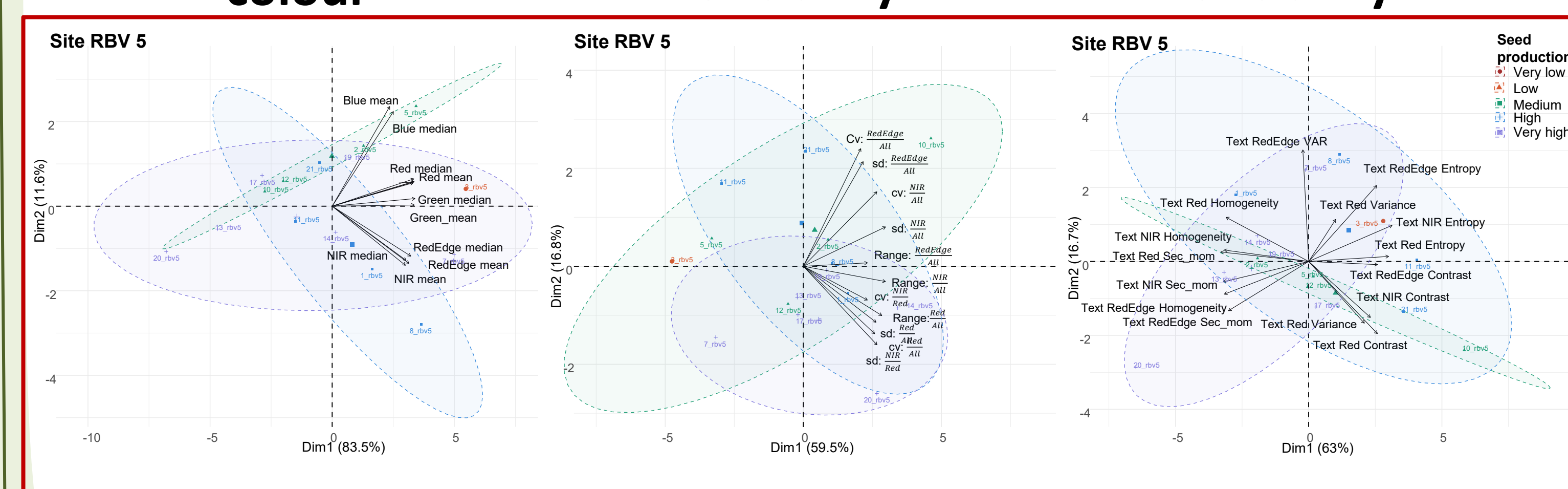


The **other hypotheses** are not supported by the data. The **PCAs do not** show **clear distinction** between seed production levels.

H2: Changes in colour

H3: Spectral variability

H4: Texture variability



Improvements to the 2026 protocol

- Systematic use of a calibration panel
- Same flight times across sites
- Improve resolution
- Automate and improve crown segmentation
- More stringent wind conditions
- Take measurements in September

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