Finding the optimal #of environments for the EA-Maize TPE

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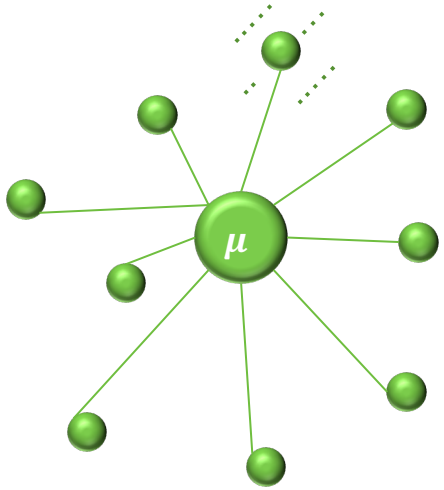
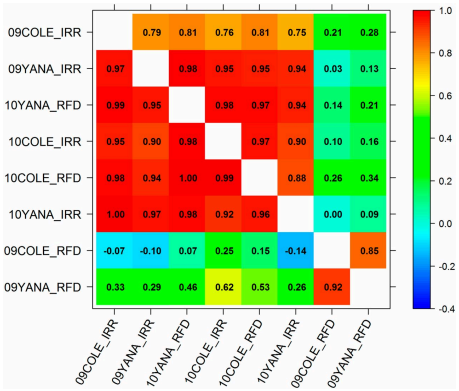
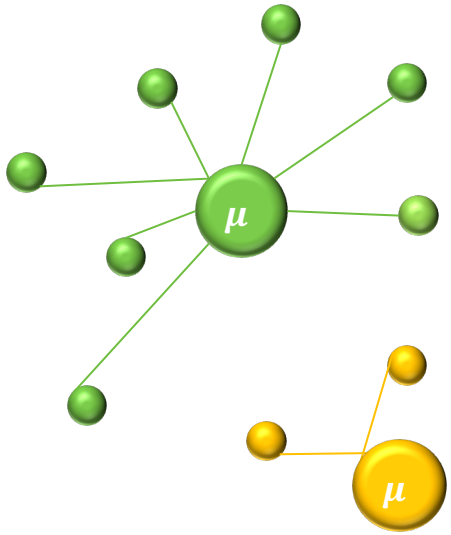
Approach

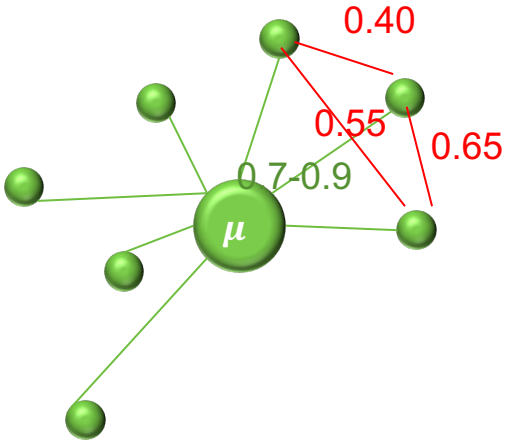
1. Identify the optimal number of environment to accurately select across the TPE
2. Identify environments with high heritability and high genetic variance.
3. Identify environments with highest correlation.

The logic behind the analysis









If $\mu_{r_G} = 0.6$ and $\sigma_{r_G} = 0.2$ it means that by selecting individuals using across-TPE BVs have rg=0.9 with environment-specific BVs, so selecting using across-TPE BVs we will have genetic gain for all sub-environments.

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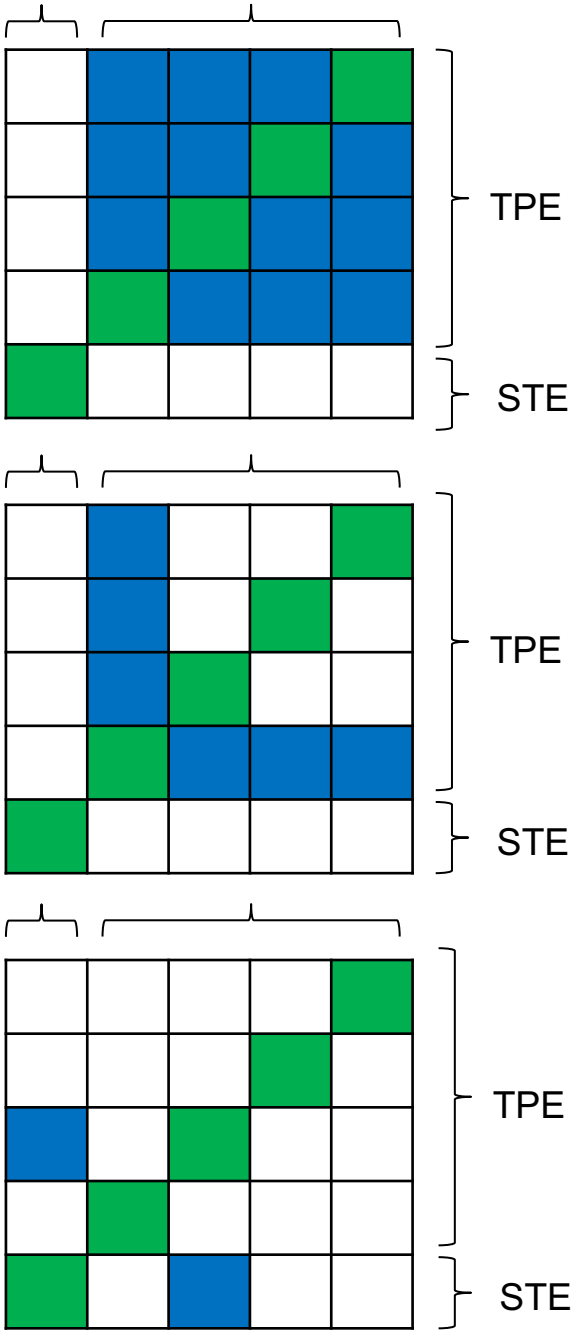
Recycling?

TPE COVERAGE



Programs tests across the TPE

Programs tests in some of the environments within the TPE

Programs tests in managed environments outside the TPE

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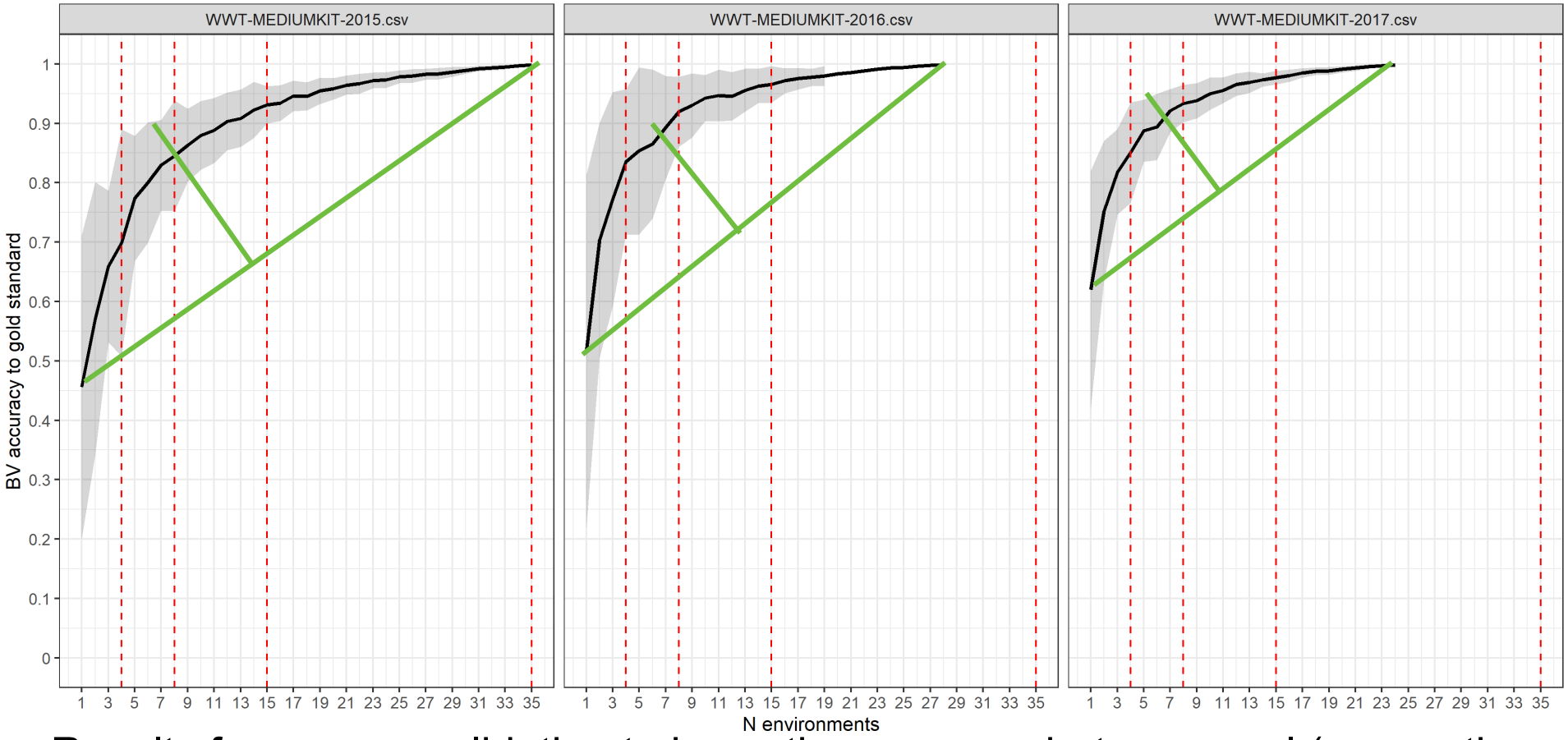
1. Identify the optimal number of environment to accurately select across the TPE



Results from cross validation to know the accuracy between real (across the entire TPE) and estimated BV when selecting a given number of environments (we assume the max #of environments represent the real BV).

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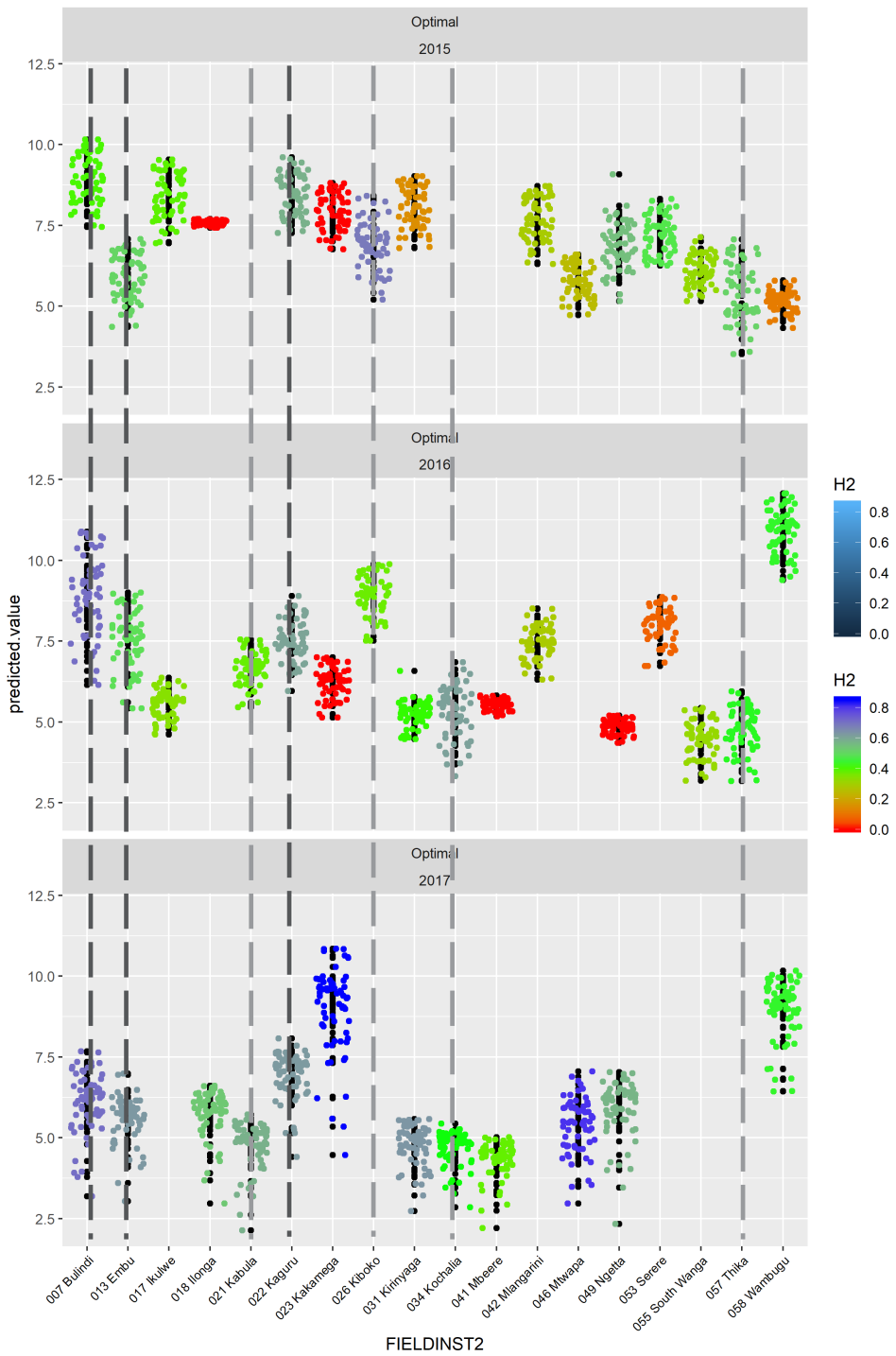

2. Identify environments with high heritability and high genetic variance.

Results from single environment heritability across 3 years of data. We assume that environments with highest H2 and genetic variance represent the best locations for applying selection

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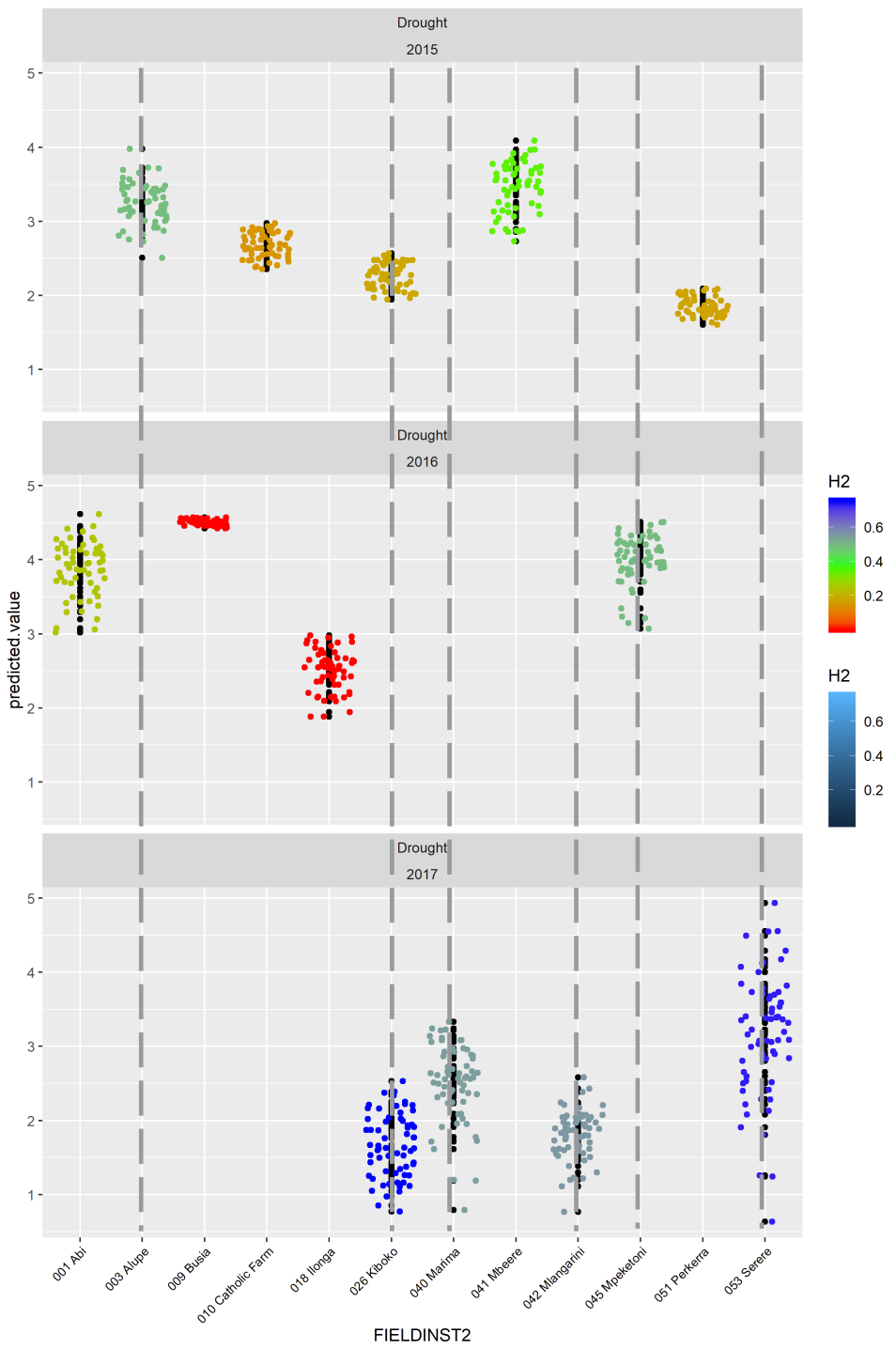

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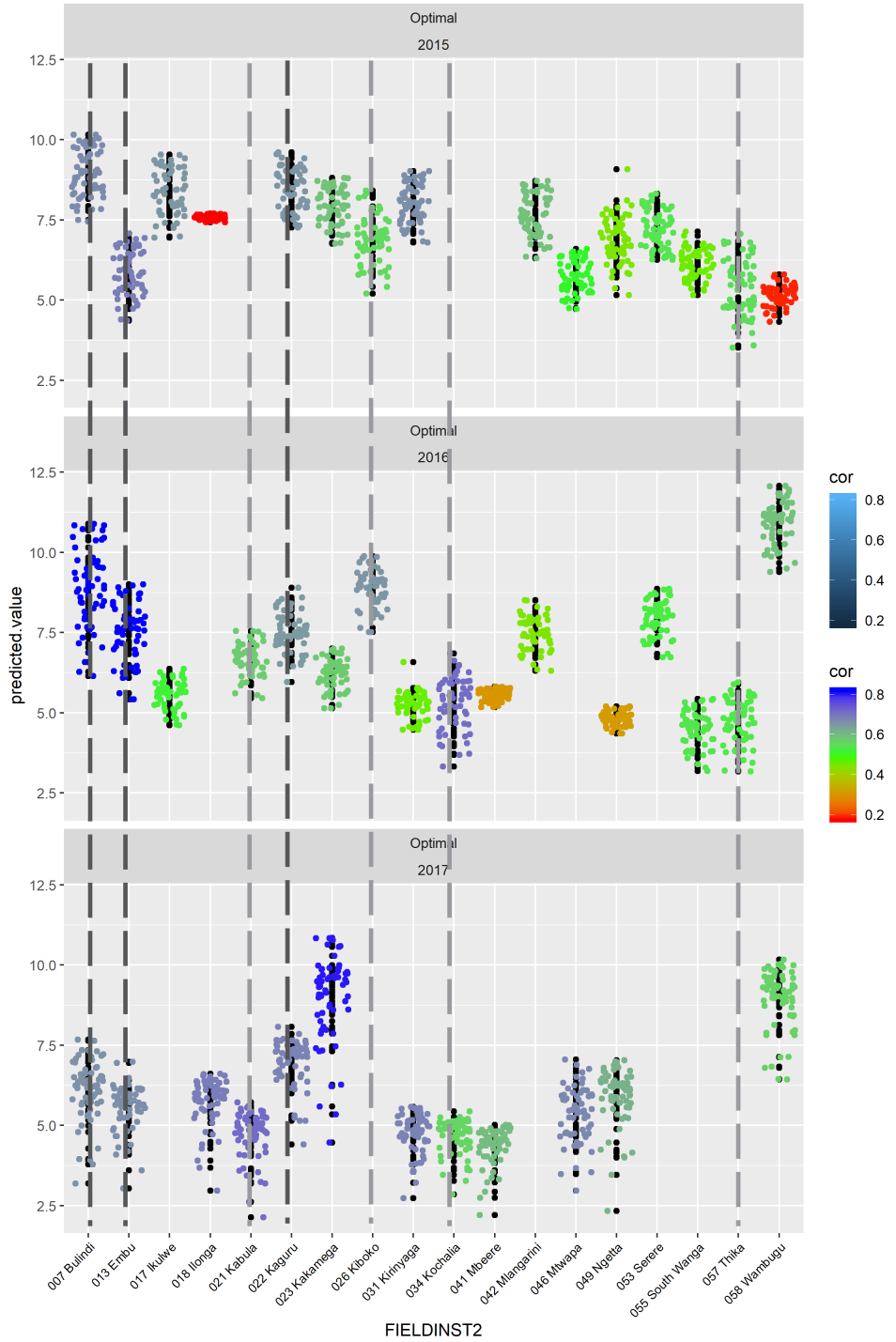

3. Identify environments with highest correlation.

Results from single environment BV and BV across all environments to identify which environments are the most representative of the TPE.

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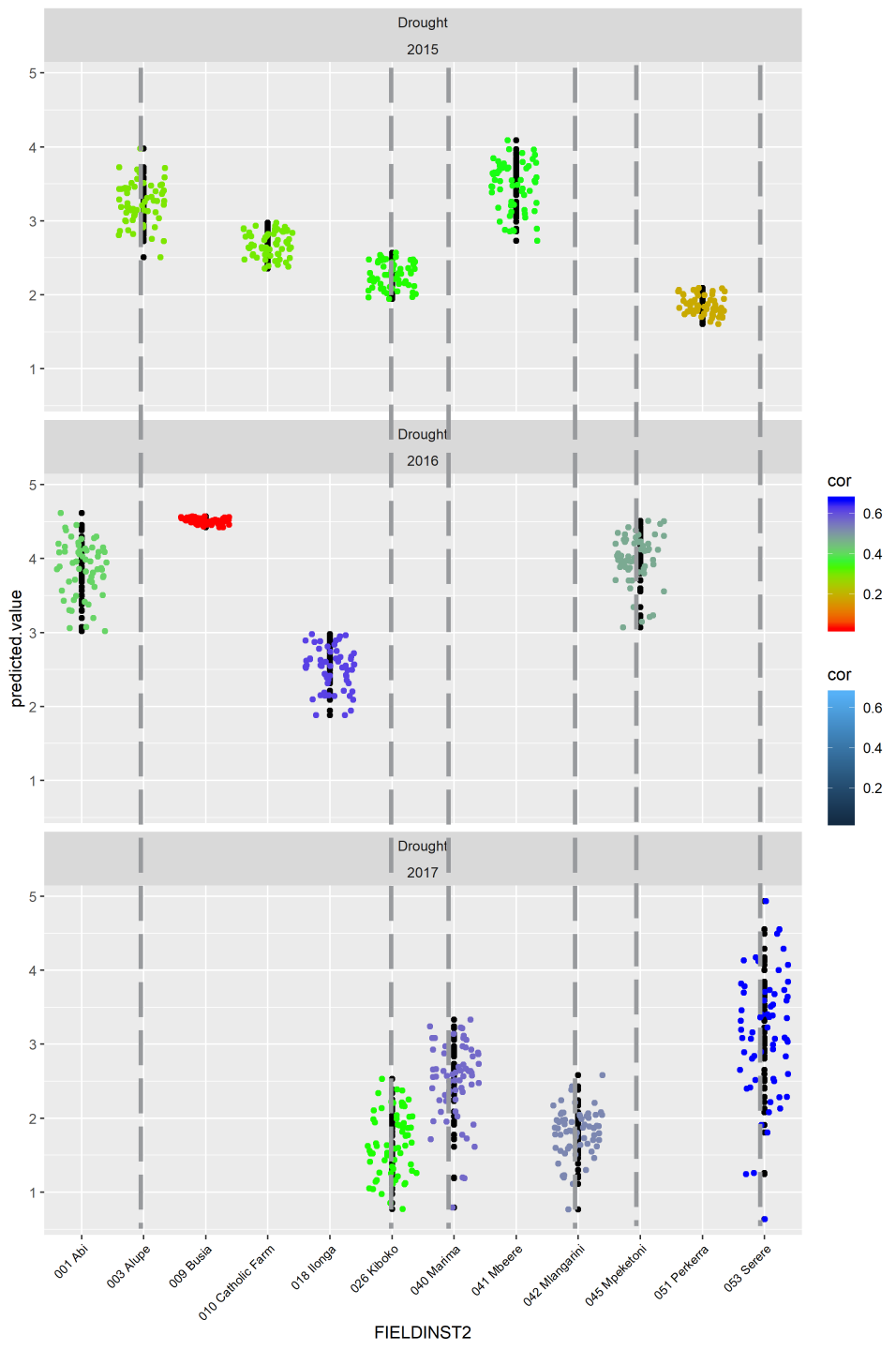

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Some of the best locations

- Optimal
  - Budindi
  - Embu
  - Kaguntu
  - Kiboko
  - Kabula
  - Thika
- Drought
  - Serere
  - Marima
  - Ilonga
  - Milangarini
  - Alupe

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Thank you for your interest!

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