

What do you know about Flax yield in Saskatchewan?

Abel Soltani

Jun. 10, 2024

Questions Being Answered

Where are the Best Rural Municipality in Saskatchewan to Invest in Flax?

What Crop Rotation Can We Consider for Flax Farming?

Data

RM:

1, Argyle

1, Argyle

2, Mount Pleasant

3, Enniskillen

4, Coalfields

5, Estevan

6, Cambria

7, Souris Valley

8, Lake Alma

9, Surprise Valley

10, Happy Valley

11, Hart Butte

12, Poplar Valley

17, Val Marie

18, Lone Tree

19, Frontier

31, Storthoaks

32, Reciprocity

33, Moose Creek

34, Browning

35, Benson

Crop:

Winter Wheat - bu/ac

Winter Wheat - bu/ac

Canola - bu/ac

Spring Wheat - bu/ac

Mustard - lbs/ac

Durum - bu/ac

Sunflowers - lbs/ac

Oats - bu/ac

Lentils - lbs/ac

Peas - bu/ac

Barley - bu/ac

Fall Rye - bu/ac

Canary Seed - lbs/ac

Spring Rye - bu/ac

Tame Hay - tons/ac

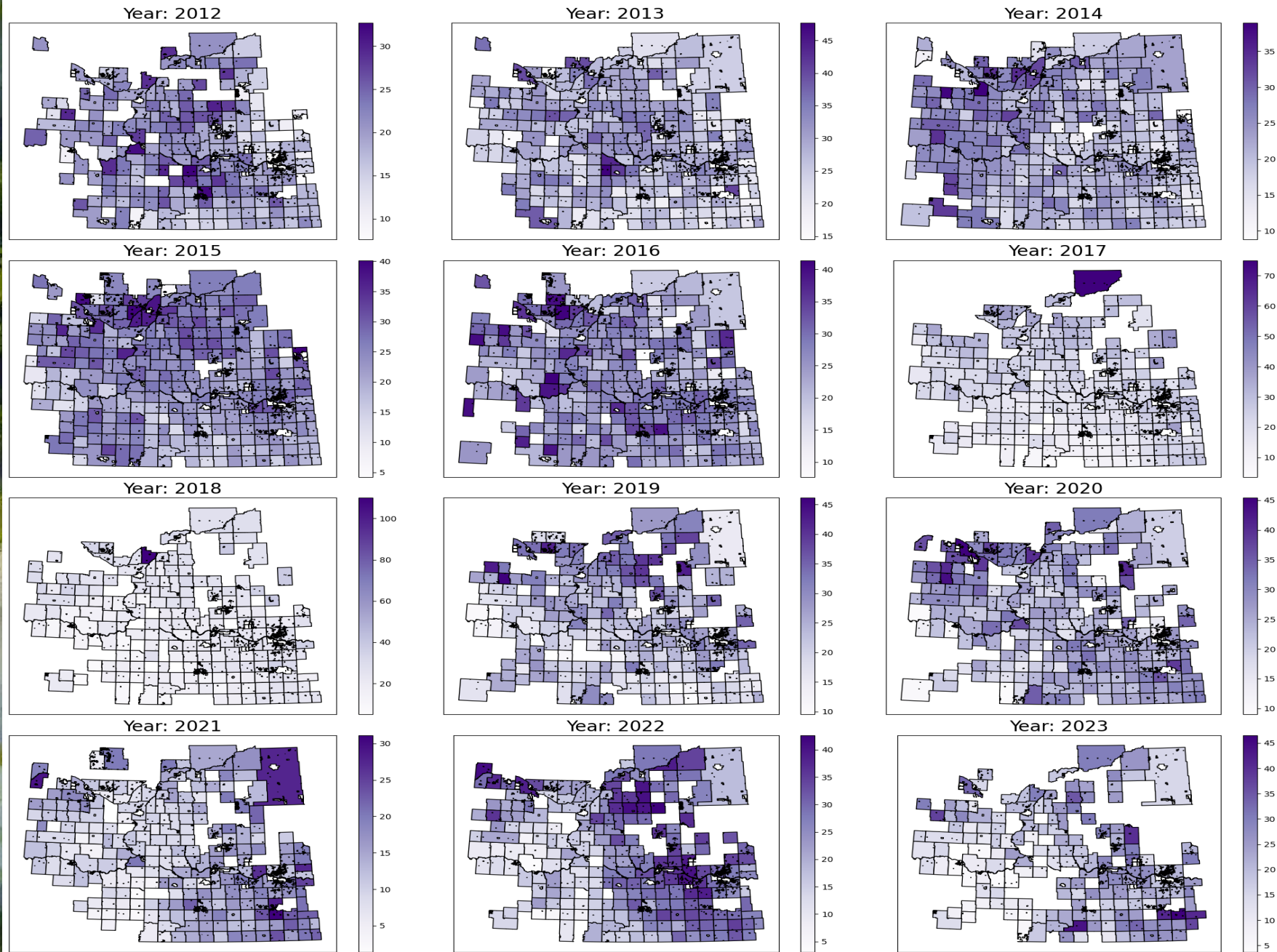
Flax - bu/ac

Chick Peas - lbs/ac

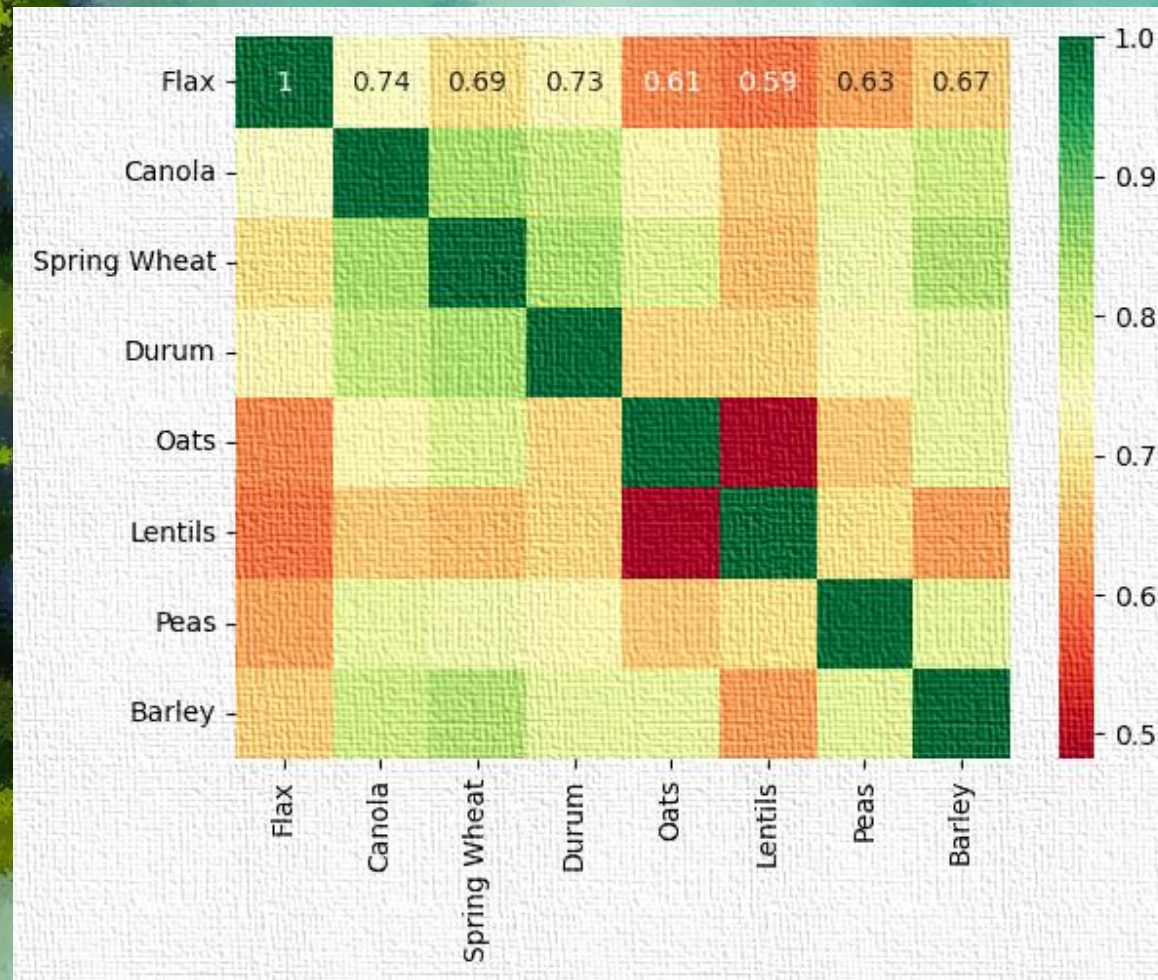
Provincial GIS Data

Exploratory Data Analysis

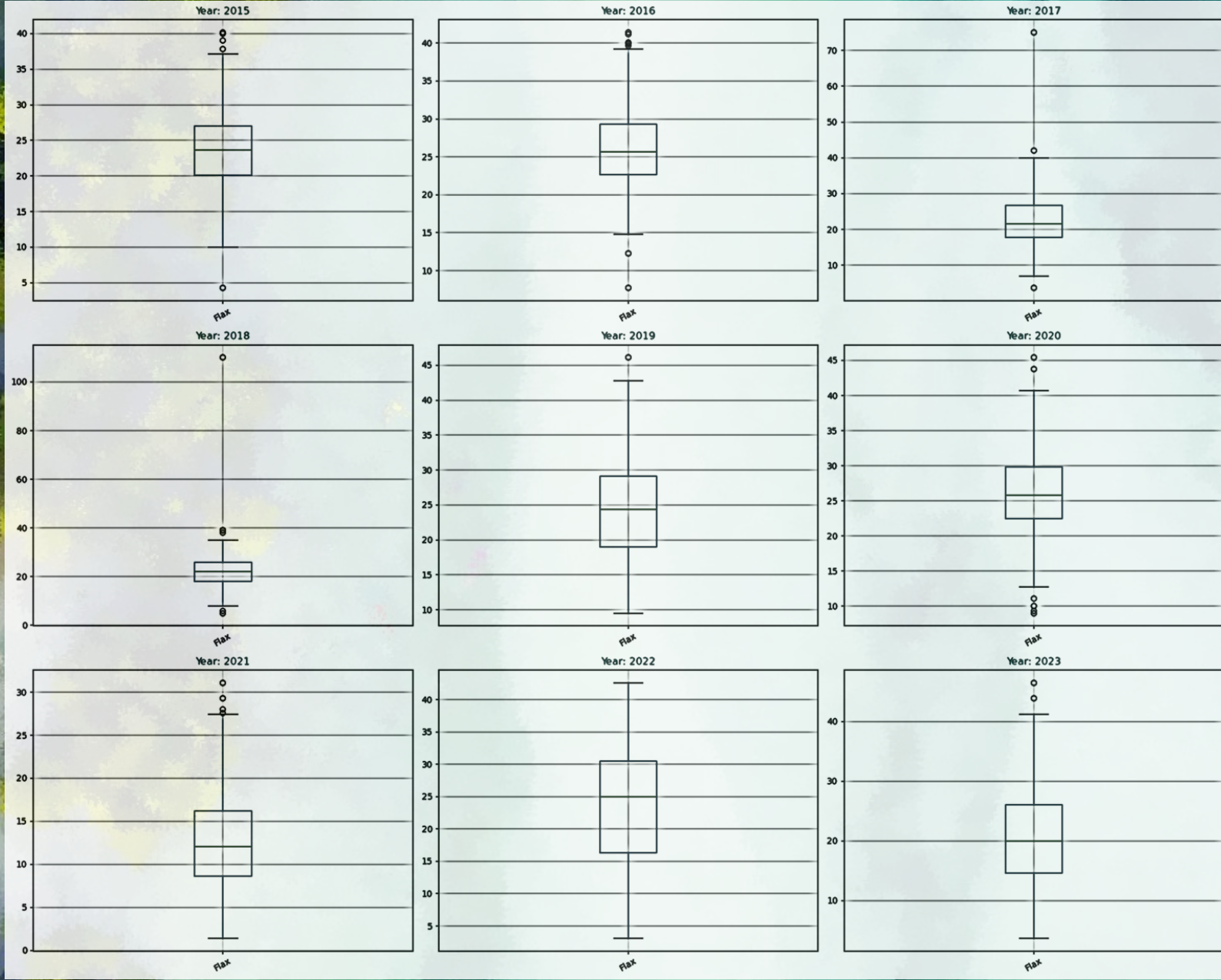
Flax Yield per Year (2012 - 2023)



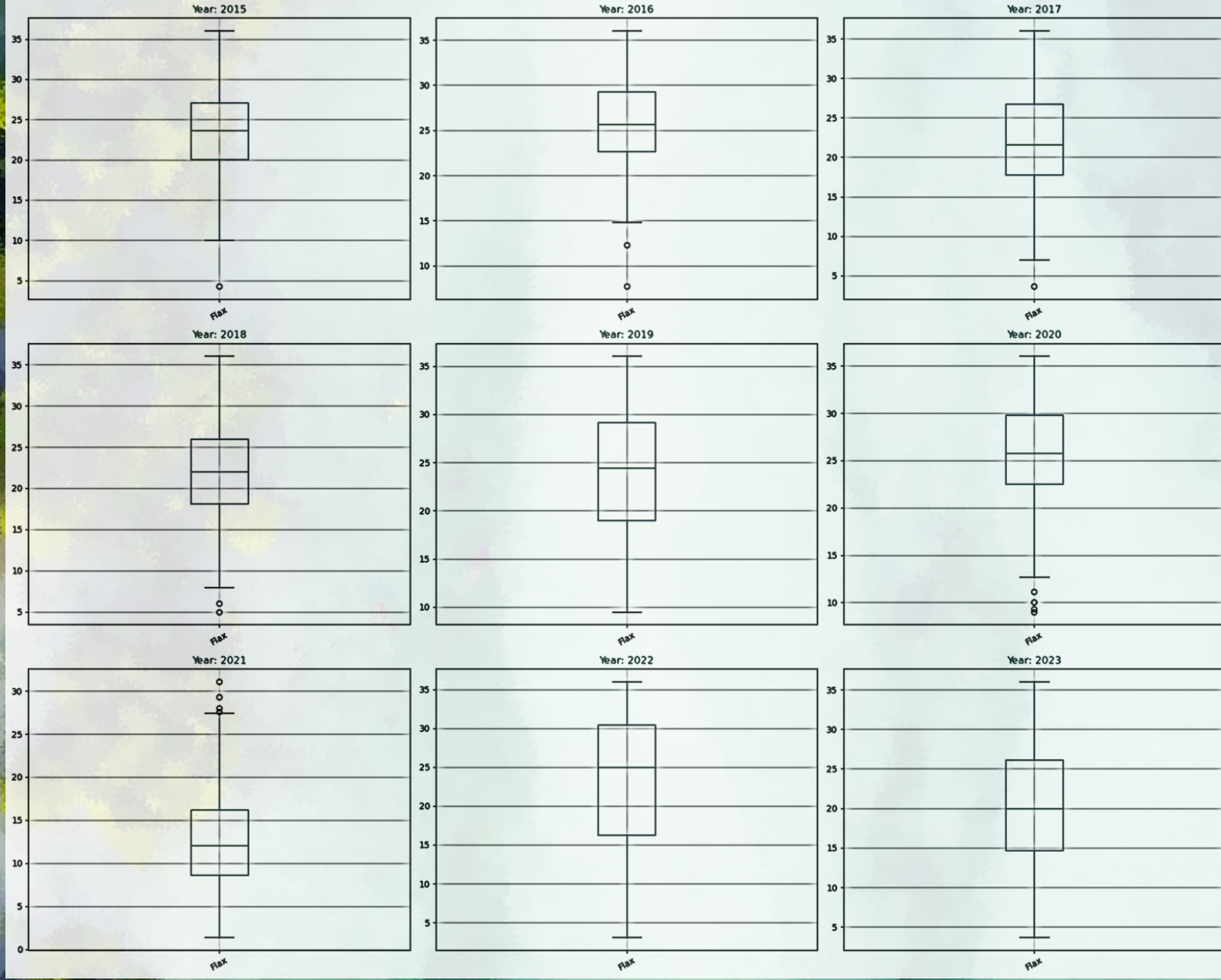
Correlation Analysis



Before Outlier Treatment



After Outlier Treatment



Machine Learning Models

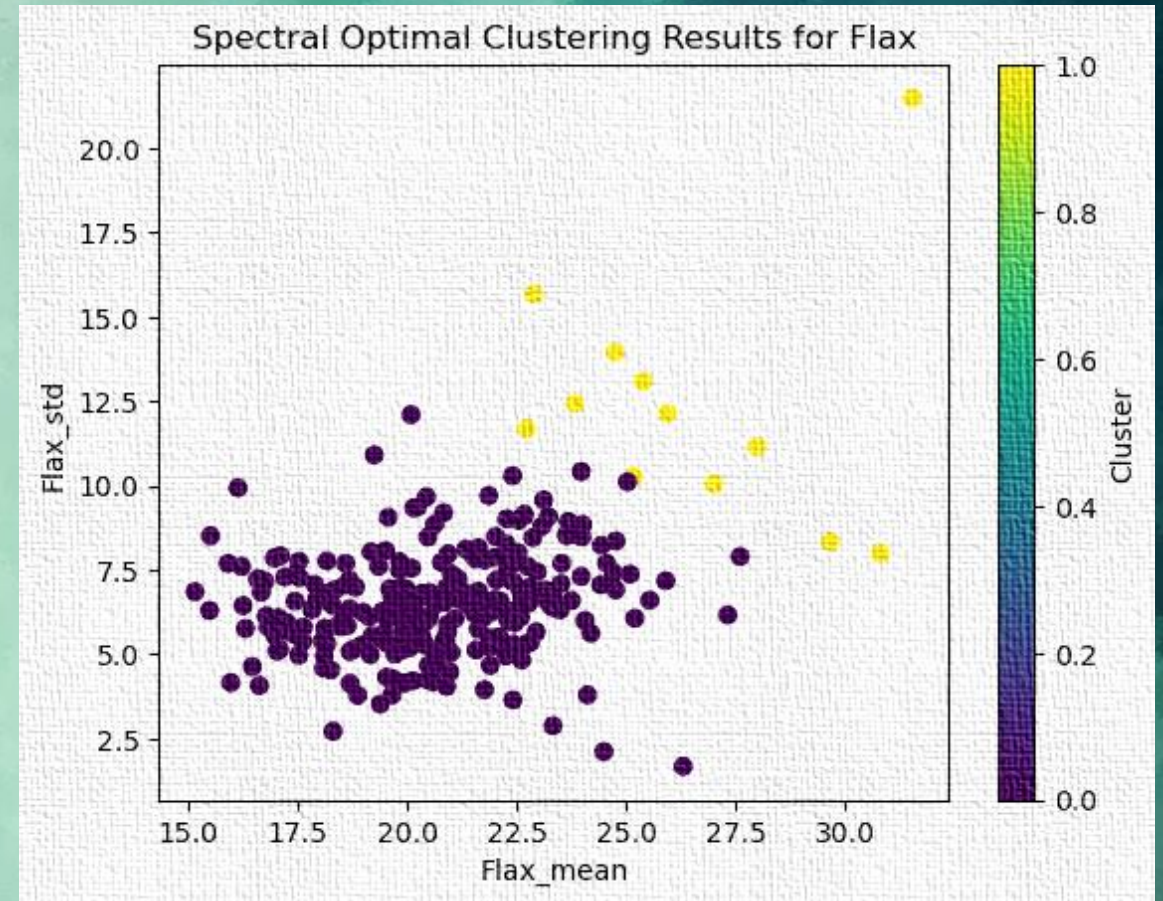
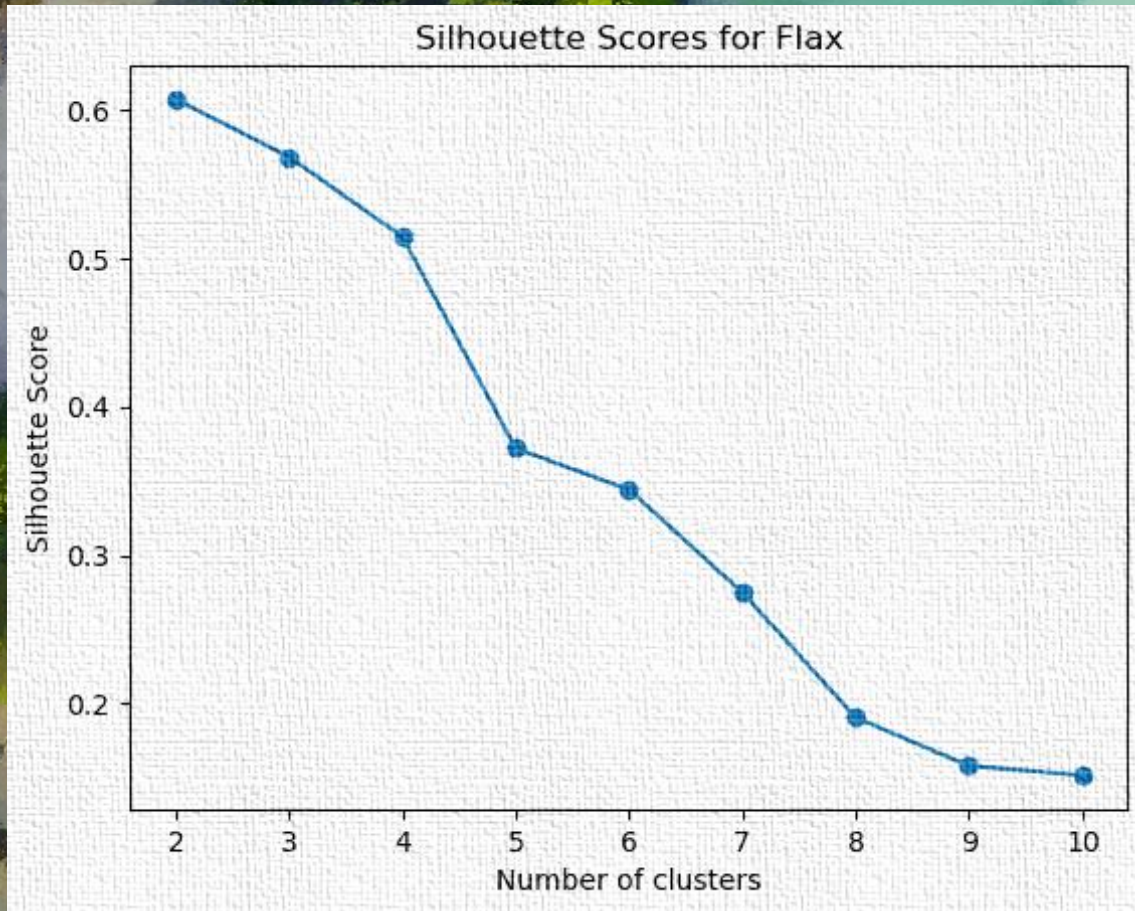
Spectral Clustering

is better for capturing complex, non-convex cluster shapes and handling overlapping clusters but is computationally expensive and requires a similarity matrix.

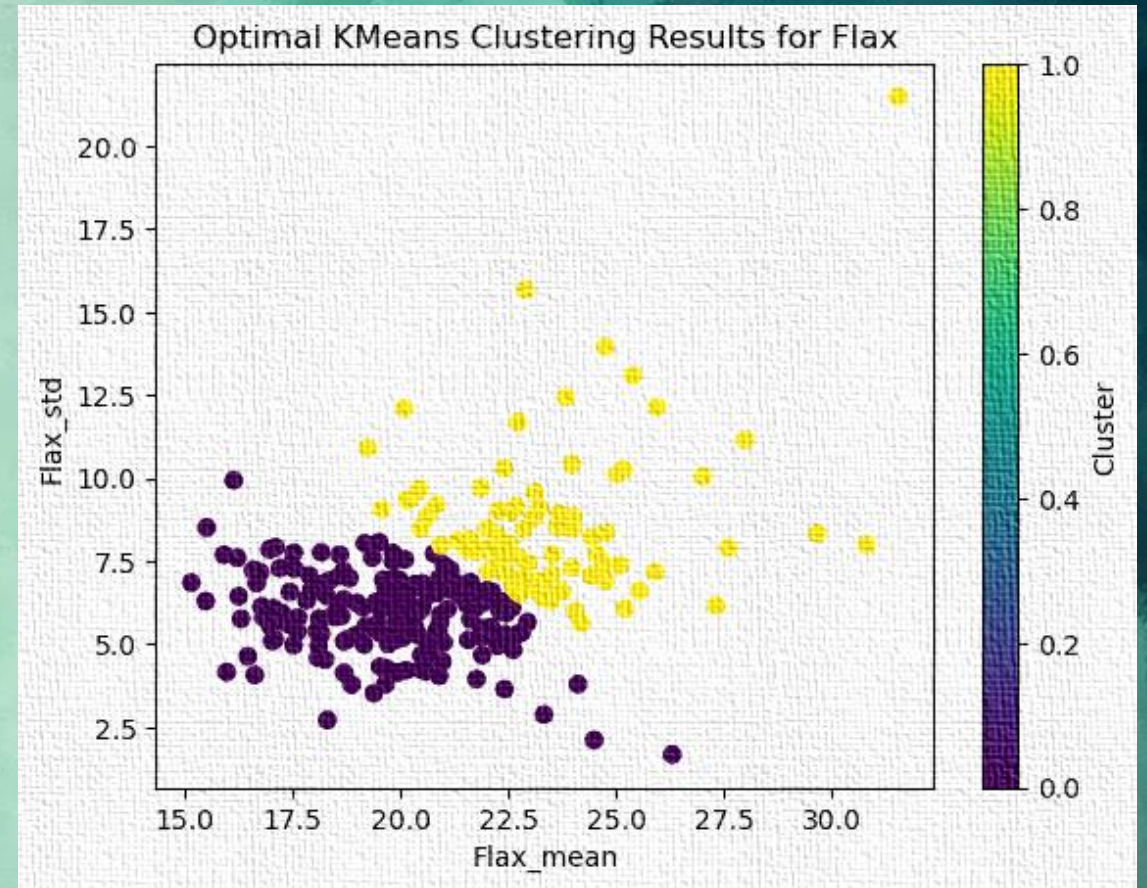
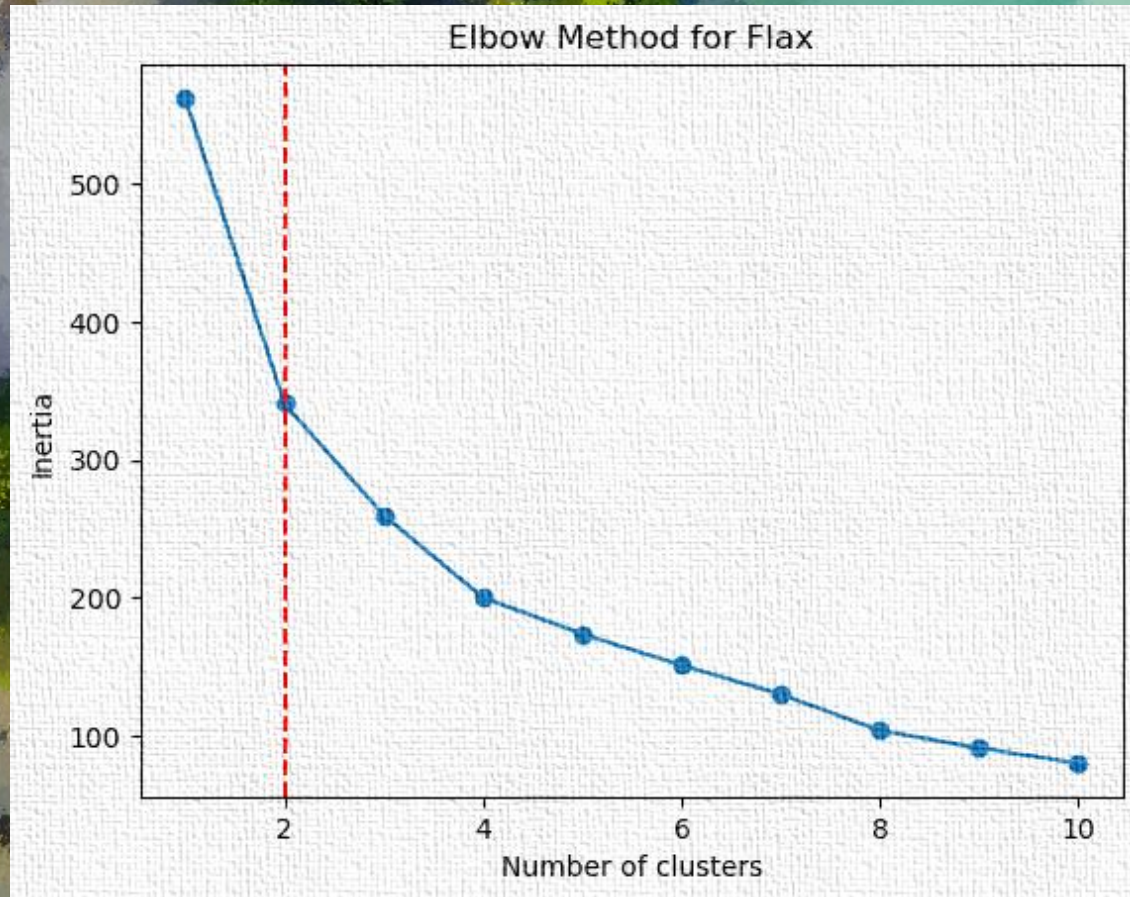
K-Means Clustering

is simple, efficient, and scalable but assumes spherical clusters of similar size and struggles with non-convex clusters and varying densities.

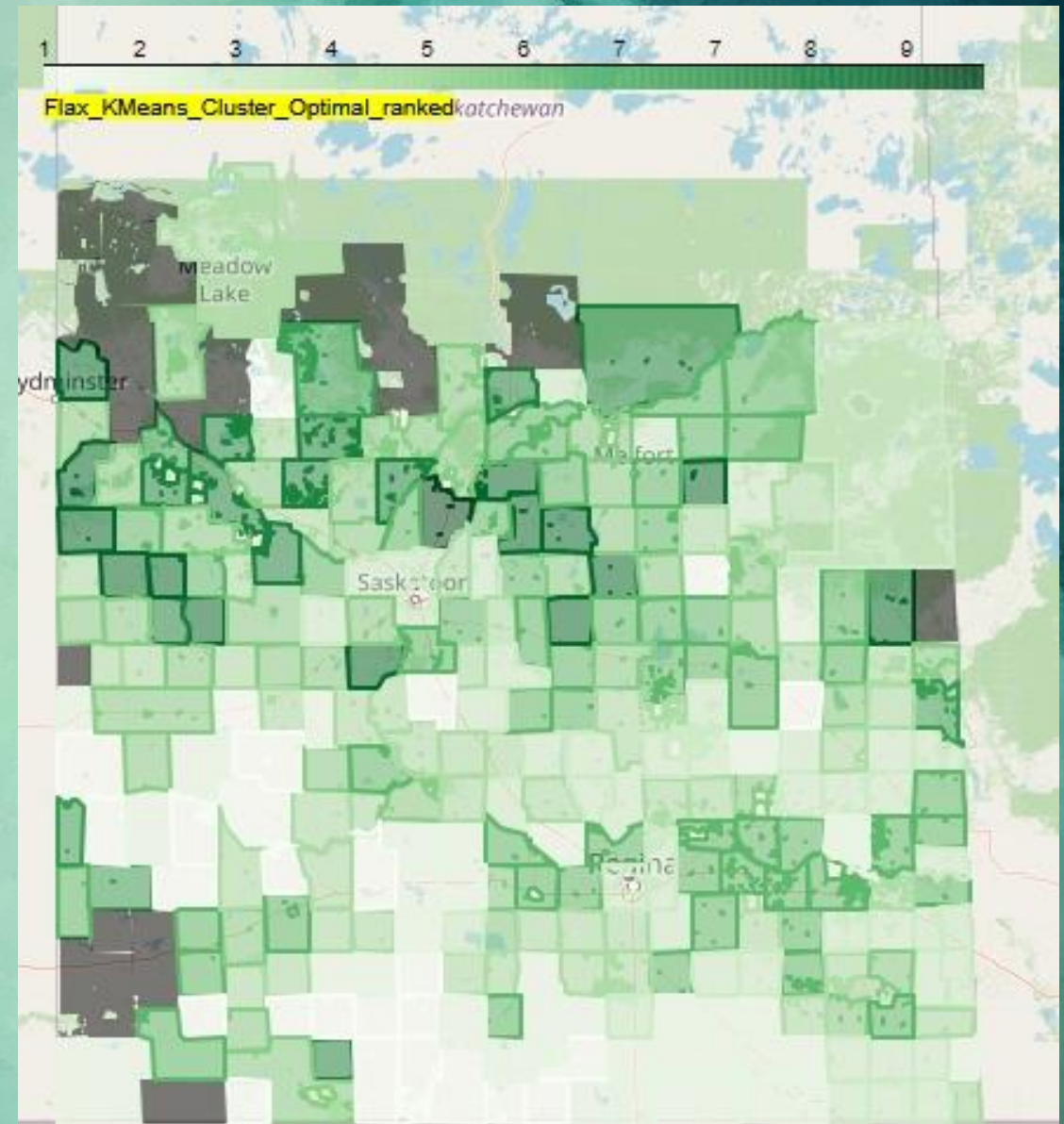
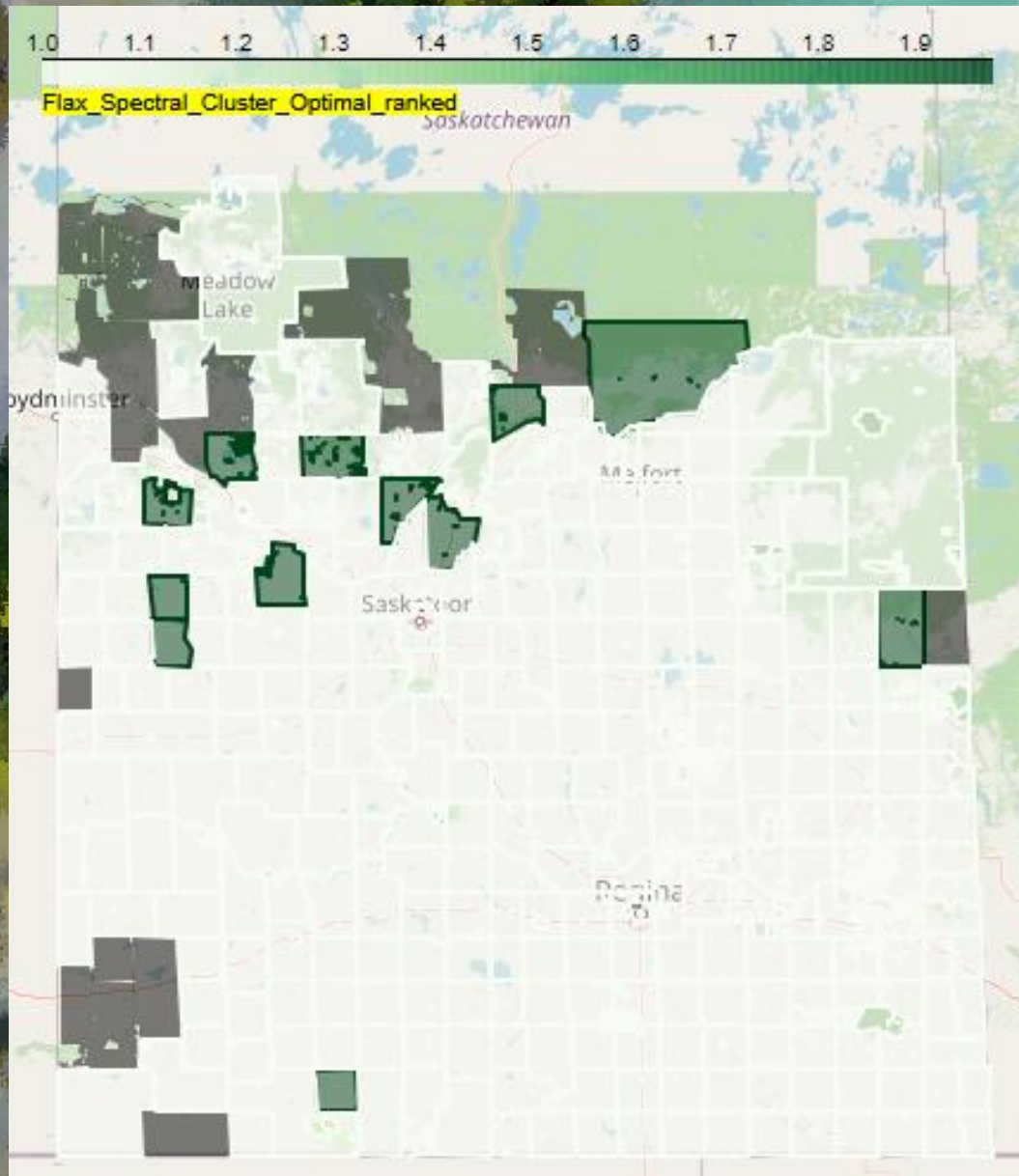
Spectral Clustering- Optimal Clustering



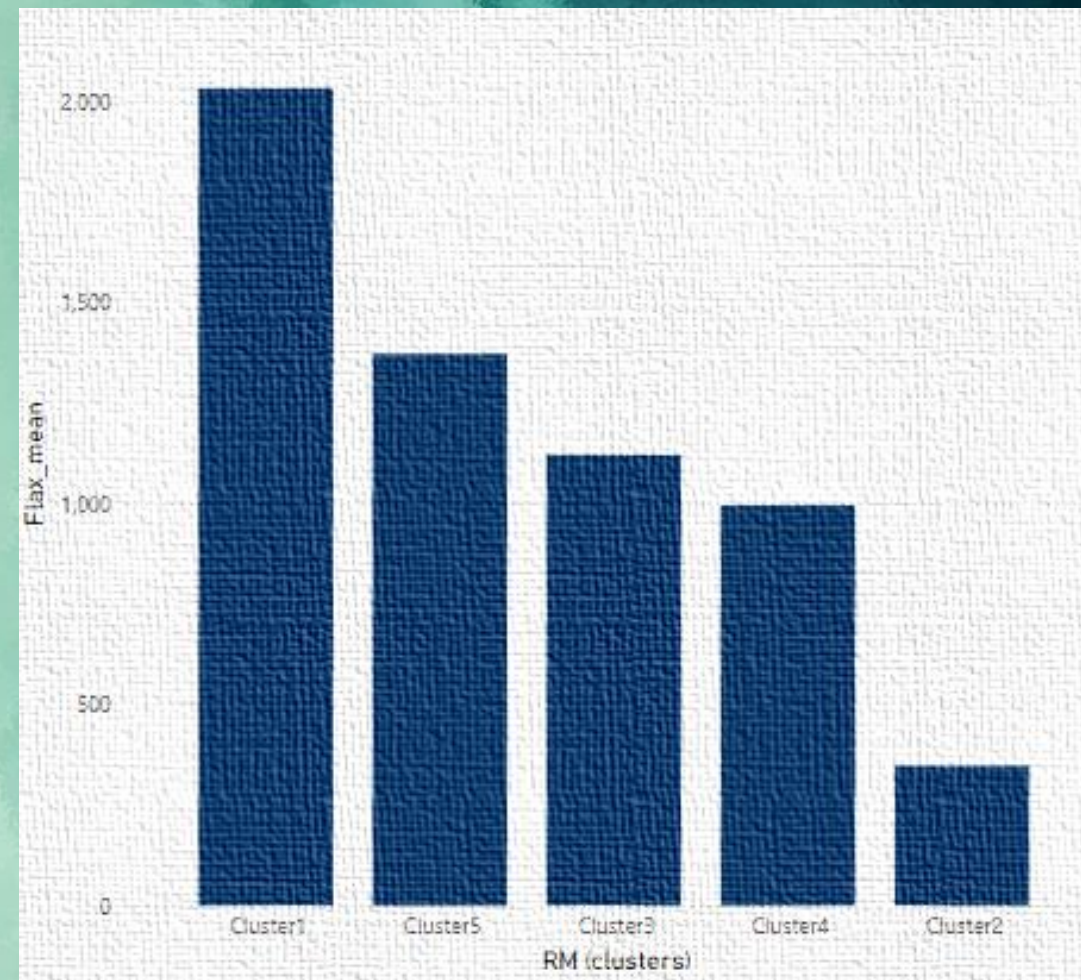
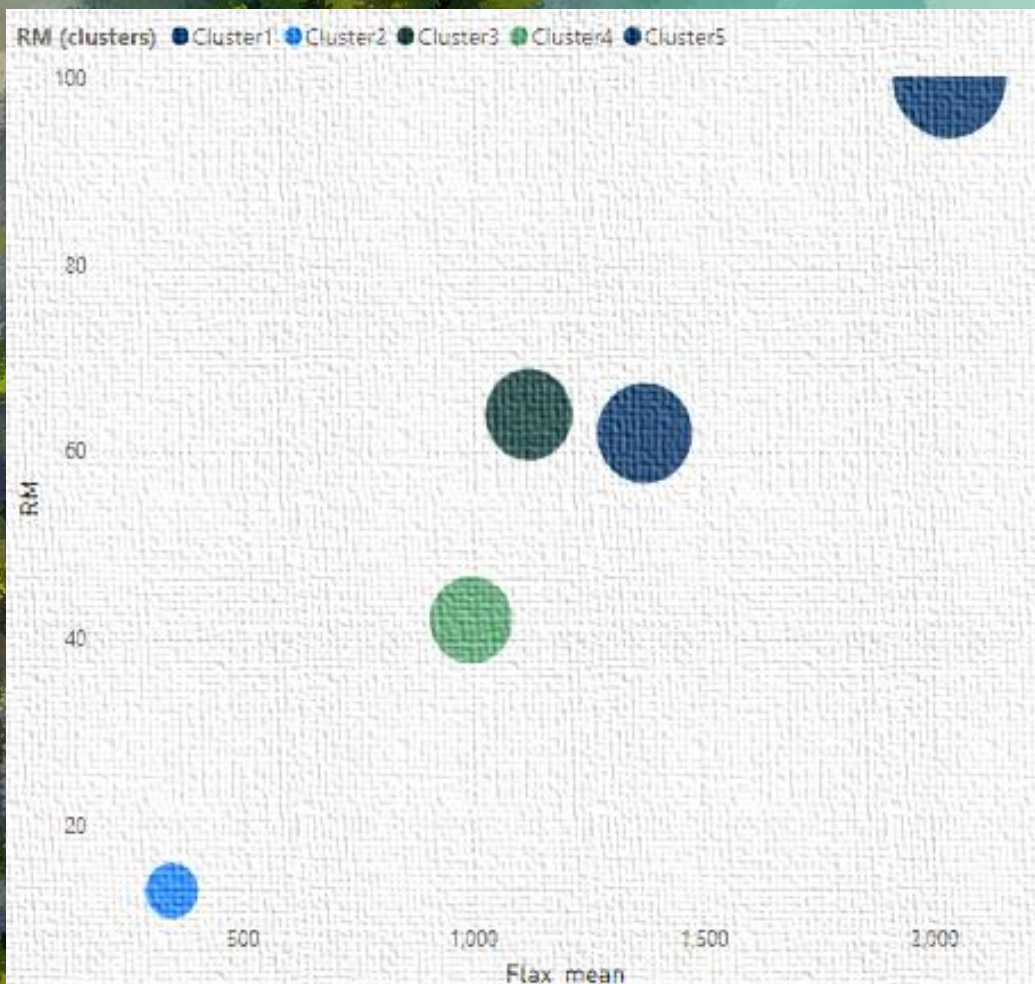
K-Means Clustering- Optimal Clustering



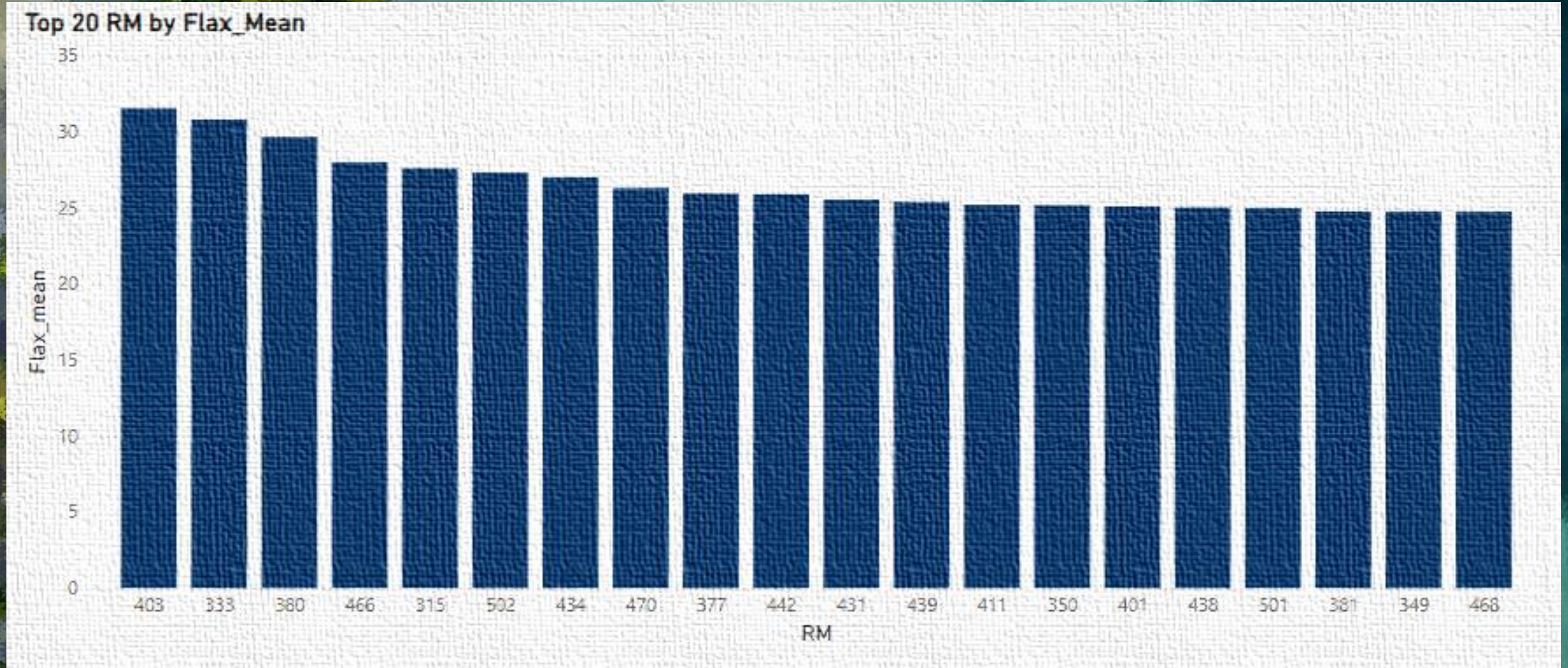
GIS Analysis to visualize areas with highest production



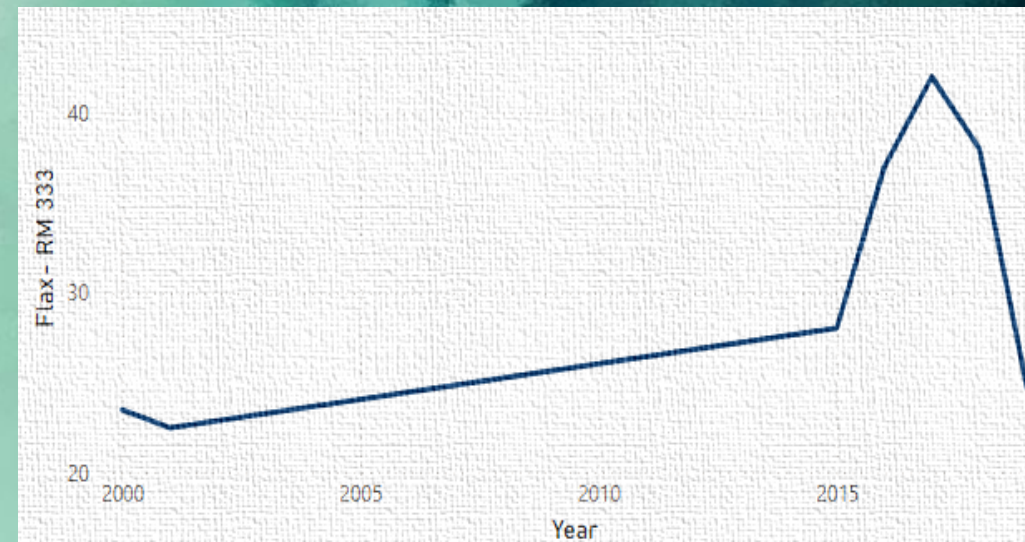
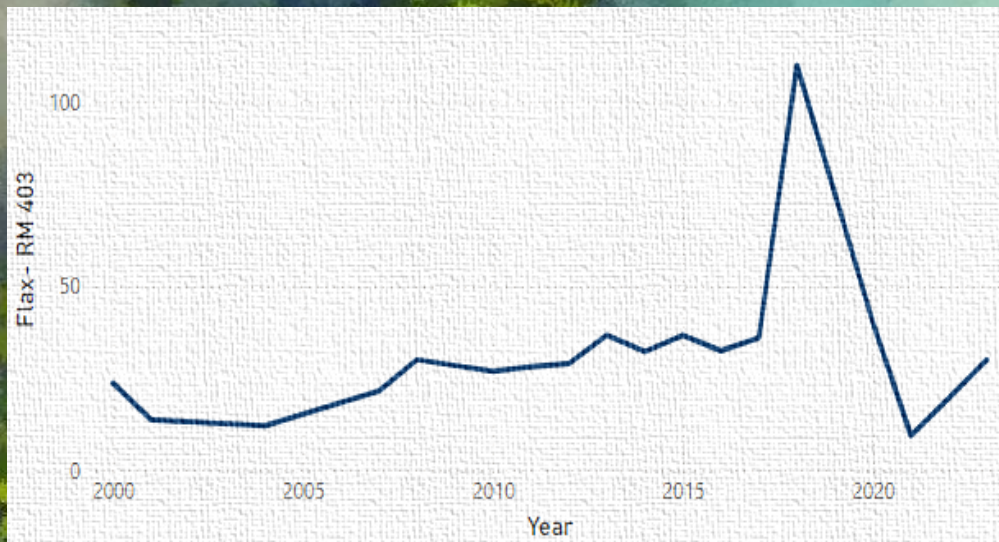
Clusters by Flax mean



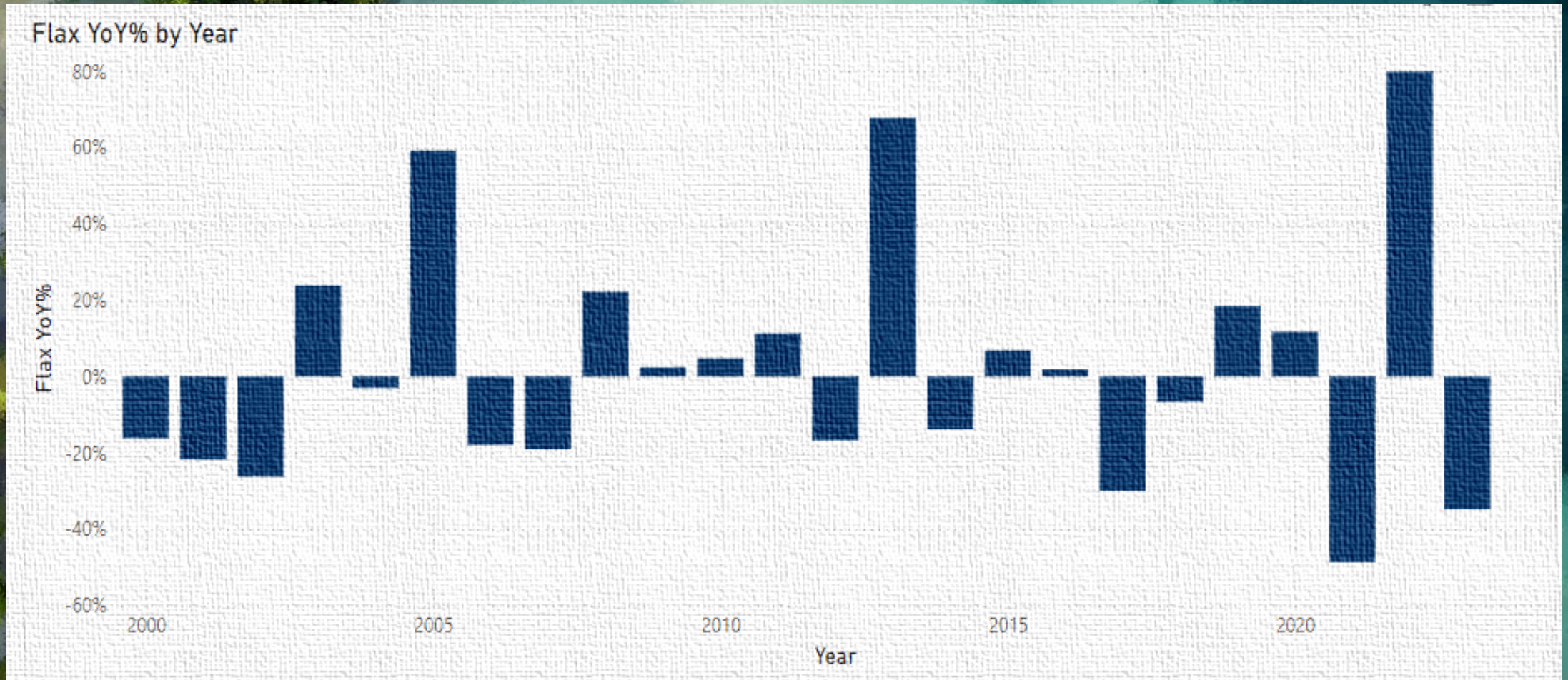
Top 20 RM



Top 4 line charts



Year by Year change



Forecasting

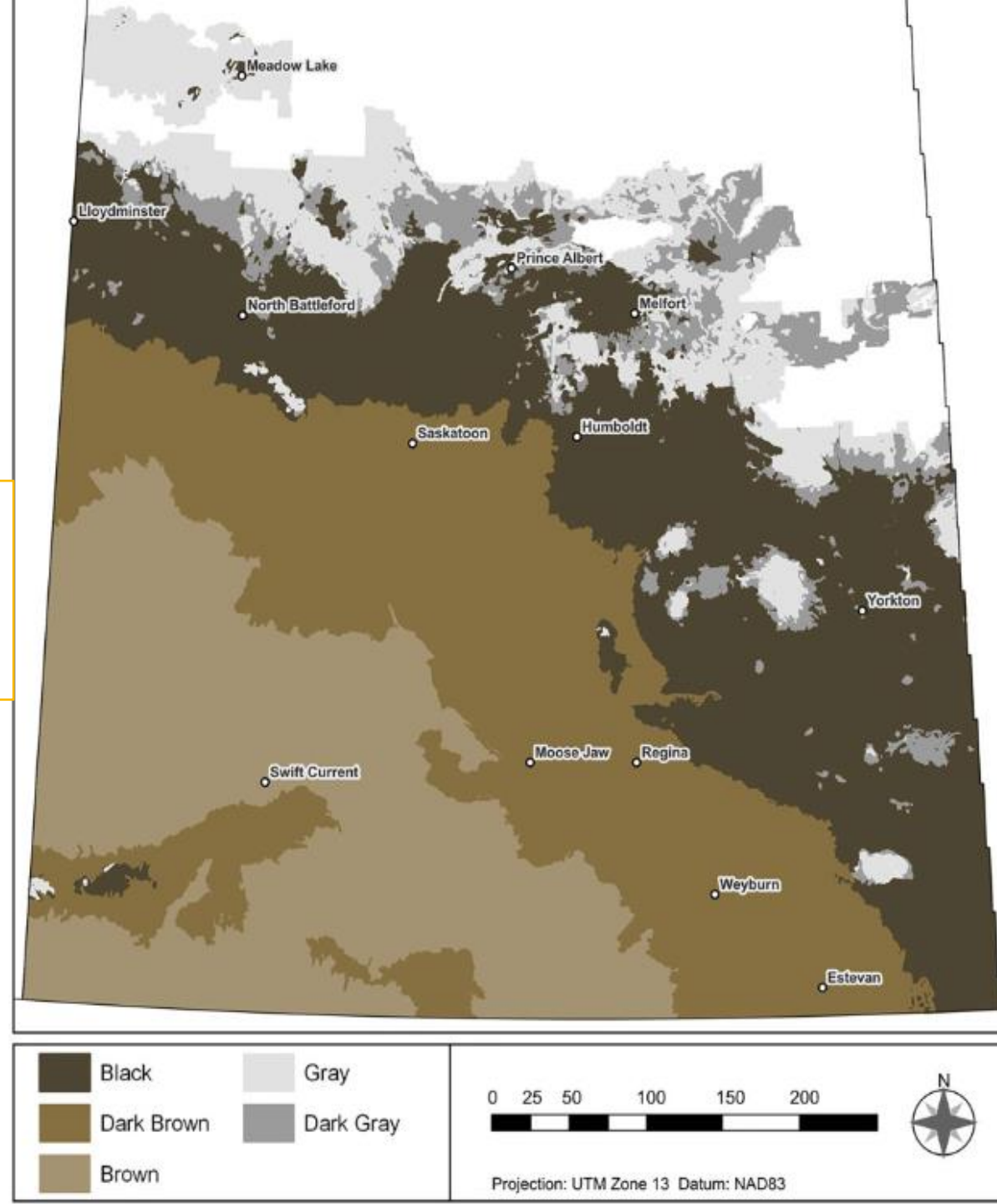


Takeaways:

The crop rotation list may include, Canola, Durum, Spring Wheat, and Barley.

Northern Saskatchewan has the most productive averages for Flax, probably due to the black and dark brown soil types.

RM #403, #333, and #380 have the highest amount of harvest, ~ 31 bu/ac.



The background of the slide is a close-up photograph of numerous small, five-petaled blue flowers with yellow centers, likely linum. The flowers are in various stages of bloom and are set against a dark, out-of-focus background of green foliage. A white rectangular box with a folded corner effect is positioned in the upper left quadrant, containing the text 'THANK YOU'.

THANK YOU