



Understanding
Sorghum
Morphological
Traits in a
Diverse
Population

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Hongyu Jin

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Figure 1: Sorghum picture



Dataset description

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The dataset is the agronomic traits that were measured in a sorghum field experiment with two levels of nitrogen treatment. Each row represents a small piece of land with its unique row number and column number which contains around 10 individual sorghum plants. The explanation for each column is stated below:



List of variables

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Plot ID&Sorghum Accession: Unique ID for each plants
SNPDataID Unique ID

Row&Column: spatial data for sorghum plants

Block: Blocking number

Treatment: two levels of nitrogen treatment

DaysToBloom: How many days until the sorghum flower
bloom(unit:day)

MedianLeafAngle: Median value of leaf angle for each 10
individual sorghum plants(unit:degree)

LeafAngleSDV: Standard deviation of leaf angle for 10
individual sorghum plants

PoorStand: If half of the sorghum plants are poor stand, if yes
then the answer is Y

PaniclesPerPlot: How many panicles per plot have

PanicleGrainWeight: How much grain weight for each
panicle(unit:gram)

EstimatedPlotYield: The estimated plot yield for 10 individual sorghum plants(unit:gram)

FlagLeafLength: The mean value of the flag leaf's length for each 10 individual sorghum plants(unit: cm)

FlagLeafWidth: The mean value of the flag leaf's width for each 10 individual sorghum plants(unit: cm)

ExtantLeafNumber: The number of visible leaves on the main stalk at maturity stage.

PlantHeight:The mean value of the plant height for each 10 individual sorghum plants(unit: cm)

ThirdLeafLength: The mean value of the third leaf's length for each 10 individual sorghum plants(unit: cm)

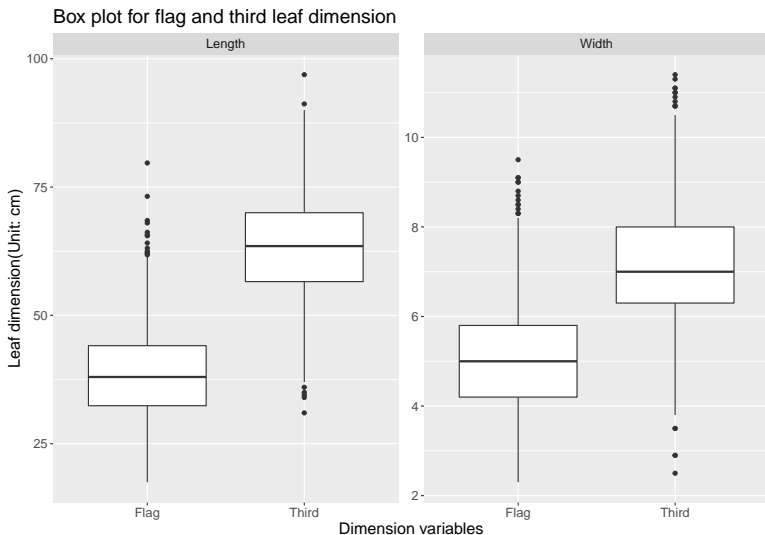
ThirdLeafWidth: The mean value of the third leaf's width for each 10 individual sorghum plants(unit: cm)



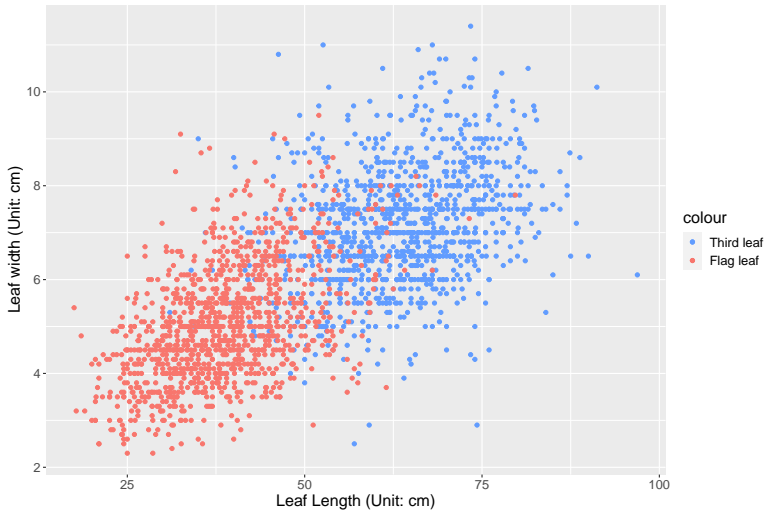
Check for the properties in different variables

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Scatter plot for flag and third leaf's dimension





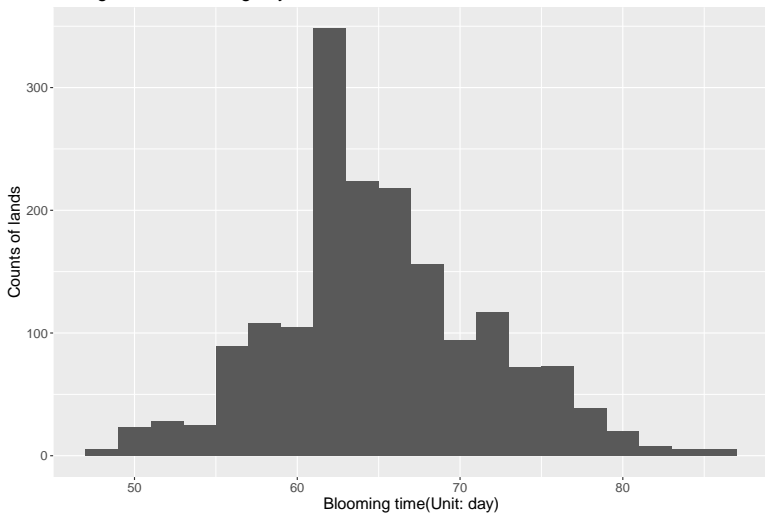
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● Mean:65.67 Median 65

Histogram for blooming day





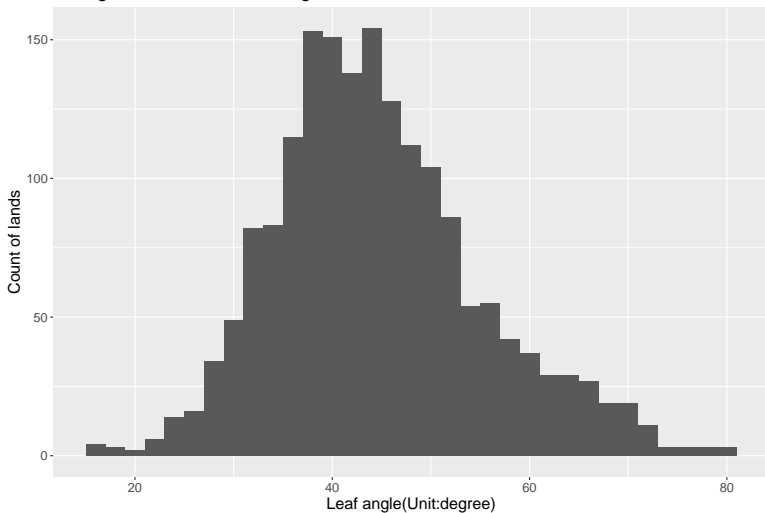
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● Mean 44.66 Median 43.50

Histogram for median leaf angle



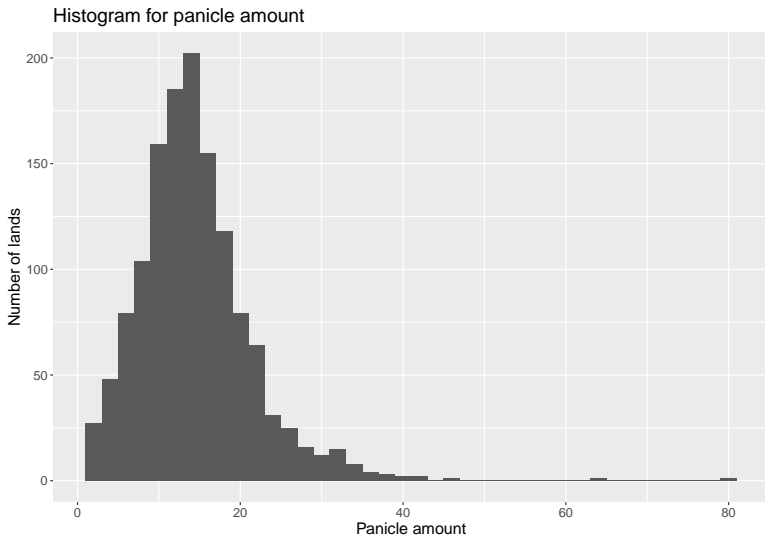


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● Mean 14.89 Median 14.00





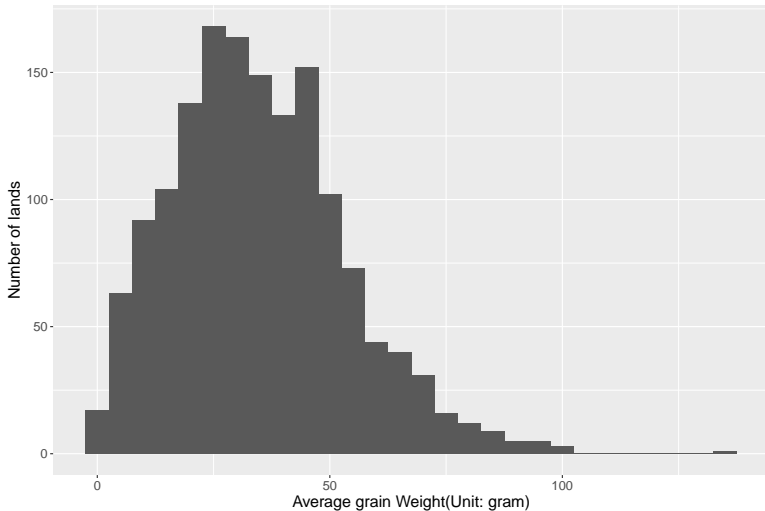
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● Mean 34.79 Median 33.20

Histogram for grain weight



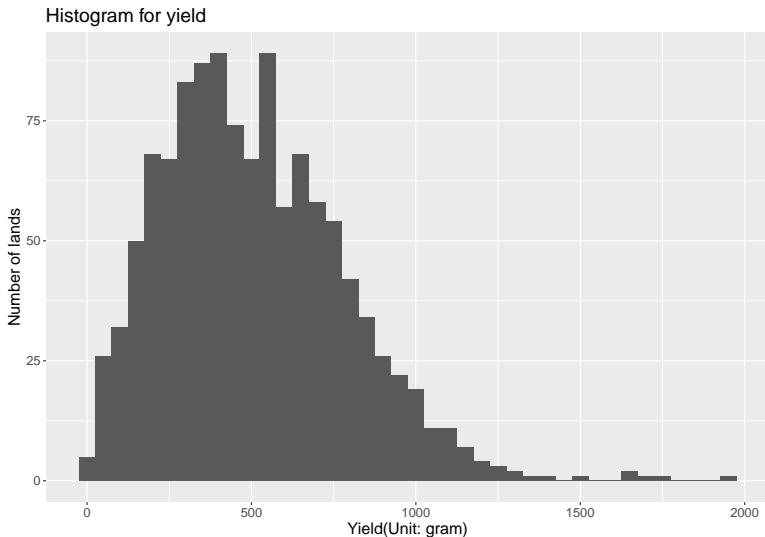


Check for the properties in different variables

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● Mean 507.5 Median 475.2





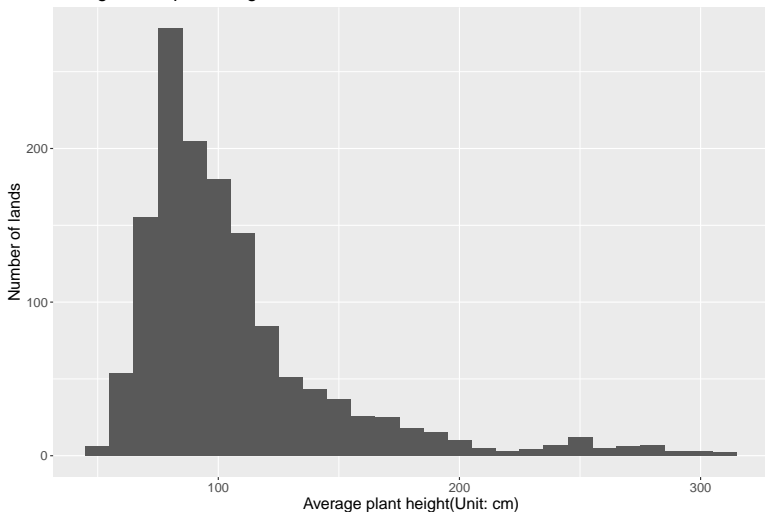
Check for the properties in different variables

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- Mean 107.5 Median 95.0

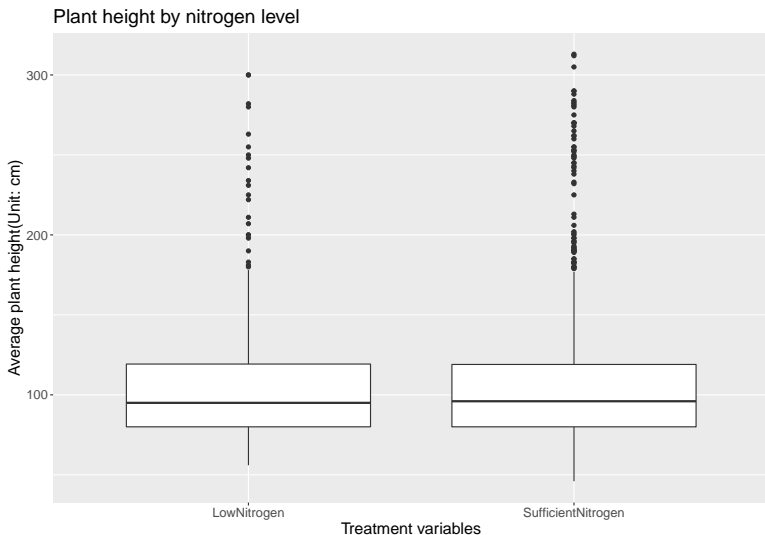
Histogram for plant height





Explore the effect of the nitrogen treatment with plant height

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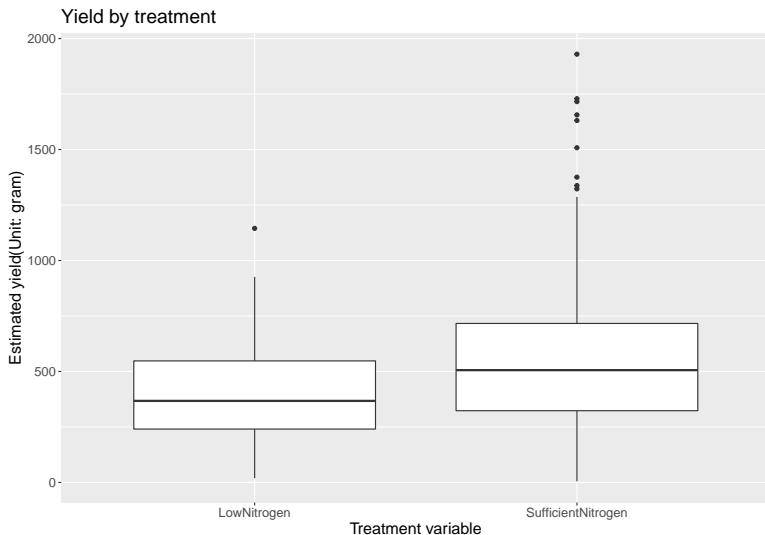




Explore the effect of the nitrogen treatment with yield

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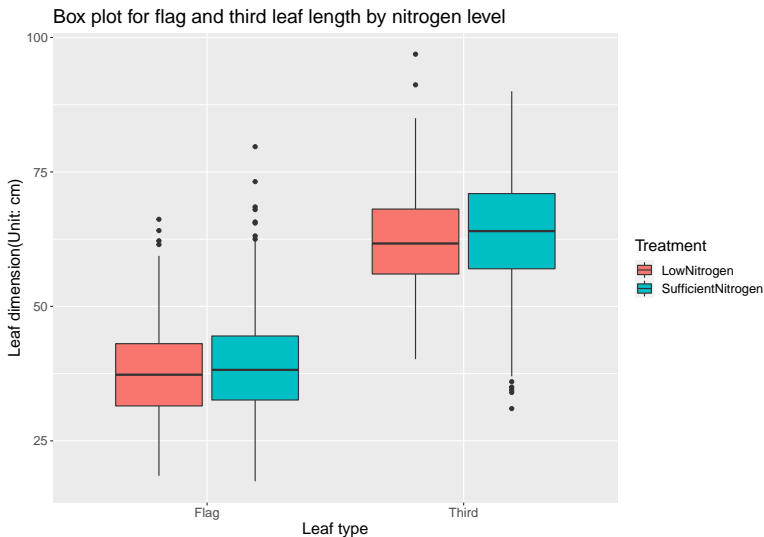




Explore the effect of the nitrogen treatment with leaf length

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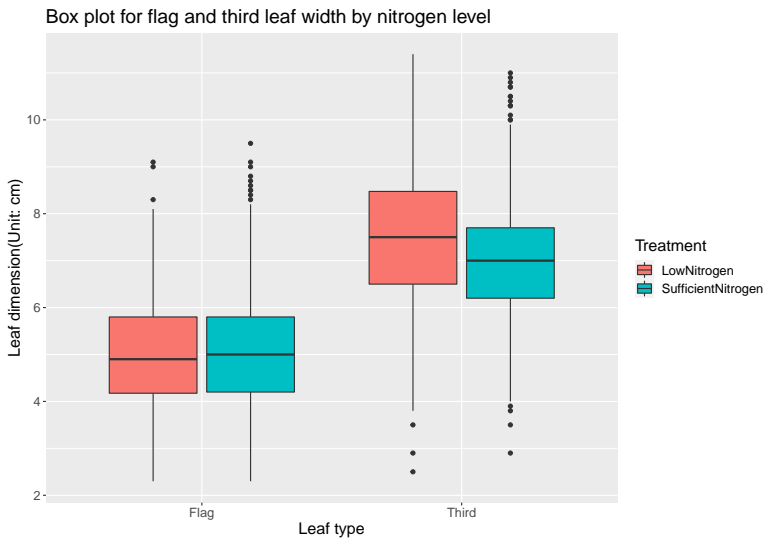




Explore the effect of the nitrogen treatment with leaf width

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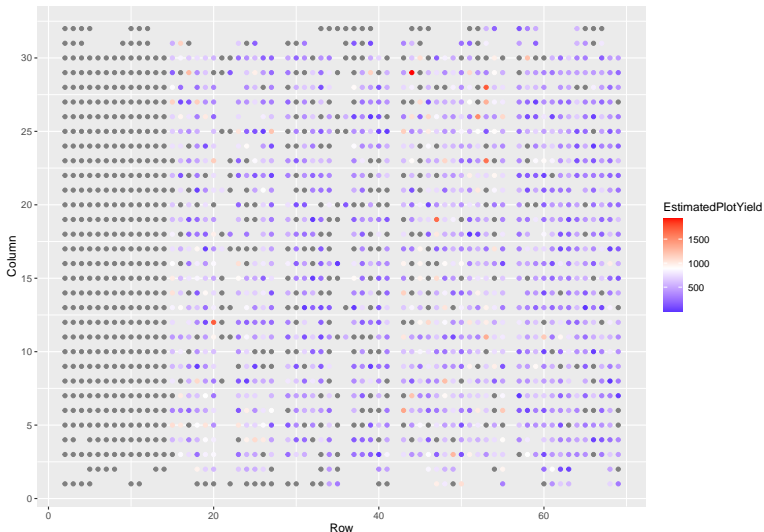




Potential yield pattern as subject to the field layout

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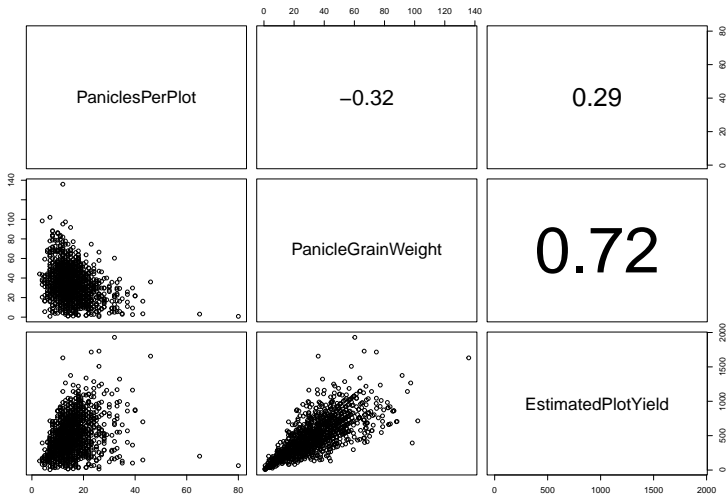




Correlation between other traits and yield.

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Thank you!

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Figure 2: Sorghum picture