Breeding for Nutritious and High-Yielding Wheat

Nathan Sutton, Olufunke Ayegbidun, Kimberly Garland-Campbell

Introduction

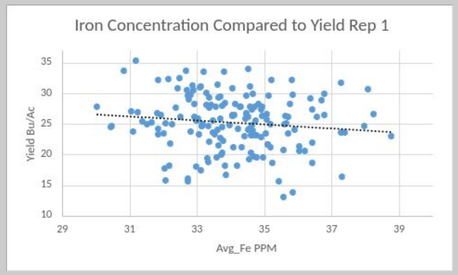
- Zinc deficiencies affect over 2.2 billion people (Wani et al., 2022).
- Iron and zinc deficiencies lead to many health problems including a weakened immune system (Hassan et al., 2021).
- This study aims to increase iron and zinc in wheat to fight these deficiencies.
- As iron and zinc increase, some studies found yield increase (Hassan et al., 2021) while others found it decreases (Wani et al., 2022; Xu et al., 2022).

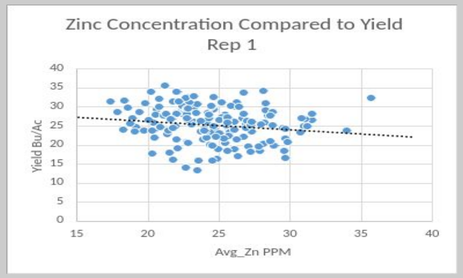
Methods

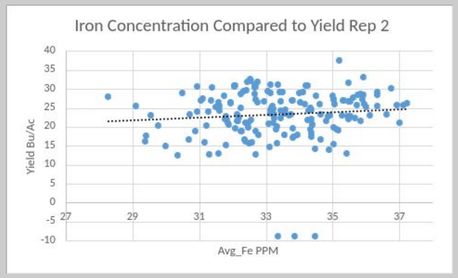
1. 8 lines of wheat were bred together to make 180 lines
2. These lines were planted near Colfax, Washington
3. Once mature, heads were snapped off of lines
4. An EDXRF was used to measure the iron and zinc in the wheat
5. The data for yield, iron and zinc were collected and analyzed in Excel

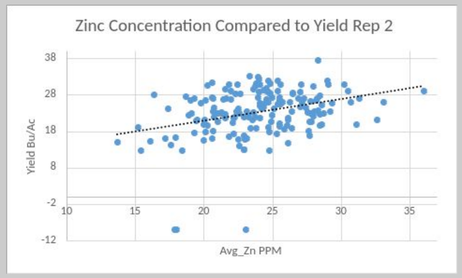
Results

Iron and Zinc Concentration Compared to Yield

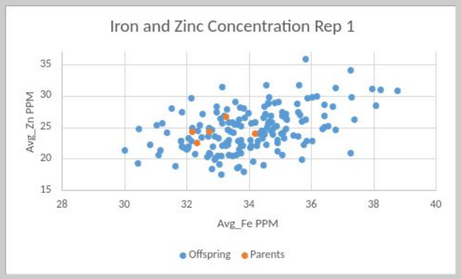


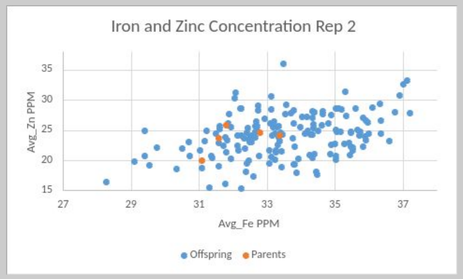






Iron and Zinc Concentrations





Conclusion

- In rep 1, yield decreased as iron and zinc increased while in rep 2, yield increased as iron and zinc increased. More data needs to be collected to understand yield better. Future research can be more focused on yield to better understand it.
- Some wheat lines had higher iron and zinc concentration than their parents showing that breeding can be used to help increase iron and zinc in wheat. More breeding can be done to make better lines for the future.

The field that we snapped heads at

Sources

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