



WHEAT TRIALS



CARBOXIPOLYOL technology is based on compounds that emulate the natural chelation and complexation from the plant, which may complement soil nutritional management, potentiate photosynthesis processes, translocation of photoassimilates.

CARBOXYPOLYOLS are molecules of organic origin from plant extracts of low molecular weight and highly soluble in water, obtained from the transformation of carbohydrates to aldonic acids that bind to a metal ion to form stable compounds in water and soil through ionic bonds and covalents.



Innovation in Vegetable Chelates and biostimulants.



Vegetable organic chelates and complexes, Eco friendly, nano poly-ionic.



Efficiently management and correction of nutritional deficiencies (Ca, Mg, B, Zn, Cu, Mn, Fe).



Environmental stress management.



Power compensator in critical times of cultivation



Improves stability and promotes mix compatibility.



High concentration in the formulation.



Nutrition and plant health.



Trial details



1. **Location:** Cressey, California



2. **Application equipment:** 5- gal backpack sprayer with a 3-nozzleboom



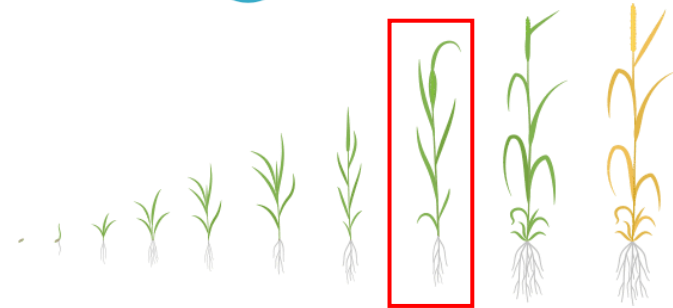
3. **Total área:** 50 acres



4. **Volume of water:** 5 gallons per treatment

5. **Repetitions per treatment :** 3

6. **Phenology:** “boot stage”



7. **Applications :** Foliar - Conjunction with herbicides (SHARK) Active ingredient: Carfentrazone-ethyl

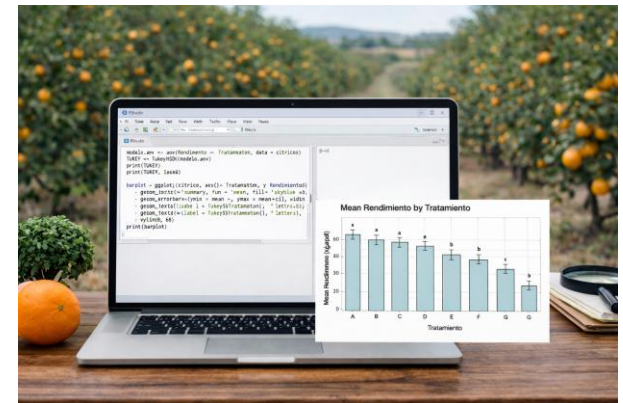


SHARK[®]
EW
HERBICIDE



Data analysis and statistics

- Statistical analyses were performed using **RStudio**.
- Assumptions of normality were assessed using the **Shapiro–Wilk test**
- Homogeneity of variances was evaluated using **Levene's test**.
- Data were subject to three-way Analysis of Variance (**ANOVA**)
- Different **letters indicate significant difference between treatments** according to **Tukey (HSD) multiple range test** at $P < 0.05$.





ALGAE AND PROTEIN HYDROLYSATE BASED PLANT FERTILIZER

GUARANTEED ANALYSIS

Total Nitrogen (N).....2.50%

2.50% Water Soluble Nitrogen

Soluble Potash (K_2O).....5.0%

Density a 68°F: 10,01 Lbs/gal







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LIQUID COMPLEX FERTILIZER WITH K, P, B, Zn and Molybdenum

GUARANTEED ANALYSIS

Total Nitrogen (N).....	0.22%
0.22% Water Soluble Nitrogen	
Available phosphate (P_2O_5).....	19.4%
Soluble Potash (K_2O)	21.5%
Magnesium (Mg).....	0.6%
Boron (B).....	0.85%
Molybdenum (Mo).....	0.032%
Zinc (Zn).....	0.85%

Density at 68°F: 12.68 Lbs/gal





MULTINUTRIENT CONCENTRATED SOLUBLE WITH Mg and micronutrient.

GUARANTEED ANALYSIS

Total Nitrogen (N).....	3.0%
3.0% Water Soluble Nitrogen	
Soluble Potash (K_2O).....	2.87%
Magnesium (Mg).....	4.54%
Sulfur (S).....	3.19%
Boron (B).....	0.26%
Copper (Cu).....	0.28%
Manganese (Mn).....	1.34%
Molybdenum (Mo).....	0.16%
Zinc (Zn).....	0.76%

Density at 68°F: 11,20 lbs/gal



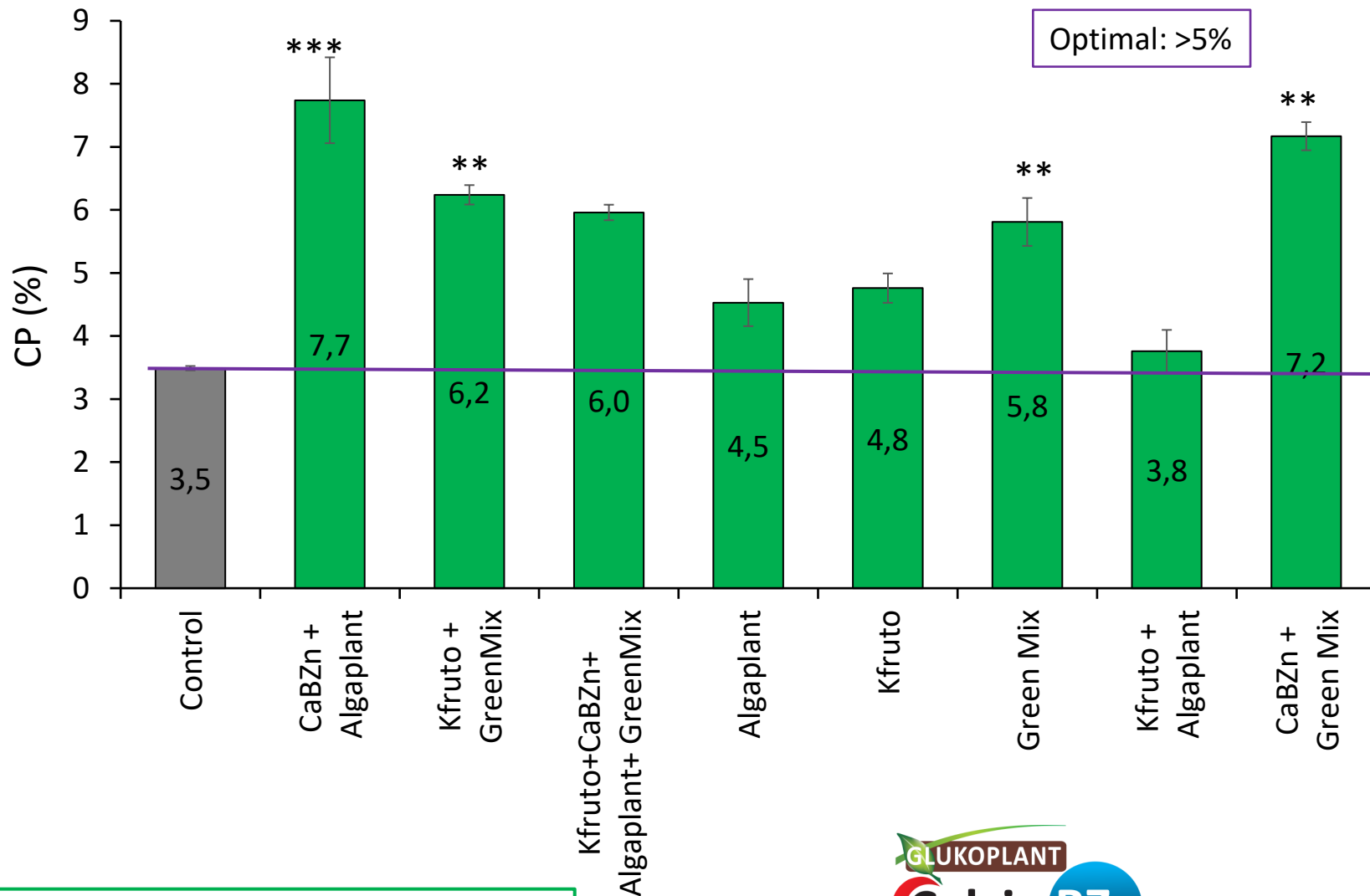
Methodology.

#	Treatment	Dose
1	Control	-
2	G. CaBZn + A. Algaplant	1 quart/ Acre
3	A. Kfruto + A. GreenMix	1 quart/ Acre
4	A. Kfruto + G. CaBZn + A. Algaplant + A. GreenMix	1 quart/ Acre
5	A. Algaplant	1 quart/ Acre
6	A. Kfruto	2 quart/ Acre
7	A.GreenMix	2 quart/ Acre
8	A. Kfruto + A. Algaplant	1 quart/ Acre
9	G. CaBZn + A. GreenMix	1 quart/ Acre





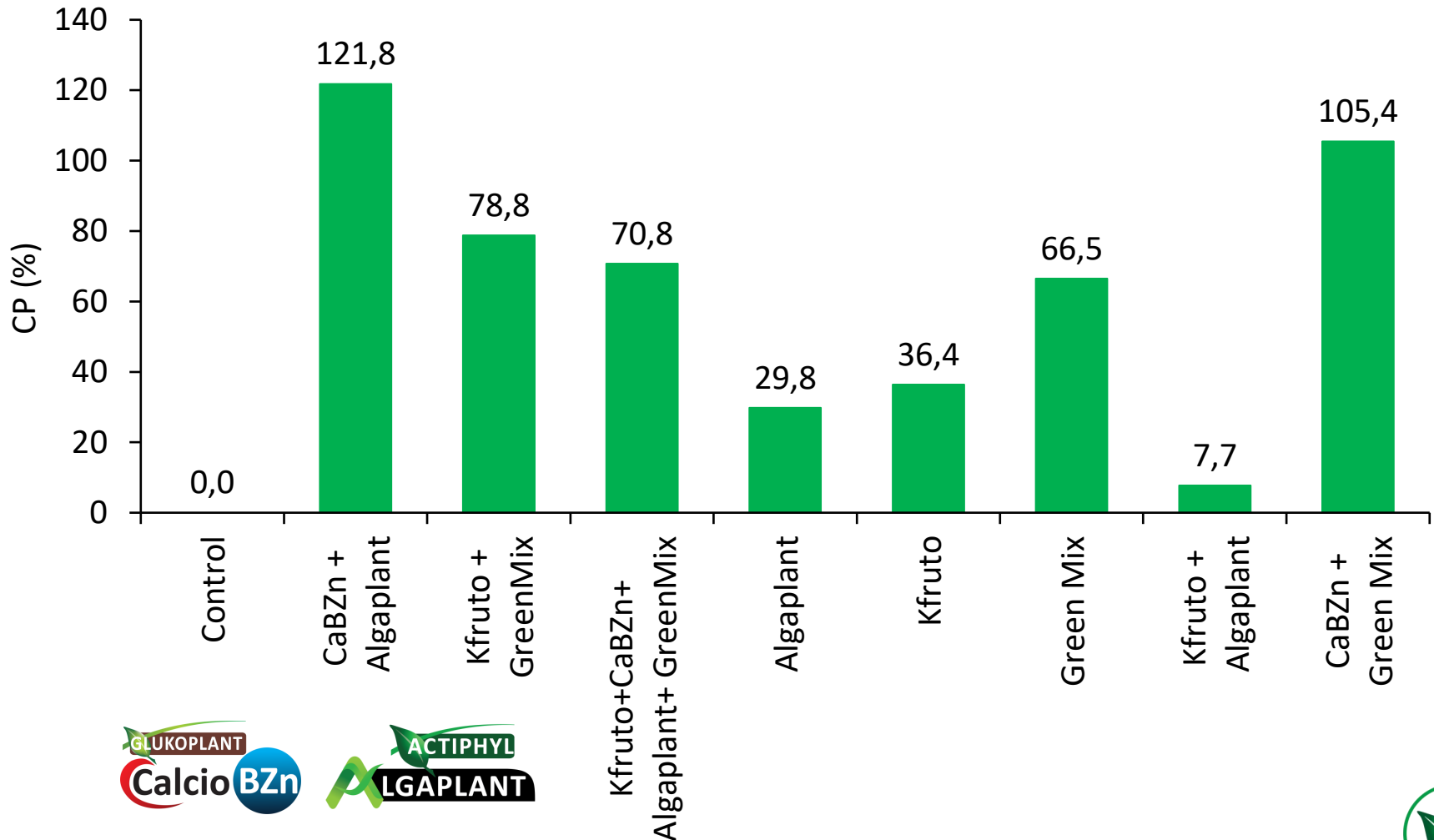
Crude Protein



increase from 65 % to 121 %

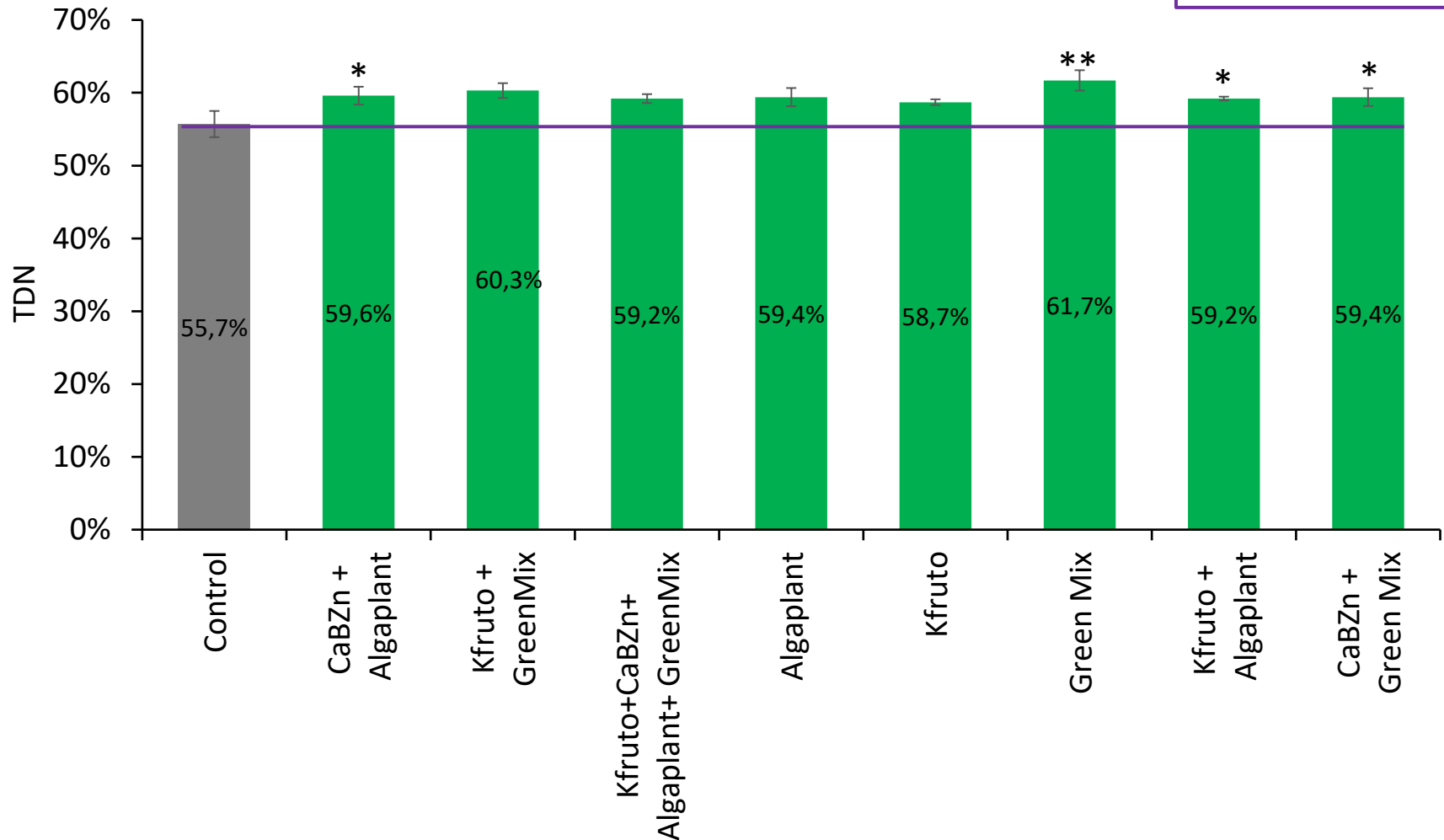


Percentage increase in crude protein (%)



Total Digestible Nutrients (TDN)

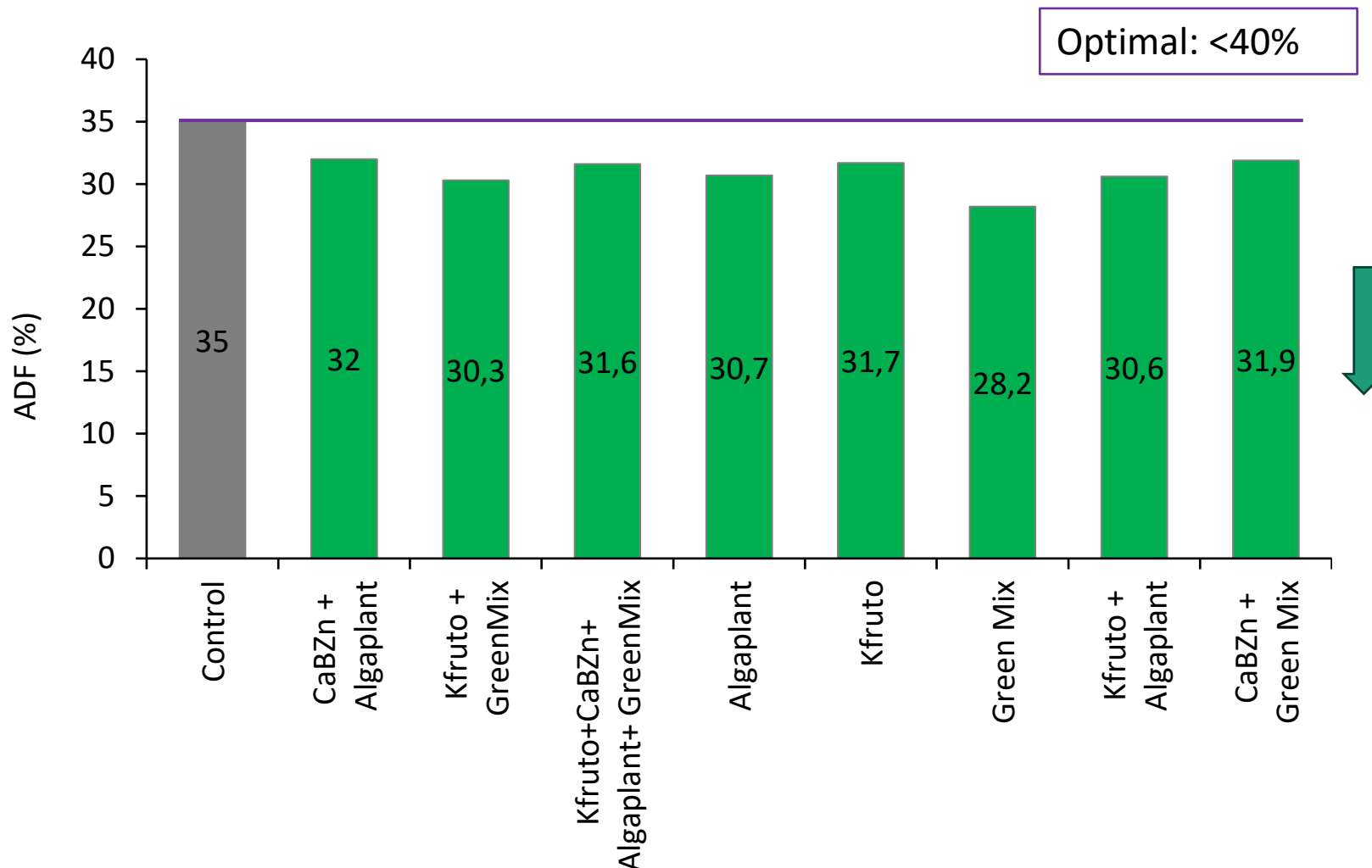
Optimal: >50%



Increase from 10,76% to 6,28

- Higher TDN means better energy availability.
- Increased TDN improves feed nutritional value.

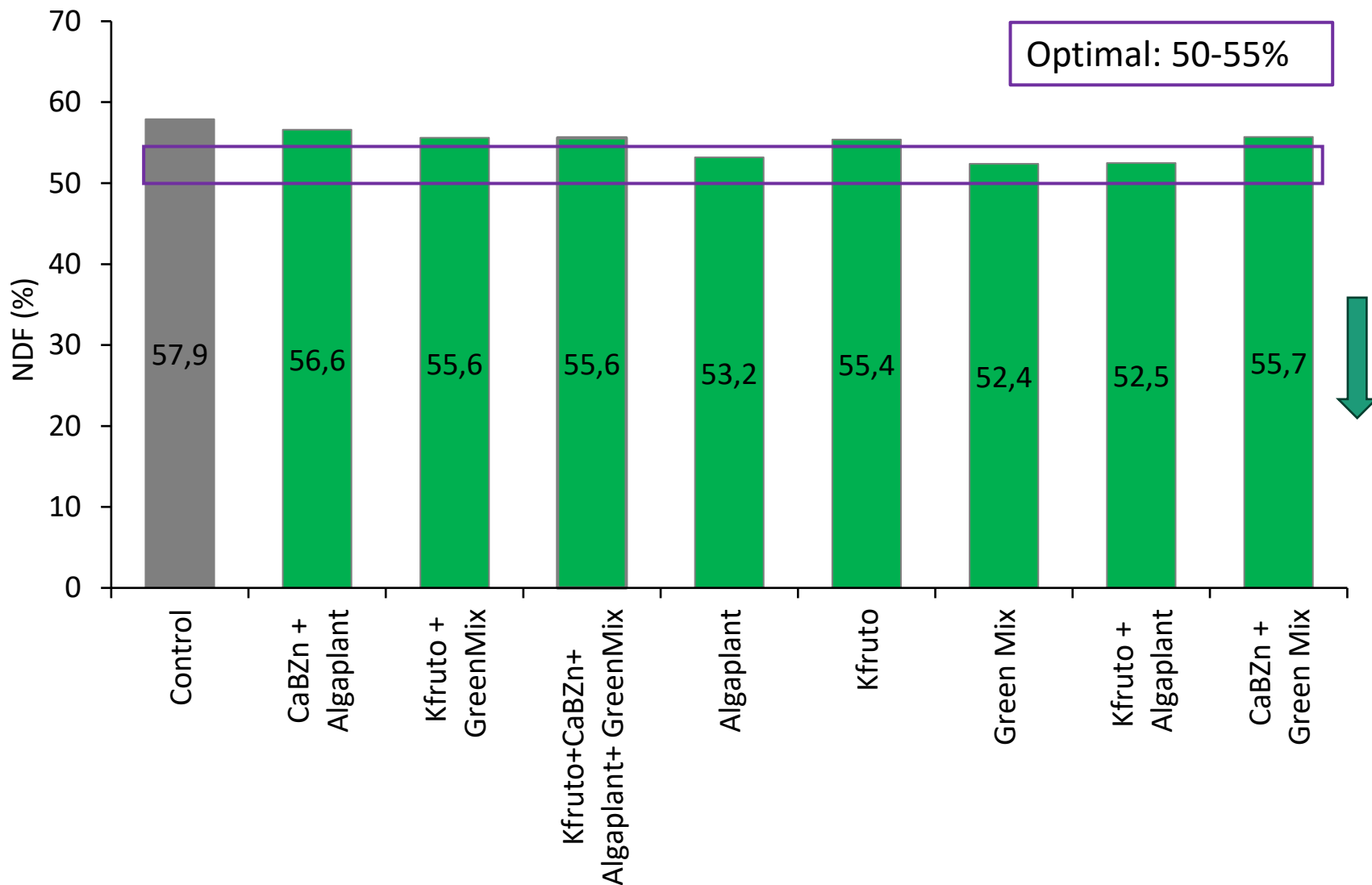
ACID DETERGENT FIBER (%)



Decreased from 8,57 to 19,43%

- Lower ADF indicates better digestibility.
- Reduced ADF improves forage quality.

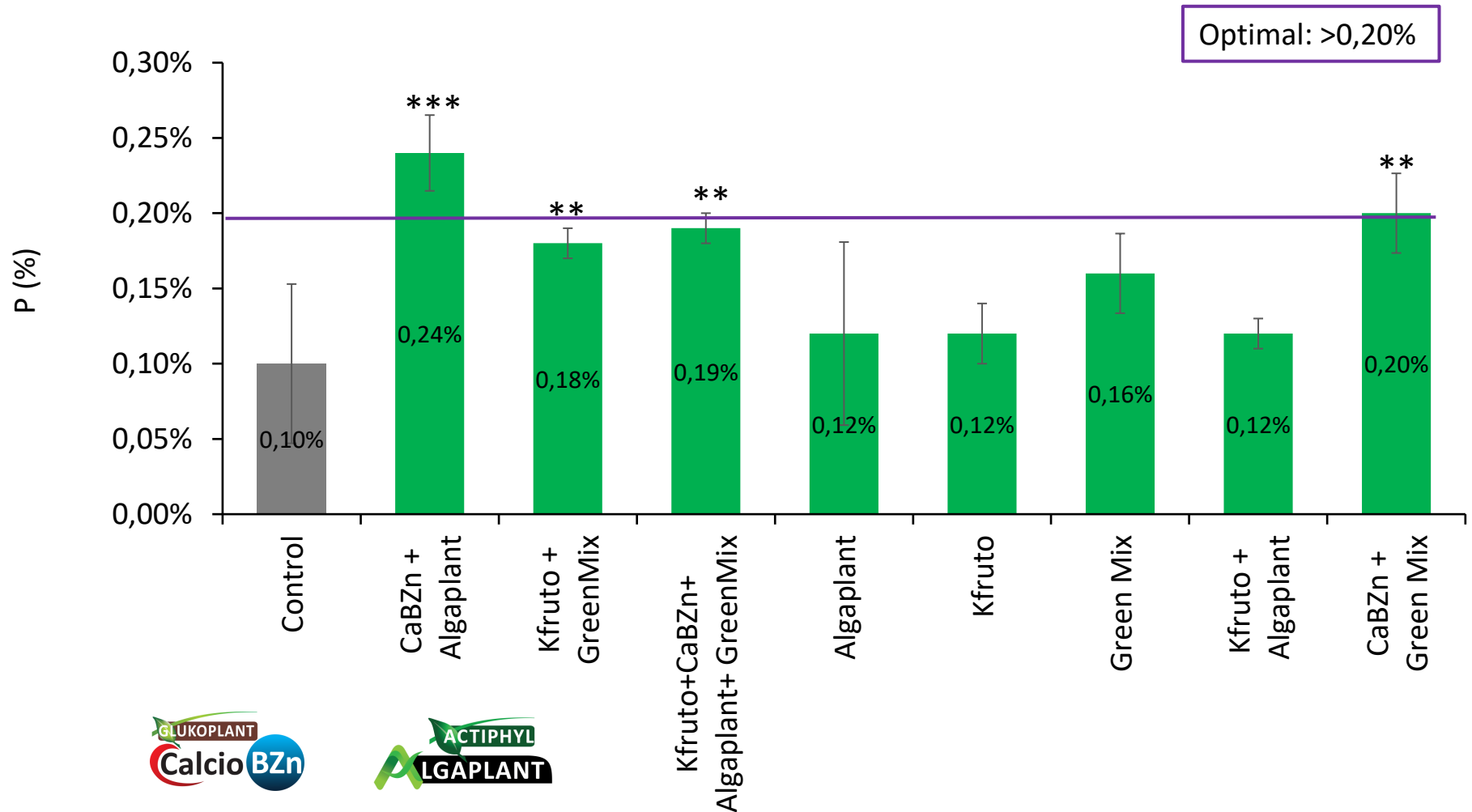
Neutral Detergent Fiber (NDF)



Decreased from 2,24 to 9,49%

- Reduced NDF suggests greater nutrient availability

Phosphorus (%)

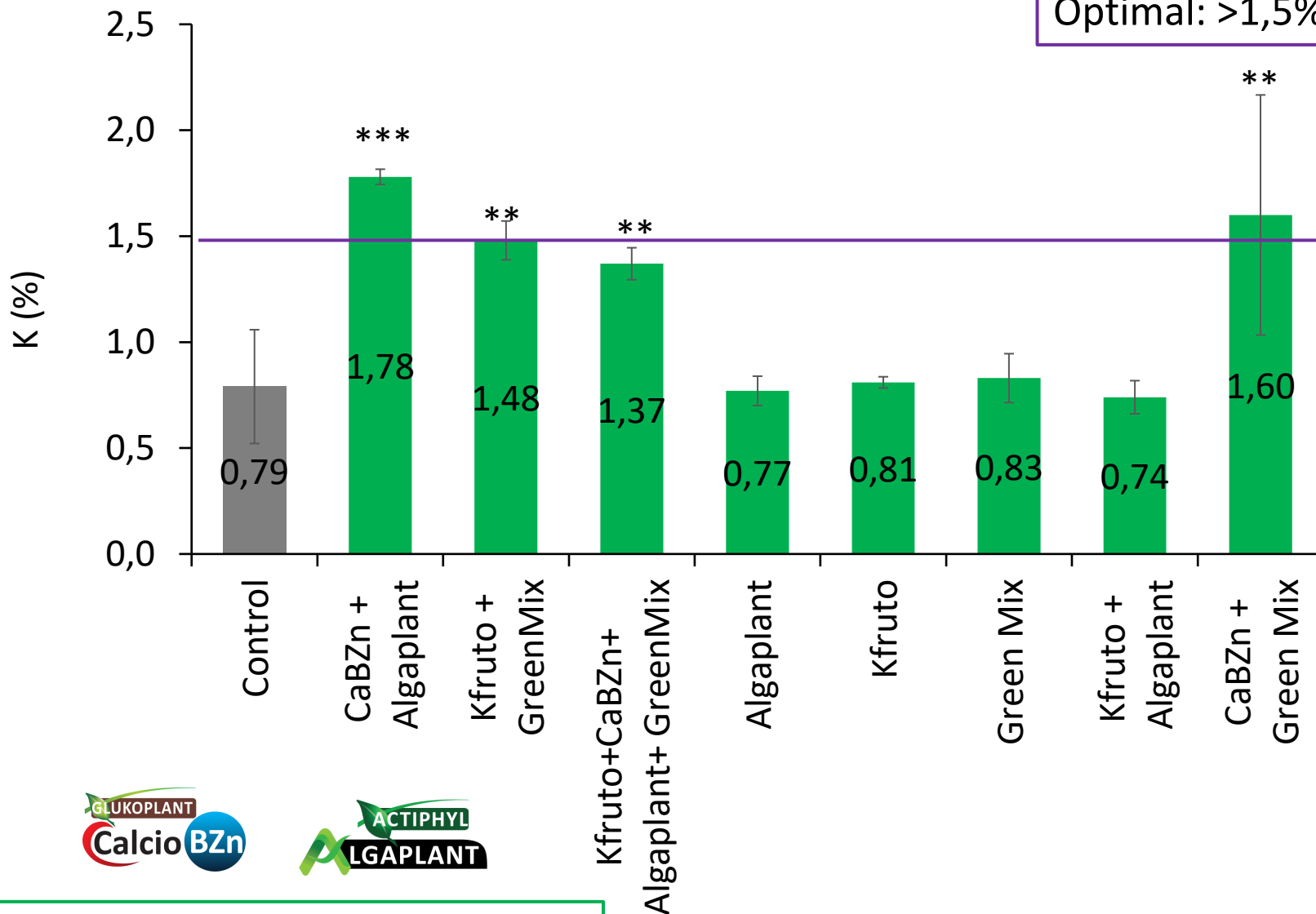


Increase from 80 % to 140%

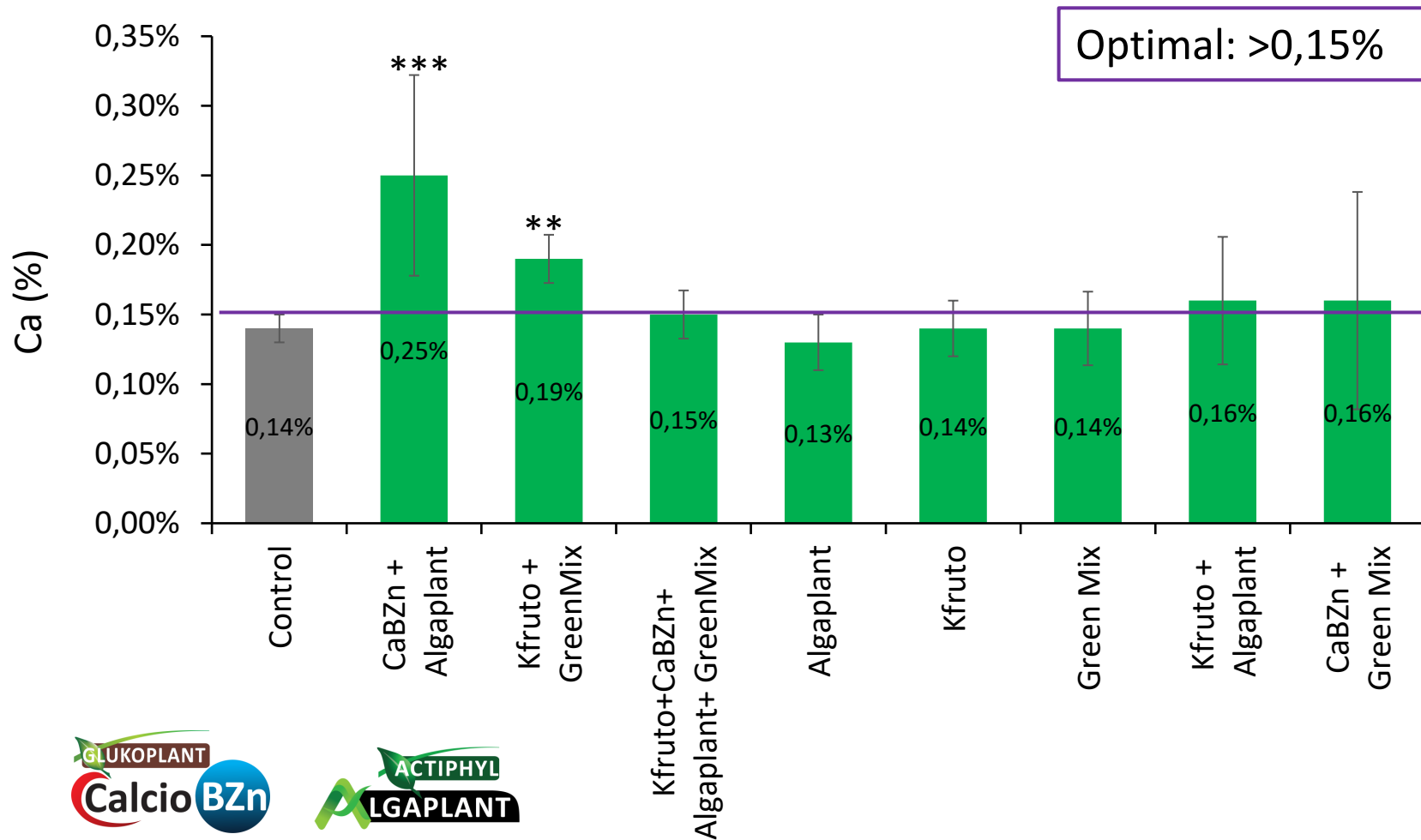
• Phosphorus contributes to energy production through the synthesis of carbohydrates

Potassium (%)

Optimal: >1,5%



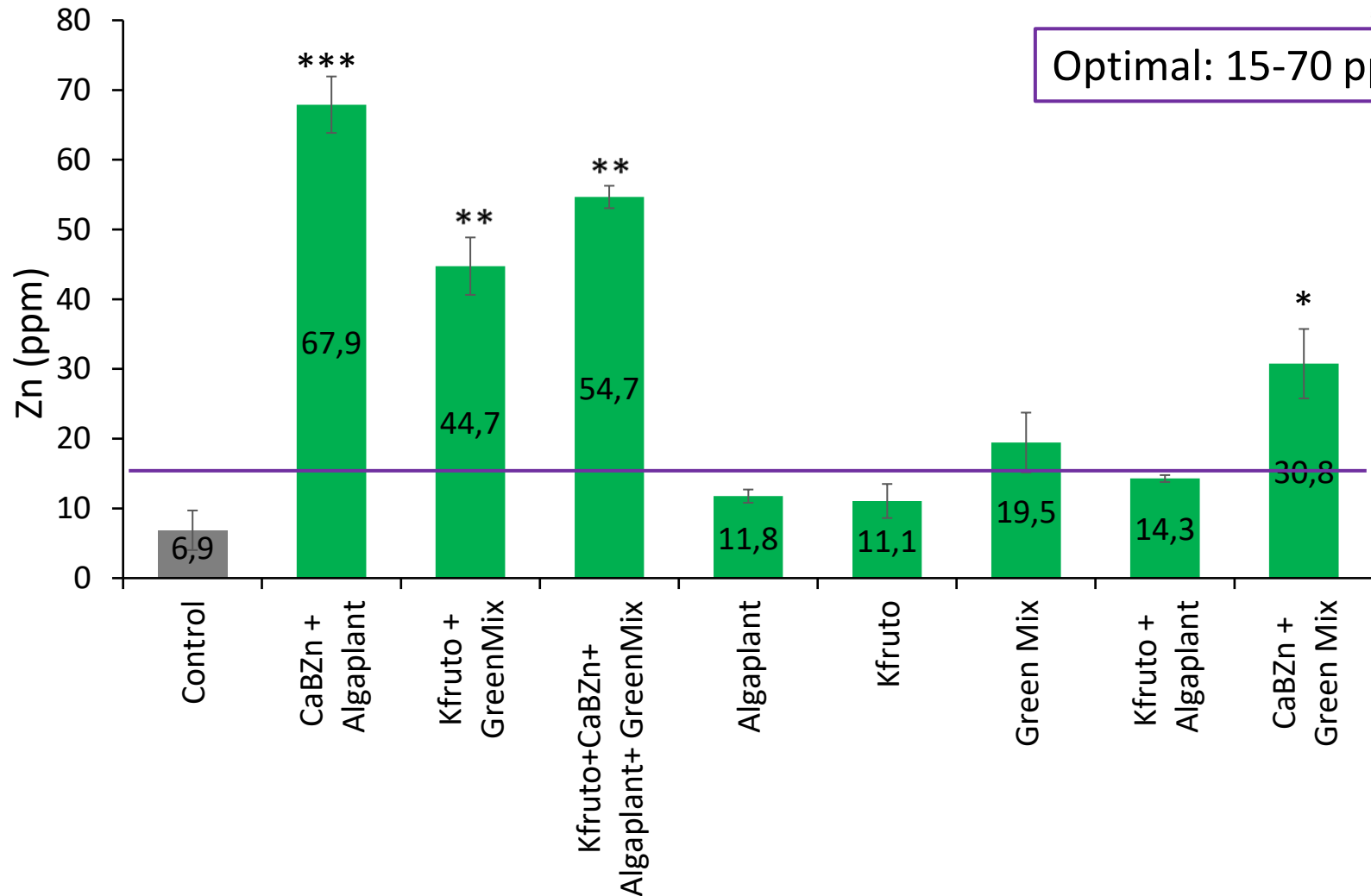
Calcium (%)



Increase from 34,7 % to 78%



Zinc (ppm)



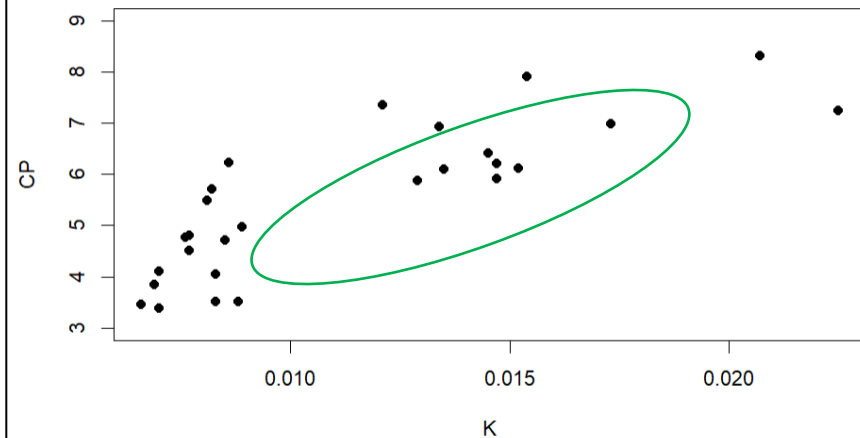
Increase from 346% to 884 %

- Zinc improves enzyme activity and protein synthesis.

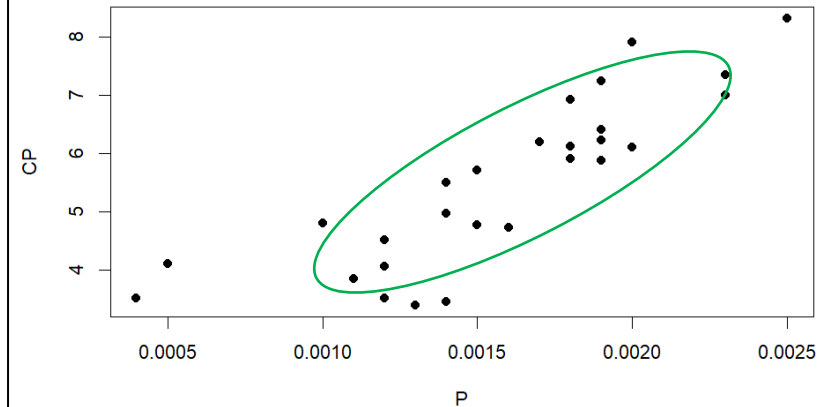
Correlation between crude protein and nutrients



K vs CP (83%)



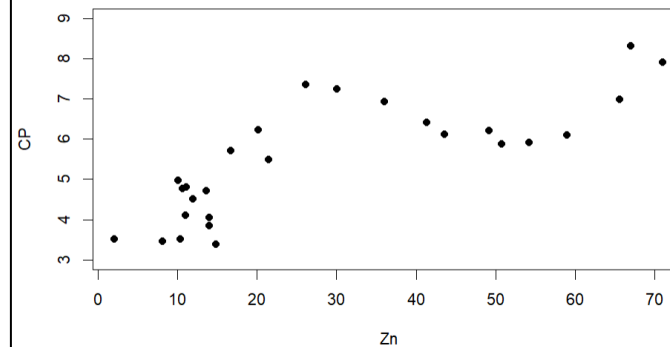
P vs CP(88%)



(K) is an essential plant nutrient **involved in photosynthesis, carbohydrate** and protein formation, water and nutrient transport, and **nitrogen utilization in wheat.**

(Gu et al., 2021)

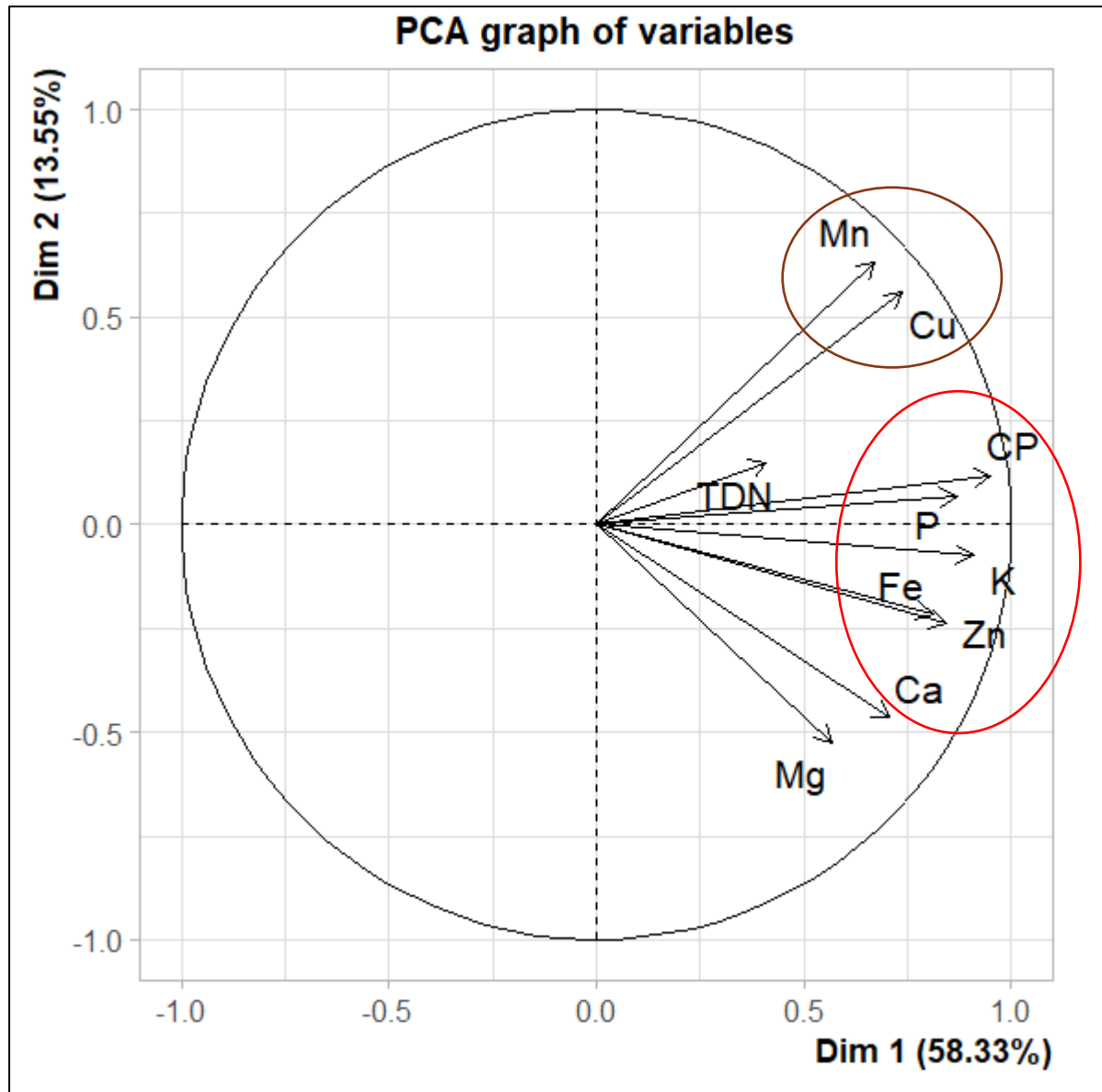
Zn vs CP(80%)



Phosphorus and zinc fertilization improves the nutritional quality of wheat.

(Jakhar et al., 2018)

Principal Component Analysis (PCA)



- The nutrients inside the red circle (**P, K, Fe, Zn, and Ca**) showed an increase and were positively correlated with crude protein (CP).
- Their higher availability was associated with greater protein accumulation in wheat.





Conclusions

- The best treatment was **Glukoplant CalcioBZn + Actiphyl Algaplant** observing increases in crude protein of 121% with respect to the control, the second best was the treatment Glukoplant **CalcioBZn + A. Green Mix** with an increase of 105% of crude protein.
- The treatment **Glukoplant CalcioBZn + Actiphyl Algaplant** improved the content of Phosphorus, Potassium, Calcium and Zinc with an increase of 140 %, 125 %, 78% and 881 % respectively.
- The second treatment was **G. CaBZn + A. Green Mix** for Phosphorus (100%) and Potassium (102%), treatment **A. Kruto+ Green Mix** for Calcium (35%) and treatment **A.Kfruto + G.CaBZn +A.Algaplant +A.Green Mix** for Zinc (696%).



REFERENCES



- Gu, X., Liu, Y., Li, N., Liu, Y., Zhao, D., Wei, B., & Wen, X. (2021). Effects of the foliar application of potassium fertilizer on the grain protein and dough quality of wheat. *Agronomy*, 11(9), 1749.
- Jakhar, R. K. (2018). Nutrient content and uptake of wheat as affected by phosphorus, zinc and iron fertilization in loamy sand soils of Rajasthan. *Chem Sci Rev Letter*, 7, 496-500.





**Thank you for your
attention**

