Fermentation of alfalfa brown juice and its environmental friendly reusing

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1. Introduction

- The human population is constantly growing

Protein deficiency

- **Alfalfa** is an excellent alternative protein source
- Protein isolation results a harmful **by-product**

Alfalfa (*Medicago sativa*)

2. Problem

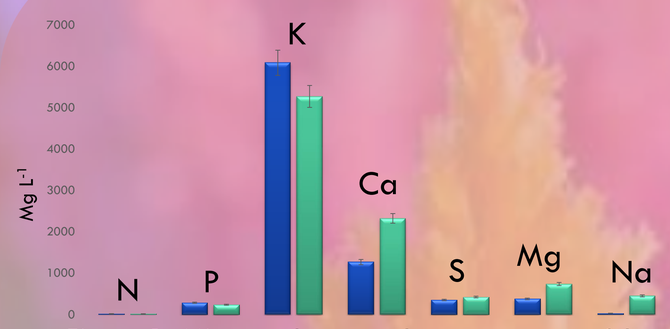

Figure 1: Micro and macro-elements content of brown juice

Treated like sewage

Eutrophication

3. Goals

- Meet the requirements of **circular economy**
- **Fermentation** of alfalfa brown juice
- Environmental friendly **reusing** as biofertilizer

4. Methods

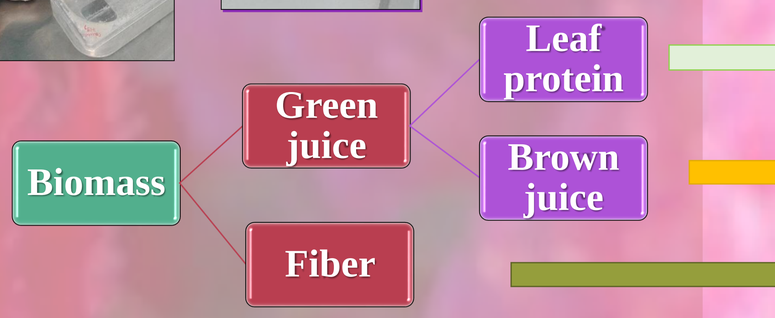

Figure 2: Protein coagulation

- **Lactic acid bacteria** strains
- Green house experiment

Foliar application

0,5%; 1%; 2,5%; 5%; 10%

5. Results

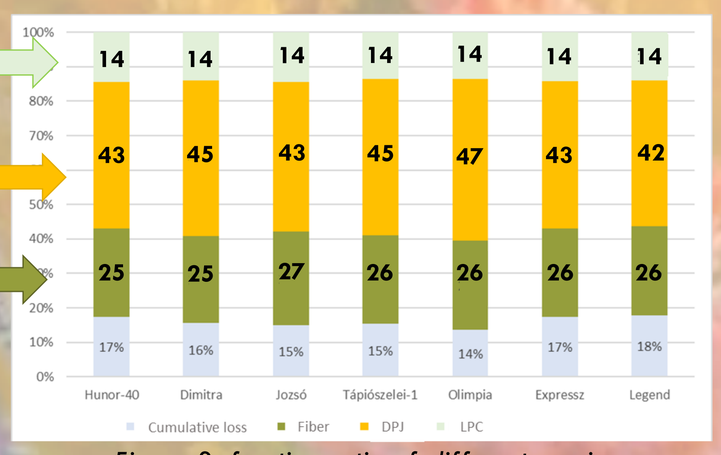

Figure 3: fraction ratio of different species

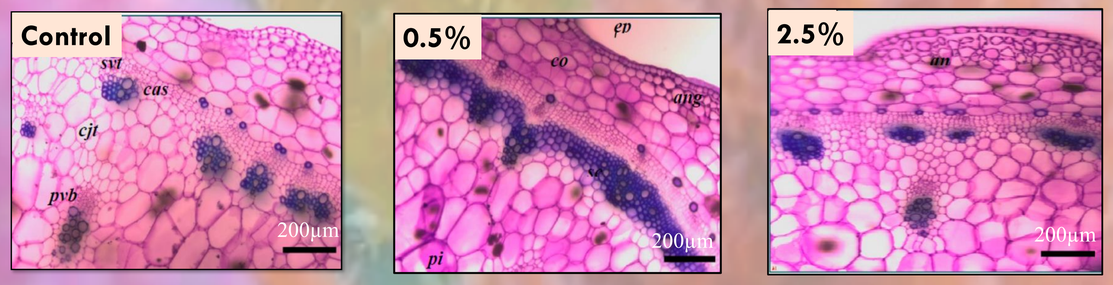

Figure 4: Effect of brown juice for Celosia argentea

6. Conclusion

After the **successful preservation** of brown juice, its effect was examined for the growth of ***Celosia argentea***. Different parameters were measured and we can conclude that the **1% and 2.5%** were the most effective, thus BJ can be **reused in an environmental friendly way** as a plant stimulant.

Bákonyi, N.; Kisvarga, S.; Barna, D.; Tóth, I.O.; El-Ramady, H.R.; El-Sayed, A.G.; Kovács, S.; Fehér, C.; Rozbach, M.; Fári, M.G.; et al. Chemical Traits of Fermented Alfalfa Brown Juice: Its Implications on Physiological, Biochemical, Anatomical, and Growth Parameters of Celosia. Agronomy 2020, 10, 247. [CrossRef]