

## Cycocel (CCC) Treatment: A Practicable Approach for Increasing Yield in Soybean

**Ranjana Tiwari**

Assistant Professor School of sciences, Department of Agriculture (Genetics and Plant Breeding) Noida International University, Greater Noida, Uttar Pradesh

### SUMMARY

Plant growth regulators are organic compounds other than essential nutrients that affect the physiological processes of growth and development in plants when applied in low concentrations. The Plant growth regulators can be growth promoters and growth retardant. Growth regulators are known to improve the physiological efficiency including photosynthetic ability and can enhance the effective partitioning of accumulates from source and sink in the field crops. Chlormequat chloride (CCC), Mepiquat chloride positively effects on morphological, physiological and biochemical parameters of soyabean. The Morphophysiological parameters, namely: Plant height, Number of branches, Number of leaves (trifoliolate) per plant, Dry matter accumulation was observed to increase significantly with the application of chlormequat chloride and Mepiquat chloride which ultimately results in increase in yield. (Konhoujam, 2011) Application of chlormequat chloride (CCC) 500 ppm was found useful in increasing soyabean yield.

### INTRODUCTION

Soybean (*Glycine max.* L. Merrill) is a highly nutritive and energy rich dual purpose rainy season monocarpic legume crop. Soybean contains biologically effective protein (43 %), edible oil (20 %), vitamins, minerals, salts and essential amino acids. Because of its versatility, soybean is popularly known as "Miracle Bean" and is being exploited in many agro-based industries with innumerable ways. Plant growth retardants (i.e. regulators) have been reported to be an effective tool for increasing crop yields due to their important role in various physiological and biochemical processes in plant, leading to rapid change in phenotype of the plant within the season to achieve desirable results. The use of growth retardants has been gaining more importance in the recent years for improvement of crop yield potential and quality of the produce. (Kalyankar et al., 2008) In this context, there is an urgent need to identify suitable growth retardants for improving soybean yield potential.

### Cycocel (CCC) Treatment

Normal sowing of soybean is carried out from 15 June to 15 July. For obtaining maximum yield benefits two spray of chlormequat chloride (CCC) is to be taken at 45 and 70 days after sowing. In apical region of the soybean there is auxin growth regulator which plays an important role in cell division and promotes the height of plant if plant height is increased beyond certain limits plant will grow in upward direction and most of the energy is utilized in vegetative growth of plant. Cycocel (Chlormequat chloride) (CCC) reduce the Inter nodal length, reduce Plant height, influence source-sink relationship and stimulate the translocation of photosynthates towards sink. Foliar application of Chlormequat chloride (CCC) was also reported to help in realization of higher assimilatory rates resulting in higher dry matter production. Cycocel also shorten and strengthen stem of the plants. The application of Chlormequat chloride (CCC) was also reported to increases chlorophyll content, oil and protein synthesis. The plant growth retardants have great potential to increase the yield. However, a great care is to be taken during preparation of solution, its application and accurate assessment, etc.

Cycocel (Chlormequat chloride) (CCC) treated soybean plant recorded increased number of branches, leaf area, total chlorophyll content and harvest index. Cycocel (CCC) positively affects yield and yield contributing traits along with physiological parameters also (Cato et al., 2006). The maximum grain yield and biological yield was recorded by application of CCC in 500 ppm.

### CONCLUSION

Application of Cycocel (CCC) 500 ppm increases leaf chlorophyll content, Plant total dry weight, harvest index which ultimately leads to increase in soybean yield (Gulluoglu et al., 2006). It should be applied at 45 and 70 days after sowing. Chlormequat chloride (CCC) increases soybean yield by 15 % to 24%. Cycocel/ (Chlormequat chloride)/ (CCC) are synonymous word

**REFERENCES**

- Cato, S. C., Castro, P. R., and Camargo, D. E., (2006). Height reduction in soybean plants caused by 2, 3, 5-triiodobenzoic acid. *Cienc. Rural*, 36(3): 981-984.
- Gulluoglu, L., Arioglu, T. and Arslan, M., (2006). Effects of some plant growth regulators and nutrient complexes on above ground biomass and seed yield on soybean grown under heat stressed environment. *Journal of Agronomy*, 5(1): 126-130.
- Kalyankar, S. V., Kadam, G. R., Borgaonkar, S. B., Deshmukh, D. P. and Kadam, B. P., (2008). Effect of foliar application of growth regulators on seed yield and yield components of soybean (*Glycine max* (L.) Merrill). *Asian Journal of Bio-Sciences*, 3(1): 229- 230.
- Konthoujam, N.D. (2011). Effect of Bioregulators on Growth, Yield and Chemical Constituents of Soybean (*Glycine max*) *Journal of Agricultural. Science*, 3( 4):55-57
- Ramesh, R., Reddy, D., Shiva Prasad, V. V., Parshuram Patroti and Vara Prasad, B. V. (2013). Synergistic and inhibitory effects of plant growth regulators on soybean (*Glycine max* L. Merrill), *Helix* 4: 370-373.
- Ramesh, R. and Ramprasad, E. (2013). Effect of Plant Growth regulators on Morphological, Physiological and Biochemical parameters of soybean (*Glycine max* L. Merrill), *Helix* 6: 441 – 447.