BCIL

Biotech Consortium India Limited

Agrochemicals to increase crop productivity

TECHNOLOGY AVAILABLE FOR TRANSFER

UNMET NEED AND OPPORTUNITY

- Drought is a major abiotic stress factor for decreased crop productivity owing to uneven rainfall in everchanging climatic conditions. Plant survival mechanisms promote the accumulation of Abscisic acid (ABA) under these conditions. However, excess ABA causes the closure of stomata leading to reduced CO_2 fixation and subsequent decreased photosynthesis. This drop in the productivity can be addressed by various ways such as opening the stomata, increasing CO_2 fixation, decreasing ABA accumulation, etc.
- This technology can accelerate crop growth and productivity of a broad spectrum of plants under normal and different stress conditions, eventually boosting revenue from farming in drought prone regions.

UNIQUE SELLING PROPOSITION

- Stable powder formulation to be used as a foliar spray. The compounds have a shelf life of over 3 years in powder form.
- Cost-effective chemical formulations to promote growth in crops like Arabidopsis, rice, wheat, cowpea, mung bean, and soybean. Each acre requires 100 liters, costing ~Rs. 4000 per hectare. This can be further reduced to below Rs.1000 per hectare when produced in bulk.
- Effectively regulates CO_2 fixation under mild drought conditions without any deleterious effects.

INTELLECTUAL PROPERTY

Indian Patent Applications filed.

STAGE OF DEVELOPMENT

The technology currently stands at TRL-4 with screen house experiments conducted and results validated.

TECHNOLOGY

- Two different combinations of compounds designed against key regulators of plant homeostasis like ion channels influencing stomatal opening and ABA biosynthesis pathway respectively, shows better yield in plants under different abiotic stress conditions like drought, oxidative stress, etc.
- Spraying the plants with the combinations of these compounds enhance seed germination and can be effectively used in seed priming.

EXPERIMENTAL DETAILS

Figure 1 shows dry weight of 2-week-old Arabidopsis increased by 35-55% with respect to water control in presence of M1 and M2. (M1 and M2 are the two main compounds used in one of the combinations.)

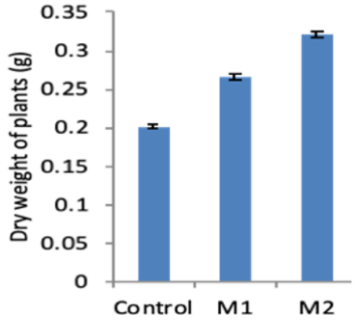
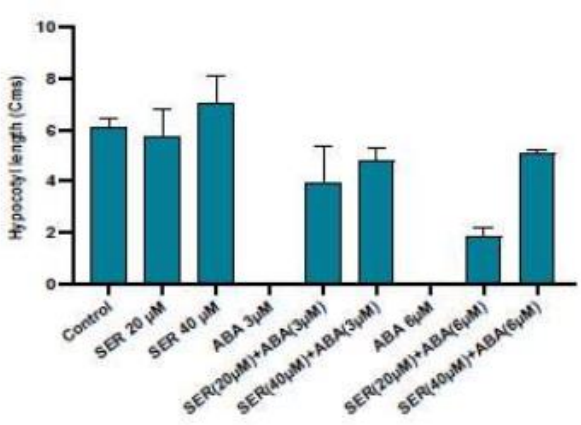
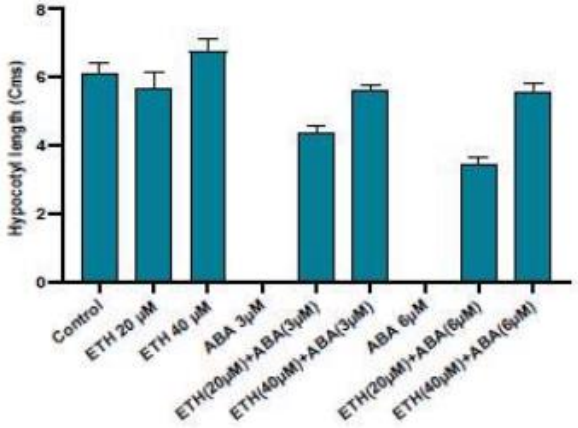


Figure 2 shows SER (serotonin) and ETH (ethanamine) promotes growth of hypocotyl of soybean even in the presence of ABA. (SER and ETH are the two main compounds used in one of the combinations.)





LICENSING OPPORTUNITY

BCIL is looking for suitable companies for licensing this technology.

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