Shaping the plants of the future

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A hormone that determines the size and shape of crops could improve harvests, and help in the control of a vampire plant according to Queensland researchers presenting their work today at the International Botanical Congress in Melbourne, Australia.

The ability to shape and structure plants to cope with changing environments could be a significant outcome of the unravelling by botanists at the University of Queensland of the action of a newly discovered family of plant hormones, the strigolactones.

A team led by Associate Professor Christine Beveridge has found that the hormone determines the size and shape of plants by interacting with the growth centres or meristems in their shoots and roots.

“Taller plants can be produced by boosting strigolactone, and bushier plants can be grown by suppressing the hormone,” says Dr Beveridge “In the case of fruit-producing trees where pruning is essential, the use of this chemical may instead lead to prevention of unwanted branches and give a better harvest,” she said

“We suspect the hormone works by regulating and suppressing the activity of the meristems. Theoretically, by controlling the release of the hormone, we should be able to govern the architecture of plants.”

The researchers have developed genetic tools which will allow them to tease out more details, in particular the biochemical pathways by which the strigolactones are constructed and by which they act.

“Strigolactone’s capacity to have an impact on shoot branching should be conducive to obtaining a desired shape in plants and is sure to prove beneficial in crop production.”

In the forestry industry, the hormone could be manipulated to inhibit branch production and contribute to better stem growth and wood production, Dr Beveridge said.

Understanding strigolactone may also prove important in the fight against the devastating plant parasite known as African Witchweed. Release of the hormone stimulates the parasite and allows it to target its host plants, such as cereal crops.

Source: Science in Public