

COTTON *Innovate*



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123rd Birth Anniversary of Dr BR Ambedkar celebrated

The 123rd Birth Anniversary of Architect of Indian Constitution, Bharatratna Dr B.R. Ambedkar was celebrated at CICR Nagpur. On the occasion Journalist, renowned Philosopher and Ex- Professor Jaimini Kadu was the chief guest. Dr KR Kranthi, Director, CICR presided over the function. At the outset dignitaries offered floral tributes and paid homage by garlanding the portrait of Dr B.R. Ambedkar and remembered his contributions to the Nation. Speaking on the occasion Prof Kadu elaborated thoughts of Dr B.R. Ambedkar on parliamentary democracy - its need in India owing to diverse tradition, cultures and religions. 'Dr Ambedkar was genius among World Leaders' said Dr Kranthi. Dr S.M. Wasnik made introductory speech. The function was well attended by all the Heads of Divisions, Scientists, technical, administrative staff and labour members in big numbers. Dr V.S. Nagrare compared the programme while Shri G.C. Gajbhiye proposed vote of thanks. Dr V.N. Waghmare and others worked hard to make the occasion successful.



Circadian rhythms imparts resistance power in vegetables and fruits to fight with insects and pests

Circadian clocks tell plants when the seasons change due to variations in day length, said Janet Braam, a plant biologist at Rice University in Houston, Texas. But the clock is also critical in plant defenses against insects. "Plants know when the insects eat," said Braam, who is a co-author on the recent study, "so they can prepare a defense in advance." Braam and colleagues knew that levels of protective compounds called glucosinolates were under the control of the circadian clock in a plant called *Arabidopsis*. A study found that store-bought cabbage, lettuce, spinach, zucchini, sweet potatoes, carrots, and blueberries respond to light-dark cycles up to about a week after harvest. And when the produce was kept on the same light-dark cycle as a predator—cabbage looper moth caterpillars (*Trichoplusia ni*)—it was better able to resist attacks. Braam and colleagues took store-bought cabbage and cut one-inch (three-centimeter) circles from the leaves. They then "trained" their cabbage disks to a circadian rhythm by exposing the samples to 12 hours of light and 12 hours of dark for three days.

They measured levels of glucosinolate, including a compound called 4MSO that has anticancer and antimicrobial properties, at four-hour intervals. The team then exposed the disks to cabbage looper moth caterpillars that had also been trained to the 12-hour light, 12-hour dark cycle.

Cabbage disks on the same schedule as the looper moth caterpillars suffered the least amount of damage from the insect, while cabbage samples out of synch with the caterpillars' schedule—which experienced "daylight" hours during the caterpillars' "nighttime" hours—lost 20 times more tissue when exposed to the hungry herbivores.

Glucosinolates accumulated in the cabbage disks during daylight hours, when the caterpillars were feeding. Thus, cabbage on the same schedule as the caterpillars was able to marshal their defenses in time to defend against the herbivores.

But cabbage out of synch with the caterpillar schedule did not have the same levels of protection. "Basically the plant is preparing at the wrong time of day," explained Braam.

"This is an approach that you can take to increase the post-harvest health of the crops without having to spray them with pesticides or introduce genetically modified organisms," he said.

Braam has plans to delve deeper into what other nutrients or compounds in fruits and vegetables are under the control of circadian clocks. She would also like to figure out how to take advantage of changes in compound levels that are beneficial to human health.

Reference

Danielle Goodspeed, John D. Liu, E. Wassim Chehab, Zhengji Sheng, Marta Francisco, Daniel J. Kliebenstein, Janet Braam. 2013. Postharvest Circadian Entrainment Enhances Crop Pest Resistance and Phytochemical Cycling. *Current Biology*. Volume 23, Issue 13, p1235–1241.

Contributed by Ms. Ashvini Yeole, Project Assistant, Biotechnology Section, CICR, Nagpur

The above literature scan was awarded with cash prize (Second) under 'Most Exciting Discoveries in Agricultural Sciences after 2010' as a part of National Science day Celebration- 2014 under RA/SRF's Category.

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