

# Scientific discovery could revolutionize one of world's most important crops

May 20 2016, by Evelyn Perez

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Credit: Florida International University

Conservation geneticist wants to arm Ethiopian and Indian farmers with revolutionary new varieties of chickpea.

A team of researchers, including FIU biology professor Eric von Wettberg, has identified the gene responsible for giving white [chickpea](#)

its light seed and flower color. This genetic finding can help breeders create varieties of chickpea that will fare better against debilitating diseases, yield a higher number of seeds on the same amount land, and fetch a higher price per seed.

In developing countries in Africa and Asia, farmers earn more money for selling light chickpea for their desired appearance and thin seed coats that are easier to cook. This can be problematic for farmers depending on chickpea for their livelihoods because dark chickpea is often more resistant to diseases and growing it yields a greater yield of seeds.

"Sometimes a dark colored chickpea variety has a useful farmers earn more money for selling light chickpea for their desired appearance and thin seed coats that are easier to cook. trait like disease resistance, but breeders hesitate to cross it to a light colored variety because they are afraid it will take several crosses to recover the light seed and [flower color](#) trait," said von Wettberg, co-author of the study. "With a gene identified, we can help breeders get the same result with fewer crosses."

Von Wettberg conducts his research with the International Center for Tropical Botany, a collaboration between FIU and the National Tropical Botanical Garden. The study was recently published in *New Phytologist*.

Breeding plants to maximize their positive traits and produce desired effects is often done by government institutions, universities, research centers and international development agencies. According to von Wettberg, chickpea has traditionally not received the same attention from the West's breeding community as have other crops such as soybean and maize.

The researchers plan to partner with international crop breeding centers to provide them with the information and wild seeds they need to adapt chickpea seeds to local conditions and hand them to farmers.



Florida International University biology professor and conservation geneticist Eric von Wettberg gives a talk on breeding climate resilient crops at TEDxFIU 2013. Credit: Florida International University

"Chickpea isn't the sole answer to food security, but taking the steps to increase the resilience of crops against disease and climate change is part of it," von Wettberg said. "We have the molecular tools needed to find genes to allow breeders to better do their jobs. If we as researchers can do that, we can get ahead of climate change and what it will do to agriculture."

The findings come at an opportune time as the United Nations has declared 2016 the International Year of Pulses. A pulse is a seed legume and includes kidney beans, pinto beans, lima beans, black-eyed peas, pigeon peas, lentils and chickpeas. Designed to promote discussion and cooperation at the national and global levels and increase awareness of the challenges faced by pulse farmers, this designation positions pulses as a primary source of protein and other essential nutrients in human

diets.

**More information:** R. Varma Penmetsa et al. Multiple post-domestication origins of chickpea through allelic variation in a diversification-associated transcription factor, *New Phytologist* (2016).  
[DOI: 10.1111/nph.14010](https://doi.org/10.1111/nph.14010)

Provided by Florida International University

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