

CROWDFUNDING FOR RESEARCH

Bumble bees benefit from lupin farming



PhD researcher Thijs Fijen hopes to get crowdfunding for research on improving methods of cultivating lupins. The seed could replace imported soya in meat substitutes. ‘And bumble bees are crazy about lupins’.

TEXT YVONNE DE HILSTER PHOTOGRAPHY MIRJAM HOMMES

‘Have I mentioned that lupin is a good crop for bumble bees?’ jokes Thijs Fijen halfway through our discussion. By that point, he has certainly done justice to the crop’s many advantages: it is good for the soil, fixing nitrogen from the air; it is an attractive landscape feature; the protein-rich seeds can replace imported soya in meat substitutes. And the flowers are indeed very popular with bumble bees, who are having a hard time of it in the Netherlands. Two thirds of the 29 species in the country are vulnerable, threatened or extremely rare, and some have disappeared entirely. ‘We know that a number of rare bumble bees love to forage on lupin. The pollen of lupin is an important nutrient for their offspring.’ Fijen is a PhD candidate in the Plant Ecology and Nature Management chair group at Wageningen University & Research. He hopes to round off his PhD research on the influence of bumble bees and hoverflies on seed production in leeks in May next year. ‘I am studying the main factors for seed production in five different varieties of leek. Besides the quality of the plants, which you can influence with fertilization and irrigation,

everything points to pollination, especially by wild pollinators such as bumble bees.’ This provides good arguments for better nature conservation and for doing more to ensure wild pollinators have a good life.

BEANS IN THE SOUP

Fijen launched a crowdfunding campaign this summer in order to be able to follow up his PhD research with a study on the role of bumble bees in pollinating lupin. The less bitter ‘sweet lupin’ is cultivated on a modest scale in the Netherlands – a total of 40 hectares in 2016 – partly as green fertilizer, partly as livestock feed, and partly for human consumption. The crop is not very popular due to variable and unpredictable yields. The first move towards expanding the acreage of the crop would be to improve yields, says Fijen. The second would be to make lupin better known among consumers so that demand grows for these nutritious beans to put into burgers, soups and salads, and as a snack.

‘Research has been done on breeding lupin in order to increase yields or protein content, but not





on pollination,' says Fijen. 'Whereas that can be important for the yield. So I want to look at the contribution of bumble bees to the pollination of the three varieties of lupin grown in the Netherlands, in comparison with that of honey bees, which farmers usually use at present. Insects that want to access the pollen of the lupin have to get through a kind of flap mechanism in the flower. Honey bees are just a bit too light for that.' Fijen needs about 15,000 euros for field trials in Wageningen. 'Then we can sow next spring and the crop will flower in June.'

CULTURAL HERITAGE

By improving lupin cultivation, Fijen hopes to bring biodiversity and agriculture a little bit closer together. 'The decline of bumble bees is partly because we've lost so many flowering crops in the Netherlands over the last few decades: lupin, beans, buckwheat and flax are hardly grown any more. They constitute a form of cultural heritage actually. What's more, a lot more vegetables are now grown in greenhouses.' There is already plenty of scientific evidence of the importance of wild pollinators such as bumble bees and hoverflies to agricultural crops. 'But those studies are not always relevant at the farm level. Most of them are short studies conducted in small fields without taking crop rotation into account. That makes it difficult to persuade farmers to do more for biodiversity. Besides, it is not like artificial fertilizer: you can't just open a bag of wild pollinators and spread them around.'

If bumble bees turn out to be crucial to lupin yields, growing more lupin in the Netherlands could create an all-round win-win situation with a more flourishing bumble bee population, more stable lupin production and higher yields. Not to mention a lower ecological footprint thanks to higher production of plant-based, locally grown protein to replace imported soya. ■

You can support the project via crowdfunding.wur.nl/project/lupine, a University Fund Wageningen initiative. A sponsor will double every donation.

