

Plant is prepared for pests

Wild relatives of the black mustard spice plant defend themselves against pests with chemical defences and strong leaves.

When defending themselves against their first enemy, the plants allow for the fact that they will have to ward off other insects later in the season. They are prepared for the most likely sequence of attackers. These findings are from research by Wageningen entomologists published in *Nature Plants*. Plants don't know whether or when they will be attacked, so most plants only invest in defence when they are actually under attack. In the meanwhile, they invest all their energy in growing and flowering. 'Plants

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know quite specifically which insect is attacking,' says researcher Daan Mertens.

'They know from the kind of damage to the plant cells, the substances that are released and the insect's distinctive saliva. The plant uses those signals to launch a targeted defence with the production of chemical defences.'

Risk management

But the entomologists discovered something surprising in their research on black mustard (*Brassica nigra*). Mertens: 'They are prepared for the harmful insects to appear in a particular order. So you get one particular aphid early in the season, for example, then a certain species of caterpillar.' The wild mustard plant doesn't use up all its antibodies on the first pest; it makes sure it keep enough ammunition for later threats. Mertens calls this 'risk management' that has developed through natural selection. The plant can cope with the most common sequence of pests.

Plant breeders can use this insight to develop more robust crops, say the researchers. AS