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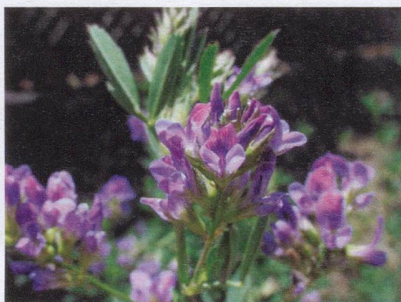
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FLORA IN SWITZERLAND

Lucerne – and the clever honey bees

Lucerne is a cool season perennial legume living from three to twelve years. It resembles clover with clusters of small purple flowers. The plant grows to a height of up to 1 metre, and has a deep root system sometimes stretching to 4.5 metres. This makes it very resilient, especially to droughts. Like other legumes its root nodules contain bacteria with the ability to fix nitrogen, producing a high-protein feed regardless of available nitrogen in the soil. Lucerne is widely grown throughout the world as forage for cattle and is most often harvested as hay, but can also be made into silage, grazed, or fed as greenchop. It has the highest feeding value of all common hay crops and can be grown from very cold northern plains to high mountain valleys, from temperate agricultural regions to Mediterranean climates and searing hot deserts. Humans also eat lucerne (alfalfa) sprouts in salads and sandwiches.

Lucerne seed production requires the presence of pollinators when the fields are in bloom. Lucerne pollination is somewhat problematic, however, because Western honey bees, the most commonly used pollinators, are not suitable for this purpose; the pollen-carrying keel of the lucerne flower trips and strikes pollinating bees on the head, which helps transfer the pollen to the foraging bee. Western honey bees, however, do not like being struck in the



Lucerne (*Medicago sativa*) is a flowering plant in the pea family, cultivated as an important forage crop. It is sometimes

head repeatedly and learn to defeat this action by drawing nectar from the side of the flower. The bees thus collect the nectar but carry no pollen and so do not pollinate the next flower they visit. Most pollination is accomplished by young bees that have not yet learned the trick of robbing the flower without tripping the head-knocking keel.



Alfalfa leafcutter bee, *Megachile rotundata*, a pollinator on alfalfa flower

Most of the improvements in lucerne over the last decades have consisted of better disease resistance on poorly drained soils in wet years, better ability to overwinter in cold climates, and the production of more leaves. Multileaf alfalfa varieties have more than three leaflets per leaf, giving them greater nutritional content by weight because there is more leafy matter

for the same amount of stem.

Roundup Ready lucerne is a genetically modified variety, patented by Monsanto, that is resistant to Monsanto's glyphosate. Although most broadleaf plants, including ordinary lucerne, are sensitive to Roundup, growers can spray fields of Roundup Ready lucerne with Roundup, and so kill the weeds without harming the lucerne crop. However, in May 2007, an injunction order was issued prohibiting farmers from planting Roundup Ready lucerne. The key issue is the possibility that Roundup Resistance could be transmitted to other plants, including both other crops and weeds, making major pest species resistant to the herbicide Roundup.

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