Maize - „a green bridge“
-Speaker´s text-

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Maize is one of the most important crops in the world. Together with wheat and rice, maize is the most widely grown grain crop.

The reason lies with the crop itself: Maize is extremely versatile and very rich in energy and yield. Due to its tropical origin, maize grows particularly well on warm bright days; quickly synthesizing much biomass.

Thus maize shapes the landscape appearance in many areas of our countryside. However, not only humans benefit from this crop. Animals - especially insects-also use it as their habitat.

So, how is life in a maize field? Which animals can be found there and where do they come from?

They are hardly visible, as the spring sun's first rays slowly begin to warm the farmland. The fields seem lifeless-but only at first glance!

Between the clumps and the clods, the little hunters are already scurrying about in search of insect eggs. The woodlice are also combing through the soil looking for food, whilst spiders lurk for their prey, just as ground beetles are aiming for tiny worms, snails and other soil dwellers.

Meanwhile, the year goes on. If it remains warm and dry, the farmers will start sowing the maize in mid-April. Only two weeks later, the seeds' leaves will break through the soil into light.

A short while after, the next leaves have formed, and soon the maize rows will grow, building a green roof that covers the soil.

Now countless insects, spiders, mites and millipedes - so-called arthropods-begin to spread. Numerous scientific studies have discovered more than 1,000 different species in maize fields. They settle on leaves and stems.

Spiders spin their webs. Ladybirds are on the lookout for their favorite meal: aphids.

More and more insects are attracted by the growing food supply.

Meanwhile, the maize plants grow several centimetres each day until their full height of more than two metres is reached in July. Now it is time for those animal and insect species to leave the maturing cereal fields and move on to the maize fields, in search of a new dwelling.

At the latest, when only dry stubbles remain after the cereal harvest, these species need a new habitat. Maize then provides a new and safe home for the insects.

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Here, the crops are still green and will remain in the fields well into autumn. Thus maize serves as a green bridge, securing the survival of many insects before they pupate or retreat into hibernation.

Yes, this is indeed an interesting function that we can attribute to maize. One has to imagine the spring green of a cereal field in June; there we will find a multitude of aphids in all cereal crops. Wherever aphids exist, there will be an army of beneficial organisms as well.

Many antagonists have adapted: ladybirds, hoverfly larvae, green lacewings, ground beetles and others can be found in cereal fields.

When the cereal fields mature; wheat as a rule in early July, they will have a chance to move on into the maize fields.

At this time, the maize is still green and there is a plentiful supply of aphids, providing food for the beneficial organisms, which can still reproduce and remain in the maize fields for a long time. And that is the green bridge function of maize!

So once again, during the summer months the abundance of life in the maize fields increases. Ever more aphids settle on the plants. The young cobs are still soft, juicy and sweet - a paradise for those voracious sucking pests - if it weren't for the green lacewings. For many of the lacewing species, aphids are an easy prey. Particularly, the larvae are true „aphid lions“, devouring one aphid after another.

Ladybird egg nests equally are disastrous for the aphids. Each egg houses a greedy larva that moults several times during growth and hungrily attacks aphids. As soon as the larva has ingested enough food, it pupates and then hatches into a new ladybird, which in turn has 50 aphids on its daily menu.

Here come the hoverfly larva, yet another hungry companion. Aphids are also the favorite dish of these larvae. They devour up to 100 aphids a day. As there are many aphids in the maize fields, hoverflies can reproduce quite splendidly.

The well- fed larvae pupate after about one or two weeks. Once the hoverflies hatch, they have had enough of the aphid diet. Instead they begin to feed on pollen and thus become vital pollinators in the agricultural landscape.

Very few insects which find food and habitat in the maize fields become dangerous to the plants themselves. The European corn borer, an unimpressive butterfly, is one of these. It lays its eggs on the underside of the leaves. The hatching larvae then bore into the maize plants.

Once inside the plant, the larvae eat their way through the stem, hollowing it out so that it buckles and stops growing. Often these larvae feeding sites on the cob become infested by poisonous mildew. For the harvest are only scant remains.

To avoid this, many farmers rely on a tiny and environment- friendly ally: Trichogramma, a wasp parasite to the corn borer. Specifically bred, about 2,000 eggs of this beneficial

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organism are placed on small cards, which are evenly distributed in the maize field one or two times in the summer.

After hatching, the females lay their eggs in the clutches of the corn borer, killing the brood. A new generation of beneficial organisms will hatch instead of the voracious larvae.

Now it's autumn and it is time to harvest the maize. Life in the fields comes to an end. The maize inhabitants leave their green bridge and retreat to their winter quarters until next spring.

On the basis of our studies, I would say that maize clearly has a function - the function of enhancing and improving the potential of the natural enemies of the aphids, contributing a reduced need for insecticide use in cereal fields.

All things considered, that is a contribution to improve the natural regulation mechanisms in our agricultural landscapes.

When maize harvesting time finally comes, real yields are delivered. Farmers begin making silage maize. They bring the neatly chopped plants to a bunker silo where the crop is compacted and stored. The maize silage is used as valuable fodder in animal husbandry as well as substrate for the biogas facilities.

Meanwhile, the grain maize still remains in the fields, maturing in the last rays of the autumn sun. It won't be long before the golden yellow grains will be harvested with a combine.

A few weeks later, the whole crop is harvested. Nature comes to rest while the fields wait to be prepared for the next sowing.

Next year, a new life cycle will begin, and once again maize will serve as a habitat, a source of food and green bridge for many animal species.