Beneficial weed

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A **beneficial weed** is a plant not generally considered domesticated and often viewed as a weed but which has some companion plant effect, is edible, contributes to soil health,[1] or is otherwise beneficial. Beneficial weeds include many wildflowers, as well as other weeds that are commonly removed or poisoned.

Clover was once included in grass seed mixes, because it is a legume that fertilizes the soil

Contents

Soil health

Dandelions benefit neighboring plant health by bringing up nutrients and moisture with its deep tap root

Although erroneously assumed to compete with neighboring plants for food and moisture, some "weeds" provide the soil with nutrients, either directly or indirectly.

For example, legumes, such as white clover, if they are colonized by the right bacteria (Rhizobium most often) add nitrogen to the soil through the process of nitrogen fixation, where the bacteria has a symbiotic relationship with its hosts roots, "fixing" atmospheric nitrogen (combining it with oxygen or hydrogen) making the nitrogen plant-available (NH4 or NO3).

Others use deep tap roots to bring up nutrients and moisture from beyond the range of normal plants so that the soil improves in quality over generations of that plant's presence.

Weeds with strong, widespread roots also introduce organic matter to the earth in the form of those roots, turning hard, dense clay dirt into richer, more fertile soil.

Some plants like tomatoes and corn will "piggyback" on nearby weeds, allowing their relatively weak root systems to go deeper.

Pest prevention

Many weeds protect nearby plants from insect pests.

Some beneficial weeds repel insects and other pests through their smell [2]

Crow garlic, like any allium, masks scents from pest insects, protecting neighboring plants

(http://www.informaworld.com/smpp/content~content=a905829894&db=all), for example alliums and wormwood. Some weeds mask a companion plant's scent, or the pheromones of pest insects, as with ground ivy, as well as oregano and other mints.

Some also are unpleasant to small animals and ground insects, because of their spines or other features, keeping them away from an area to be protected.

Trap crops

Some weeds act as trap crops, distracting pests away from valued plants. Insects often search for target plants by smell, and then land at random on anything green in the area of the scent. If they land on an edible "weed", they will stay there instead of going on to the intended victim. Sometimes, they actively prefer the trap crop.

Host-finding disruption

Recent studies on host-plant finding have shown that flying pests are far less successful if their host-plants are surrounded by any other plant or even "decoy-plants" made of green plastic, cardboard, or any other green material.

- First, they seek plants by scent. Any “weed” that has a scent reduces the odds of them finding crop plants. Examples are Crow Garlic (wild chives) and Ground Ivy (a form of wild mint), both dramatically masking both plant scent and insect pheromones. They cut down Japanese beetle infestation, and caterpillar infestation, for example cabbage worm, tomato hornworm, and even squash bugs.
- Second, once an insect is near its target, it avoids landing on dirt, but lands on the nearest green thing. Bare earth gardening helps them home in perfectly on the victim crop. But if one is using “green mulch”, even grass or clover, the odds are that they will make what's called an “inappropriate landing” on some green thing they don’t want. They will then fly a short distance at random, and land on any other green thing. If they fail to accidentally hit the right kind of plant after several tries, they give up.
- If they plan to lay eggs on the crop, weeds provide one more line of defense: Even if they find the right plant, in order to ensure that they didn’t hit on a dying plant or falling leaf, they then make short leaf-to-leaf

flights before laying eggs. They must land on the “right kind of leaf” enough times in sequence, before they will risk laying their eggs. The more other greenery is nearby, the harder it is for them to remain on target and get enough reinforcement. Enough “inappropriate landings”, and they give up, heading elsewhere.

One scientific study said that simply having clover growing nearby cut the odds of cabbage root flies hitting the right plant from 36% to 7%.[2]

Companion plants

Queen Anne's Lace provides shelter to nearby plants, as well as attracting predatory insects that eat pests like caterpillars, and may boost the productivity of tomato plants

Many plants can grow intercropped in the same space, because they exist on different levels in the same area, providing ground cover or working as a trellis for each other.[3] This healthier style of horticulture is called forest gardening. Larger plants provide a wind break or shelter from noonday sun for more delicate plants.

Green mulch

Conversely, some intercropped plants provide living mulch effect, used by inhibiting the growth of any weeds that are actually harmful, and creating a humid, cooler microclimate around nearby plants, stabilizing soil moisture more than they consume it for themselves.

Plants such as ryegrass, red clover, and white clover are examples of "weeds" that are living mulches, often welcomed in horticulture.

Herbicide

Repel plants or fungi, through a chemical means known as allelopathy.[4] Specific other plants can be bothered by a chemical emission through their roots or air, slowing their growth, preventing seed germination, or even killing them.

Beneficial insects

A common companion plant benefit from many weeds is to attract and provide habitat for beneficial insects or other organisms which benefit plants.

For example, wild umbellifers attract predatory wasps and flies. The adults eat nectar, but they feed common garden pests to their offspring [3] (http://www.wildaboutgardening.org/en/gardening-for-wildlife/animals/beneficial-insects).

Some weeds attract ladybugs or the "good" types of nematode, or provide ground cover for predatory beetles.

Uses for Humans

- Some beneficial weeds, such as lamb's quarters and purslane, are edible. This list of edible flowers includes many wildflowers that are considered weeds when not planted intentionally. Dandelion is an example of an edible weed (see dandelion wine, dandelion coffee).

- A number of weeds have been proposed as natural alternate sources for latex (rubber), including goldenrod, from which the tires were made on the car famously given by Henry Ford to Thomas Edison.
- Cocklebur and stinging nettle have been used for natural dyes.
- Milkweed is a more effective insulator than goose down.
- Some plants seem to subtly improve the flavor of other plants around them, for example stinging nettle, besides being edible if properly cooked, seems to increase essential oil production in nearby herbs.[5]

Examples

- Clover is a legume. Like other beans, it hosts bacteria that fix nitrogen in the soil. Its vining nature covers the ground, sheltering more moisture than it consumes, providing a humid, cooler microclimate for surrounding plants as a "green mulch". It also is preferred by rodents over many garden crops, reducing the loss of vegetable crops.
- Dandelions possess a deep, strong tap root that breaks up hard soil, benefiting weaker-rooted plants nearby, and draw up nutrients from deeper than shallower-rooted nearby plants can access. They will also excrete minerals and nitrogen through their roots.[6]
- Crow garlic, the wild chives found in sunny parts of a North American yard, has all of the companion plant benefits of other alliums, including repelling japanese beetles, aphids, and rodents, and being believed to benefit the flavor of solanums like tomatoes and peppers. It can be used as a substitute for garlic in cooking, though it may lend a bitter aftertaste.
- Bishop's lace (Queen Anne's Lace) works as a nurse plant for nearby crops like lettuce, shading them from overly intense sunlight and keeping more humidity in the air. It attracts predatory wasps and flies that eat vegetable pests. It has a scientifically tested[7] beneficial effect on nearby tomato plants. When it is young it has an edible root, revealing its relationship to the domesticated carrot.

References

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3. Ussery, Harvey. "Plant an Edible Forest Garden". Motherearthnews.com. Retrieved 2012-06-13.
4. "Journal of Chemical Ecology , Volume 9, Number 8". SpringerLink. Retrieved 2012-06-13.
5. Burnett, Bruce. "Stinging Nettle: Companion Plant and Medicinal Herb". *BCliving*. Retrieved July 21, 2013.
6. Anon. "Companion Planting for Vegetables & Plants". *Country living and farm lifestyles*. countryfarm-lifestyles.com. Retrieved 2011-03-07.
7. "Scribd". Scribd. Retrieved 2012-06-13.

Further reading

- Schoonhoven, L.M., J. J. A van Loon, and Marcel Dicke. 2005. *Insect-plant biology*. Oxford University Press, London.
- Cover Crops - Living Mulches (https://web.archive.org/web/20091207160512/http://www.ncsu.edu:80/sustainable/cover/l_mulch.html)

External links

- Plants for a future -- Useful weeds (https://web.archive.org/web/20060625185233/http://pfaf.org:80/leaflets/usefulweeds.php)

- Discover Beneficial Weeds in the Garden (http://www.motherearthnews.com/organic-gardening/beneficial-weeds-zmaz87jazgoe.aspx) — offers a list of "soil indicator" weeds
- Insect Olfaction of Plant Odour (http://www.olfacts.nl)

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