

# FARMSCAPING

## FARMING WITH NATURE IN MIND

*By Av Singh*

**“When farms are factories, they produce commodities and profit for agribusiness and charge external costs to the land and rural communities. When farms are natural habitats for humans, domesticated crops and livestock, and also for *wild plants and animals*, they produce food and multiple other benefits for society... We need all people to look at farming with new eyes, to see the potential of the farm as natural habitat, and to refuse to accept the inevitability of farms becoming rural factories to serve the global economy. We must teach that ‘the land is one organism.’”**

—Dana Jackson, *The Farm as Natural Habitat: Reconnecting Food Systems with Ecosystems*. 2002.

**A**sk most people to give an example of getting out in nature and the majority will describe places of recreation with sea kayaks, glacial streams and moose. Most people, especially environmentalists, don't accept that a farm can be an example of nature. Many large farms perpetuate the idea that farming and environmental sustainability are mutually exclusive and have led some to refer to farms as “ecological sacrifice zones.” Even small farms, including some organic farms, sacrifice agroecosystems by farming without having nature in mind. Theoretically, mimicking nature is a goal cherished by most organic farmers but in practice organic farms are increasingly mimicking their conventional neighbours. Increased specialization on organic farms has led to less complex (and less creative) crop rotations, and increased separation between crops and livestock. But perhaps more striking is that many organic farms have created homogeneous landscapes lacking nature's diversity.

A decrease in plant biodiversity can affect the farm at several levels. First, insects looking for plant material will target crops as their sole feeding source if there is no other vegetation available. Secondly, beneficial insect populations and predatory birds may avoid the farm due to a lack

of habitat. Natural enemies are nature's biological control and a farmer can benefit from this free service by learning how to attract and keep natural enemies in their farm system.

### **Getting nature back on the farm**

Aldo Leopold stated, “A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community.” Based on Leopold's statement, farmscaping is something right. Farmscaping is a whole farm approach to increase and manage biodiversity towards the desired goal of increasing the presence of beneficial organisms. Hedgerows, insectary plants (plants with pollen or nectar that attract insects), cover crops, healthy soil and water reservoirs are some of the decor used to entice insects, bats and predatory birds.

**Hedgerows** – Also referred to as shelterbelts or windbreaks, hedgerows are typically a linear barrier of trees, shrubs, perennial forbs or grasses that are planted along field edges or in between fields. Hedgerows are used to reduce windspeed and thus reduce wind erosion and decrease the desiccating (drying) effect of wind on crops. By reducing windspeed and trapping moisture (rain or snow), hedgerows modify the microclimate in

---

Many large farms perpetuate the idea that farming and environmental sustainability are mutually exclusive.

---

the protected area, potentially creating a favourable environment for beneficial organisms.

Hedgerows can serve as ecological anchors in annual cropping systems with undisturbed beneficial habitats in or around crop fields. The above- and below-ground ecology of most annual cropping systems is altered every year with tillage. In contrast the perennial hedgerows provide valuable food resources and overwintering sites for beneficial organisms. Willows and poplars are often included in hedgerows because their early spring pollen serves as a valuable food source, helping beneficials get off to a strong start. Alders and

caragana (both nitrogen-fixers), chokecherry and lilacs form dense barriers to help trap moisture.

**Insectary plants** – Insectary plants attract beneficial insects to aid in the health of the crop and the soil, but they also add to the beauty of the farm with their flowers. Ideally, insectary plants provide habitat for the desired predators, yet do not harbour insects that are likely to become pests. Other considerations to take into account when choosing insectary plants include timing of flowering, competitiveness and cost.

The appearance of beneficial organisms (e.g. parasitic wasps)



*Borage attracts bees and green lacewings to the vegetable garden.*

should be timed to coincide with the main crop's peak need for biological control of pests. Essentially, an insectary plant should grow and bloom at a time that best meets the needs (i.e. pollen, nectar) of the beneficial organisms. Insectary plants should not require much additional management and so less aggressive species should be chosen in space-limited situations. For example, comfrey and mint can soon occupy more than their desired space unless they are intensively managed (or grown at the edge of the field). Lastly, the cost of establishing and maintaining a beneficial habitat should be given consideration and should also include the cost of any land taken out of production.

**Cover crops** – Living mulches, green manures and catch crops can all be referred to as cover crops. Some cover crops, often legumes or grasses, are grown to prevent soil erosion and suppress weeds, while others are incorporated into the soil to provide nitrogen and organic matter to the subsequent crop.

Cover crops alter the microclimate by affecting soil moisture and soil temperature. They

## Plants attracting beneficials

**Anise hyssop** (*Agastache foeniculum*) – A perennial with summer-long blooming flowers that are rich in nectar and licorice-scented leaves and are attractive to several butterfly species.

**Bachelor's buttons or cornflower** (*Centurea cyanus*) – Wildflowers (seeded in fall or early spring) that are highly attractive to flower flies, ladybugs, lacewings and beneficial wasps.

**Borage** (*Borago officinalis*) – An annual herb with bright blue clusters of edible cucumber-flavoured flowers that are the preferred host for green lacewings and a favourite of bees.

**Comfrey** (*Symphytum* spp.) – A fast-growing perennial that provides highly attractive hibernation sites for spiders.

**Fennel** (*Foeniculum vulgare*) – Long-lasting fennel flowers are extremely attractive to all nectar-feeding beneficial insects and are the specific host plant for many swallowtail butterfly species. Fennel can be a perennial in zones 6–9.

**Golden marguerite** (*Anthemis tinctoria*) – This long-blooming perennial produces bright yellow daisies that are highly attractive to many beneficials including ladybugs, lacewings, flower flies, tachnid flies and mini-wasps.

**Mountain mint** (*Pycnanthemum virginicum*) – Many members of the mint family serve as excellent choices for beneficial borders.

**Sweet alyssum** – (*Lobularia maritima*) – A low-growing annual, often used as edging for flower beds, is also used as a fast-growing, weed-smothering ground cover in vegetable rows and is highly attractive to flower flies (which prey on aphids).

can also provide habitat for beneficials such as spiders and ground beetles over the winter. Certain cover crops are also **insectary plants**, such as buckwheat, sweetclover, vetch, red and white clover and some brassicas (mustards, oilseed radish). Of course, farmers don't want the beneficials to live only on the cover crops—the beneficials are needed on the actual crops. The beneficial organisms will move from the cover crop to the crops once the cover crops have stopped blooming, but to encourage an earlier move, mow the cover crops when the beneficials are needed on the crop. Mowing alternate rows of cover crops can increase the range of habitat for beneficials, and extend the flowering period.

Another unique strategy to manage pests using cover crops is the use of brassicas to **control soil nematode populations**. Mustard, oilseed, canola and radish can be sown as cover crops and then ploughed into the soil, where substances released during decomposition harm nematodes.

Lastly, a somewhat related strategy is the use of attractant crops or **trap crops**. Plants that are highly attractive to pests are

often grown before, or in alternating rows, with crops to attract pests. Periodically the plants and their resident pests are removed. Examples of trap crops include the use of eggplants to attract migrating Colorado potato beetles or the use of radishes (mustard or canola) to attract flea beetles.

---

Farmscaping is a whole farm approach to increase and manage biodiversity to increase the number of beneficial organisms.

---

**Healthy soil** – The creed of many organic farmers, “Take care of the soil and the soil will take care of everything else,” is quite appropriate when discussing farmscaping. Many insects, including both pests and beneficials, spend part of the life cycle in the soil. A diverse soil community (common in healthy soils) will help regulate insect populations.

**Water reservoirs** – A healthy on-farm water ecosystem will attract many beneficials including dragonflies, toads and

snakes, but water sources also create a suitable environment for birds and bats. Chickadees, wrens, swallows are quite content with birdbath-size water sources, whereas bats (who drink on the fly) prefer a watering area at least 10 feet long.

## Conclusions

Organic farming can continue its trend of becoming more homogenized, more grown-under-a-bubble farming and produce food in distinct production units *or* it can benefit from nature by emulating nature. Farmscaping is a concept that marries aesthetics with function, by which farmers can intentionally get their farm back to nature. One significant benefit of farmscaping is that the farmers become engaged in observing pest cycles, plant cycles, and become excited about experimenting with new ideas based on their observations, all the while creating something right.

## Further reading

*Biological control: A guide to natural enemies in North America*. C.R. Weeden, A.M. Shelton, Y. Li, M.P. Hoffman (eds.). Cornell University. 2004. <[www.nysaes.cornell.edu/ent/biocontrol](http://www.nysaes.cornell.edu/ent/biocontrol)>

*Naturalize Your Farming System: A whole-farm approach to managing pests*. SARE. 2000.

<[www.sare.org/publications/farmpest/farmpest.pdf](http://www.sare.org/publications/farmpest/farmpest.pdf)>

*Av Singh, Ph.D., P.Ag., is the Organic and Rural Infrastructure Specialist with AgraPoint Int. Inc. in Nova Scotia and is available for comments or questions at 902-896-0277 or <[a.singh@agrapoint.ca](mailto:a.singh@agrapoint.ca)>.*

## Bats as beneficials

Most of us are aware that bats munch on mosquitoes (a small brown bat can devour up to 600 mosquitoes in an hour), but they can also provide significant agricultural pest control services. In one season, a typical colony of 150 big brown bats in the U.S. Midwest eats:

- 50,000 leafhoppers
- 38,000 cucumber beetles
- 16,000 June bugs
- 19,000 stink bugs, and
- thousands of moths such as adult corn borers, earworms and cutworms.