

Nature in Balance

By Lynette Buchanan-Roth



One winter day last February, I faced with dismay a large area of mint that had spread willy-nilly, as mint is known to do. It had grown well beyond its territory where I had planted it as ground cover for one of the fragile hillside slopes of my farm. I know, it seems not the best choice for an erosion control planting, but it's a tasty ingredient for food and drinks. So there I stood looking at the huge, tangled mess of mint, its four foot tall shoots engulfing some of my favorite roses.

What to do. Roses on my farm are managed using the principal of least time. So I took the fastest and easiest action and whacked the over-wintered cover to the ground. Digging out the invading roots was out of the question. The roses were given a light pruning and left to fend for themselves.

By mid-April the roses were blooming radiantly among tender new shoots of mint and naturalized vetch, a nitrogen-fixing legume (see photo). What could explain the success of such an odd coupling of plants? Serendipitously, a living mulch system had developed. The diversity of the garden's ecosystem was increased -- a good thing. Diversity is a cornerstone of nature; and when it's denied, particularly in the extremes of monoculture (e.g., a tidy planting of isolated roses), the stage is set for trouble.

What is a living mulch? A living mulch system is a cover crop grown around and between the primary plants in a garden. Such a system could consist of companion plants, where one plant species provides some cultural benefit to the other (trap cropping, biochemical pest control, etc.). Or, it could be a pairing of plants, no matter how unexpected, that simply thrive in each others company. This winter, wild arugula sprang up in parts of my strawberry beds; both are far more vigorous and healthy than their counterparts grown under clean culture. The strawberries seem to appreciate the overhead shelter from the arugula, whose ample canopy I manage happily by eating its succulent, nutty leaves for lunch.

Mulch, whether organic residues or cover crops, creates a hospitable habitat for the macro- and micro-organisms that help build soil. The amazing network of soil organisms include microscopic one-celled bacteria, algae, fungi, and protozoa; the more complex nematodes and micro-arthropods; and the visible earthworms, insects, small vertebrates, and plants. Providing food and shelter to these organisms is the most important aspect of building a biologically healthy soil.

As these soil organisms thrive, they improve plant vigor:

- they generate a source of the essential nutrient nitrogen in the form of ammonium, readily used by plant roots;
- they can suppress disease by competing with disease-causing organisms (preventing access to plant surfaces, feeding on pathogens, or generating chemicals that repel pathogens);
- some of them (bacterial organisms) can stimulate the plant's own defense system (referred to as induced systemic resistance, ISR).

Beyond the benefits of organic residues, a living mulch can provide:

- a refuge for sustaining beneficial insects which control pest populations;
- in the case of a legume cover crop, sufficient nitrogen for growth of primary plants such as roses.

For a planned cover crop I lean toward selecting legumes, because they provide all the benefits of a living mulch including nitrogen production. The best nitrogen fixing legumes such as sweet clover (*Melilotus*), true clovers (*Trifolium*), peas (*Pisum*), and vetches (*Vicia*) can fix 100 to 300 lbs. of nitrogen per acre. As nitrogen fixation is a partnership between the legume and a specific bacterium, it is good practice to inoculate the legume seed with the appropriate bacterium prior to planting. The correct bacterial species is often not sufficient in your soil and the cost of them is reasonable.

Clearly, nature itself is a complex matrix of interdependent organisms: each thriving on the resources of others, the viability of one depending on the success of others. There are no silver bullets, no magic tricks, no single elixir that can grow beautiful roses sustainably. Organic



gardening requires a knowledge of the process, an understanding of how the pieces are connected. It gives you the power to make sound choices and intelligent decisions about growing your roses (not to ignore, a stronger body and sharper mind).

You know you have a biologically healthy soil, when your garden echoes in laughter.

Golden Celebration blooming among a living mulch of purple vetch and mint.