



02



Cover Crops, Nitrogen Fixation, and Dynamic Accumulators

LESSON 02

In This Lesson, You Will Learn

- Nitrogen fixing plants to use in your garden
- Cover crops to use in the garden
- Dynamic accumulator plants to increase plant fertility

01

Regenerative Gardening principles advise us to never leave the soil uncovered.

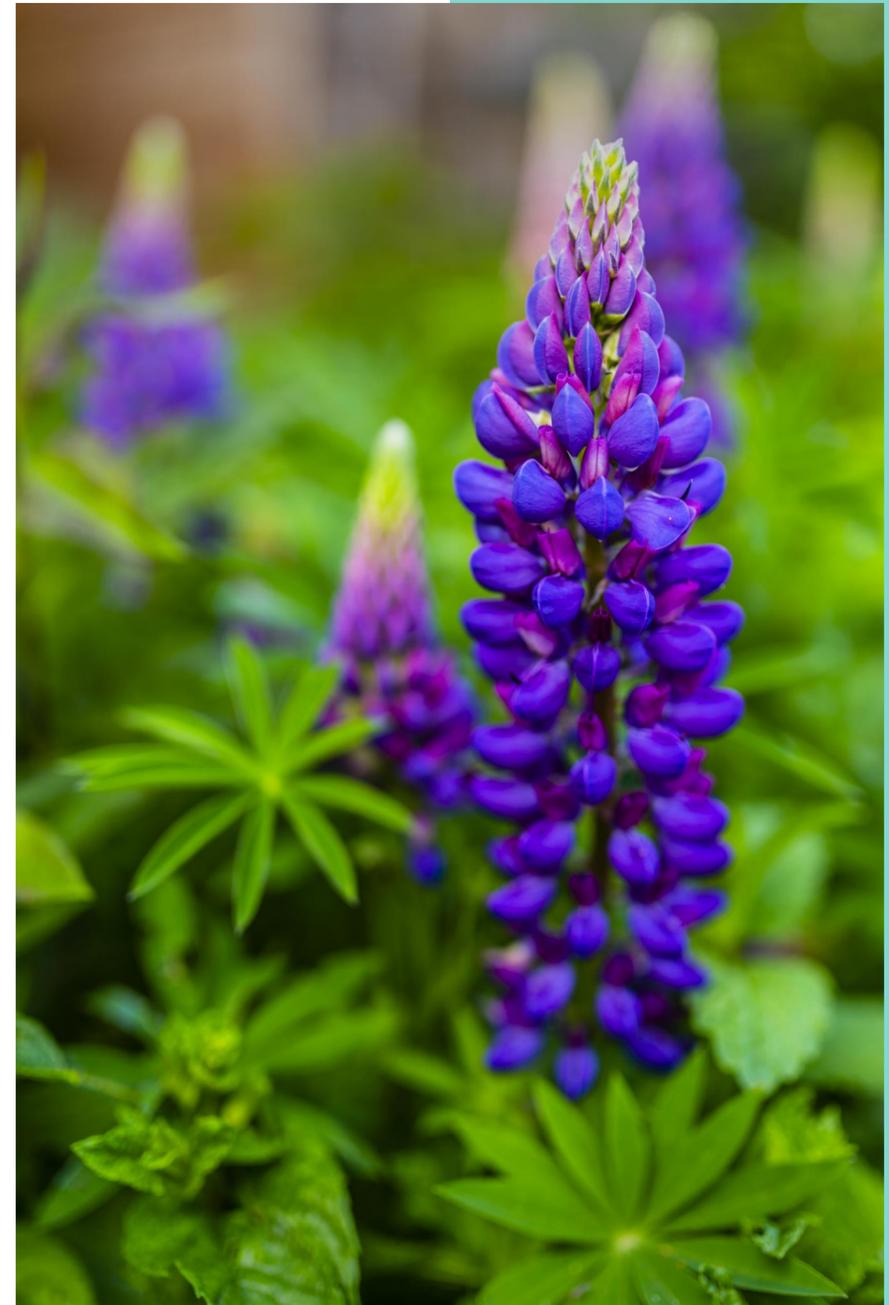
02

While we can achieve this by judicious mulching, some kinds of mulch can bind up nitrogen in the decomposition process.



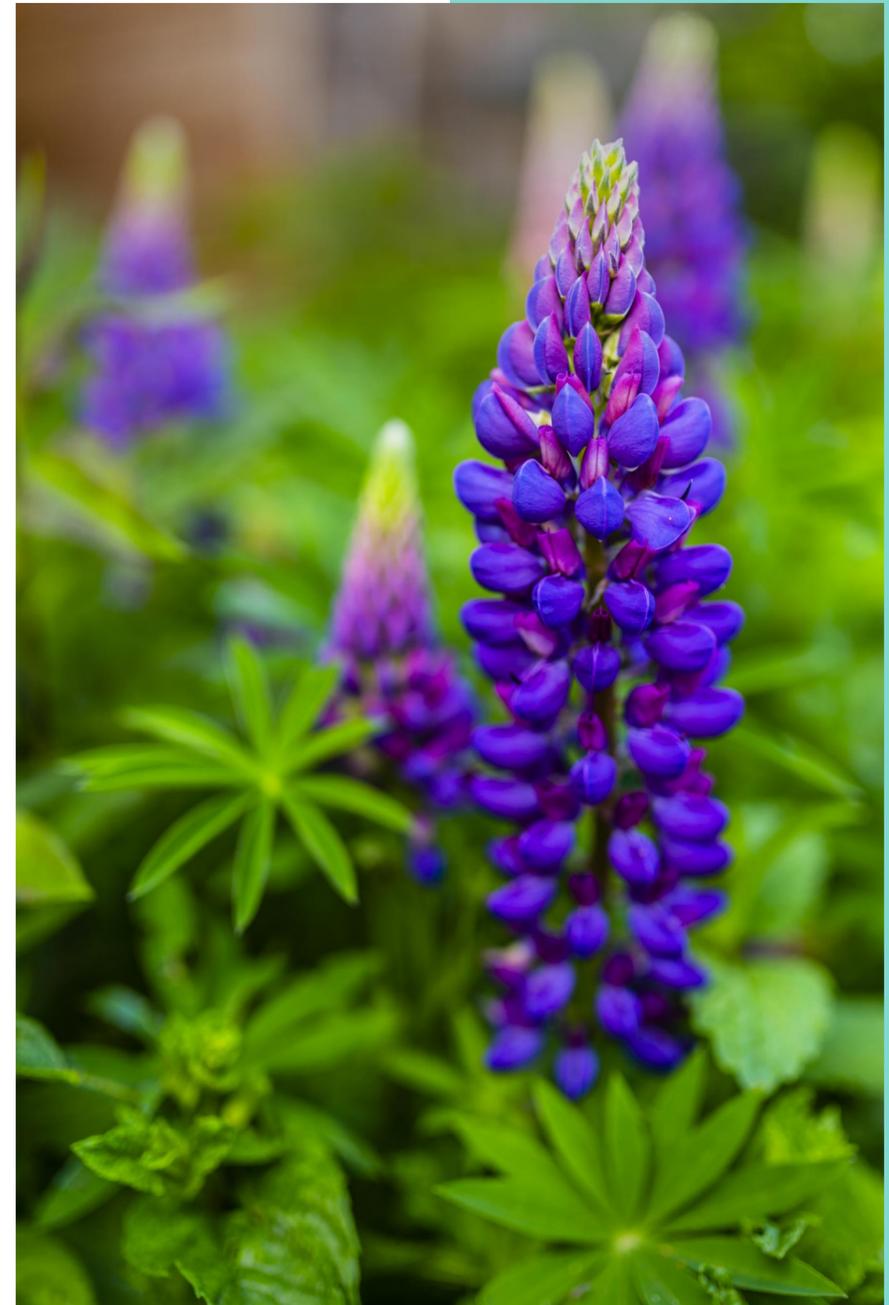
03

Some plants are able to take nitrogen from the air and place it into the soil, where it is available for other plants to use



04

Other plants absorb nutrients deep down in the soil and bring it to the surface for other plants to use.



Benefits of Using a Cover Crop

- › Encourages nitrogen fixation
- › Provides organic matter for the soil or compost
- › Feeds mycorrhizal bacteria and soil life web
- › Prevents erosion

Some plants are better cover crops than others

Fast growing legume crops that fix nitrogen in the soil

Grasses that form large biomass for feeding soil through compost

Deep rooted radishes which break up compacted soil then feed soil microbes as they decompose



**Fabaceae family
plants fix nitrogen**

- Peas and Beans
- Sweet Peas
- Clover
- Vetch
- Indigo and false indigo
- Lupins



- Licorice
- Peanuts
- Soybeans
- Astragalus
- Mimosa
- Carob

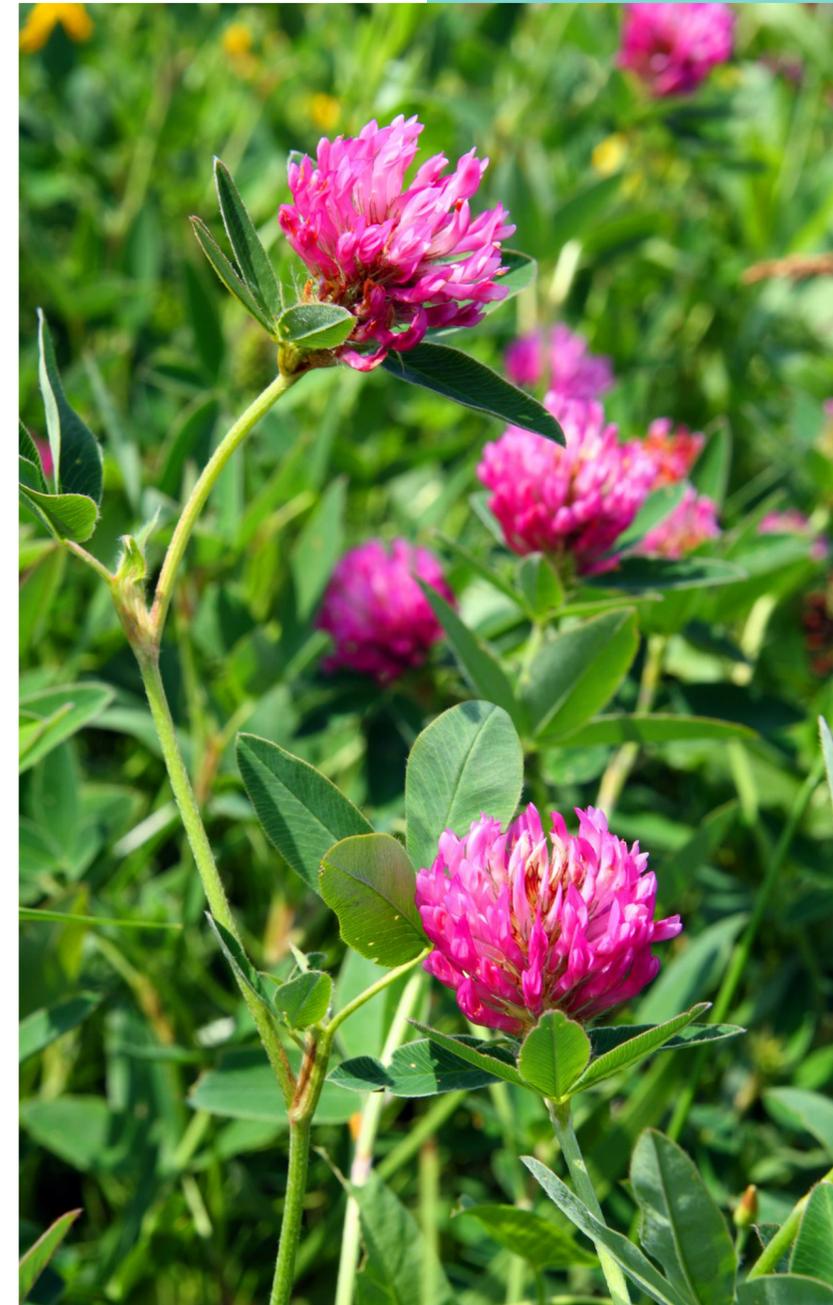


Fabaceae family plants take nitrogen and ammonia from the air and lock it into their root zone and in their leaves.

These plants release nitrogen to other plants growing near them, when the soil microbiome is stable.

These plants also release nitrogen into the soil or compost when they decompose.

This family includes perennial plants like lupin, clover, and Siberian pea shrub





It also includes annual plants like garden peas, beans, and sweet peas.

Fabaceae plants fix nitrogen with the help of symbiotic bacteria that attach to their roots by forming nodules.



There are non-legume plants that fix nitrogen as well



- Bayberry (*Myrica spp.*)
- Seabuckthorn (*Hippophae rhamnoides*)
- Autumn olive (*Elaeagnus umbellata*)

For instance. Many of these are edible and medicinal.

There are nonlegume plants that fix nitrogen as well



Plants in the Myricaceae and Elaeagnaceae families form symbiotic relationships with Frankia bacteria which forms hairs along their roots.



Nitrogen fixing plants are generally fast and vigorous growing and are good to use as cover crops, where their biomass is applied to the soil as a mulch.

If allowed to flower, they can be chopped down, after flowering and laid on the soil surface. Do not compost plants that have flowered. Your wonderful nitrogen fixers could end up as weeds in your garden.

Other companion plants accumulate nutrients in their leaves and release it when they decompose, to other plants.

These are referred to as “Dynamic Accumulators”.

Examples of Herbal Dynamic Accumulators

- Alfalfa (*Medicago sativa*)
- Black birch (*Betula lenta*)
- Chickweed (*Stellaria media*)
- Chives (*Allium schoenoprasum*)
- Comfrey* (*Symphytum officinale*)
- Dandelion (*Taraxacum officinale*)
- German chamomile (*Matricaria recutita*)
- Horsetail* (*Equisetum* spp.)
- Licorice (*Glycyrrhiza glabra*)
- Linden (*Tilia* spp.)
- Nettles* (*Urtica dioica*)
- Red clover (*Trifolium pratense*)
- Yarrow (*Achillea millefolium*)
- Yellow dock and Sorrel (*Rumex* spp.)



Dynamic accumulators are often used in a chop and drop method, to mulch other plants.

When they are dropped on the soil around other plants they can act as “nurse” plants or directly feed other plants as they decay.

These plants are often used to support soil microbiome.



For Example

Chamomile used as a nurse plant.



Many of these plants have deep tap roots and grow vigorously in poor soil, maximizing their own growth through mining nutrients from deep in the soil.



They return these minerals to the soil when they decompose or drop their leaves.

LESSON 02

In This Lesson, You Learned:

- ✓ Nitrogen fixing plants to use in your garden
- ✓ Cover crops to use in the garden
- ✓ Bio-accumulator plants to increase plant fertility

LESSON PREVIEW

In The Next Lesson, You'll Learn:

- The benefits of mycorrhizal fungi in the vegetable garden
- How to encourage the symbiotic relationship between mycorrhizal fungi and plant roots
- Mycorrhizal fungi and Rhizobium Bacteria
- While 80% of all plants form mycorrhizal relationships which ones don't