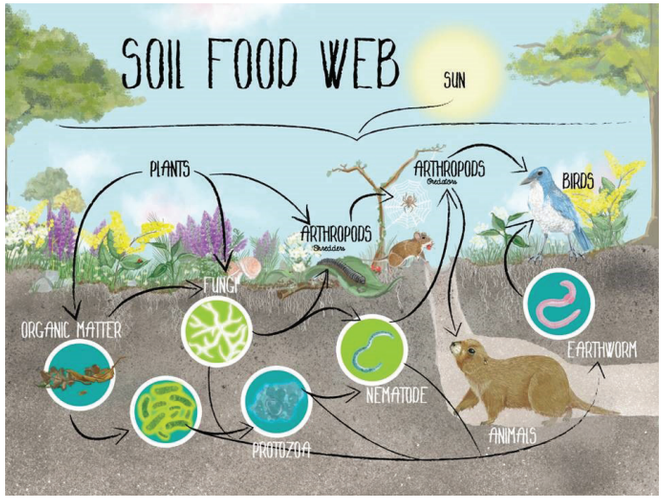
Soil Basics

Soil is the foundation of everything you see growing above ground: plants, animals, and ultimately humans rely on soil – and soil conservation – for life! It takes thousands of years of exposure to the forces of weather, climate, and biologic activity to form topsoil.



The soil food web is the community of organisms living all or part of their lives in the soil. They range in size from the tiniest one-celled bacteria, algae, fungi, and protozoa, to the more complex nematodes and micro-arthropods, to the visible earthworms, insects, small vertebrates, and plants.

More than "Dirt"

Healthy soil is more than just ground-up rocks. Basic components include minerals, air, and water, and a small fraction of organic matter. But soil is also literally teeming with life – there are more living organisms in a teaspoon of healthy soil than there are people on earth! It is estimated that the collective weight of all of the organisms in the top six inches of soil on one acre of land would be between 2,500 and 5,000 pounds, depending on the health of that soil. So remember: dirt is what you wash off when you have finished working with your soil!

Contact Your Local Conservationists!

NRCS Offices

Delta Junction:
907-895-4241

Fairbanks: 907-479-3159

Homer: 907-235-8177

Juneau: 907-586-7220

Kenai: 907-283-8732

Kodiak: 907-486-5598

Wasilla: 907-373-6492

Soil & Water Conservation Districts

Fairbanks:
907-978-1727

Homer:
907-299-4920 x106

Kenai:
907-283-8732 x5

Kodiak: 907-486-5574

Palmer: 907-357-1440

Salcha/Delta:
907-687-9924

Upper Susitna:
907-733-7923

Visit us Online!
www.ak.nrcs.usda.gov

ALASKA • Updated Nov. 2020

USDA is an equal opportunity provider, employer & lender.

USDA
United States Department of Agriculture

Soil Nutrients and Your Crops

unlock the SECRETS IN THE SOIL

ALASKA
Natural Resources Conservation Service
ak.nrcs.usda.gov/

Nutrient Management

Understanding the 4 R's for your soil

What is Nutrient Management?

It's common to add fertilizers and nutrients to the soil to help maximize crop production on your farm or garden. But how do you know if you are applying the right nutrients at the right amount? Are you over or under applying?

Understanding your soil's needs and managing your inputs can reduce environmental impacts to water quality, soil, air and habitat. Proper management can also improve your soil health and crop production, and save money by eliminating excess input costs.

Nutrient Management is all about understanding and carefully managing what you put into your soil, by considering the four R's:

- **Right amount** (rate)
- **Right source**
- **Right placement** (method of application)
- **Right timing** of commercial fertilizers, manure, soil amendments, and organic by-products.

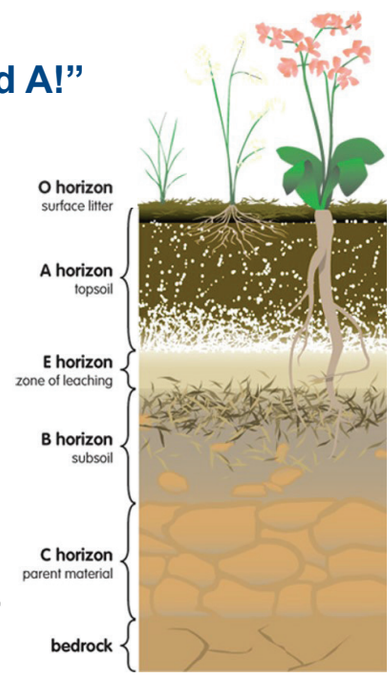
NRCS can help you apply the Nutrient Management conservation practice on your private land. Talk with us or your local Soil and Water Conservation District about getting a soil test. The test will give you a full nutrient profile of your soil. NRCS will work with you to develop a detailed nutrient management plan. You may even be eligible for financial assistance from NRCS to help offset the costs for the Nutrient Mangement practice.

Healthy Soils = Healthy Crops

The best crop productivity occurs in healthy, active soils. As a grower, your goal should be to cultivate as great a community below ground as you grow above ground! Microorganisms help cycle nutrients, making them more available to your crops – so creating a good home for them means your crops will also grow better.

Save the "O and A!"

Soils are categorized according to the structure and composition of layers in their "profile" – the cross-section of a soil starting from the surface and reaching down to bedrock. A soil profile is shown on the right. Most growers are primarily concerned with conserving and improving soil quality in the "O" or "organic" and "A" topsoil horizons, where most crop roots are found.



Soil Health Principles to Improve Sustainability and Productivity:

Adopting soil-friendly practices such as cover crops, plant diversity and crop rotations can complement your nutrient management efforts. For example, planting a multi-species cover crop mix or applying an organic mulch may help you achieve a desired level of organic matter in your soil and boost nutrients naturally. NRCS recommends the following soil health management principles which can be applied to just about any farm setting.

Minimize Disturbance

Reduced till
No-till
Controlled traffic

Maximize Diversity

Crop rotation
Seed mixes
Pollinator plantings
Rotational grazing

Keep it Covered

Cover crops
Mulching
Leave the residue

Maximize Living Roots

Crop rotation
Cover crops
Perennial crops