N-P-K
The ABC's of NPK
A Seminar with Liza Ehle

Getting started:
- Get a soil test, including pH and any recommendations sent by lab
- Multiply length x width to equal the square footage of the area to be fertilized
- Use the soil recommendations and your square footage to decide what type of fertilizer is required and how much you need for your area
- Decide what fertilizer you need for what you want to grow, buy enough to treat the area you are fertilizing, read the bag or bottle thoroughly before applying, apply at recommended rates or less, do not use more

Nitrogen:
- This helps a plant put on lush green growth and too much can over stimulate a plant, particularly if it is not well-established or rooted
- Lawns like a lot of nitrogen to perform well, but run-off from nitrogen can harm many of our watersheds so apply only what you need and the grasses can use
- Nitrogen is best in slow-release forms and added to soil prior to planting so the plant can use it as it needs it. Nitrogen helps break down organic matter in compost. Avoid using large amounts that are washed away with rain or irrigation.
- Plants that lack nitrogen grow slowly, with small leaves and little top growth
- Manures/bat guano, fish/crab meal, cottonseed meal, feather meal, soybean meal, blood meal, ammonium/urea as well as many cover crops provide nitrogen

Phosphorus:
- Phosphorus helps the plant’s overall reproductive system, its flower and fruiting capability and its tissue strength
- It has low mobility in plants so is particularly slow to react when fertilizing which makes it good to build into soils, not apply as fertilizer to plants
- Slow growth, stunted leaves and defoliation, scorching and disfigured leaves all indicate you have a deficiency in phosphorus
- Fish meal, bat/seabird guano, bone meal, alfalfa meal and phosphates all supply this key ingredient

Potassium:
- This nutrient helps the plants immune system, and rooting abilities
- In general, not as high numbers are needed and this is usually available in small amounts with nitrogen and phosphorus in other balanced fertilizers
- Good sources are kelp meal, greensand, guanos and nitrate, phosphate, chloride and sulfate potassium
All the others:
- Calcium, magnesium, sulfur, iron, manganese, boron, zinc, copper, molybdenum, chlorine are necessary in small amounts and affect a wide variety of crops in different ways, primarily with chlorophyll and plant proteins
- Plants low in these elements are usually symptomatic with chlorosis, a yellowing of leaves with veins green and margins scorching
- Iron is often deficient in Northwest plants due to our pH levels which make uptake of iron more difficult. Apply lime to bring pH to between 5.0-6.5 and add chelated iron and this will often bring good results in chlorotic plants.
- Heavy metals that are found in many of these nutrients can last indefinitely in soils and contaminate wells. Apply small amounts to root areas and watch for slow results in the plant before applying more.
- Look for balanced fertilizers with trace minerals. Use oyster shell, azomite, bone meal and gypsum as well as products with chelated iron like Iron-Safe

When and where:
- Whenever possible, amend with the correct fertilizers prior to planting so you build a rich and varied diet for your plants directly into your soil.
- Use slow-releasing organic amendments that break down incrementally and feed the plant as it needs it rather than all at once to avoid leaching
- Use chemical lawn and shrub fertilizers sparingly and for emergencies, but recognize that this is a “cup of coffee” not a “healthy breakfast” for plants
- Top dress plants with organic fertilizers and compost in the root zone in Feb/March and again in Aug/Sept. The first one should be higher in nitrogen as it boosts top growth at a time plants are putting on new shoots as winter breaks. The second one should be higher in the last categories as the crops are producing fruit, hardening off wood and producing root growth as fall approaches. Efficient fertilizing works in harmony with plant growth cycles.
- Lawns can be fertilized 3 times a year lightly at Valentine’s Day, Memorial Day and Labor Day. This will encourage moderate growth, minimize run-off and feed the soil during peak demand times. Aerate before the first dose, thatch before the second and apply any weed control before the last to maximize your use of fertilizers in these larger areas.

A little secret:
- Mycorrhizae works! These tiny fungi attach to roots and make your water and fertilizer get where it is going better and faster. Add these products directly to the root zone of the plant in powder or liquid form to enhance the performance of organic fertilizers, minimize transplant shock and stress and to initiate a strong soil ecosystem in new gardens or ones that are transitioning to organics.

More is not better:  Small amounts frequently is better than too much all at once!