

## **Soil Test Now B**

### **How to Get an Accurate Soil Test and Understand the Results**

By Dr. H. Lee Stribling

The success you have growing a wildlife food plot depends on several things. Preparing a good seed bed, choosing the right seed, getting plenty of sun and rain are all very important, but none of these factors can be maximized if you don't consider the fertility of your soil. All too often wildlife food plots are established on ground that is so acid and so low in nutrients that hardly anything will grow there. If the pH and fertility is not addressed when you plant, then all the time you have spent preparing the plot and the money you have spent on seed will be wasted. Ignoring soil condition is the most common error in food plots that fail. This can be avoided by doing a soil test, understanding the results, and applying the right types and amounts of lime and fertilizer to correct poor soil conditions.

Many times a general lime and fertilizer application of 1 to 2 tons of lime and 300 to 400 lbs of 13-13-13 are applied when no soil test is taken. This is better than not putting out any lime or fertilizer at all. However, doing this year after year can create problems. Soils can eventually become so basic (that is, high pH 8 to 14), and the elements, like phosphorus in fertilizer, which do not leach out can build up to the point where plants will become yellowish. When this happens it will appear that not enough fertilizer was added and more is usually applied which only makes your problem worse.

The only way to avoid soil fertility problems is to do a soil test and follow the recommendations from the testing laboratory. If the test comes back and says to use 2 tons of lime and 500 lbs of 13-13-13 per acre, then use exactly that. Any less is inadequate and poor plant production can be expected. Any more is wasted and could cause problems which are hard correct for many years.

### **How to Take a Soil Sample**

Unless you are extremely lucky, just going out into your future food plot and digging up a handful of soil in one place in one plot is not going to get you the information you need to grow the best plots possible. Soil types and fertility often vary greatly within a given food plot, and conditions almost always change from one plot to another. Test all your plots and make sure you identify which sample came from what plot so you can tailor your lime and fertilizer applications to each plot according to its specific needs. Indicate what you intend to grow in each plot, because lime and fertilizer recommendations can differ from crop to crop. It is not necessary to tell variety only what type of crop will be planted (i.e. small grain, clover, corn, beans, etc).

Your sample that you send to the lab should be a Acomposite@ sample, which means that it is representative of soil from the entire plot not just one spot. To make a Acomposite@ sample you need to take Asubsamples@ from many places in the plot, mix them, and take a sample of the mixture to be tested. Follow a random pattern, zig-zagging across the plot to collect your subsamples. Mix these in a container like a 5 gallon plastic bucket. Then fill the soil test box with a scoop of the composite sample.

When you are taking your subsamples don't just dig a shovel full or trowel full of soil off the top. The growing zone for most food plot plants is from 1 to 6 inches deep. A good method to sample this growing zone is to first cut down about 6 inches with your shovel and remove soil to expose a vertical 6 inch wall on the side of the hole. Use

your shovel to cut a slice of this vertical wall about 1 inch thick. This is your subsample which you put in the bucket. Go to the next point and do the same trying to make each subsample slice the same size. Taking subsamples in this way accurately represents the soils present where your plants will be growing.

### How to Interpret Results of Your Soil Test

When you look at any fertilizer bag you will see a set of three numbers separated by dashes. These are important values to understand because they indicate the strength of the fertilizer and what types of nutrients in it. Using these values and those from your soil test, you can provide the exact nutrients required and very likely save some money as well.

The main elements plants need in the soil to grow are Nitrogen, abbreviated **N**; Phosphorus, **P**; and Potassium, **K**. Every fertilizer lists the amount of these elements on the bag in that order, N-P-K. The first number is the percentage of Nitrogen contained in that fertilizer blend, the second is the percentage of Phosphorus, and the third the percentage of Potassium. If you have trouble remembering the order of these ingredients (NPK), use the salesman's trick, **No Punny Korn**. That's helped a lot of people every time.

Example 1 ▢ 13-13-13 (called triple-13) is a common fertilizer blend widely available. The three 13's mean that 13% of the bag's weight is N, 13% is P, and 13% is K. So in a 100 lbs of 13-13-13 there are 13 lbs of active N, 13 lbs of P, and 13 lbs of K.

Example 2 ▢ Your soil test comes back and says that each acre of your food plot needs 30 lbs of active N, 30 lbs of active P, and 30 lbs of active K. How much 13-13-13 do you spread per acre? You know from the bag label that there are 13 lbs of N, P, and K in each 100 lbs of 13-13-13. You need 30 lbs of each so divide 30 lbs needed by 13 and get 2.3. You need 2.3 times 100 lbs of 13-13-13 or 230 lbs/acre to meet the requirements listed in your soil test.

Example 3 ▢ What if your soil test comes back almost the same as in Example 2 but it says that you need an extra 30 lbs of K per acre (ie. 30 lbs of active N, 30 lbs of active P, and **60** lbs of active K). A simple balanced fertilizer will not work. You have to add additional K to the 230 lbs of 13-13-13. The chart below shows that Muriate Potash has 60 lbs of K in 100 lbs of Muriate Potash. You only need 30, so you add 50 lbs of Muriate Potash to your 230 lbs of 13-13-13 and you meet the soil test requirements.

Fertilizer	%N (Nitrogen)	%P (Phosphorus)	% K (Potassium)
Anhydrous Ammonia	82	0	0
Urea	46	0	0
Ammonium Nitrate	33.5	0	0

Ammonium Sulfate	21	0	0
Triple Superphosphate	0	45	0
Monoammonium Phosphate	0	48	0
Diammonium Phosphate	0	53	0
Ammonium Superphosphate	0	16	0
Muriate Potash	0	0	60
Sulphate of Potash	0	0	50
Potassium Nitrate	0	0	44

Percent N, P, and K in various single ingredient Nitrogen, Phosphorus, and Potassium fertilizers.

(Adapted from: Ball, D.M., C.S. Hoveland, and G.D. Lacefield. 1991. Southern Forages. Potash and phosphate Institute, Norcross, GA. 256 pp.)

Chances are that all plots will require different amounts of nitrogen, phosphorus, and potassium. The best approach is to begin with a standard blended fertilizer like 5-10-10, 10-10-10, or 13-13-13 and add additional amounts of N, P, or K to meet the recommendations from the testing laboratory. Of course, blends are available in 4-12-12 and 0-20-20 usually recommended for legume plots.

Soil tests don't have to be run each year. In most cases soils should be tested every other year or every 3 years. Lime should not be applied again until another test is done. A balanced fertilizer should be used in years between testing at a rate similar to that recommended in the latest results.