

► Establishing And Working With Crop Management Zones

Presented by Ralph Frazier

County Agent - Madison Parish, LSU AgCenter

As input cost continue to rise and profit margins decrease, producers need to have the greatest return on dollars invested in a crop. The establishment and use of management zones can assist producers to obtain this. A management zone identifies the crops need in a particular zone in a field and then applies the correct input at the proper rate needed for that zone to produce the maximum profitable return.

There are three ways of establishing management zones, all three provide good information if used correctly. The most common management zone is the grid sample. Grid sampling is quick and simple to establish, but most producers try to use too large a grid and by doing so miss critical sections of the field. When using the grid sample method, the most common procedure for sample collection is to navigate to a given point in the grid, collect 8-10 cores around that point and move to the next grid.

The problem is the sample represents an area less than $\frac{1}{4}$ ac, instead of the original grid size. To properly sample a grid each section needs to have soil cores pulled randomly across the entire zone to make up a representative sample of that zone.

The second method of establishing management zones is to define the difference in yield within a field. This is done by analyzing harvest yield maps and converting the yield levels into zones. This can be used to collect the soil sample and provide a basis for comparison of nutrient levels and future needs. Environmental conditions from year to year can affect yield and influence the management zones. For this reason, multiple years of harvest data should be combined and analyzed to create the management zones.

The third method is the electrical conductivity map (EC). If the EC data is collected and compiled properly these maps do not change from year to year, unless major movement of the soil takes place. They are not affected by weather or environmental changes from year to year. The EC map like the yield map can produce large management areas that may need to be sub-divided into blocks no larger than 10 acres. Samples are then collected randomly within a defined zone and combined provide a representative sample for each zone. This method will require more time because the area ridden over and sampled is larger. Maintaining the identity of the samples is essential to allow matching the results to the zone in the field. The total number of samples sent to the lab will be less, resulting in saving in lab fees. When the results are received from the lab, merge the nutrient requirements with the corresponding zone. This will give the producer a prescription showing the nutrient amounts required to treat the field.

All three methods of developing management zones are good. Evaluate annually your nutrient application against harvest results and make necessary adjustments to your management zones. Always remember that precision agriculture is an ongoing process that requires attention to details. Your problem did not develop overnight so don't expect it to be solved quickly.