Discovering Homeowners Tend to Overfertilize Yards
(2013 Success Story)
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Situation:
Homeowners can learn the fertility levels in their yard by collecting soil samples and then submitting them to a Wisconsin Department of Agriculture, Trade, and Consumer Protection approved soil testing laboratory. Winnebago County UW-Extension routinely ships samples on behalf of homeowners for soil testing. There are numerous vegetation categories to choose from so homeowners can receive a sample summary with fertilizer recommendations that meet their gardening goals. Between 2007 and 2012, nearly 300 soil samples have been processed through the Winnebago County UW-Extension office. The standard homeowner soil sample analysis measures pH, phosphorus, potassium, and organic matter, and the report provides an annual nitrogen maintenance recommendation. A pattern of high soil fertility became apparent as more samples were collected.

Response:
Nick Schneider summarized soil fertility analysis reports from yards in Winnebago County in order to determine if there are community wide patterns. Soil summary data was organized by plant type and year. The vegetation categories that were examined for this report included annual flowerbeds, perennial flowerbeds, fruit, vegetable gardens, lawn, trees and shrubs. Within each vegetation group, soil level averages were determined. Soil test measurements that were examined in this summary included pH, organic matter, phosphorus, and potassium. Individual soil tests were then grouped into “low”, “optimum”, and “high” categories. “Low” soil test means insufficient fertility is holding back plant growth; therefore building up nutrient levels will improve plant performance. “Optimum” means plants should be supplied with a maintenance level of nutrients annually. The goal of a sound fertilization plan is to maintain yards in the optimum fertility range. “High” fertility indicates the soil is holding more nutrient than plants need to grow well. Homeowners should decrease or even eliminate fertilization when soil test levels are high.

Results:
Soil samples from homeowners in Winnebago County reveal a habit of overfertilization in lawns, gardens, and flowerbeds. Evaluation of results has shown a pattern of overfertilization that is not only costly to the homeowner, but also increases the environmental risk associated with excessive soil nutrient levels. The most prominent risk of overfertilization is phosphorus reaching surface waters; thereby increasing algae blooms. As a result of these findings, Schneider created a research summary, popular press articles, and an article for distribution in the statewide January 2014 Master Gardener Association newsletter. The research summary can be found at the Winnebago County UW-Extension website. The Oshkosh Northwestern newspaper ran the article in print and online. The Winnebago County Extension office received an increase in garden soil sample submissions and Schneider received more calls from homeowners wishing to better understand soil fertility.
Evidence:
Local soil tests show encouraging results for pH. pH frequently had a neutral level between 6.9 and 7.4 indicating that lime is not needed. Only 2 samples in the database indicated the soil needed lime to remedy acidity. Organic matter averaged near 6%, which is evidence that gardeners are doing a good job of returning plant materials to decay in the soil. Non-amended soils in Winnebago County typically have organic matter near 3 to 4.5%. High organic matter helps improve soil structure, water holding capacity and nutrient availability.

Nutrient needs vary by plant type, but interpretation of phosphorus and potassium results show dramatic overfertilization in many yards. For example, vegetable garden samples averaged at four times the amount of phosphorus considered optimum and twice the amount of potassium. Eighty-four percent of samples were high in phosphorus, while 70 percent of samples were high in potassium. Only 11 percent of samples were low in phosphorus and 16 percent were low in potassium. These results indicate the majority of homeowners do not need to add phosphorus or potassium to their yards. However, there remains a small portion of yards that are low in these nutrients. Yards infrequently had soil phosphorus and potassium in the optimum range.