# Water quality affects herbicide success

The quality of spray water can influence herbicide performance. Minerals, clay and organic matter in water used as a carrier can reduce the effectiveness of herbicides. Clay and organic matter contained in pond water—but rarely found in well water—can reduce the performance of many postemergence herbicides. The mineral content and pH of water can influence herbicide performance, particularly Roundup.

Well water in Nebraska is often high in calcium and magnesium with a pH well above 7.0. These conditions are especially detrimental to Roundup performance; however, most other postemergence herbicides would not be seriously affected. Measures used to counter the negative effect of hard water on Roundup performance include reducing the carrier volume to 10 gallons per acre or less and adding ammonium sulfate to the spray mixture. Reducing the carrier volume simply reduces the amount of mineral available to react with the Roundup. Ammonium sulfate prevents minerals in the water from reacting with Roundup and forming less active salts of Roundup. Adding ammonium sulfate can improve Roundup activity even with water free of minerals. This latter effect of the ammonium ion is independent of water quality and occurs with a number of other postemergent herbicides including Basagran, Blazer, Classic, Cobra, Pinnacle and Pursuit.

Herbicide mixture compatibility and ease of mixing are influenced by water quality and temperature. Herbicide formulations contain ingredients to counter the adverse effect of hard water on herbicide mixing and compatibility. Mixing and compatibility problems are greater in cold water than warm water. Allowing well water to warm in a holding tank before mixing with herbicides will reduce compatibility problems. Always follow the label directions for mixing herbicides to minimize compatibility problems. (DV)

Rural Sense

# Thin alfalfa stands

If you check your alfalfa fields this spring and find that your stands have been thinned by winter kill, you have several options for recovering some of that yield.

If your alfalfa was planted last year, many people have excellent success simply drilling new seed in with existing plants. For older, existing stands, there is very little chance of successfully thickening them with more alfalfa. Diseases, as well as competition and toxic compounds from existing plants, cause many failures. Nonetheless, if you have less than half a stand, you might thicken your alfalfa stand with new seedlings.

When you need a very high quality legume feed for your livestock—for dairy cows, interseed 8 to 10 pounds of red clover or berseem clover into the thin alfalfa stand as soon as possible. Use berseem clover to improve stands for 1 year because it will give a larger yield than red clover this year. Use red clover for thickening alfalfa stands to last 2 or 3 years.

Oats are probably your best choice to simply increase tonnage of stock cow hay this year. Drill 1 to 2 bushels of oats per acre as soon as possible. Regardless of whether you interseed oats or clover, cut your first harvest early to help new seedlings become established.

Do not forget what might be your best option of all—rotating to another crop and immediately seeding a new field of alfalfa. In the long run, this is probably your best bet. (WS)

# Functions of different flours

What's the difference between the different types of flour? How do you substitute them for each other?

Flour provides the structure in baked goods. Wheat flour contains proteins that interact with each other when mixed with water, forming gluten. It is this elastic gluten framework that stretches to contain the expanding leavening gases during rising.

The different wheat flour types contain varying amounts of the gluten forming proteins. ***Hard wheat*** has a high protein content. ***Soft wheat*** has less protein. In yeast breads, a strong gluten framework is desirable, but in cakes, quick breads and pastries, a high protein flour makes a tough product.

Here is more information on the various flours from Sharon Lauterbach, Extension Assistant and Julie Albrecht, Extension Food Specialist:

***Bread flour*** has about 12 percent protein. Use bread flour for yeast raised bread because the dough it produces has more gluten than dough made with other flours. Sufficient gluten produces a light loaf with good volume. Slices hold together, rather than crumble.

***Cake flour*** is 7.5 percent protein. The lower gluten content causes products to have a tender, more crumbly texture that is desirable in cake.

***All purpose flour*** is blended during milling to achieve a protein content of 10.5 percent. This medium protein flour can be used for all baking purposes. If using all purpose flour for cake flour in a recipe, substitute one cup minus two tablespoons all purpose flour for one cup cake flour.

***Whole wheat flour*** may be substituted for part of the white flour in yeast and quick bread recipes, but the volume of the finished product will be reduced. Whole wheat flour contains the nutritious germ and bran as well as the endosperm of the wheat kernel. Bran particles cut through the gluten during mixing and kneading of bread dough, resulting in a smaller, heavier loaf.

To substitute whole wheat flour in a white bread recipe, use half whole wheat and half bread flour for the best results. If substituting a very coarsely ground whole wheat flour for all purpose flour, use one cup plus two tablespoons whole wheat flour for every cup of all purpose flour.

***Wheat germ***, though not a flour, is often used for part of the flour for flavor and fiber. Protein, vitamins, minerals and polyunsaturated fats are concentrated in the germ of grain kernels. Wheat germ, preferably toasted, can be used for up to one third of a recipe's flour.

***Rye flour*** is often used in combination with wheat flour for bread. ***Light rye flour*** can be successfully substituted for 40 percent of wheat flour in a recipe without loss of volume. ***Medium and dark rye flours*** should be limited to 30 percent and 20 percent, respectively, of the total flour amount. (AH)

Family Living

# Safe food buying tips

Taking a few precautions at restaurants and grocery stores can help avoid food-borne illnesses.

Foods contaminated with pathogenic microorganisms often don't look, smell or taste bad. Without these indicators, it's crucial to handle foods as safely as possible to prevent food-borne illness. Here are some tips for safe food handling:

• Whether eating at home, a restaurant or anywhere else, foods not served at proper temperatures should be reheated or replaced. Hot foods should arrive at 140° F or higher, or be kept hot on a buffet. Likewise, cold foods should be 40° F or lower. Foods held at room temperature create an environment ideal for microorganisms to breed and multiply.

• If grocery shopping is one of several errands to be run, do it last. Perishable food should never be left in a hot car.

• When grocery shopping, buy cold food last and put it away first. Frozen foods should be solid, not mushy. Cold foods should be refrigerator-cold to the touch. If possible check the package for frost or package ice. Frost indicates that a food has probably been thawed and refrozen, which can lead to a lower quality product.

• Meat and poultry items should be placed in an area of the cart where they won't get squashed or come into contact with other foods. Also, when sacking groceries, don't allow meat and poultry, or their juices, to come into contact with produce and other raw foods.

• Don't buy food in poor condition, especially dented, leaking or bulging cans. Bulges in cans can be caused by several things, including Clostridium botulinum, the microorganism that causes a deadly form of food poisoning.

• Check dates on food items. "Use by dates" indicate that the product should be eaten before that date. Don't buy food that won't be used before or is already past its use by date. "Sell by dates" indicate the food item has some shelf life past the date. Products like milk, if properly stored and handled, may be good for up to a week after the sell by date.

• Grocery stores have different methods of handling outdated food items. Some may place them in bargain bins and sell products at a discount, but remember the standard precautions. Others remove outdated or spoiling food immediately.

• Occasionally, a person may get groceries home and realize that a product doesn't smell or look right. If this happens, call the store immediately or take it back. Tactfully tell someone that the product is unacceptable so he or she can deal with the situation.

SOURCE: Julie Albrecht, Ph.D., Food Specialist, NU/IANR (AH)

# Vinegar gaining flavor

Periodically, vinegar will be touted as a miracle food for everything from burning fat to curing cancer. Unfortunately, these claims aren't backed up by scientific evidence.

Nutritionally, vinegar is more important for what it doesn't contain rather than the nutrients it does contain. Given the amounts of vinegar normally consumed, its levels of vitamins and minerals are insignificant. However, vinegar is very low in calories (about two per tablespoon) and is free of fat and sodium. Thus, vinegar is an excellent food flavoring for people trying to watch these substances in their diet.

The vinegar choices available today in the typical supermarket are much more exciting than the rather bitter tasting "white" vinegar so many of us grew up with. The next time a recipe calls for one of these flavored vinegars, try the real thing rather than reaching for the white stuff as a substitute.

Rosso & Lukins in the "Silver Palate Good Times Cookbook" suggests choosing a vinegar according to guidelines similar to those used in selecting a wine. That is, match strongly flavored vinegars with strongly flavored foods. Here's a sample of some vinegars you may want to try:

***Balsamic or red wine vinegar***. Balsamic vinegar is an aged red wine vinegar. Use it in lesser amounts than regular red wine vinegar. This flavorful vinegar goes well with robust foods. In salads, use it with heavier olive oils and stronger-flavored greens.

***White wine, rice and cider vinegars.*** Use these with milder flavored foods. In salads, mix them with lighter flavored oils and milder-tasting salad fixings.

***Herbal vinegars.*** These take on the flavor of the herb with which they're made.

In general, all these vinegars tend to be less bitter and acid-flavored than white vinegar.

You can often cut back on the oil used in combination with them in salads...you may want to experiment. Some people lightly sprinkle one of these vinegars directly on their salad and omit the oil entirely. You may be able to skip the salt in salad dressings when using these more flavorful vinegars. As a finishing touch, have the peppermill handy for a final twist of flavor. (AH)