# On the right: Cirrus Clouds

For centuries people have been using clouds to forecast the weather. High wispy cirrus clouds, sometimes called mare's tails, mean that within 24 hours the weather will change.

# Below: Altocumulus Clouds

Altocumulus clouds are mid-level clouds that look like a layer of white and gray puffy cotton across the sky. The presence of these clouds on a hot and humid morning could mean that afternoon rain is on its way.

# Fair weather clouds:

## Cumulus clouds:

These are fair weather clouds when they are fluffy mounds of white cotton in a blue sky. Fair weather is likely to continue.

## Cumulus congestous clouds:

These clouds look like large heads of cauliflower. Although considered fair weather clouds they can sometimes produce short bursts of rain showers.

# Storm Clouds:

## Cumulodimbus clouds:

These clouds are often called thunderheads. The most dangerous of clouds, they are huge and towering with dark bottoms and are capable of producing great winds, hail, heavy rain, lightening and tornados.

## Stratus clouds:

Stratus clouds are low gray clouds that mean misty rain or snow. Sometimes these clouds reach the ground and form fog.

# MGA Spring Forum Event


Bob Vavrek, USGA Green Section Regional Specialist, share the information on growing annual bluegrass


Dr. Brian Horgan from the University of Minnesota , discusses the merits associated with the Science of The Green Project.

*L to R: Joel Comstock, MGA, Matt Pringle, USGA, Brian Horgan, UMN, Bob Vavrek, USGA, Roger Stewart CGCS, MGCSA and Dale Parske, Reinders*

**Thank you Minnesota Golf Association, The USGA, UMN, MGCSA and Reinders for hosting the Event.**

# *Affiliate Appreciation Event*

## *The Lost Spur, Host Tony Kellen*

# Within the Leather

by David Kazmierczak, CGCS

**Perspective.**

An amazing word that essentially means one's point of view of a situation or happening. I guess the word itself isn't so amazing but its meaning sure is. What's amazing is how many different ways any number of people can look at something and come up with a different perspective; a different angle or thought about what some other person might think.

So far this spring the general consensus, or perspective, has been that Mother Nature has once again, for the second year in a row, dealt us a crummy hand. A lousy winter, followed by near record rainfall coupled with cold and wind has left all living things stagnant and begging for warmer temperatures in order to get on with the task of growing and reproducing. While the weather certainly hasn't been without precedent, that doesn't mean it hasn't put a major strain on our industry.

For courses, business is down. For superintendents, projects and overall maintenance has had schedules disrupted, plans cancelled, and the inevitable question of when is it ever going to warm up and when am I going to get out of this crabby mood I'm in? General grumpiness seems to be the order of the day, followed by stress of all that needs to be done. Well, let me lay one superintendent's perspective on you: Buck up Turfbob Crabbypants, it's just not that bad.

The month of May, 2014 has been a bit of a rocky road for this superintendent. For starters, two good friends discovered or are fighting the scourge of cancer at way too young an age, like there is any good age to have to do so. I'm betting well over half the people reading this column have had to go through this either personally or with loved ones and unfortunately the other half probably will.

Last Monday my daughter, Susan, underwent a procedure to try to help her deal with Cerebral Palsy, which she has had since birth. She had to spend five days in Gillette Children's Hospital and while she is home now and recovering it will still be a long road to recovery. My boss, Dave Mooty, hit the nail on the head with this line in an email he sent offering encouragement: "It is very hard to watch your children suffer."

There are no truer words ever offered to me.

However, it is my perspective that despite this, things will be ok and, in fact, things could be so much worse. Any trip to Gillette for us is a smack in the face reminder of how fortunate we are to be in the position we are in. If you have never been to a clinic/hospital like Gillette you have no idea how many kids there are with serious, serious problems. For every kid, there is a family of any number of people directly affected by the problem. My parents, who visited Gillette for the first time were shocked by what they witnessed on just a normal day as they passed by the clinic to the rehabilitation ward.

The same can be said for when we take Susan to Courage St. Croix for therapy or swimming. One peek around there and you instantly are amazed with how many people are fighting, surviving and thriving under a seemingly infinite number and range of afflictions. It's inspiring at times, and yes, it puts things into: perspective.

Even if you don't know anybody with these kinds of problems or, thankfully, your family is healthy, you need to look no further than the recipients of our own Wee One tournament for some perspective on how hard life can really be and what really matters.

I don't bring this all up to make you feel bad. I don't bring this up to cavalier some cause or tell you to pray three times a day for a cure for everything. I simply want to illustrate that if you put your job into perspective, you might find some of your grumpiness might wane. You might be able to roll with the punches a little bit better. You might be able to see the silver lining in the grey skies and downpours. Blighted turf is not the end of the world. Sluggish greens will eventually grow, irrigation leaks eventually fixed. It's human nature to get down when facing adversity, but with a little resolve and a solid perspective that there are a whole lot of others facing way more important issues than anything happening on a golf course, things become a little easier to digest, game plan and accomplish. That doesn't mean you shouldn't care about the job, or take pride in what you do, but don't allow it to become all-encompassing and turn you into something you are not.

I leave you with this thought: the golf course was there before you. It will be there after you, and they don't erect bronze statues of golf course superintendents. They just don't. But, that's one man's perspective.

# MGCSA Environmental Stewardship Supplemental Information

# EIQ What Does It Mean?

## A Method to Measure the Environmental Impact of Pesticide

### *Introduction and Background*

For several years, increased attention has been focused on integrated pest management (IPM) programs and alternative methods of pest control to reduce pesticide use in agricultural systems because of food safety issues, groundwater contamination, and increased environmental awareness. By definition, IPM is a pest management strategy that uses a combination of methods (sampling, thresholds, forecasts, biological and cultural controls, etc.) to manage pests without solely relying on chemical pesticides to produce a safe, economic crop. If, however, no other control measure is effective in preventing pest damage, a chemical pesticide is recommended. In past IPM programs, pesticides were generally chosen based on their efficacy or cost rather than on their potential environmental impact. Although some growers and pest management practitioners did take into account the effect of the pesticides on the applicator or beneficial natural enemies such as predatory mites when making pesticide recommendations, no formal method was available to assist them in making environmentally based pesticide choices. Because there is no easy method to assess pesticide impacts, each individual had to rely primarily on their own judgment to make these decisions. Some growers (organically approved growers) felt that only natural pesticides should be used in agricultural production systems because they are naturally occurring and are perceived to be less harmful to the environment. Other growers felt that any pesticide registered by the United States Environmental Protection Agency (US EPA) and used according to the label must be environmentally safe. In addition, IPM programs throughout the country use various methods (number of sprays, the amount of active ingredi-

ent or formulated product used per acre, dosage equivalents, etc.) to quantify pesticide use and environmental impact to compare different pest management strategies or programs. None of these methods estimates the environmental impact of specific pesticides.

Because of the EPA pesticide registration process, there is a wealth of toxicological and environmental impact data for most pesticides that are commonly used in agricultural systems. However, these data are not readily available or organized in a manner that is usable to the IPM practitioner. Therefore, the purpose of this bulletin is to organize the published environmental impact information of pesticides into a usable form to help growers and other IPM practitioners make more environmentally sound pesticide choices. This bulletin presents a method to calculate the environmental impact of most common fruit and vegetable pesticides (insecticides, acaricides, fungicides and herbicides) used in commercial agriculture. The values obtained from these calculations can be used to compare different pesticides and pest management programs to ultimately determine which program or pesticide is likely to have the lower environmental impact.

## *Methods*

Extensive data are available on the environmental effects of specific pesticides, and the data used in this project were gathered from a variety of sources. The Extension Toxicology Network (EXTOXNET), a collaborative education project of the environ-mental toxicology and pesticide education departments of Cornell University, Michigan State University, Oregon State University, and the University of California, was the primary source used in developing the database (Hotchkiss et al. 1989). EXTOXNET conveys pesticide-related information on the health and environmental effects of approximately 100 pesticides.

A second source of information used was CHEM-NEWS of CENET, the Cornell Cooperative Extension Network. CHEM-NEWS is a computer program maintained by the Pesticide Man-agement and Education Program of Cornell University that contains approximately 310 US EPA - Pesticide Fact Sheets, describing health, ecological, and environmental effects of the pesticides that are required for the reregistration of these pesticides (Smith and Bar-

nard 1992).

The impact of pesticides on arthropod natural enemies was determined by using the SELCTV database developed at Oregon State (Theiling and Croft 1988). These authors searched the literature and rated the effect of about 400 agrichemical pesticides on over 600 species of arthropod natural enemies, translating all pesticide/natural enemy response data to a scale ranging from one (0% effect) to five (90-100% effect).

Leaching, surface loss potentials (runoff), and soil half-life data of approximately 100 compounds are contained in the National Pesticide/Soils Database developed by the USDA Agricultural Research Service and Soil Conservation Service. This database was developed from the GLEAMS computer model that simulates leaching and surface loss potential for a large number of pesticides in various soils and uses statistical methods to evaluate the interactions between pesticide properties (solubility, adsorption coefficient, and half-life) and soil properties (surface horizon thickness, organic matter content, etc.). The variables that provided the best estimate of surface loss and leaching were then selected by this model and used to classify all pesticides into risk groups (large, medium, and small) according to their potential for leaching or surface loss. Bee toxicity was determined using tables by Morse ( 1989) in the 1989 New York State pesticide recommendations, which contain information on the relative toxicity of pesticides to honey bees from laboratory and field tests conducted at the University of California, Riverside from 1950 to 1980. More than 260 pesticides are listed in this reference.

In order to fill as many data gaps as possible, Material Safety Data Sheets (MSDS) and technical bulletins developed by the agricultural chemical industry were also used when available.

Health and environmental factors that addressed some of the common concerns expressed by farm workers, consumers, pest management practitioners, and other environmentalists were evaluated and are listed in Figure 1 (1Mb pdf file). To simplify the interpretation of the data, the toxicity of the active ingredient of each pesticide and the effect on each environmental factor evaluated were grouped into low, medium, or high toxicity categories and rated on a scale from one to five, with one having a minimal impact on the environment or of a low toxicity and five considered to be highly toxic or having a major negative effect on the environment.