NAICC NEWS

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"Hey! Look What I Built...Now What Do I Do With It?"

Following is a synopsis of a presentation recently given by Mike Fassler, Salisbury Management Services, Inc., at the business planning session of the recent NAICC annual meeting.

Three types of consulting practices exist: one person practices, family-owned and managed practices and non-related, party owned and managed consulting practices. As businesses develop, succession planning becomes a crucial aspect of each type of consulting practice.

Succession planning is the development of a strategy for the transfer of ownership, management and philosophical responsibility of the business from either one generation to the next or one set of owners and managers to the rest. The process of succession planning is just that – a process – as opposed to an event.

In addition to involving people and money, growth is a major issue in succession planning and includes both horizontal and vertical growth. Possible challenges to growth include:

- Maturing business life cycles and increasing competition
- Limited capital to fund current owner needs and business growth needs
- Weak next-generation business leadership
- Entrepreneurial leadership's inflexibility and resistance to change
- Conflicts among next generation successors
- Different goals, values and needs.

One option is to "cash out" of the business. This can be done by selling to another related organization (consolidation), selling to stakeholders (family or non-family), giving to stakeholders (family or non-family) or selling the hard assets and client list and closing the business.

In management transitions, key leadership qualities are essential. Among them are passion and talent for the profession, a caring attitude toward all stakeholders, attention to detail, a high level of integrity and a sense of humor. Leaders need to be able to create and communicate a vision for the company and they must have the courage to change.

They must also be able to make the transition from entrepreneur to professional management; and also know the benefits – and difficulties – of learning through experience, the hardest and best teacher. Leadership is earned through trustworthy behavior. Trust grows from demonstrated competence, congruence (action matching intentions), consistency and communication.

In the management transition process, both the senior generation and successor generation have critical result areas. The senior generation moves into personal development outside the business. This person must be a leader in him or herself. The senior person must communicate the vision and strategic direction and the core values of the business. This generation must develop and implement a Code of Conduct and an environment of trust with family and non-family stakeholders and an environment where the successor generation has the opportunity for on-the-job training.

The senior generation must separate family and business issues and management and ownership issues. Last, the senior generation's CEO is responsible for developing the successor CEO structure.

The successor generation must develop self-esteem, be involved in a formal continuing education program, and develop a mentor relationship with a more senior person. This generation must believe that it can be successful outside the family business and be willing and able to push beyond his or her comfort zone. They must be able to work as a team with siblings and non-family staff members; trust and respect the senior generation and be business centered rather than self-centered. This generation must be willing to practice, practice, practice, and they will need to become the next trust catalyst.

Red flags to management and ownership transition include apparent lack of accountability and performance standards and pay based on perceived needs or entitlement as opposed to performance and lack of a structured communication process. Other warning issues include the existence of an artificial and protected environment

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LISTENING

A good listener is not only popular everywhere, but after a while he knows something.

Wilson Mizner

INSIDE THE NEWS

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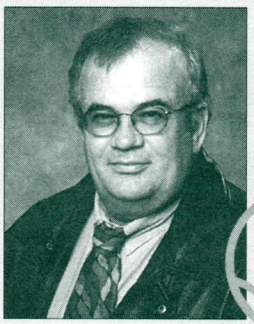
A Committee on Committees?



BY ROGER CARTER, NAICC PRESIDENT

In January, 1998, President Lee West suggested to the NAICC Executive Board that a "Committee on Committees" be appointed to write SOP's (Standard Operating Procedures) to give the committee members guidance. In addition, the SOP on Committees would give guidance to the President or President-Elect in selecting new committee members, committee chairs and vice-chairs.

At the time, I saw no need for a "committee on committees." I thought it would be just another committee, and more committees meant more confusion and less results. After all, how hard could it be to select a committee of wise, astute, tactful, hard-working and friendly individuals from the huge membership that NAICC now has.

I had heard the following about committees:

- To get something done, a committee should consist of no more than three people, two of whom are absent at the time.
- The best way to kill a good idea is to get a committee to work on it.
- The person who shows up punctually at a committee meeting is probably attending for the first time.
- A committee consists of a group of people who keep minutes and waste hours.
- Some people can sit on a standing committee and still lie down on the job.
- Committees have become so important nowadays that subcommittees have to be appointed to do the job.

I believed that some of the above was probably true, but none of that helped me with the task at hand – a serious job.

After beginning to build a spreadsheet of the past two years' committee members and chairs, I began the selection process. I immediately realized that President West was right, and I was wrong. This wasn't just work – it was punishment. There were so many things to consider; each committee was somewhat different; people are different. Hundreds of decisions had to be made and each one thought out thoroughly.

The numbers on each committee need to vary depending on that committee's role. Committees can only be so large – usually the smaller the better – and with such a vast number of talented people from which to choose I began to doubt whether I could ever narrow the selections.

Other things must be considered, such as each geographic region needing representation. This helped narrow the field, since I could choose one from the Northeast, Southeast, Midwest, Mid-South, Southwest or Far West. Six members are enough on any committee, I thought, as this would allow for one from each region, if possible. To maintain continuity, some members from the previous committee should be considered. Some could move up to chairs, vice-chairs, etc. Others may want to serve on different committees because of changing interests, etc. Interest from some potential committee members also had to be considered. Some felt that their interests are suited for certain committees and acknowledged this on the membership renewal form. However, many forms did not have any "interest" listed, but in conversations with individuals I knew that some would like to work on certain committees.

New blood and fresh ideas are necessary to stimulate committee movement onto new and better things. However, new faces do not always work out. The chemistry of the committee is essential for good operation. Having one domineering individual on a committee of four or five may mean that there is actually a committee of only "one." Matching personalities can be the most difficult task. Trying to choose members that have all of the same weapons – guns, knives, etc. – may make for a fairer fight in the committee room. And selection of folks who can take constructive criticism and those who are tactful is a must.

Considering the profession of the members being appointed to committees is another criteria in committee selection. Some committees must be comprised of only crop consultants, others of only research consultants. Most committees, however, are comprised of both.

Committee chairs and vice-chairs are the ones that will ultimately decide the fate of committee production. It is more than just breaking the vote in case of a tie. Committee leaders must define the consensus of the group and lead the committee to the outcome. Communication over the past few years has changed drastically. It is almost imperative that committee members have access to e-mail. Faxes are good but are expensive. They are probably second to "snail mail" as the least used method of communication. Most NAICC Board discussions occur via e-mail or Board Discussion Site. Because we came to consensus on many items, we were able to cancel our Summer Board meeting – a huge savings for NAICC.

Allison Jones, our Executive VP, can e-mail many pages of documents to us at a huge savings. Committee members should e-mail as much as possible to conserve funds. Because some committees work quickly and with rapid response necessary – particularly the Legislative Advisory Committee – cell phones are also a necessary part of the committee members' equipment.

A dedication to NAICC's vision statement is a must. It reads, "The Alliance, a leader in agriculture, represents, educates, encourages and increases awareness of professional, independent consultants. Its members serve as the primary source of knowledge-based decisions guiding environmentally-sound and profitable agriculture." All committee members should have this emblazoned on their chest.

No, it wasn't easy making the selections. There are not enough committees or committee positions to appoint everyone to a committee. Those who weren't selected for committees are still listed and may be of service on Ad Hoc committees, working groups and task forces. They also serve as back-ups to

members who may need to step down from their committee positions during the year.

The product that committees produce may not always fit the original description of what was intended, but something different or good can come or be learned from every committee. Hopefully, we will all gain knowledge and expertise and the representation that is needed from the 1999 NAICC committees. ■

"Hey! Look What I Built... Now What Do I Do With It?"

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established for the successor generation, lack of teamwork among siblings in the successor generation, no guidelines or rules for entering the family business, the imposition of the senior generation lifestyle values on the successor generation and the lack of a mechanism to manage conflict.

More information about succession planning can be attained from Salisbury Management Services, Inc., P.O. Box 10, Eaton Rapids, MI 48827, phone: (517) 663-5600. ■

A Season in the Life of a Hemp Consultant

By Ron Tone, P.Ag, CAC, St. Pierre, Manitoba

The following article was submitted by NAICC voting member Brent Wright, ICMS, Inc., Portage la Prairie, Manitoba, Canada. The author is affiliated with the Canadian Consulting Agrologist Association (CCAA), which is the counterpart of NAICC in Canada.

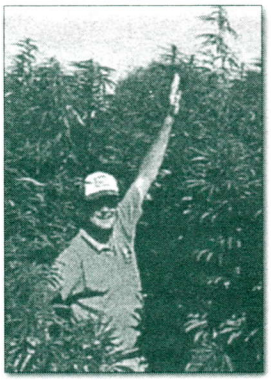
In May, 1998, I contracted with CGP (Consolidated Growers & Processors) to scout 30 fields of Cannabis sativa (Industrial Hemp). Until this summer I did not know what a hemp plant looked like (though some of my friends knew a lot about a similar plant!). Other than the THC (delta-9 tetrahydrocannabinol) content, there is no difference between the Industrial Hemp and Marijuana. THC is the psychoactive ingredient of Cannabis. In Canada the growing of industrial hemp was legalized in the spring of 1998. The THC content of the varieties cultivated cannot be more than 0.3 percent THC. Only varieties meeting this requirement can be grown in Canada for commercial production.

I scouted fields that had Ukrainian and French varieties. I also looked in on a shorter German variety. There were almost 700 acres seeded and 550 acres combined in Manitoba and Saskatchewan. A few fields were lost to excessive rains and one field was lost to drought. In Manitoba the total harvested was about 1200 acres – this included the acreage grown by companies other than CGP.

I was quite excited to learn about this new crop, not only from the book *The Cultivation of Hemp* but also from what I could see actually happening in the fields. Most farmers seeded 10-acre fields with some planting up to 100 acres. This made for a lot of driving between fields. The seeding dates ranged from May 25 to June 5; the first field was harvested September 14.

The first thing I had to learn in this consulting project was what the plant looked like coming out of the ground. Cannabis sativa is similar to Hemp nettle (Galeopsis tetrahit) except for the notched cotyledons. In one field, the farmer thought he had a terrific stand of industrial hemp but half the crop was Hemp nettle!

It was interesting to watch another field where a good stand out-competed the wild mustard (Sinapis arvensis). At first the wild mustard was keeping up, but by mid-July, with hemp measuring over six feet tall, the wild mustard was lost. The farmers were impressed with how well the hemp crowded out the weeds. The hemp competed well where the hemp stand was good – at least six to seven plants/sq. ft. This was dramatically evidenced in the field where the hemp finally outgrew the wild mustard. That same field had a poor stand of hemp at one end because of a low spot. There the high moisture held the hemp's growth back and the wild mustard took over.



Tone in ten-week-old (nine feet) hemp crop

I set up a farm strip trial using different N, P_2O_5, seed rates, varieties and row spacing. I realized, once the crop was over my head, that I should have added space between the different treatments. Without adequate spacing I couldn't just walk in and figure out where the different treatments were. After mid-July, I had to do my scouting overview of fields by climbing on the roof of my truck! From that vantage point I could check for areas of lodging, diseases, fertilizer deficiencies, uniformity of crop stand, etc.

One unexpected benefit I gained from walking through the fields was nicely polished boots (from the oil off the plant) and green stains on my beige pants!

As the crop matured, the male dioecious plants were noticeable first because they were the first to flower (around July 25). Dioecious plants have male and female flowers on separate plants. Hemp is naturally a dioecious plant but has been bred into a monoecious type (male and female flowers on the same plant). The male pollen can travel as far as seven miles. Cross-pollination between hemp plants and marijuana plants would significantly reduce the potency of the marijuana plant. In a couple of the fields close to the city, individuals came in and "sampled" the crop! But overall most people merely stopped to look, as we had posted signs stating what the crop was.

I did some sampling for insects with a sweep net. Because of the strong fibrous stalks, it was sometimes a challenge to stay on my feet while walking through a field that had lodging in it. On July 9 there was lodging from heavy rains in one field. The hemp was about four feet high and was lying flat on the

ground. When I returned to the field two weeks later the crop was back up and the field had a nice even stand of hemp. If you looked at the base of the plants, though, you could see the crooked stem.

Sampling of the hemp for THC takes place as the seed begins to mature, around August 8-15. Walking through eight to 10 foot hemp and cutting off 60 inflorescences at random was good exercise. I skipped my usual morning jog when I knew I was sampling that day!

As harvest approached CGP asked Bernard Geoffroy, an experienced hemp producer, to come from France to advise with the timing of harvest as well as with the baling and drying. The hemp was straight combined at 30 percent moisture and then aerated or dried. The harvesting went well. There were a few modifications to the combines to keep the 'world's strongest fiber' from wrapping around shafts and breaking things. It was strange to combine first, then swath! The stubble left was 4 1/2 feet tall after the combine went through. (One caution: you descend from the combine onto the ground very carefully!) After combining, the stubble is then swathed in the opposite direction of the combining and cut close to the ground. After 10 to 14 days of drying and turning with a gyro rake the straw is then baled. The average yield was 800lbs./acre for the seed and almost two tons/acre for the straw.

It was a good year for trying hemp on a commercial basis. To be in on this initial year was a terrific learning experience for me!

If you want to follow the progress of the crop in Manitoba, check out the web at www.congrowpro.com or Manitoba Agriculture @ http://www.gov.mb.ca/agriculture/intro/index.html. ■

How Significant Are Insignificant Figures?

By Jon Baldock

A major current issue among research consultants revolves around whether or not researchers should estimate the third digit in reading graduated cylinders. The intent of dropping the third digit appears to be to provide more certain data. Ironically, the result is exactly the opposite and the uncertainty it causes can be very large. It may seem like a minor issue, but it really goes to the heart of science – the reliability of measurements.

To see the irony and importance of this issue one must understand the relationship of significant digits to the error of measurements and how errors accumulate when measurements are combined in calculations (the latter is often referred to as "propagation of errors"). This whole issue arises from the fact that exact measurements are impossible (Ref 1, 2, 4). Thus, all measurements have some degree of uncertainty, which should be reported with the best estimate of the measurement in order to show its reliability. One use of significant figures is to provide a shorthand way of conveying the uncertainty of the measurement. That is, the range in percent error of measurements recorded to one significant figure is between 5 and 100 percent. For recording to two significant figures the range in percent error is 0.5 percent to 10 percent; for three significant figures it is 0.05 percent to 1 percent; etc.

For example, suppose we have a 100 ml graduated cylinder with a little over 57 ml of liquid in it (the cylinder is graduated in 1 ml increments). We estimate that the liquid is about 0.3 ml over the 57 ml mark. This volume should be read and recorded as 57.3 ml, so there are three significant digits. The implication of three significant figures is that the five is the most certain digit, the seven is the next most certain, and the three is least certain. In fact, the last digit is assumed to be approximate, which generally means we are uncertain whether the last digit should be two, three or four (compare Ref 2 and 3); but our best estimate is three. Thus, a more concise way to record the measurement would be: 57.3 ±0.1 ml. If the volume is recorded as 57 ml, then there are two significant figures. The implication of two significant digits is that the 5 is certain, but the 7 is approximate and the more concise way of recording the volume would be 57 ±1 ml. Thus, dropping the estimate of 0.3 ml and recording the volume as 57 ml may initially seem to be the more exact method. But in reality, the 57 ml recording is 10 times less precise because the uncertainty is ±1 ml instead of ±0.1 ml.

> "We should be more precise about our imprecision."

The ±1 and ±0.1ml are called the absolute errors in the readings. Often it is useful to compare the uncertainties using relative error, which is the absolute error divided by the best estimate of the reading and is usually expressed as percent. For the three-significant-digit reading, the relative error is 0.18 percent (0.1 ml*100/57.3 ml). And for of the two-significant-digit reading, it is 1.8 percent (1 ml* 100/57 ml). These percent errors reiterate the 10-fold advantage for three significant digits. We could usually accept the 1.8 percent error in the two-significant-digit case if that was the end result. But that is only the error for one measurement. The pernicious thing about errors is that they accumulate especially when measurements are multiplied or divided to get the final results. Specifically, the upper bound on the relative error of multiplying and/or dividing measurements is the sum of the relative errors of the individual measurements (Ref 1, 2, and 4). For example, one of the common formulas used in calibrating sprayers can be expressed as $GPA = [5940\ (V)\ (T_D)]\ /\ [(D)\ (W)\ (T_V)]$, where GPA is gallons per acre, 5940 is a conversion factor with units of minutes per acre, V is the gallons collected in a measured time T_V in minutes, T_D is the time in hours for the sprayer to travel the measured distance D expressed in miles, and W is the width in inches covered by one nozzle. As a result, the relative error in calibration, GPA_{re}, is $GPA_{re} = V_{re} + T_{D,re} + D_{re} + W_{re} + T_{V,re}$, where the subscript "re" indicates relative error. The conversion factor is constant and has zero relative error, so it drops out of the formula. Thus, if we have measured the volume, times, and distances to only two significant figures; then their

relative errors can be as high as 10 percent and the calibration error could be as high as 50 percent (10 percent+10 percent+10 percent+10 percent+10 percent). Even if we maintained the 1.8 percent relative error for each measurement, as with the graduated cylinder above, the error in calibration would be 5(1.8 percent)=9 percent, which is well above the guidelines of most protocols. However, if we have made the measurements to three significant figures, then the relative error is less than 1 percent and the maximum calibration error is 5 percent, which is the maximum stated or implied in most protocols.

There is much more to error analysis than can be covered here. There is good news and bad news in the rest of the story. The bad news is that these examples focused mostly on errors in reading graduations; instrument imprecision and calibration procedures can add substantially to the total uncertainty. The good news is that there are ways to reduce measurement error. For example, if you can assume the errors are independent and random, then using the mean of repeated measures reduces error. Those assumptions also allow the combined error to be computed with quadratic terms, which produce estimates of precision that are less than the upper bound method (Ref 1, 2, and 4). Perhaps the best news is that error analysis allows comparison of the individual relative errors to determine which measurements are the least precise and hence need the most attention. More information on measurement error, significant figures, propagation of errors and error analysis can be found in the books cited below, especially Ref 2. However, the web sites listed may be more readily accessible and they provide a good introduction.

In summary, all measurements have some degree of uncertainty, so it is important to report both the best estimate of the measurement and the precision (in raw data or by SOP). Significant figures provide a ballpark range for precision, but significant figures alone are often insufficient information to meet industry or GLP standards. We should be more precise about our imprecision. In my opinion, it is usually necessary to observe and report measurements to at least three significant figures to attain those standards. However, if properly done and documented, two-significant figures might work for some measurements. Failure to use the appropriate number of significant digits or determine the overall precision of our measurements may not rise to the level of high crimes and misdemeanors; but they are more than trivial oversights. They go to the heart of science — the reliability of our measurements and results.

Positive, negative, and neutral comments can be directed to me via phone: 608-845-7993, fax: 608-848-7999, email: agstat@aol.com or submitted to this newsletter.

1. Bevington, P.R. and D.K. Robinson. 1992. Data reduction and error analysis for the physical sciences. 2nd ed. McGraw-Hill. New York.
2. Taylor, J.R. 1982. An introduction to error analysis: The study of uncertainties in physical measurements. University Science Books. Mill Valley, CA. (There is a 1997 edition of this book.)
3. http://www.physics.uncc.edu/PhysStaff/M1/Sig_Figs_folder/Sig_Figs.html
4. http://www.sbg.ac.at/geo/Idrisi/landeval/s494ch5p.htm

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IPM INSURANCE

Thomas J. Buman and Robin Pruisner, Agren, Inc.

Numerous studies have found that risk is a major reason that farmers are not adopting conservation technologies such as IPM and nutrient management systems. In 1996 the National Research Council Board on Agriculture stated, "Risk plays a large role in a grower's decision to adopt a new pest-management system." Risk even prevents adoption of IPM and nutrient management systems that farmers believe are profitable.

A 1995 USDA Economic Research Service Study, titled "Voluntary Incentives for Reducing Agricultural Nonpoint Source Water Pollution," surveyed a number of farmers to determine why they are not adopting these win-win practices. This study found that although farmers *understand* the practices and *think they cut costs*, they still do not adopt them. In probing further the study found that with regard to both IPM and nutrient management, "risk" is one of the two principal reasons that best management practices are not being used.

The National Academy of Sciences in its landmark report, *Soil and Water Quality: An Agenda for Agriculture*, reached the same conclusion regarding nitrogen management. It stated:

Producers face a management dilemma because the effectiveness and efficiency of nitrogen management cannot be assessed, economically or environmentally, until the growing season is over. A crop that produces poor yields because of inclement weather will result in poor nitrogen use efficiency and uptake, nitrogen to be lost to the environment, no matter how carefully a management plan was designed. Since producers must make nitrogen applications without being able to predict weather and crop yields, the potential for being wrong is always present and will always occur in some years.

A second recent National Academy Report, entitled, *Ecologically Based Pest Management*, reached similar conclusions. It found:

The interaction of economic feasibility and risk largely determines the likelihood that an ecologically based pest management system will be adopted or implemented by growers.

Farmers rely on pesticides, fertilizers and other agricultural inputs to manage risk. In practice, farmers apply extra inputs for insurance, rather than testing or scouting to determine actual input needs. For example, farmers may prefer to apply a soil-applied insecticide for corn rootworm when they don't know whether rootworms will even be a problem. This prophylactic application of insecticide is for insurance purposes. As a second example, many farmers apply animal manure as a soil supplement. But again, only a few reduce their commercial fertilizer application rate. Less than half of the farmers applying manure in Iowa lowered their commercial fertilizer application rate when applying manure. Only 1 percent tested their manure for nutrient content.

INSURING CORN ROOTWORM BEETLE SCOUTING PRACTICES

Today, most farmers apply a soil

based insecticide every year, for corn-after-corn, not knowing if they need the insecticide. The insecticide is being used prophylactically. In discussions with entomologists around the Midwest, far less insecticide can be applied each year, particularly for corn rootworms, if proper IPM practices are used. In fact, after years of research Midwest entomologists have concluded that the use of soil-applied insecticide for rootworms can be eliminated on 40 percent to 50 percent of the corn-after-corn acres through proper scouting techniques. The total acreage of continuous corn in the United States in 1995 was 14 million acres (Source AREI, 1996). This can result in a significant reduction of insecticide use.

Currently, university recommendations exist for scouting corn fields (corn-on-corn), to determine if a rootworm insecticide will be needed next year. Scouting for the corn rootworm beetles is performed in July and/or August. At that time, a crop consultant can determine the level of beetle infestation and will make a recommendation on whether to "treat" or "not treat" the following spring for corn rootworms with an insecticide applied at planting.

When using proper IPM techniques, most Midwest entomologists suggest that if a recommendation not to treat is made there is less that a 5 percent probability that rootworm damage will occur the next year. Therefore, it seems that a recommendation to "not treat", based on proper scouting techniques, has little risk. In spite of the low risk, however, farmers and consultants are not adopting this practice.

Solution: To encourage the adoption of this practice, the Agricultural Conservation Innovation Center (ACIC)and IGF Insurance Company have developed an insurance policy, available in the Spring of 1999, that will insure producers they will not sustain economic damage from rootworm feeding if they follow set IPM recommendations when scouting for corn rootworm beetles. A model that takes into account the yield history of the field, and the projected corn price determines the price of the policy. IGF Insurance has estimated the insurance policy for this scenario to at $4-5 per acre. A farmer could cut his insecticide bill by two-thirds, if he replaced the insecticide with an insurance policy—assuming that the farmer spends $15 per acre on insecticide for rootworm control.

This policy is applicable to rootworm infestations in a continuous corn setting and rootworm beetle infestations in soybeans, which will be planted to corn the following year.

By providing this insurance policy, ACIC believes it can expand the use of corn rootworm beetle scouting across the entire Corn Belt. ACIC and Agren also believe that crop consultants can use this policy as an incentive for producers to employ the consultant's services.

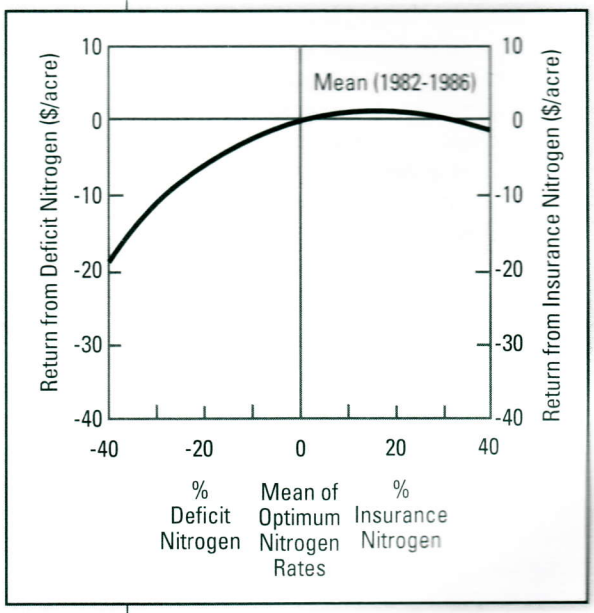
COLD SOILS POLICY FOR NO-TILL ACRES

A series of cold, wet springs has slowed down conservation tillage adoption in some regions. In spring of 1999 American Agrisurance, Inc., will be offering an insurance policy for farmers in Iowa and Indiana. The policy will offer coverage for farmers to insure them against cold weather during the three key weeks *(one ahead and two behind)* the published *(by American Agrisurance)* planting date. In this policy, a farmer can choose the percent of normal heat units he wants to insure and the level of coverage he wants to purchase. For instance, a farmer may choose to purchase $25 of coverage to protect against receiving less than 85 percent of normal heat units for the given three-week period. For $25 of coverage at 85 percent of normal heat units, the cost of the policy will range from $2-10 per acre, depending on the location. Coverage is available for 75-85 percent of the average.

NITROGEN FERTILIZER POLICIES

Profitable crop production requires significant amounts of nutrients in the form of commercial fertilizers, animal wastes and legumes, portions of which can subsequently run off into surface waters or leach into groundwater. According to EPA, nutrient pollution is the leading cause of water quality impairment in lakes and estuaries and the third leading cause of water quality impairment in rivers. Above a set concentration, nitrate is also a concern in drinking water. Based on human health effects, EPA has established a maximum contaminant level of 10 mg/liter for nitrate in public drinking systems. Above this level, nitrates can cause methemoglobinemia, which prevents the transport of oxygen in the bloodstream of infants and may be a cancer risk to humans (EPA, 1992). (Source: Agricultural Resources and Environmental Indicators, 1996-97)

Farmers rely on fertilizers and other agricultural inputs to protect and increase crop yields. In practice, farmers apply more than is necessary of a given input for insurance reasons, rather than using testing to determine actual needs. The following graph demonstrates why farmers are reluctant to lower fertilizer applications even when they can save input costs. If the farmer miscalculates the optimum nitrogen rate (the vertical line in the middle of the graph), he runs the risk of reducing his profit due to not applying enough nitrogen. Therefore, since nitrogen is inexpensive, farmers are able to *self-insure* their losses by applying higher than recommended rates of nitrogen.



The difficulty in managing nitrogen is compounded by the fact that much of the nitrogen is applied well in advance of when the crop really needs the nitrogen. Therefore, farmers have to apply nitrogen at higher than recommended rates to reduce the risk of

not having enough nitrogen available, especially in those years when significant leaching or denitrification occurs.

In the past five years, researchers throughout the Midwest have developed and researched several different BMPs that help farmers better predict the level of nitrogen needed by the growing corn crop. Researchers have shown that the development of these tests have the ability to significantly reduce the levels of nitrogen applied. "Practical and accurate testing methods that would allow nitrogen fertilizer recommendations to be made following planting are the single most important technical innovations needed to improve nitrogen management." (Source: Soil and Water Quality, An Agenda for Agriculture, 1993) The most notable of the nitrogen tests is the Pre-Sidedress Nitrogen Test (PSNT). Empirical results indicate that the PSNT (or late spring nitrate test) can "reduce nitrogen rates by a maximum of almost 40 percent while expected profits are simultaneously increased by up to $22.08/acre". (Babcock & Blackmer, 1992)

Unfortunately, this research showing a reduction of 40 percent nitrogen use is assuming that there is no uncertainty on the farmers' part about the reliability of the test (Babcock, Carriquiry, and Stern, 1996). In fact, often when farmers use the PSNT, they feel some uncertainty about it. To reduce this uncertainty farmers apply even more nitrogen than the PSNT recommends.

INCREASE THE ADOPTION RATE OF THE PRE-SIDEDRESS NITRATE TEST (PSNT)

In order to maximize the benefit from the PSNT, farmers need to have some assurance the PSNT will provide accurate results.

Solution: It is the desire of ACIC to develop a financial insurance policy that protects the farmer against the fear/risk that the PSNT performed will be incorrect, thereby reducing the amount of nitrogen applied. The policy will be available from American Agrisurance, Inc., in early 1999, and will cost $2-10/ per acre, for a maximum of $100 per acre of coverage.

RISK INSURANCE POLICY FOR FIRST YEAR CORN AFTER ALFALFA

In Wisconsin, where many farmers plant nitrogen-fixing legume crops, few accurately credit the fixed nitrogen (N) when managing the following crop. One study, including 740 farmers switching from legumes (alfalfa, clover or soybean) to corn, found that more than half did not credit the nitrogen from the legume. The farmers who did credit legume-produced N underestimated its value by 67 lbs./acre (P. Nowak, 1997).

On first-year corn following a legume crop in Wisconsin, nitrogen amounts per source average:

Purchased nitrogen = 63.42 lbs./acre
Legume nitrogen = 130.0 lbs./acre
Manure nitrogen = 147.29 lbs./acre
Average total N available = 340.71 lbs./acre

In this case, the legume nitrogen alone should have met the nitrogen demands of the growing corn crop.

The practice of applying fertilizer products in such a prophylactic manner is an insurance policy in itself. Crediting for nitrogen available from legumes or manure requires more skill than deciding the amount of a safe, prescriptive commercial fertilizer to apply. The farmer must trust his own judgment, trust an expert's estimate or trust a test. If the estimate is wrong, it can decrease the farmer's income.

Solution: ACIC proposes to develop an insurance product that protects farmers against the fear/risk that the nutrient testing being performed will be incorrect. In addition to alleviating fear and risk for the farmer, the insurance policy will have a positive impact on reducing commercial fertilizer use. IGF Insurance will be offering this policy.

ADJUSTMENT OF INSURANCE POLICIES

All of these IPM and BMP practice insurance policies must have a system to adjust them. Adjustment is the process of determining if the farmer's claim is correct. Adjustment also determines the level of payment due to the farmer. Unfortunately, these policies cannot be adjusted based on yield loss. Yield fluctuation can be attributed to many variables and is too inconsistent to be used as an adjustment criterion. The moral hazard of relying on farmers to produce accurate and honest yield records also precludes yield as a useful criterion. ACIC will be developing systems to adjust these policies in a manner similar to that used by insurance companies to adjust hail insurance policies. Hail insurance is not directly based on yield loss. Instead, hail damage is based on the level of injury to the plant. The level of injury is then correlated to a yield loss.

CONCLUSION

Whether real or perceived, the risk of losing profit by implementing best management practices and integrated pest management techniques is a major barrier in a farmer's decision process to adopt these practices. Farmers have come to rely on agrichemicals and fertilizers to reduce risk, and many are slow to reduce their reliance on those inputs, even if scientific evidence proves they are unnecessary. Farmers need assurance, in the form of dollar insurance, that the occasional failure of a lower-input agricultural system will not cause significant loss of income.

The Agricultural Conservation Innovation Center (ACIC) is working with private insurance companies to develop these BMP/IPM risk management instruments throughout the United States. It is ACIC's belief that these instruments should provide a powerful incentive for farmers to adopt these new "win-win" technologies.

For more information on any of these products, contact one of the following:

Tom Buman
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Agren, Inc.
312 W 3rd Street
Carroll, IA 51401
tbagren@netins.net
rpagren@netins.net
(712) 792-6248

Steve Hamilton
American Agrisurance, Inc.
PO Box 1574
Council Bluffs, IA 51502
SHamilton@amag.com
(800) 999-7475

Steve Griffin
IGF Insurance Company
6000 Grand Avenue
Des Moines, IA 50312
sgriffin@igfinsurance.com
(515) 633-1173

SPOTLIGHT ON THE STATES

Louisiana Consultants Met

The Louisiana Agricultural Consultants Association held its 1999 annual Spring Pest Management Workshop February 22-23, at the Louisiana Convention Center in Alexandria, La. The 1999 Executive Board was elected with **Randy Machovec** of Pest Management Enterprises, Inc., Cheneyville, La., as president. **Mark Smith** of Crop Management Services of Point Coupee, La., is on the board as immediate past president. Other officers elected to the 1999 board are as follows:

President-Elect (2000)
Dan Turner
Morehouse Ag Consultants, Inc.

Secretary/Treasurer (2000-02)
Cecil Parker
Agri Services, Ltd.

Director (1999)
Stanley Viator
Viator's Ag Advisory Service

Director (1999-2000)
Bruce Allemand
Pest Management Enterprises, Inc.

Sessions held during the two-day workshop included presentations on Marketing in the Freedom to Farm Environment, Pesticide Safety, Rice Production, Cotton Production, Sugarcane Production, Soybean Production, and Sweet Potato Production. Also included in the workshop was a panel on emerging technologies with industry personnel giving updates on new product recommendations for various crops this growing season.

The workshop ended on Tuesday evening with a social; door prizes donated by industry representatives were awarded.

Colorado Consultants Held Meeting

The Independent Agricultural Consultants of Colorado (IACC) held their 1999 annual meeting in February in Ft. Collins, Colo.

They chose **Kim Cook** as their president, Gene Gilbert as president-elect and Brian Lauritsen as secretary/treasurer. The group voted to pay $100 to each first-time member who decides to join NAICC, thus increasing NAICC support among state members. At the meeting it was also decided that IACC would donate $200 to NAICC's general fund. Last, the group voted to pay $500 toward President-Elect Gene Gilbert's attendance at the annual NAICC meeting in Portland, Ore.

Washington Group Held Third Annual Meeting

In an effort to develop continuity and relationships among in-state independent crop consultants, the Washington State Independent Crop Consultants recently gathered as a group for their third annual meeting in Yakima, Wash.

The meeting was attended by seven industry or product company representatives and presentations were made to the 10 attending independent crop consultants.

Don Jameson and Norm Hilbert of Miller Chemical Company planned the meeting. Hilbert has worked with a variety of agricultural companies over the years and formerly worked with Jameson at Agrimanagement, Inc.

The Washington State Independent Crop Consultants has not yet formalized itself as a legally chartered organization. ■

CALENDAR OF EVENTS

April 26, 1999
Professional Agricultural Consultants of New York State Spring Meeting, Phillipsburg, N.J., contact: Fred Hudson, (607) 756-9977 or fred.hudson@firstpioneer.com.

May 23-28, 1999
10th Annual Soil Conservation Organization Conference, Purdue University, West Lafayette, Ind., Contact: Mark Nearing, fax: 765-494-5948.

June 9-12, 1999
National Workshop on Constructed Wetlands/BMPs for Nutrient Reduction and Coastal Water Protection, Radisson Hotel - Canal Street, New Orleans, La. For more information contact Dr. Frank Humenik, NC State University, (919) 515-6767 (phone), (919) 513-1023 (fax), or FRANK_HUMENIK@NCSU.edu.

August 8-11, 1999
"Walk on the Wild Side," Soil and Water Conservation Society Annual Conference, Grand Casino, Biloxi, Miss. For more information contact SWCS headquarters at (515) 289-2331 or visit http://www.swcs.org.

October 22-24, 1999
NAICC Executive Board Meeting, Sheraton Old Town, Albuquerque, N.M. For more information contact Allison Jones at (901) 861-0511; (901) 861-0512 (fax); JonesNAICC@aol.com.

January 19-22, 2000
NAICC Annual Meeting, Doubletree Lloyd Center, Portland, Ore. For more information contact Allison Jones at (901) 861-0511; (901) 861-0512 (fax); JonesNAICC@aol.com.

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