# Giant Views

## of the Industry: Part 1

### Experts Within Major Seed Categories Address Trends and Challenges

***By Angela Dansby***

*Seed World* presents Part I of its third annual "giant views" of the seed industry, featuring comments from industry experts on issues of importance to seed, feed and food business. Some questions are crop-specific, while others are issue-specific and pertain to multiple crops. The views below address trends, challenges and opportunities in the seed sector today. Representatives without country listings are based in the United States. Part II will follow in the January 2006 issue.

## CANOLA & SUNFLOWER

***To what extent does palm oil threaten the use of healthier oils like high stability canola or sunflower oils in the United States for the reduction of trans fat in the food supply?***

**Pablo Ilarregui, oils channel manager, Dow AgroSciences:** The threat of palm oil to the adoption of healthier oils becomes real when the decision to use palm is based only on cost and not on health or functionality. Palm oil can be a good alternative to replace trans in shortenings but palm increases saturated fats in the process. There is no health or functional reason for palm oil to replace partially hydrogenated liquid oils in food service or food processing as the same stability or fry life can be achieved with high oleic canola or sunflower oils that contain no trans and have the lowest saturated fat content of all common edible oils. The challenge for the industry is to eliminate trans and simultaneously decrease saturated fats, as they are both unhealthful.

**Willie Loh, PhD, director of sales and marketing, Cargill Specialty Canola Oils:** As food companies move to address the trans fat labeling requirement, no single oil has emerged as the "panacea" for all needs. High stability canola and sunflower oils are two of many potential solutions for the food industry. Some companies will undoubtedly try using palm oil. However, "zero trans" is only a piece of the larger picture, which is improved nutrition.

Food companies ultimately must deliver more nutritious products to remain competitive in the marketplace.

**Suresh Narine, PhD, associate professor, Agri-Food Materials Science Centre, University of Alberta, Canada:** In the late 1980s, a public awareness campaign on the dangers of "tropical greases" resulted in the removal of palm oil from most food products in North America. Ironically, the new campaign against partially hydrogenated fats has aided in the resurgence of palm oil use in edible products in North America.

For solid shortening and margarine products, partially hydrogenated vegetable oils such as soy and canola have traditionally been used as a way of delivering a specific texture and extrudability required by the food industry. Partially hydrogenated fats can result in the formation of trans fatty acids (although some companies such as Bunge Oil have developed new hydrogenation methods that greatly limit the amount of trans in partially hydrogenated oils). Response to the trans fat legislation in the U.S. and the specter of even more stringent legislation in Canada has led food formulators to resort to fats naturally high in saturated fat, such as palm oil or fully hydrogenated canola and soy oils (which should theoretically contain no trans fat) as a way of avoiding trans in solid shortenings, margarine and confectionery products.

While high stability canola and sunflower oils provide a very good replacement for liquid frying fats, they do not provide the texture that is required for solid products. For example, Kraft Foods is using a combination of palm oil and high oleic canola oil for the filling in its trans-free Oreo® varieties. Without the addition of palm oil, it would be very difficult to deliver the texture expected by the consumers. Palm oil delivers the high saturates needed in the absence of partially hydrogenated fats for the required texture without resorting to hydrogenation, a process that has come under significant attack. In this manner, increase in palm oil usage is resulting in a decrease in the use of canola and soy oils. However, the function that palm oil or any other high saturate oil performs in solid shortenings, margarines and confections cannot be replaced by high stability canola oil. In the frying oil segment of the marketplace, use of palm oil as a low-trans alternative does threaten the use of high stability canola oil, but an emphasis on reduction in saturated fat in the diet will result in less palm oil being used in this sector.

**Michael Jacobson, executive director, Center for Science in the Public Interest:** Consumers and food companies alike have two good reasons to avoid palm oil. It's almost as bad for human health as the partially hydrogenated oils it is frequently replacing. Plus, palm oil plantations, particularly in Malaysia and Indonesia, promote deforestation and are pushing many already endangered animals closer to extinction. We're actively encouraging processed food manufacturers and restaurant chains to replace partially hydrogenated oils with healthier alternatives. Happily, a lot of companies are finding that they can successfully replace trans fat with heart-healthy oils like canola or soy. That's clearly the direction food companies should move in if they want to attract increasingly label-conscious consumers who are just as concerned about saturated fat as they are about trans.

## Corn/Maize

***How will increased ethanol production and use in the U.S. and abroad impact the corn industry?***

**Richard Tolman, CEO, National Corn Growers Association:** The growth in the ethanol industry is a springboard for several things

happening in the corn industry. First, ethanol is a catalyst for farmers to move into ownership of what they produce. There are more than 50 farmer-owned ethanol plants. They will provide a template for farmers as they look at other ownership and business opportunities in this new age of agriculture.

In addition, renewable energy is proving to be a great partner with agriculture in harnessing the tremendous productivity we benefit from in U.S. corn production. This productivity, primarily in the seed industry, will lead to an average of an additional 160 million bushels of corn production per year without any increase in acreage. The NCGA board envisions corn production of more than 15 billion bushels by 2015. Corn used for ethanol will grow from 1.5 million bushels to 3.5 million bushels by 2015. Some groups propose that renewable energy will be 10, 20 and even 50 percent or more of our transportation fuel by 2020 and beyond. Growth in ethanol use provides a great synergy for the growth in corn productivity.

**Otto Doering, PhD, agricultural economist, Purdue University:** The new U.S. Renewable Fuel Standard calls for the production of 7.5 billion gallons of renewable fuel by 2012 – a near doubling of current annual production. Ethanol and biodiesel are expected to make up most of the 7.5 billion gallons. To meet that goal, ethanol plants would use 2.5 billion bushels of corn, an increase in current usage of 1 billion bushels. U.S. corn surplus areas will see changes in corn movement, pricing and usage if substantial new ethanol production capacity is built to accommodate this demand. For example,

Indiana produces about 850 million bushels of corn a year. About 160 million bushels are fed to livestock and 225 million are processed in-state. The excess corn moves south and east to feed hogs and poultry and the rest is exported. Proposed ethanol plants might consume 150 million bushels of corn, reducing exports from 465 to 315 million bushels.

Potential impacts of increased ethanol production and use might be: 1) increased local corn prices (50-mile radius) of 10-15 cents; 2) increased feed costs for local hog, poultry and egg producers; 3) more production of distilled dried grains than might be absorbed locally; 4) decreased soybean production; and 5) altered marketing channels may eliminate some marketers, buyers and transporters. Other possible impacts from higher ethanol production include a need for fewer grain elevators, lower export volumes, and a move away from traditional crop rotations. U.S. gasoline consumption is about 140 billion gallons a year, so 7.5 billion gallons of renewable fuel will account for five percent of total gasoline use. Ethanol cannot supply all of our liquid energy needs, but it can contribute to the solution.

Non-U.S. ethanol production will be based on feedstocks like sugar cane, not corn. Also, the long-term growth in demand for U.S. corn has come from processing use, not exports. The two primary process demands also depend upon government programs, namely the ethanol subsidy and sugar program (supporting fructose).

**Tom Burrus, president, Burrus Hybrids:** Today, many of the ethanol plants are owned by corn growers. They are looking for ways to be more efficient in their plants. Grain premium opportunities are anticipated for growers who can deliver high fermentable corn. At Burrus Hybrids, we are working on a grain characterization project called "Advanced Agricultural Value Inc." to identify corn hybrids that are agronomically sound, high yielding and deliver grain profiles from which end users can capture value. Also, we are participating in the "Processor Preferred" effort through Monsanto that has a highly fermentable corn profile.

## COTTON

***What does the future hold for cotton genetics and new traits?***

**Bud Hughes, director, Verdant Partners, LLC:** No other crop has been so profoundly impacted by biotechnology as cotton. After only 10 years since being first introduced, transgenic cotton was planted on 83% of all U.S. acres in 2005 with only four states across the cotton belt planting less than 90%. Driven by the adoption of varieties with herbicide tolerant (HT) and insect resistance (IR) traits, the results of this shift have been impressive. The complexity of cotton farming, the total use of pesticides, and risks of catastrophic loss due to pests has been reduced dramatically. These results, along with improved management practices, a big increase in conservation tillage and new varieties improved through breeding, have produced record yields in a more sustainable way. But the future of cotton advances will be in technologies other than these. While additional HT and IR traits will continue to be commercialized and compete in the marketplace, it will take 10 more years for the next quantum advances to be a commercial reality on the farm. Fiber quality improvements, stress tolerance (i.e. drought, cold, etc.), and even higher yields will eventually be achieved through a combination of transgenic traits and breeding advances, both made possible by improvements in our overall knowledge of the cotton genome and molecular markers, and fueled by the growing funds available to the seed and traits industry for reinvestment in research and development.

**Tom Jagodinski, president and CEO, Delta and Pine Land Company:** Genetic and technological research for cotton has been gaining complexity for years. Variety development has become far more extensive and intense, resulting in additional research stations around the world and a wider germplasm base. While variety development is frequently referred to as conventional, there are dramatic increases in technology, including molecular markers. The reliance on employees' experience and its importance increases greatly as you involve biotechnology, particularly as you develop varieties that contain traits from multiple technology partners.

**Greg Lewis, PhD, vice president, Business Development, Athenix Corp.:** In cotton, we are likely to see an increase in the number of trait providers as well as a broadening of the spectrum of traits becoming available. In the short term, apart from improvements in the performance of existing traits, additional herbicide tolerances will be added to provide more flexibility in crop and weed management. In the pest management arena, resistance to sucking insects like Lygus and plant bugs will be developed and made available in the next few years as will resistance to nematodes. Salinity, drought and cold tolerances are being developed and one or more of these traits will be utilized in cotton depending upon demand. Fertilizer use efficiency, fiber yield and certain quality parameters, especially fiber uniformity, can and will be addressed using transgenes, but these are more complex traits and will likely take more time to accomplish.

## EQUIPMENT/ENGINEERING

***How do seed companies select the right equipment for their needs?***

**Fritz Hoeckner, president, Wintersteiger Inc.:** Budgets at most seed companies are tight and they need to make sure they invest their money wisely. They have a close look at what efficiencies and improvements new equipment will offer them. They are concerned with speed, accuracy and reliability of new equipment on one hand and the support level of the supplier on the other. New equipment needs to be able to do planting/harvesting faster and more accurately. Many times seed companies want to rely on proven machines and solutions. We work closely with our customers to demonstrate machines in the field and give our customers a comprehensive understanding of the capabilities of new equipment. We also offer extensive service and field support programs to our customers across the country to assure smooth planting and harvesting seasons.

**Curt Davis, vice president of sales, Bratney:** A seed company would first analyze its whole facility with respect to capacity and quality requirements to obtain overall assessment of problem areas. Often a company will purchase a new piece of equipment based on a capacity or quality increase as it may need to operate more efficiently. Next, a company would look to see if there is new technology in equipment that can solve multiple challenges with one machine purchase. A color sorter is a good example; it will increase a plant's capacity and quality with one purchase.

Advances in seed clean-out efficiency would also be considered. A company can purchase equipment that reduces clean-out time, thus, reducing labor costs. In addition to labor savings, the operation of modern equipment has become easier, making the equipment more flexible to multiple operators.

Physical space restrictions within a

current system are also a challenge that can influence a company's equipment decisions. Limited space seems to always be a challenge. Most manufacturers are doing a good job with designing equipment to increase capacity, increase quality and reduce clean-out time – all in a smaller footprint than was previously required. Consulting with an experienced manufacturer representative is quite common in determining the right equipment to meet a seed company's needs.

**Patrick Clem, sales and marketing manager, ALMACO:** Our goal is to provide equipment that offers a return on investment to our clients in a short amount of time through process automation, efficiencies, and extended product life. When we meet with clients who are in the market for new equipment, we spend quite of bit of time on the front end addressing their exact desires in the configuration of a piece of equipment. We also learn about their research program and how the equipment will be used to support research goals. It's important to gain some insight into what type of equipment clients have used in the past and what their likes and dislikes are about their current equipment. Hands-on interaction is key to our clients as well. We often provide product demonstrations in the field to give prospective clients exposure to our equipment prior to making a purchasing decision. This gives them the opportunity to take a "test drive" and provide feedback on any possible changes they may desire. We invite many clients to our facility to interact with our production people as the machine is being built to configure the ergonomics of the seed handling application on the equipment. All of this information is then used to design a specialized piece of equipment that is very unique to the clients' specific needs. Value-added customer service and support is very important to our clients. We pride ourselves in offering the highest level of technical and in-field customer service in the research equipment industry and this is a major factor in our clients' purchasing decisions.

## FARM/FORAGE

***Is demand for organic forage seed increasing and if so, where?***

**Mac Ehrhardt, president,**

**Albert Lea Seed House:** Yes. There is strong demand for improved organic alfalfa and clover varieties. Where we market seed (MN,IA,WI), there does not seem to be strong demand for organic forage grass seed, but that may change as we get improved varieties and if the National Organic Standards Board tightens up the organic seed rule.

**Bruce Ceranske, owner, Legacy Seeds:** Demand for organic forage seed is increasing, but supply is not. It is very difficult to produce organic alfalfa seed due to weed control problems without the use of herbicides. In addition, not being able to use an herbicide desiccant to strip the leaves off makes it more difficult to harvest seed pods. With organic production, we cannot use insecticides either. Bugs like Lygus can be difficult to control in alfalfa seed production. The genetics in organic production are much older, too, which don't help agronomic challenges. Needless to say, what organic seed is produced is considerably more expensive. However, people are willing to pay for it. In order to help meet demand, producers who cannot obtain organic seed are allowed to use untreated non-organic seed, according to the National Organic Program. This will help boost supply.

## ORGANIC

***What can the U.S. learn from Europe regarding organic seed production and use?***

**Richard Siegel, JD, Richard D. Siegel Law Offices**: Since 1995, the European Union (EU) has had a standard that farmers must grow organic crops with organically grown seed whenever a suitable organic variety is avail-

able. This has led to a new commercial organic seed market in Europe. In the U.S., the National Organic Program standards imposed a similar requirement in 2002. The EU's decade of experience has taught much to U.S. seed companies. The EU tried to impose blanket deadlines – Dec. 31, 2000, which was extended to Dec. 31, 2003 – after which all organic farmers would have to use organic seed exclusively. In 2003, the EU scrapped the deadline. As in the U.S., EU organic farmers may still use conventional seed as long as they can convince their organic certifier that they cannot find an appropriate organic variety. However, EU Member States have started web sites where farmers can see which organic varieties are available. A similar web site is planned in the U.S. Finally, instead of a blanket deadline, the Dutch have lists of specific organic crops that allow only organic seed use because the country has enough organic seed varieties for those crops. This gives Dutch organic seed suppliers niche markets in which conventional seed does not compete. U.S. seed companies are watching this with interest.

**Patty Buskirk, president, Terra Organics LLC:** The organic seed industry in both the U.S. and Europe will only grow to it fullest potential when organic seed laws are strengthened and enforced to require the use of organic seed with no exceptions. Europe will be a leader well before the U.S. in organic seed enforcement and regulations.

**Maury Johnson, head of production and sales, Blue River Hybrids:** The U.S. can learn something from the EU in setting up a mechanism to determine if adequate supplies of organic varieties are available. We need to move the process along in the U.S. to establish a national framework to know what's available in organic seed varieties. There should be no exceptions for the use of organic seed if enough of it is available. For example, organic field corn seed is rather plentiful. It would be helpful if the National Organic Standard Board recommendations of August 2005 to tighten rules for organic certifiers granting exemptions were enforceable. If sufficient organic seed is available, it should be mandatory to use.

## SEED ENHANCEMENTS

***How can seed inoculants and biologicals reduce chemical inputs on crops?***

**Calvin Sonntag, CEO and president, Philom Bios, Canada:** Farmers and retailers might want to think of some of today's high performance inoculants, such as MultiAction™ TagTeam®, as fertility efficiency tools. TagTeam®, for example, now registered for most major legumes including soybeans, ensures a robust supply of plant available nitrogen in the treated crop and also helps provide substantial nitrogen for next year's crop.

Similarly, phosphate solubilizing inoculants present in technologies like TagTeam® or JumpStart®, which is registered on most major crops including corn, wheat and soybeans, can significantly improve the efficiency of a farmer's phosphate investment by accessing otherwise unavailable soil phosphate and/or improving the efficiency of fertilizer applied phosphate. When proactively and regularly incorporated into a farmer's crop nutrition program, these kinds of fertility efficiency technologies can significantly improve net returns.

**Christian Verschueren, director general, CropLife International, Belgium:** Biologicals, in the broadest sense of the word, include biopesticides that utilize micro-organisms (bacteria, viruses, fungi or protozoa) as the active ingredient to kill or inhibit a target pest. Examples of biopesticides sex pheromones, which disrupt the mating of the target pest or attract them to traps, and beneficial organisms, such as insect predators and parasitoids. Generally, biologicals have very low toxicity or impact on non-target organisms. Seed treatments can be based on either chemical pesticides or microorganisms; they provide an accurate means of delivery of the active ingredient, minimizing product losses.

Biologicals and seed treatments are both useful tools that can be used within an integrated pest management (IPM) strategy. IPM, as described in the Food and Agriculture Organization's International Code of Conduct on the Distribution and Use of Pesticides adopted by FAO member governments, the pesticide industry and interested NGOs, is "… the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms."

While biologicals and seed treatments are useful tools, they are effective only against a limited number of pests and/or certain environmental conditions. As such, it is an undeniable fact that the mainstay of IPM programs is the responsible and effective use of chemical pesticides. A number of IPM programs have substituted some applications of chemical pesticides, and hence, have resulted in an overall reduction in pesticide use. However, this is

not always the case, and should not be the primary aim of IPM, which is the effective management of pests.

**Bill Buckner, head, U.S. Crop Protection, Bayer CropScience:** I don't know that either inoculants or biologicals will have a significant affect on chemical inputs, especially traditional crop protection products. By definition, at least historically, inoculants and biologicals are defined as living microorganisms. Nitrogen-fixing bacteria have been used for years as inoculants for legumes (peanuts, soybeans, alfalfa, etc.). At least in theory, the use of nitrogen-fixing inoculants can help reduce the need for synthetically produced nitrogen products.

In a similar fashion, biologicals, such as our seed-applied Kodiak® and Yield Shield® products, limit opportunities for soil-borne disease organisms to attack the plant by covering the root surface with high populations of beneficial bacteria. These bacteria then exist in a symbiotic relationship with the plant. In the case of Kodiak® and Yield Shield®, we would probably most accurately describe them as compliments to our more traditional products, not as replacements. In our view, these products can serve as product line extensions and may fit well into emerging markets like organic crop production. Bayer CropScience continues to seek innovative solutions for crop protection and these products (inoculants and biologicals) provide one more avenue of development in the future.

**John Wilke, product manager of seed enhancements, Becker Underwood:** Legumes are unique in that they are able to extract nitrogen from the atmosphere (instead of the soil) when the appropriate strain of rhizobia bacteria are present. Our inoculants provide the proper bacterial strain in the right place at the right time to provide a growing plant the tools it needs to utilize this process. Properly inoculated legumes often do not need additional chemical fertilizers, cutting down fertilizer expenses, soil leaching, nitrates in water, etc.

Newer generation products may contain other biological inputs as well. As an example, our Vault® product is a combination of both inoculant and biofungicide. It utilizes a unique strain of Bacillus subtilis bacteria, which colonizes the root system, providing later-

season suppression of diseases such as Fusarium, Rhizoctonia, and Alternaria. This arrangement works well with traditional seed-applied fungicides, as the early season disease control is handled by chemical inputs. As those chemical fungicides break down, the biological fungicide gains strength, fighting diseases later in the plant's life.

## SEED TESTING

***What is the best approach to testing for genetically modified traits in seed?***

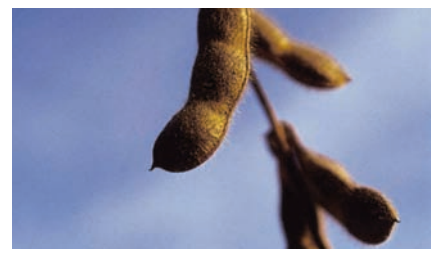
**Anita Hall, executive director, Society Commercial Seed Technologists, Inc.:** Selecting the appropriate test for seed will ultimately depend on the end use of the results. Are you looking for the absence or presence of a trait or do you need quantitative data? The best approach to testing for genetically modified traits is to understand the ultimate use of the tests and then to talk with the laboratory or technologist that will be performing the test. The technologist will be able to describe the four types of tests commonly used by the seed industry to test for traits: herbicide bioassay, immunoassay (ELISA, lateral flow strips), electrophoresis (PAGE, IEF, starch-gel), and polymerase chain reaction (PCR) and help you select the test that will best fulfill your needs. Five years ago, the SCST created an accreditation program for technologists in these four areas. The program ensures that the technologist is proficient in both the theory and practical application of the genetic purity tests currently utilized by the seed industry. Using a laboratory with a certified or registered genetic technologist ensures that GM tests are conducted by an experienced technologist. The SCST Genetic Technology Committee and working groups are extremely active in providing training and education to keep members up-to-date in this rapidly evolving area of seed testing.

## SORGHUM

***What are the barriers to grain sorghum expansion in the U.S.?***

**Mitch Tuinstra, PhD, associate professor, Department of Agronomy, Kansas State University:** Grain sorghum is economically important in areas where low and erratic rainfall and high temperature limit the production of other summer crops. Sorghum typically replaces corn production in the more marginal dryland environments of the Central Great Plains region. Despite the importance of sorghum for farmers in this area, acreage has decreased over the past 20 years. Why? One of the main reasons has been the loss of private sorghum research positions and funding as a result of attrition and corporate consolidation. These cuts are defended based on the relative value and volume of sorghum seed sales as compared to corn. "Corn is king" as the industry says. Consequently, technological developments such as tolerance to herbicides and resistance to pests tend to favor corn and soybeans – the higher value seed crops. Marketing programs also tout these advances and naturally emphasize the success of hybrid corn.

So should sorghum researchers change their emphasis to corn? I think farmers in this region would say "no" since this would undermine the economic stability of their farming operations. Recent studies have shown that sorghum produces higher and more stable yields than dryland corn in these environments. Sorghum has been described as the "wonder crop" of semi-arid and arid agriculture and will continue to play an important role in dryland agriculture.



## SOYBEAN

***Will efforts like www.weedresistancemanagement.com be enough to prevent glyphosate resistant soybeans from developing resistance to weeds?***

**Howard Gabe, PhD, consultant soybean breeder, Brazil:** As I remember it, glyphosate never did control giant horseweed effectively in the Midwest and it was always a case of applying the recommended rate when weeds were small in order to gain any control at all. This rule should always apply because as weeds get bigger, they resist many of the post-emergence herbicides. Glyphosate has been so good because when you apply it to small weeds, soon after emergence, it kills almost everything, but there have always been exceptions and ryegrass is one. There are several morning glories that are not effectively controlled either.

Now that the use of glyphosate resistant soybeans has been cleared for commercialization in Brazil, it is inter-

esting that so far there hasn't exactly been the rush to buy that people had envisioned. As you move north into Mato Grosso (28 percent of Brazil's soybeans are now produced in this state), there are numerous tropical weeds, which either don't occur in the south, Argentina, or the U.S., that glyphosate doesn't seem to control. One such weed, Commelina benghalensis L., is a plague in Mato Grosso and other tropical soybean-growing areas. Called tropical spiderwort in the U.S., it occurs in Louisiana, Georgia and Florida, but doesn't seem to have attracted much attention there. And there are other weeds in Mato Grosso that seem to be resistant to glyphosate, so local farmers are already talking about using tank mixes with glyphosate and other products, such as 2,4-D.

***William G. Johnson, PhD, associate professor, Department of Botany and Plant Pathology, Purdue University:*** No, online educational efforts are not enough to inform farmers of the value of preserving glyphosate resistant technology. A concerted education effort with growers for alternative control tactics will be required along with incentives to follow different production practices. Incentives could be aesthetics by showing them cleaner fields or seed companies establishing pricing programs, packaging seed and chemicals together for a discounted price. In many cases, growers will have to see the benefits in order to change practices. Weed resistance problems could result from the misuse of glyphosate resistant technology, so the real educational opportunity is with farmers spraying glyphosate three times for weed control. Ultimately, farmers are in the best position to protect the technology, so they will need to be both informed and motivated to do so.

## TRADE

***What is the outlook for improving the market aspects of***

***agriculture within the World Trade Organization?***

**Allan Gray, PhD, associate professor, Department of Agricultural Economics, Purdue University:** The outlook for improving the market aspects of agriculture in the current WTO negotiations are not good. Unfortunately, the U.S. and European Union (EU) failed to realize soon enough that the "Group of 20" developing countries, including Brazil, India, and China among others, has considerable negotiating power. Without the U.S. and EU bringing about real changes in the subsidy programs to farmers, the Group of 20 will not agree to a new trade deal. Recently, U.S. trade negotiators proposed a pretty aggressive reduction in farm subsidies, but only if the EU follows suit and if developing countries provide quid pro quo in removing their trade barriers so that U.S. and other products can flow more freely into their countries. The problem is that the E.U., and particularly France, is not willing to accept as large of a cut in farm subsidies as the U.S. is proposing. And developing countries that lack the treasury resources of the U.S. and EU are not willing to forgo their only means of protecting their producers until they are sure that the U.S. and E.U. will carry through with their proposals. Compounding the log-jam in negotiations is the U.S. Senate Agriculture Committee's recent statements indicating their increasing displeasure with the Administration's attempts at negotiating trade policies that would essential rewrite the 2007 Farm Bill. Congress and the Senate in particular believe that it is their purview to write U.S. farm policy, not the Administration and/or WTO. It is with these factors in mind that I say the WTO negotiations set to occur in China in December are unlikely to provide real improvement in agricultural markets.

**Gregg Young, director of multilateral affairs, Foreign Agricultural Service, U.S. Department of Agriculture:** The outlook is good if WTO ministers can jump over protectionist hurdles. The real question is the degree to which countries will get over sensitive products or issues that restrict trade. Such market access limiting provisions will guide the negotiations. Patience is called for in reaching an agreement. Much good is currently at stake in terms of reducing subsidies and trade-distorting provisions. WTO members are in a better position now than they were in the

Uruguay Round. The U.S, for example, asked for market access improvements then, but little happened. This Doha Round has been better in opening up markets. But a challenge is that the EU is proposing the market access provisions it did in the Uruguay round and the U.S. doesn't think they are adequate. The U.S. is proposing less subsidies, tariffs and cuts on domestic support than the EU for improved market access.

## WHEAT

***Is gluten-free wheat a pipe dream?***

**Klas Hesselman, chef, Svailof Weibull, Sweden:** No, but the normal gluten wheat market is so much larger

than a special gluten-free market that interest would be limited. Secondly, the risk of contamination of normal wheat into gluten-free wheat is obvious, so it would be very hard to market such a variety anyhow.

**Roberto Javier Peña, PhD, head, Cereal Quality Laboratory, International Maize and Wheat Improvement Center (CIMMYT):** If I understand the term "pipe dream" as an impossible dream, then the short answer is yes. Wheat gluten protein is a fundamental component of the wheat organism. It is the way the seed stores reserve nutrients, which allow wheat to germinate later. Gluten-free wheat can be obtained through genetic manipulation but the upset to the metabolic functions of the seed will be very large so that the gluten-free wheat would not be highly appreciated as a commercial crop.

**Angela Dansby is editor of *Seed World*.**

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