

MICHIGAN FARM NEWS

MICHIGAN'S ONLY STATEWIDE FARM NEWSPAPER

MICHIGAN FARM BUREAU



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Michigan State Fairgoers Witness the Miracle of Life



In both state fairs held recently in Escanaba and Detroit, county Farm Bureaus rallied together with Michigan Farm Bureau and the help of Blue Cross Blue Shield, Michigan State University's College of Veterinary Medicine and the Michigan Veterinary Medical Association to present fairgoers the miracle of life that happens everyday on Michigan farms. At the Michigan State Fair alone, over 375,000 fairgoers witnessed the birth of 26 sheep, 11 calves, 26 pigs and 343 chicks.

Political leaders meet with MFB board

Preserving Michigan's farmland resources will continue to be one of the major challenges facing agriculture, according to Sen. Dick Posthumus (R-Alto), majority leader of the state Senate.

Speaking to the Michigan Farm Bureau board of directors, Posthumus said the state should move forward to implement agricultural security zones as a way to enhance the effectiveness of the P.A. 116 (Farmland and Open Space Preservation Act) program. "Obviously P.A. 116 has helped, but I think we need to go beyond that," he said. "The problem with P.A. 116 is that it involves fairly small blocks of land and if everyone else around you is not in it, it doesn't have the full effect we need of keeping that land in agriculture."

He also called for assessing agricultural land based on its actual farm use rather than its highest potential market value. "We've got to change that, because it clearly forces land out of agricultural production," he said.

Posthumus believes in continuing to fund agriculture research at Michigan State University to help Michigan agriculture keep its competitive edge. "If we're going to continue a viable agriculture in Michigan, we've got to compete with every other state and every nation. What we do here may be different — our land may be different, our climate may be different, our capital investments from processing plants may be different. We need to continue to find out what our competitive advantage is over our neighbors," he said.

The west Michigan senator also challenged farmers to continue telling their local school boards how important it is to support FFA and vocational agriculture.

Spencer Abraham, Michigan's Republican U.S. senator, also met with the MFB board. He thanked MFB for supporting the fiscal goals of the Republican Congress and praised Farm Bureau's regulatory reform policies. "Delaney reform is a good first step and certainly reflects a growing awareness of how often regulations promulgated by bureaucrats really don't end up being useable when they are applied in reality," he said.

Abraham told board members that reinstating income averaging "has a good chance of getting on the radar screen" in the next Congress.

He also described the benefits of what he hopes will be a Bob Dole presidency. "Bob Dole has led the fight in the Senate on the agriculture committee, as well as on the floor itself, reforming the tax laws to help family farms. He's led the fight for the Freedom to Farm Act. Clearly, agriculture issues have been at the top of his agenda his entire career. I'm sure in the White House they will occupy a uniquely high role, especially in relation to where we've been the past few years," Abraham said.

Bob Dole has been endorsed by the MFB AgriPac.

Monsanto to announce new grower agreement this month

If you're wanting to try some Roundup Ready Soybeans on your operation next year, you would be well advised to get with your seed supplier early this year, advises Doug Little, a local market manager for Monsanto, based in Michigan. He predicts that it will be at least 1998 before the technology is available on a widespread basis throughout the state.

While the majority of the 12,000 acres planted in southern Michigan this year were primarily Group IIIs, Little expects that more producers will be able to take advantage of the new technology next year with limited availability of Group IIs and Group Is.

"We benefitted somewhat this past year because of the additional Group IIIs that were left over from southern states that weren't able to get them planted in time, allowing more southern Michigan producers to try them," Little explained. Nationwide, there were 1.2 million acres of the new beans planted this season.

Little says most producers used the Roundup Ready technology on some of their toughest, weediest fields, and have been very pleased with the resulting weed control. The final verdict on actual yield performance, however, will soon be determined.

"That's a question that a lot of people have on their minds," Little admitted. "Our position all along in this technology, is that we would produce

competitive yields equal to or better than the current herbicide programs."

Among the bigger lessons learned in the first year of Roundup Ready Soybeans, was the need to rethink the controversial grower agreement. Steve Joehl, Monsanto's market development manager for Roundup Ready Soybeans, says the company plans to introduce a new agreement in mid-September.

"We realized that we had to make the agreement much easier to understand and that it had to be more benefit-oriented for the farmer," Joehl said. Although he declined to give specific details, Joehl said the new agreement would help the producer to understand the technology and provide additional rate and drift control recommendations. "Don't assume what we did last year is what we'll do this year," he said.

The international trade issue has also apparently been laid to rest, Little says, with a European agreement finally in place to accept the soybeans. He anticipates that the Japanese market will sign a similar agreement sometime in September as well.

Monsanto plans to continue charging a "technology fee" in the \$5 range. That will add roughly \$7.50 per acre in additional costs and when added to the cost of the recommended one quart rate, will make total weed control costs per acre in the \$15 to \$18 range, according to Little.

He contends, however, that improved weed control and a wider application window of four to

six weeks after planting will be a good investment for producers. "The beauty of this technology is that we know it works and if the weather pattern isn't right or weeds do break later, you can go back in with Roundup and be sure that it's going to be safe on the crop and kill the weed," Little concluded.



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News in Brief

MDA recruits for Michigan pavilion at food show in Chicago

The Michigan Department of Agriculture (MDA), in conjunction with the Michigan Jobs Commission, is now recruiting exhibitors for the Michigan pavilion at the U.S. Food Export Showcase (USFES) to be held in Chicago on May 4-6, 1997.

"Michigan had a strong showing of 13 food companies in this year's export showcase, and we'll build on that success in 1997," said MDA Director Dr. Gordon Guyer. "Our state has many high-value food products suitable for export markets. And the nearby Chicago showcase is the most valuable North American venue for export and domestic sales for many of them."

The U.S. Food Export Showcase attracts about 7,000 international buyers, plus 20,000 domestic buyers. USFES is held concurrently with the Food Merchandising Institute's Supermarket Industry Show in Chicago's McCormick Place. Last year Michigan and 34 other states organized delegations at USFES.

The 1997 Michigan pavilion has room for 16 companies showcasing fruits, vegetables, processed products, beverages, snack foods and other export-ready foods.

Booth cost for Michigan exhibitors will be \$1,600. Reservations and payments must be received in Lansing by Oct. 31. Since USFES is now sold out, Michigan's 16 booth spaces will be distributed on a first-come, first-serve basis.

For more information, contact Denise Yockey, International Marketing Manager, MDA, at (517) 373-1058. ■

Milk hormone losing favor with milk producers

Over two years ago, the introduction of the bovine growth hormone Posilac was expected to revolutionize the dairy industry. Cows were expected to produce more milk because of the product. And unfounded health concerns among consumers because of the synthetic hormone were well documented.

Today, Posilac does not dominate dairy farms across the country. In fact, only 10 percent of the nation's dairy cows receive the hormone treatment, according to the Agriculture Department.

Economics — not health concerns — is the main reason for the product's lack of appeal. A dose of Posilac costs \$5.80, adding to dairy farmers' already escalating production costs.

The Monsanto Co., disappointed by the lack of sales of its product, is offering loyal BST users a 10 percent discount on Posilac. ■

County annual season well underway



The county Farm Bureau annual meeting season filled with policy debate on local, state and national issues kicked off in August in a few counties throughout Michigan, including Gratiot County Farm Bureau under the direction of County President John Weller. If you haven't already attended your county annual meeting, join your Farm Bureau neighbors in deciding the issues your county takes a stand on.

Rail merger gains final approval

The federal Surface Transportation Board has given its blessing to Union Pacific's proposed \$5.4 billion acquisition of Southern Pacific Railroad, clearing the way for the largest railroad in North America.

Opponents can appeal the board's decision in federal court, but industry experts say such action would not succeed because Congress gave the board absolute authority to approve railroad mergers. Most judges are reluctant to overturn the board's rulings. The American Farm Bureau Federation opposed the merger. ■

Sunflowers becoming hot commodity

Farmers whose wheat crop suffered at the hands of Mother Nature this summer have discovered a viable alternative — sunflowers. In Kansas, the Sunflower State, sunflower acreage has more than tripled in the 1990s. The seed is valued by food processors as a source of "healthy" vegetable oil because it's low in saturated fat.

Worldwide demand for sunflower oil and seeds is rising about 3 percent a year, said Larry Kleingartner, president of the North Dakota-based National Sunflower Association.

Although Kansas is known as the Sunflower State, North Dakota is the nation's leading producer of the seed, producing about seven times as many seeds as Kansas. South Dakota and Minnesota follow.

For you trivia buffs, Kansas is called the Sunflower State because of the number of wild sunflowers that grow in the state. ■

Study: Cow's milk not a diabetes causer

Refuting earlier claims that cow's milk fed to infants could cause the onset of diabetes, researchers at the University of Colorado at Denver found babies under the age of three months who consumed the milk were not more likely to develop a type of autoimmune disorder that is an early predictor of diabetes.

The researchers said their evidence disputed previous reports that showed a 60 percent increased risk of diabetes from the consumption of cow's milk. Of the 253 children studied, the researchers found no connection between milk and autoimmune problems that developed in 18 children.

"Cow's milk has many valuable nutrients and forms a critical part of the diet of many infants and children throughout the world," the researchers said. "Thus, feeding practices that exclude cow's milk should not be adopted without a strong scientific indication. In our opinion, such an opinion has not been clearly established." ■

Midwest farm economy to face more changes

The current farm picture — declining grain stocks, the new farm bill and changes in livestock production — may force Midwest farmers and food processors to face difficult changes and possible restructuring down the road, according to a Federal Reserve Bank economist.

Michael Singer, a Fed agricultural economist, said how farmers and food processors deal with decreasing hog production in the Midwest and declining milk processing and cheese production will have important implications for jobs and wages in rural communities. Singer noted a trend increasing the number of large-scale hog facilities in the Southeast.

"If this trend continues, the Midwest could lose its dominance in pork processing, similar to its loss of beef processing in the 1970s," Singer predicted. ■

New farm bill a hit?

The Agriculture Department reports that 89.1 percent of all eligible farms, covering 98.8 percent of the nation's eligible acreage for wheat, corn, oats, barley, sorghum, cotton and rice, had been enrolled in seven-year production flexibility contracts made possible by the 1996 farm bill.

Those enrollment figures compared to the 1990 farm bill, which had only about 50 percent of the eligible farms enrolled, cover about 85 percent of the eligible cropland.

"For a new farm bill, I believe this has been one of the smoothest sign-ups in many years," said Agriculture Secretary Dan Glickman, speaking about the one-time farm bill sign-up period that closed Aug. 1 — not to be reopened for the entire seven-year run of the program. "Everyone working under great pressure and an exceedingly tight schedule made it possible for the nation's producers to participate in this program on schedule."

About 1.7 million farms covering 207.5 million acres enrolled in the program. Corn holds the most acreage at 80.7 million acres, followed by wheat at 76.6 million acres and cotton at 16.2 million acres. Farmers will likely begin receiving PFC checks by the end of next month. ■

Poultry exports

U.S. poultry producers are expected to export 5.2 billion pounds of poultry this year worth well over \$2 billion. Export levels of broilers, other chicken, turkeys and eggs are above last year's numbers, but the growth is expected to slow in the second half of the year, according to the Agriculture Department. Strong exports to Russia and Hong Kong are pushing up the export forecast.

Wholesale broiler price increases have been sufficient to offset most of the increases in feed costs, meaning returns for producers this year will likely reflect a profit, although those profits will likely be lower than last year, USDA said. However, the news for turkey producers is not as good with turkey prices not rising enough to cover the increased feed costs. Egg producers have, of late, seen a return to profits following negative net returns in May and June, but USDA said profit numbers are still well below those of a year ago. ■

Corn growers secure research deal

The National Corn Growers Association and the Department of Energy signed an agreement last week to conduct research on the feasibility of converting corn fiber to industrial chemicals.

The deal, known as a Cooperative Research and Development Agreement, details an arrangement between the Corn Growers and the Golden, Colorado-based National Renewable Energy Laboratory to conduct the research using federal funds and corn grower-generated checkoff dollars.

"If we crack just 20 percent of this market, it'll consume up to 100 million bushels of corn a year," said Russell Williams, a farmer from Leaf River, Ill., and chairman of the Corn Growers' Research & Commercialization Committee.

The research project will examine the conversion of corn fiber into chemicals such as ethylene glycol, propylene glycol and others. The chemicals, now largely derived from petroleum, are used in a wide range of commercial products such as antifreeze, paint, adhesives, plastics and polyester fiber. ■

Farm cooperatives hit revenue record in 1995

Farm cooperatives netted a record-setting \$2.4 billion in revenues from a high of \$94.3 billion in sales last year, according to the Agriculture Dept.

Total sales rose 6 percent over the previous record of \$89.3 billion set in 1994; net income also increased 20 percent over 1994's high of \$2 billion. The records are attributed to the increased marketing of grains, oilseeds, fruits and vegetables, and higher prices for produce, USDA said.

Despite 1995 being a record financial year for farm cooperatives, around 11 percent suffered losses. Losses amounted to around \$85 million, down from \$159 million in 1994, according to the agency. Membership totals also dropped 5 percent — to 3.76 million — from a year earlier.

Sales of farm supplies also increased by 2 percent last year — at \$21.2 billion — and commodity sales rose by 6.2 percent — at \$69.6 billion, USDA said. ■

Proposed EPA rule draws fire

Several scientific societies have criticized a proposed Environmental Protection Agency rule that would label and regulate pest-killing substances made by genetically engineered crops, and the genes used to make them, as "plant pesticides."

The scientific groups issued a report that called the plan "scientifically indefensible." The report said the wording of the plan could call into question "public confidence in the safety of the food supply by sending the message that all plants contain pesticides." The report also said the proposal would increase the regulatory burden for companies developing pest-resistant crops and could scare off potential buyers.

EPA defended the rule, saying its general tone follows with the agency's historic definition of a pesticide as anything "intended for preventing, destroying, repelling, or mitigating any pest." ■

Mastitis vaccine

Researchers at the University of Wisconsin School of Veterinary Medicine are working to create a genetically engineered vaccine aimed at stopping two germs that cause mastitis — udder infections — in dairy cows. The infection is estimated to cost dairy farmers nationwide up to 11 percent of their total annual milk sales.

The researchers have seen "enough of a beneficial effect" in early trials of the vaccine to warrant a series of meetings with the Agriculture Department to initiate the licensing process that would make the vaccine available commercially.

"We saw reduced disease in the vaccinated animals," said Chester B. Thomas, an associate professor involved in the research. "There was much less inflammation, and the quality of the milk was better." Approval of the vaccine would help reduce the need to use antibiotics in dairy herds. ■

Domestic sugar production to continue to fall short

Sugar producers at a symposium in Michigan predicted the U.S. will likely rely more on foreign-produced sugar through the year 2002, importing at least two million tons per year. Speakers at the symposium also noted that cane output from Florida and Hawaii will continue to be pinched.

It is a "good possibility" that increases in domestic output from sugar cane and beets "will either be limited or may even decline," said Luis Fernandez, executive vice president of Florida Crystals Co. Inc. Fernandez predicted imports may account for as much as 28 percent of the nation's use in the 1996-97 trade year.

An official for a Hawaiian sugar producer said his state's output could drop nearly 150,000 tons per year over the next few years due in part to the high cost of labor and freight, and the costs of meeting environmental rules and regulations. Speakers also said the high market prices for wheat, corn and soybeans may be tantalizing enough to convince producers to plant those grains on their historic beet acres, which would further curtail domestic sugar production.

The Agriculture Department proposed a sugar import quota of 2.7 million tons for next year, which would be reviewed each quarter for adjustment purposes, while imports for this year were estimated at 2.25 million tons. ■

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Capitol Corner

For more information on legislative topics in the Michigan Farm News, call 800-292-2680.

Farmland preservation legislation on the move — needs Farm Bureau member action

Two key pieces of legislation to help Michigan farmers and local units of government deal with urban pressures are nearing a critical crossroad: S.B. 112, the Land Division Act (formerly known as the Subdivision Control Act), and S.B. 573, 574, 575, enabling legislation to allow local units of government to conduct purchase and trans-

fer of development rights programs. Both bills are tentatively scheduled for House Local Government Committee hearings in September.

Both pieces of legislation need Farm Bureau member action to support the entire concept and to write or call their legislator in support of impor-

tant items that need to be returned to the bills after being amended in the Senate.

Legislators need input from landowners — especially farmers. This legislation will institute a public policy that allows reasonable development and opportunity to farm.

STATE ISSUE

Development rights transfer and purchase

Sen. Bill Shuette (R-Midland) is sponsoring legislation that would have originally allowed local units of government to set up transfer of development rights (TDR) and purchase of development rights (PDR) programs. However, the TDR concept was opposed by the Homebuilders Association and subsequently removed from the legislation prior to Senate approval. The bills (now containing only PDR language) are tentatively scheduled to be on the House Local Government Committee agenda Sept. 18.

The original bills (including TDR) would amend various laws governing local zoning authority to do the following:

- Allow a local unit (a county, township, city or village) to adopt an ordinance authorizing the transfer of development rights.
- Provide that the ordinance would not take effect until the local unit prepared a report containing specific information.

- Permit the local unit to establish an authority for the purpose of purchasing and temporarily holding development rights.
- Require the purchase and sale of development rights to be at fair market value.
- Provide that a local unit, by ordinance, could authorize the purchase of development rights, and that the local unit could purchase the rights by voluntary sale.

MFB position: Farm Bureau policy specifically supports giving the authority to local units of government to proceed with both purchase of development rights and transfer of development rights programs.

Action needed: Contact with your State Representative is needed. Recommendation: Tell your legislator you support Senate Bills 573, 574, and 575 and you want the transfer of development rights portion of the legislation put back in.

MFB contact: Scott Everett, ext. 2043.

Purchase of development rights

A purchase of development rights (PDR) program is a means of compensating farmers for their willingness to accept a deed restriction on their land that limits future development of the land for non-agricultural purposes. Landowners are compensated for the fair market value of their land, based on the difference between what it could be sold for on the open market with no restrictions and what it can be sold for once an easement is placed on the land. Independent professional appraisers determine these values, and the agreement is negotiated on an individual basis with the farmer in a willing seller/willing buyer atmosphere.

- **Participation is completely voluntary** and landowners receive fair market value for development rights. All private property rights remain intact.

■ Permanent protection of farmland — community benefits from economic activity generated by agriculture, stable land use patterns, fewer infrastructure needs, lower cost of community services and enhanced rural character.

■ Landowner can access portion of land equity while still maintaining ownership and agricultural use of land and without having to sell it for development or non-farm uses.

■ Property taxes and inheritance taxes based only on residual agricultural value of the land rather than the full developmental value.

■ Farmland is now affordable for younger farmers and eases transfer of property to future generations.

Transfer of development rights

A transfer of development rights (TDR) program is intended to maintain designated areas in agricultural use while transferring those development rights or housing units to other areas where development is desired. A typical TDR system establishes both a preservation area and a development area. Landowners in the preservation district — or sending zone — may sell their development rights to landowners in the development district — or receiving zone — who then may use these rights to build at higher densities than allowed under current zoning guidelines. Developers provide free market compensation for the development rights, and after the sale an easement is legally recorded and placed on the protected parcel.

- **Participation is completely voluntary.**

Landowners in a sending zone may build at the density currently allowed or the landowner may sell the development rights to a developer. Landowners in a receiving zone may build at the density currently allowed or at a higher density

if development rights are purchased and transferred from the sending zone.

■ TDR is market-driven and incentive-based. The value of the development rights established on a free market basis in a willing buyer/willing seller setting to establish the price. The developer will pay only what is determined to be the economic benefit to the developer of the extra number of housing units.

■ Allows protection of agricultural land while still allowing development to occur in the community. The housing units are transferred to another area where development would be better suited and where infrastructure can best service needs.

■ The developer benefits because additional housing units can be built on the same land, which will help minimize development costs including lower per-unit cost of roads, engineering and marketing. Landowners in a sending zone benefit from being able to sell the development rights but maintain the land in agricultural use (same benefits as under a PDR program).

STATE ISSUE

Land Division Act (Subdivision Control Act)

During debate on legislation, sponsored by Sen. Leon Stille (R-Spring Lake), the 2.5-acre maximum lot size was amended out of proposed law. The bill is tentatively scheduled for hearing on Sept. 18 in the House Local Government Committee.

Revisions to the current Subdivision Control Act include changes exclusively to address the 10.01+ acre unlimited exempt divisions.

Under the current law, landowners are allowed four exempt divisions under 10 acres every 10 years. Divisions beyond the first four, must be 10.01 acres or larger. After 10 years, subsequent revisions of 10.01 acres may take place.

Under the proposed Land Division Act:

- parcels or "parent tracts" lawfully in existence on the effective date of legislation become "Parent Parcels."

Explanation of Divisions Allowed:

- For parent parcels 10 acres or smaller, 2 exempt divisions.
- For parent parcels 80 acres or smaller in size, 2 initial exempt divisions (for the first ten acres) plus 1 additional exempt division for each whole 10 acres above the initial 10 acres, up to 80 acres.
- For parent parcels larger than 80 acres, 9 initial exempt divisions (for the first 80 acres) plus 1 additional exempt division for each whole 40 acres above the initial 80 acres.
- For each parent parcel (regardless of size), 2 additional exempt divisions if they each share a common driveway access.
- Divisions creating parcels 40 acres or larger are exempt (and can be built upon). Divisions of 40 acres or more do not count toward the number of exempt parcels permitted.

- **Divisions that transfer property from one parcel to another contiguous parcel or lot are exempt and do not count toward the number of exempt parcels permitted.**

- All exempt divisions shall be approved by a local unit of government within 30 days if the following conditions are met:

- Not be larger than 2.5 acres in size or 105 percent of minimum parcel size required by a local zoning ordinance (amended out, see action request)
- have a depth to width ratio 4:1 unless otherwise provided for by a local zoning ordinance
- have adequate water supply
- have adequate sewage disposal
- have appropriate easements for utility hookup
- have approved driveway access
- shall not be sold unless the deed contains a statement as to whether further exempt divisions are conveyed to the new owner.

MFB position: Farm Bureau policy supports revisions to the Subdivision Control Act to prevent 10.01+ acre divisions.

Action needed: Contact with your State Representative is needed on this issue. Recommendation: Tell your legislator that you support S.B. 112 to prevent a policy direction of 10.01+ acre land divisions. Farm Bureau is also encouraging that (bold above) be put back in. A 2.5-acre maximum lot size (unless otherwise provided for by local zoning) with the provision (bold above) to allow divisions between contiguous parcels at any time. This will maximize farmland preservation and at the same time ensure proper equity for Michigan landowners. It is important to communicate with your representative on this very important issue for Michigan agriculture.

MFB contact: Scott Everett, ext. 2043.

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AGRI NOTES AND NEWS

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NOVEMBER WILDLIFE BALLOT PROPOSALS

Farm Bureau is supporting **PROPOSAL G** on Nov. 5. See page 13 for the Community Action Group's Discussion Topic.

80-ACRE PARCEL — 2-ACRE MINIMUM LOT SIZE

Current Law — 11 exempt divisions

No land available for agriculture or future subdivision platting.

S.B. 112 — 11 exempt divisions

60 Acres Remaining

Remaining 60 acres can be used for:

- Agriculture
- One additional 40-acre parcel
- Platted further in 30 additional 2-acre homesites

Current Law	Assumptions	Exempt Divisions	OR	Exempt Divisions
4 — 2-acre parcels \$80,000	2-acre lot = \$20,000 = \$10,000/acre	10 — 2-acre parcels \$200,000		11 — 2-acre parcels \$220,000
7 — 10-acre parcels \$245,000	10-acre lot = \$35,000 = \$3,500/acre	1 — 20-acre parcel \$60,000		remaining 58 acres platted
	40-acre lot = \$80,000 = \$2,000/acre	1 — 40-acre parcel \$80,000		29 — 2-acre parcels \$580,000
				\$800,000

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Immature corn for corn silage and grain

The following is from a Fact Sheet prepared by the Cooperative Extension Service of the University of Illinois at Urbana-Champaign and was submitted by Dr. Herb Buckholz, Animal Science, Michigan State University.

Corn Grain

Immature corn is higher in moisture content and altered nutrient composition. It also has a lower bushel weight with lower feed value. Table 1 compares the nutrient value characteristics of corn at various kernel moisture levels.

Minnesota and Canadian research data indicate the TDN content drops .4 percent points per pound of bushel weight decrease from 56 pounds. For example, if the bushel weight dropped from 56 to 46 pounds, the TDN value would drop four (4) units or from 88 percent to 84 percent on a 100 percent dry matter basis.

Preserving wet corn grain above 30 percent moisture through fermentation results in feed higher in acid content, soluble carbohydrate and degradable protein. These changes can result in a more rapid rumen fermentation of starch and protein due in part to finer grain particles during ensiling and feed removal.

Corn Silage

The major change in corn silage with increasing maturity is an increase in grain level and decrease in stalk and leaf content. Typical changes are listed in Table 2.

Management Considerations

- Immature corn silage can be high in moisture, resulting in excessive seepage from upright silos. The initial frosts do not change the composition or dry matter content greatly unless it kills the

stalks, husks and kernels. If the plant is green (not killed), additional dry matter will be stored in the plant by waiting. A five- to ten-day wait after a killing frost may be needed to reach optimum dry matter for some storage units.

- Nitrate content should not be a problem if an ear has formed. Levels over 4,500 ppm or .45 percent in the total ration dry matter should be avoided by diluting down the high nitrate feed. A frost that kills the leaf material (makes plant nutrients), but not the roots (absorbs nitrate from the soil), can increase nitrate content. Test the immature silage after ensiling if nitrate levels are a concern (fermentation decreases nitrate levels in the feed).
- Adding 30 to 35 pounds of a dry feed (chopped hay, ear corn, corn cobs, midds, or other dry feeds) per ton of wet corn silage can lower the final moisture by one point. For example, adding 300 pounds of dry corn cobs to a ton of immature corn silage containing 75 percent moisture would lower the final mixture to 65 percent moisture prior to ensiling.
- A bacteria preservative can improve the fermentation characteristics of wet immature corn silage by directing the fermentation by providing adequate numbers of organisms. No urea or ammonia, (sources of NPN are recommended because of wetness of the silage (seepage losses), higher potential levels of nitrate (source of NPN) and variation in nutrient content. If added NPN is needed after ensiling and testing, add supplemental source of NPN prior to feeding.
- Test the immature corn silage after ensiling

and balance diets according to recommended guidelines.

- Control and limit green corn feeding as green chop or pasture to avoid digestive problems. This forage can be very palatable and cattle may overeat initially.

Immature Soybeans for Feed?

An alternative for soybeans that will not produce seed due to late planting, frost damage, weedy conditions or poor yield is to use the crop as an alternative forage crop. The crop can be grazed, green chopped, or harvested as silage or hay. The nutrient profile will be similar to legume forages (alfalfa, clover or peas). Stage of maturity will affect yield and quality (Table 3).

Based on the data, delay harvest as long as possible. But once the lower leaves begin to turn yellow and drop, harvest must begin to avoid leaf loss (high in protein and dry matter content). The stems will be difficult to dry because of hairs (pubescence) on the stems and leaves. The hay will be dusty.

Silage should be wilted to dry matter levels

optimal for your storage unit (30 percent for bunkers or bags, 40 percent to 50 percent for conventional upright silos, and 50 percent to 60 percent for oxygen-limited units). Soybean forage can be mixed with corn silage before ensiling (typically one part soybean forage to two parts corn silage on a dry matter basis).

Check the herbicide label for restrictions if soybeans have been treated. Many soybean herbicides do not allow grazing or feeding of the crop.

Livestock will readily consume soybean forage if it is properly harvested and stored. Calcium (1.2 percent to 1.6 percent) and phosphorus (0.20 percent to 0.25 percent) levels will be similar to other legume forages. Adjust your mineral program accordingly. A wet chemistry forage analysis should be conducted to measure nutrient content.

Another alternative is to harvest the soybeans as green seed.

Green soybeans are acceptable sources of protein and energy. Fat (19 percent) and protein (37 percent) levels in green seed can be slightly lower than mature beans, but can be an excellent buy if immature soybean seed is discounted at grain terminals.

Be sure moisture levels are low enough for safe storage. The beans may be shrivelled and hard, which may require processing prior to feeding. If the beans are green, they can be heat treated, but higher temperatures and steeping times may be needed to reach optimal undergraded intake protein (UIP or by-pass) values.

Table 3 — Yield and quality of soybean forage as influenced by maturity

Maturity	D.M. Yield (t/acre)	D.M. (%)	C. Prot. (%)	ADF D.M.	NDF D.M.
Blooming	1.1	18.9	20.1	28.2	38.7
Pod formation	1.7	18.3	18.1	31.9	43.1
Seed formation	2.5	20.3	18.2	33.7	45.7
Near maturity	3.3	34.2	19.2	29.7	40.7

(Source: University of Wisconsin, 1987 and 1989)

Table 2 — Composition and dry matter digestibility changes of whole plant corn silage with increasing maturity

Composition	Milk line-distance from top		
	1/3	2/3	Black layer
Dry matter, %	32	39	45
NDF, %	46	44	44
ADF, %	27	25	25
Starch, %	22	28	31
Grain, %	32	42	46
Energy			
TDN, %	66	68	68
Net energy-lactation Mcal/lb	0.68	0.71	0.70
Dry matter digestibility			
Stover, %	51	47	46
Whole plant, %	60	59	56

Table 1 — Changes in nutrient content of corn grain with maturity

	Milk	Kernel Maturity		
		Dough	Mid-dent	Mature
Shelled corn				
Bushel weight, lb	35	47	0.55	58
Dry matter, %	21	36	0.56	77
Crude protein, %	17	12	11	11
Crude fiber, %	5	3	3	2
Starch, %	47	55	59	64
Phosphorus, %	0.47	0.40	0.37	0.35
Ear corn				
Dry matter, %	24	36	54	73
Crude protein, %	11	9	9	9
Crude fiber, %	17	15	9	9

USDA lowers cottonseed estimate again

The U.S. Department of Agriculture (USDA) has lowered the 1996 cottonseed production estimate for August by 250,000 tons.

Cottonseed production for 1996 is now forecasted at 7.101 million short tons, an increase of 3.7 percent from last year. Although the USDA's estimate is still above last year's production level, dairy and beef producers should remain cautious until next month's report is out.

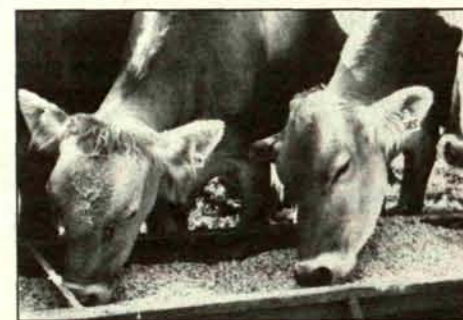
According to Tom Wedegaertner, associate director of cottonseed research and marketing at Cotton Incorporated, these lower estimates are largely a result of the questionable Texas crop. Extremely dry conditions have greatly reduced the quality of that state's cotton.

A 21 percent abandonment rate in Texas has decreased the harvested area estimate by 700,000 acres. This brings the predicted U.S. cotton harvested area down to a mere 13 million acres, a 1.2 million acre drop from last year.

Wedegaertner says, "In some areas of the country, the cotton crop generally looks good, but in others it's fairly spotty, and Texas continues to be a question mark."

Whole cottonseed is an excellent source of protein, fiber and fat for dairy and beef cattle, Wedegaertner notes. As the prices of other feedstuffs continue to see record highs, cottonseed will remain an important addition in many rations.

The slightly larger supply this season is expected to increase cottonseed crush from 3.85 million forecasted tons in 1995 to 3.9 million tons this year. According to the USDA, other use of cottonseed, primarily whole seed feeding, is forecast at 3.152 million short tons, up 4.1 percent from the 1995-96 season.

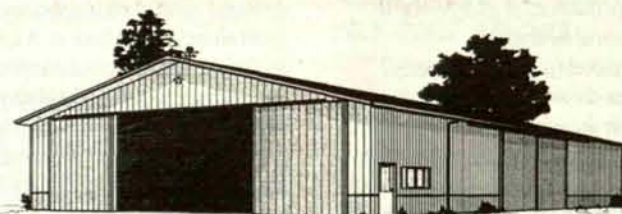


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Station	City	Frequency	Morning Report	Noon Report
WABJ	Adrian	1490	5:45 am	11:05-12:00 pm
WATZ	Alpena	1450	5:30 am	11:30 am
WTKA	Ann Arbor	1050	6:05 am	12:00-1:00 pm
WLEW	Bad Axe	1340	6:30 am	12:50 pm
WHFB	Benton Harbor	1060		12:15 pm
WKJF	Cadillac	1370	5:45 am	11:10 am
WKYO	Caro	1360	6:15 am	12:10-1:00 pm
WTVB	Coldwater	1590	5:45 am	12:00-1:00 pm
WDOW	Dowagiac	1440	6:05 am	12:15 pm
WGHN AM	Grand Haven	1370	5:45 am	12:15 pm
WGHN FM	Grand Haven	92.1	5:45 am	12:15 pm
WPLB	Greenville	1380	6:15 am	11:50 am
WBCH	Hastings	1220	6:15 am	12:30 pm
WCSR	Hillsdale	1340	6:45 am	12:45 pm
WHTC	Holland	1450		12:15 pm
WKZO	Kalamazoo	590	5:00-6:00 am	12:00-1:00 pm
WPLB FM	Lakeview	106.3	6:15 am	12:15 pm
WOAP	Owosso	1080	7:15 am	12:40 pm
WHAK	Rogers City	960		12:15 pm
WSJ	St. Johns	1580	6:15 am	12:05-1:05 pm
WMLM	St. Louis	1520	6:05 am	12:20 pm
WSGW	Saginaw	790	5:55 am	11:30-12:30 pm
WMIC	Sandusky	660	6:15 am	12:45 pm
WKJC FM	Tawas City	104.7		12:40 pm
WLKM	Three Rivers	1510	5:45 am	12:15 pm
WTCM	Traverse City	580	5:45 am	11:10 am

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MSU Roundup Ready Soybean recommendations

Thanks to research, funded in part by producers through the soybean checkoff, Michigan producers already have three years worth of expertise to draw on through Michigan State University's Dr. Karen Renner. A professor in the department of Crop and Soil Sciences at MSU, she's been conducting field research trial for three years, studying various rates and weed control pressures associated with the new technology.

Her assessment? "It works quite well," says Renner, speaking to producers during a recent series of field days. "The timing of the Roundup post application is generally seven to 10 days later than you might be using with say a Basagran or Pinnacle, or a Pursuit application, and the bean tolerance visually, is good."

While the label calls for application four to six weeks after planting, Renner suggests that producers aim for four weeks as ideal timing, and attempt to get the job done no later than five weeks if possible, using the one-quart-per-acre rate to control most weed species. "We certainly don't want to see application at six weeks, because in some years weed pressure at that stage has already been detrimental to soybean yields," she suggested.

Split application

Various application strategies and rates continue to be looked at both by Monsanto and now producers. Renner suggests that producers rely on scouting fields approximately three weeks after the



During the recent Roundup Ready Tour series, sponsored by Monsanto, Michigan Farm News and the Michigan Agribusiness Association, Dr. Karen Renner discussed weed control strategies in Roundup Ready soybeans. Producers attending the field days got a first-hand look at ongoing research trials and test plots of the new soybeans.

initial application to help make that decision. Application rates, again, hinge on weed species. With

velvet leaf, for example, Renner recommends at least a quart, while a pint per acre would be sufficient for controlling small lambsquarter.

"In drilled beans, the canopy closes and you seldom see a need for a second application," Renner said. "In row beans, probably half the time you'll get some weeds in there and then the producer has to make the call as to whether they should spray again or let the weeds head out and produce seed."

Establishing an economic threshold for herbicide application, in general, is difficult at best since weather patterns and the resulting impact on yield will vary considerably from year to year, says Renner. Weed seed production and future weed growth pressures further complicate the decision.

"Usually, if you have one weed every 10 to 15 feet, regardless of whether it's cocklebur or velvet leaf or smartweed, yield loss is below 10 to 15 percent," Renner said. "But when you get a velvet leaf every foot of row, yield loss ranges from 23 to 30 percent. If you have a cocklebur every foot of row, yield losses ranged from 25 to 60 percent."

No-till Strategies

Renner says the phenomenal growth in no-till beans isn't a problem with Roundup Ready Soybeans either. Regardless of whether you no-till or conventional till, the basic premise is the same — start with a clean field. That means producers can't skip an application prior to planting without suffering additional weed pressures later on.

"If you opt to not burn down, you'll be coming within two weeks of soybean planting and spraying, and that's not going to hold all year long; you're going to be making a second application anyway, so we suggest burndown prior to planting with Roundup and then spray about four to five weeks after planting," Renner explained.

Burndown options can include a pint of Roundup and a pint of 2-4D Ester applied a week ahead of planting, or a producer may choose the more costly option and use the one-quart rate of Roundup and plant immediately the following day, says Renner.

Resistance not a concern

Talk and fears of weeds developing resistance to Roundup are unwarranted, says Renner, adding that the chemical has been used for 20 years with no resistance developing. "We won't see Roundup-resistant weeds all of a sudden on a broad scale basis within two or three years, like we have with some other recently introduced herbicides," she said.

According to Renner, the development of a Roundup-resistant plant, such as the new soybeans, is no easy feat. "They had to actually insert a gene into the soybean plant and they had to also insert what's called the promoter, which makes that gene turn on to express the resistance," she explained. "So it's not a single, simple gene change."

Value of corn silage

Many acres of cash crop corn will not reach maturity before fall frosts. Some may be close to you and offer extra high moisture corn and/or forage for ruminants.

Drought-stressed or immature corn silage, even barren stalk silage, has nearly the same nutrient value as normal well-eared corn silage (see Table 1). The big disappointment is the lower yields per acre. A rough preharvest estimate for barren

stalk silage can assume one ton of 30 percent dry matter silage obtained from each 1-foot height of plant, excluding the tassel.

The value of corn silage is determined by at least three factors:

- replacement value in your dairy rations
- the price the cash crop farmer can charge, or obtain cash grain minus discounts,
- local purchase pressure from competing livestock farms.

Table 2 calculates the replacement value of drought/immature silage compared to alfalfa hay and corn grain. The minimum price is what the seller could receive if marketed for grain, if possible. The maximum is the price of one-third of a ton of alfalfa (corn silage replacing one-third of hay in ration at approximately same energy). Harvest costs and additional storage costs should be subtracted from these prices.

The local negotiable price is impacted by the competition for silage versus the supply within your area. Silage transportation costs need to be considered.

Timely harvest is critical so that proper moisture content can allow for fermentation and quality feed. ■

Table 1 — Influence of kernel maturity stage on whole plant moisture, yield and forage quality

Maturity Stage	Moist. %	Yield ton/a	CP %	ADF %	NDF %	Digest %
Soft Dough	76	5.4	10.3	27	53	77
Early Dent	73	5.6	9.9	24	48	79
1/2 Milk-line	66	6.3	9.2	23	45	80
3/4 Milk-line	63	6.4	8.9	24	47	80
No Milk-line	60	6.3	8.4	24	47	79

Marshfield, WI (1988-1990)

Influence of corn maturity stage on whole plant moisture, yield and forage quality

Maturity Stage	Moist. %	Yield ton/a	CP %	ADF %	NDF %
11 leaf	91	1.1	17.8	28.4	50.0
14 leaf	89	2.3	14.8	27.9	51.5
Early silk	84	4.0	12.1	31.4	56.3
Early blister	82	5.3	10.5	33.6	59.0

Arlington, WI (1993)

Table 2 — Drought-stressed corn silage value (A)

Price of alfalfa hay \$/ton	Price of corn grain (\$/bu)					
	2.20	2.40	2.60	2.80	3.00	3.20 3.40
	Value of Corn Silage (\$/ton)					
40.00	max 13.30 min 11.00	max 13.30 min 12.00	max 13.30 min 13.00	max 14.00 min 13.30	max 15.00 min 13.30	max 16.00 min 13.30
50.00	max 16.65 min 11.00	max 16.65 min 12.00	max 16.65 min 13.00	max 16.65 min 14.00	max 16.65 min 15.00	max 16.65 min 16.00
60.00	max 20.00 min 11.00	max 20.00 min 12.00	max 20.00 min 13.00	max 20.00 min 14.00	max 20.00 min 15.00	max 20.00 min 16.00
70.00	max 23.30 min 11.00	max 23.30 min 12.00	max 23.30 min 13.00	max 23.30 min 14.00	max 23.30 min 15.00	max 23.30 min 16.00
80.00	max 26.65 min 11.00	max 26.65 min 12.00	max 26.65 min 13.00	max 26.65 min 14.00	max 26.65 min 15.00	max 26.65 min 16.00
90.00	max 30.00 min 11.00	max 30.00 min 12.00	max 30.00 min 13.00	max 30.00 min 14.00	max 30.00 min 15.00	max 30.00 min 16.00
100.00	max 33.30 min 11.00	max 33.30 min 12.00	max 33.30 min 13.00	max 33.30 min 14.00	max 33.30 min 15.00	max 33.30 min 16.00
110.00	max 36.60 min 11.00	max 36.60 min 12.00	max 36.60 min 13.00	max 36.60 min 14.00	max 36.60 min 15.00	max 36.60 min 16.00
120.00	max 40.00 min 11.00	max 40.00 min 12.00	max 40.00 min 13.00	max 40.00 min 14.00	max 40.00 min 15.00	max 40.00 min 16.00

Maximum and minimum prices for drought-stressed corn silage based on prices for alfalfa hay and corn grain. Use this table to look up the maximum and minimum values of drought-stressed corn silage. Find the column and row that represent today's prices for corn grain and alfalfa hay, respectively. Find the value of silage at the intersection of these prices. The variable cost of harvesting would be subtracted from these values, if harvested by the buyer, to determine the net price paid to the seller.

International trade group calls for sugar reform

The International Policy Council on Agriculture, Food and Trade is calling for policy reforms in countries that subsidize sugar, saying present market distortions are unsustainable. The Washington-based group said countries would be wise to "prepare now" in a paper being readied for presentation at the World Trade Organization's first ministerial conference to be held in Singapore in December.

"It has been estimated that the losses incurred by developing countries due to the policies of the European Union, United States and Japan amount

to over \$2 billion a year," the paper said.

The group, which is made up of 20 food and agriculture leaders from both developed and developing countries, said gradual cuts in domestic sugar support prices, substituted if necessary by direct payments, with parallel reductions in tariffs will be needed to rectify the situation.

The council also predicted the next round of multilateral trade negotiations would have to address changes to the sugar trade if the support of developing nations and other farm exporting nations is expected. ■

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Market Outlook

by Dr. Jim Hilker,
Department of
Agricultural Econom-
ics, Michigan State
University



CORN

Has there been a frost yet? What did the USDA *Crop Report* show for expected corn production? How many heat units have we had since Sept. 1 when the survey was taken? Has the eastern Corn Belt had any rain in the last two weeks? If not, is it too late to help? And last, but not least, what does your corn look like and what is the best way to move it along in the market? When there are lots of questions, it usually means there are lots of risks still in the market.

If the *Crop Report* was bullish for corn prices and the market has rallied significantly, consider some further forward pricing—depending on your expected production. Yes, we still have the weather, like a freeze, that may cause a further spike, but there are also some factors that could bring the market back down in both the short run and the long run. For example, what if the first freeze comes late, or the *Stocks Report*, to be released Sept. 30, is bearish?

While I feel there is more upside than downside price risk in the near-term, we may want to consider some downside protection. There are a number of ways to put a floor under your average price. The most straightforward is to have some of your production forward contracted; while this fixes those prices, it also limits how low your average price can go. Another way is to forward contract and buy a call; this gives you a minimum price with upside potential. In fact, most elevators offer a Minimum Price Contract which does this for you.

If you are worried about delivery, which many Michigan farmers rightfully are, consider the purchase of put options. Use of put options gives you a floor without a delivery provision. The biggest consideration here is the cost of this insurance—remember you can sell the insurance as soon as you no longer need it and may recover some of the costs. You may want to use March options in order to recover some of the time value.

For the longer run, I expect the 1996-97 crop year to behave more like a normal short crop year than the 1995-96 crop year did, especially if we have a sharp increase before or at harvest. In other words, peak early and have a long tail. An even poorer than expected crop this fall will drive prices high right away, and then demand will adjust more than today's market expects later. Is this for sure? No. Stocks will still be tight this spring and therefore subject to a weather scare. But it is unlikely that it will pay to store. Stay in the market using calls; they will probably be cheaper than storage costs.

Some of the corn in Michigan will only be

Seasonal Commodity Price Trends

Corn	↔↑
Soybeans	↔↑
Wheat	↔↓
Hogs	↔↓
Cattle	↔↓

Index: ↔ = stable prices; ↑ = higher prices; ↓ = lower prices; TP = topping; BT = bottoming; ? = unsure

good for silage due to late and/or poor development. Other corn, due to late planting, may look good, but have a very low chance of being ready even if the first frost is a week or better after normal. For those without their own livestock, start looking for a home for this corn immediately, if you have not already done so. There are livestock producers out there that can put corn silage to good use and are feed short, allowing for a win-win situation. However, the window for making good silage passes quickly.

WHEAT

For those of you who still have wheat unpriced, there are still both upside and downside price risks. Demand has fallen off sharper than I expected, partially due to decent crops around the world and partially due to price. The spring wheat crop is coming in good and Canada will follow shortly. On the bull side, Canada could still have trouble and, if corn production drops, we could feed more wheat.

That brings us to the Sept. 1 USDA quarterly *Stocks Report* to be released Sept. 30. Most wheat is fed in the summer months when wheat prices tend to be relatively cheap compared to corn. Therefore, the *Stocks Report* will give us a pretty good idea of how much wheat has been fed. This report could bring a shock to the market in either direction.

The only reason I can think of for holding wheat for the near-term is to be waiting for a bullish *Stocks Report*. If the report is bullish and the market rallies, sell it, you win. If the report is bearish, sell it, you lose. If you cannot or are not willing to take all the downside risk, buy a put with the idea that you can sell it when you sell your wheat, right after the market move; or sell now and buy a call. Does this analysis mean that all upside potential for wheat is gone after the *Stocks Report*? No, but it is unlikely to pay to physically store it, unless you are after the lower discounts after the first of the year, and can store it at home.

SOYBEANS

Soybean prices could go down, and may have, if the September *Crop Report* was negative, but I see little chance of the bottom falling out. If we have tight stocks even when trend yields are used here and in South America, we will obviously still have tight stocks if our yield is lower than trend, which I certainly expect. What did the report say? This will stay true even if South America has a better than expected crop.

If the market rallied on the report, consider pricing more new crop depending on your production situation. If the report was price negative, consider waiting unless you haven't priced any new crop. While the soybean market may also follow the early peak long tail pattern through the year, there are some factors that may counter that pattern.

Some of those factors are: strong demand, South American weather, and tight stocks will extenuate planting scares next spring. What is being said

here is not that you should necessarily store soybeans to stay in the market, the basis will determine that, but that you should stay in the soybean market in some fashion on some portion of your production.

HOGS

Has the hog market stabilized after the late August-early September drop-off? If cash hog prices have dropped to the \$50 arena or below, there probably are not any good forward pricing alternatives available as futures likely dropped as well. If the futures markets have recovered to or near their previous highs, then consider pricing a portion of your future production.

This is not a prediction that the Sept. 1 USDA *Hogs and Pigs Report*, to be released Sept. 27, will be bearish, but rather these would be good prices regardless, and there are downside risks. The report could be negative to prices. On the other hand, the report could be positive and the market will offer pricing opportunities with a rally. One possibility, if the markets have rallied going into the report, is to buy a put option to provide some downside protection without giving up all the upside potential.

CATTLE

How long will this good cattle market hold? There are still a lot of cattle out there, just not a lot of cattle ready to go to market. These decent prices we are seeing now are due to high corn prices and low cattle prices leading to huge negative returns this past spring and therefore low placements from March through June. They are not higher prices due to a change in direction of the cattle cycle, although the poor returns to cow-calf producers the past 2 years and poor returns expected again this fall will make that begin to happen next spring.

It is fairly clear that the better returns should continue through October. How long the stronger prices remain after that depends on August and September placements, after July placements were up 6 percent. A lot of heavy feeders should be available to the market shortly and they will not need a lot of time in the feedlot. The message is to keep current.

Feedlots should be on the lookout for relatively cheap feed sources. There will be a higher proportion than usual of crop farmers needing to sell their crop as silage versus shelled corn due to poor development. It will still have the energy if harvested at the optimal time, and could be a win-win situation for both parties if they can get together.

An early frost or even normal frost date could bring a lot more silage to the market. Be prepared to take advantage of the possibility, but run your break-evens to determine what you can pay. And remember to calculate in the lower daily gains and feed conversions, and therefore more yardage. This is not to say don't feed silage, but rather price it right.

DAIRY OUTLOOK

by Larry G. Hamm

Dairy market prices continue to move higher. How high they will move this fall will depend on when the first frost date is and the impact that is likely to have on feed costs.

The July Basic Formula Price (BFP) was \$14.49/cwt. at 3.5 percent butterfat test. The BFP's (the former Minnesota-Wisconsin price) all-time high was \$14.93 in December 1989. The August BFP, which

will be announced Sept. 5, will approach or exceed the all-time record BFP/MW price. After several weeks of stability, cheese prices on the National Cheese Exchange (NCE) resumed their upward trend. During the last two trading sessions in August, the average price of 40-pound cheddar cheese blocks increased 7 cents per pound. However, not all of that increase is likely to be captured in the August BFP. Therefore, the August 1996 BFP will probably not exceed \$15/cwt. Because of the lag pricing as a result of the Federal Milk Marketing Order pricing formulas, mailbox prices to producers will likely not exceed \$16/cwt. for milk shipped during August. However, \$16 mailbox milk prices are a possibility in the next several months.

The unusual weather patterns and the resulting shortage of feed stocks are unsettling to the dairy markets. Dairy markets historically have been very vulnerable to small swings in the national dairy market supply and demand situation. In the latest statistics released by the USDA, milk production in the first half of 1996 (January through June) was 1.3 percent lower than the first 6 months of 1995. Meanwhile, commercial disappearance, a measure of commercial dairy demand, increased 0.6 percent.

These percentages roughly translate into a swing of 1.45 billion pounds of milk that was short from the dairy markets during the first half of 1996. Given that there is no government surplus and that commercial inventories of dairy products (especially butter and powder) are exceptionally low, market prices have had to react to the roughly 1.9 percent shortfall in milk supplies. The average blend price received by producers under the Federal Milk Marketing Order in July 1996 was \$15.35/cwt. or 26 percent higher than 1 year ago. In summary, a relatively small change of 1.9 percent in the milk supply/demand balance resulted in a 26 percent increase of milk prices.

All of the historic dairy policy for the price support and federal orders have been designed to try and address the fundamental volatility in dairy markets. Without the price support program and government stocks, there is no limit to the upward movement in market prices for the dairy industry in the short run. An early frost, which further shortens both grain and forage supplies in major dairy production regions, will only exacerbate the dairy market supply and demand balances. While Michigan mailbox milk prices are poised to go higher over the next several months, how high they go may depend on realized crop conditions.

The wholesale prices of cheese and butter are at all-time record highs. To date, the demand for dairy products has been remarkably resilient to significant wholesale and retail price increases for dairy products. If milk prices continue to rise, eventually demand from consumers will be affected. The use of substitutes for dairy products in food manufacturing and food service, along with reductions of consumer purchases for fluid milk and soft manufactured dairy products, will take place. Short-run milk prices will be dependent on feed costs and their impact on individual dairy farm profitability. However, consumer resistance to higher dairy prices is waiting in the wings. Longer-run dairy price levels will depend on whether consumers will pay these higher milk prices.

EGGS

by Henry Larzelere

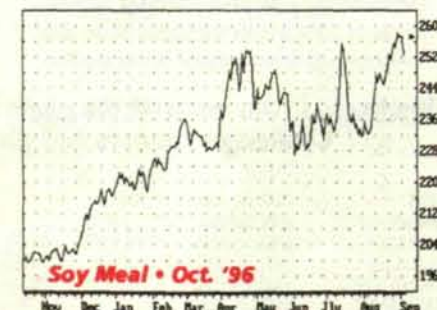
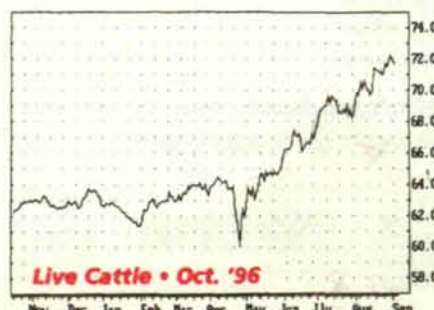
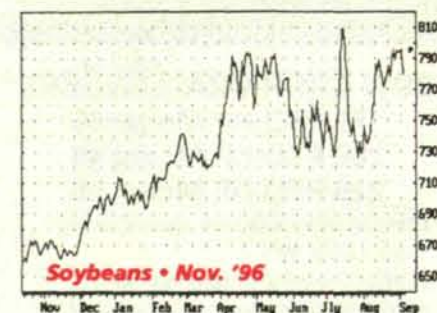
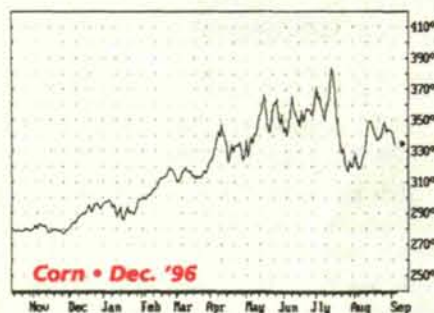
Near the end of August, egg prices were 21 cents a dozen above a year ago. During August, feed ingredient prices were 13 cents a dozen eggs above August 1995.

In September, wholesale egg prices in New York for Grade A large white eggs in cartons will be slightly above August levels. These prices in the last three months of the year will be in the low to mid-80s, with November the high month.

The demand side of the egg industry equation seems to continue strong. Egg prices continue to be above last year, while production is above a year ago. For example, the total number of layers in the U.S. was up 3 percent on Aug. 1 from a year earlier. Also, both total and table egg production during July were up 5 percent from July 1995. Production will continue above last year with July egg type chick hatch 14 percent above July 1995 and the number of layer type eggs in incubators on Aug. 1 up 8 percent from last year. The continuing increase in the egg type chick hatch over last year is unusual, especially with the higher feed ingredient costs up and not much relief in the near future.

Source: Knight Ridder Financial

COMMODITY PRICE TRENDS



Business Strategies

John D. Jones,
Telfarm Director and
District Extension
Farm Management
Agent, Department
of Agricultural
Economics,
Michigan State
University Extension



The excellent management skills of five Michigan farm families are recognized by the Michigan State University Department of Agricultural Economics Telfarm Center. Selected as the Telfarm Farm Managers of the Year are Dale and Bonnie Brinks, of Falmouth; Nelsen Dairy Farm, of Grant; David Sting, of Unionville; Richard Hale, of Jonesville; and David Klump, of Ottawa Lake. The awards recognize the owners' managerial skills and the economic progress made by their farm operations over the past several years. Other criteria include community service and activities that contribute to improving agriculture in general. Congratulations to the following very deserving farm managers.

**Dale and Bonnie Brinks —
Missaukee County**

Left to right: Dale, Bonnie, Kurt, Gary and Tracy Brinks.



Dale and Bonnie Brinks own a 90-cow dairy herd that is currently producing right at 24,000 pounds of milk per cow. Their high herd average is achieved on two times per day milking. About two-thirds of this holstein herd is registered, with eight cows classified "Very Good" or better and all have been home raised.

The Brinks bought the 310-acre farm from Dale's parents in 1989. The cows are housed in a freestall barn and milked in a double-five herringbone parlor with automatic takeoffs. All of the milking cows are fed the same total mixed ration. The cull rate averages about 28 percent per year.

Dale and Bonnie employ one full-time hired man, Joe Jenema. They have two sons, Kurt, 12 and Gary, 10, who also help out a lot when they are not playing basketball or softball, or attending McBain Northern Michigan Christian Schools. Their daughter, Tracy, 5, is the youngest.

Dale has served on the Council of the Prosper Christian Reformed Church; Bonnie is a Calvinette Leader. Dale is currently on the Falmouth Cooperative Board. Both sons are active in 4-H.

As one of 600 farms enrolled on Michigan State University's "Telfarm" computerized farm records system, MSU and MSU Extension are proud to have Dale and Bonnie Brinks as the North Region's "Telfarm Farm Manager of the Year."

Nelsen Dairy Farm — Newaygo County

The Nelsen Dairy Farm is truly an outstanding "family" partnership. The farm is located in the west-central part of Michigan near Grant. Formally, the partnership consists of two brothers — Gary and Bruce Nelsen. They have been a partnership for 10 years and prior to that the farm was operated by a three-way partnership that also included their father, Robert.

Informally, there are more family members who are involved in the operation of the dairy farm. Gary and his wife, Sheila, have three sons: Mike, 13; David, 10; and Steven, 5. Bruce and his wife, Amy, have one son and two daughters: Hans, 10; Heather, 5; and Heidi, 2. Gary and Bruce's families and their parents all live on the main home farm. Gary and Bruce acknowledge that even "Mom and Dad" still help out around the farm though they are officially retired.

The Nelsen farm has experienced steady internal growth from an original small and diversified farm operated by their father, Robert, and grandfather. They currently have 150 cows on DHIA test and 600 crop acres consisting of corn, alfalfa and small grains.

The total mixed ration program for the dairy

MSU Telfarm program picks farm managers of the year

cows utilizes a nighttime rotational grazing activity and is credited with improving the herd health. Management responsibilities are shared based on individual strengths, where Gary takes the lead on the dairy herd and Bruce concentrates on machinery management and repair. Gary says, "Bruce can and does fix anything." They share the management responsibilities for the cropping program.

The Nelsen Dairy Farm has been enrolled in the Telfarm program since 1978. Last year, the farm started keeping the financial records on a personal computer using the MicroTel program. Sheila, as the primary recordkeeper, accounted for every penny of the income and expense that flowed through the farm books. Quite a feat for even the most veteran recordkeeper.

Along with her farm duties, Sheila has also been active in the United Dairy Industry in Michigan's Dairy Diplomat program for the past three years where she conducts tours of the neatly kept Nelsen farmstead for elementary students and senior citizens. Sheila also gives weekend dairy promotions at local grocery stores during June Dairy Month.

Gary is a director of ICMFA, MSU's Michigan Dairy Memorial Foundation Scholarship Board, and Ashland Township Zoning Board. The Mamrelund Lutheran Church is a major focal point for the total family where Sheila, Bruce and Amy sing in the choir and Amy is the Sunday school superintendent.

Congratulations to this outstanding farm family on the receipt of west-central's Telfarm Farm Manager of the Year. It is an exceptional joint family effort!

Donna and David Sting — Tuscola County



Nestled in the Thumb of Michigan is a cash crop farm operated by David and Donna Sting of Unionville. A life-long resident of the area, David began his farming career in 1965 after completion of the Ag Short Course at Michigan State University. Shortly after returning to the farm, Donna and David were married and they began in earnest to build their farm with two sons, Mat and Grant, helping out over the years on the farm.

The farming operation produces a variety of cash crops, which include wheat, corn, sugar beets, edible soybeans, and several type of dry beans. The bulk of the 660-acre farm is owned with about 80 acres of rented land being part of the farm base. In order to keep this farm operation more profitable and efficient, Dave's brother, Tom, combines his 600-plus acres into the farming program to make better use of the machinery and labor force.

"We are always looking for new enterprises that can add more profit to our farm," said Dave. The farm produces several varieties of edible dry beans and now edible soybeans to capture some of the added premium paid for these crops.

A leader in the community, Dave serves St. Pauls Church as the Chairperson of the Church School Board and as a member of the Constitution revision committee. Active in the local Farm Bureau, he started on the county board of directors as the Young Farmer representative and worked his way up to serving as County Farm Bureau President.

As a long-standing board member of the Sebawaing Cooperative Elevator board of directors, Dave was asked and still serves as a director of the merged board of directors after the Sebawaing and Pigeon Co-ops merged. Taking part in the Michigan Ag Leadership Program group number 8 gave Dave a new perspective on his leadership focus. Donna is a teacher in the Caro Public Schools teaching choir and English.

An early adapter to the use of computer technology, the farm converted to the MicroTel program in 1987 after being on the paper Telfarm system for some 15 years. "Adapting to the new technologies has been one of the biggest challenges over the past 10 years. And it looks like this will continue to be a challenge in the future," Dave commented. They hope that some day one of the sons may want to return to take over the farm operation and allow Dave and Donna to make that long-awaited trip to Europe.

Continued on page 11



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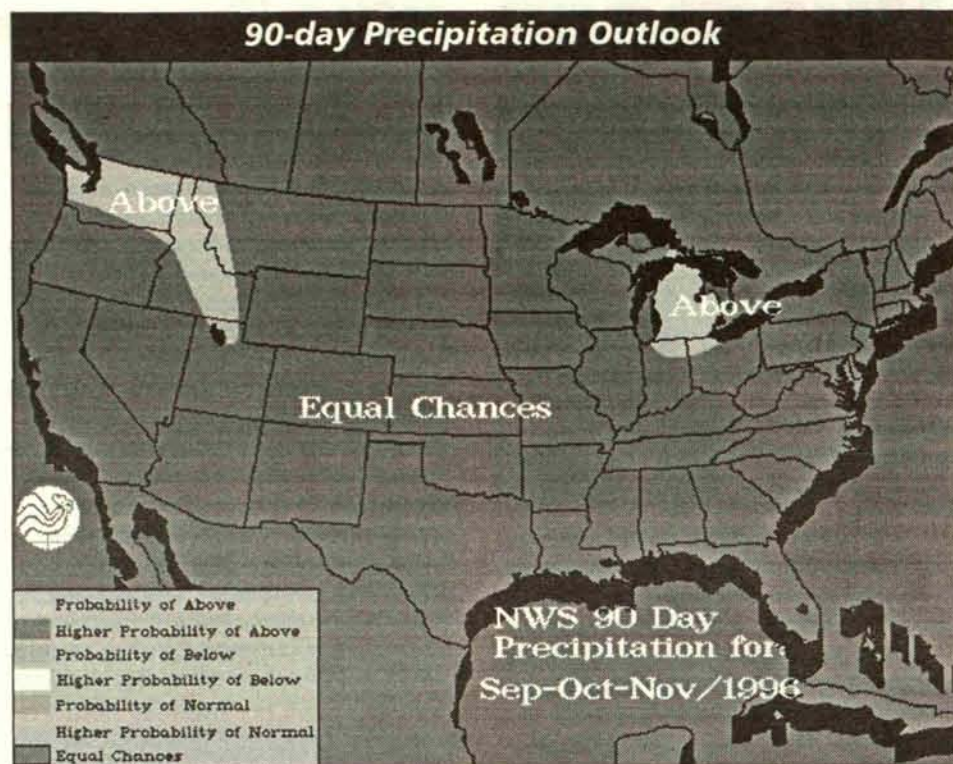
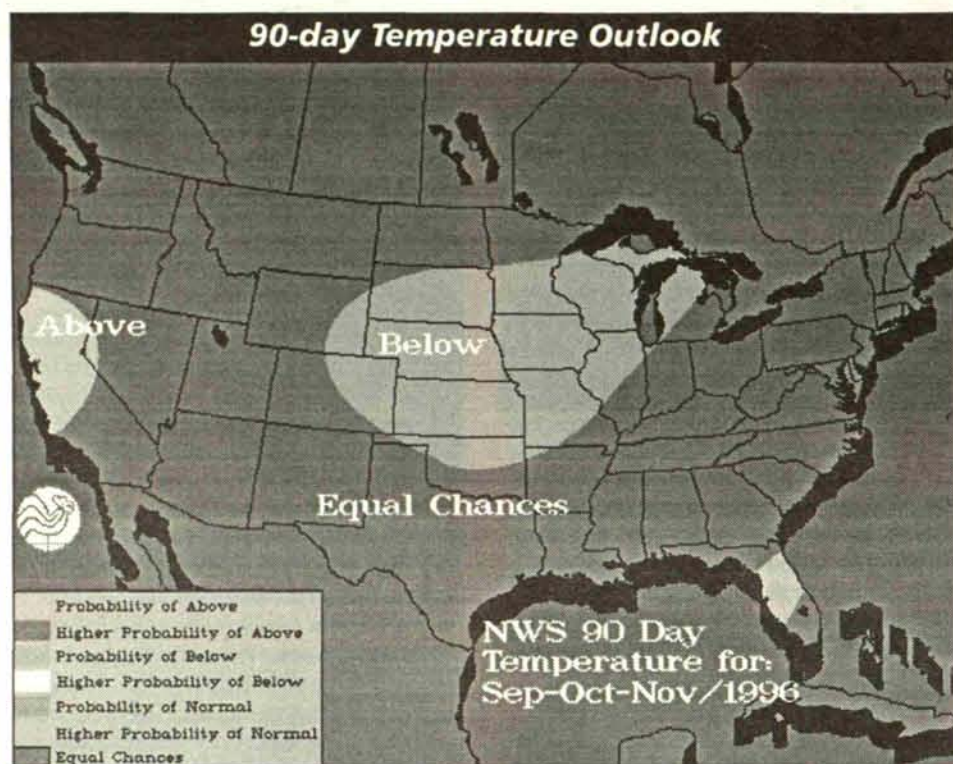
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Weather Outlook



by Dr. Jeff Andresen, Agricultural Meteorologist, Department of Geography, Michigan State University

the state. Rainfall totals for the month were less than 50 percent of normal in many areas, and continued a drier than normal trend since late June.

Temperatures during August averaged from near to just above normal, the first above normal monthly temperatures recorded this growing season in most locations.

With delayed phenology of most crops this year, there is obvious concern about the date of first fall frost/freeze during upcoming weeks. It is important to note that meteorologically, it is almost impossible to predict an early freeze more than several days in advance.

In order for temperatures to fall to the freezing mark or below early in the fall, there must be clear, calm nighttime conditions associated with a center of a large area of Canadian-origin high pressure. The only way to bring such an air mass into the region is for a northerly or northwesterly configuration of the jet stream.

The mean date of first fall freeze ranges from early September in interior areas of the Upper and

northern Lower Peninsula to late September/early October in interior sections of the central and southern Lower Peninsula to mid-October in extreme southwestern and southeastern corners of the state.

Fact of the day

Farming averages 44 deaths per 100,000 workers per year. Tractors are the No. 1 cause of deaths involving farm activities, with one out of every four tractor accidents being fatal. Most tractor accidents occur between the hours of 12 p.m. and 8 p.m. and can be attributed to fatigue and human pressure to get a job done. Most of the tractor fatalities are caused by faulty or missing safety equipment on tractors including seat belts and rollover protective covers.



Michigan Weather Summary

8/1/96-8/31/96	Temp.		Growing Degree Days		Precip.	
	Obs. mean	Dev. from normal	Actual Acc.	Normal Acc.	Actual (inch)	Normal (inch)
Houghton	66.0	2.4	1292	1553	2.16	3.21
Marquette	65.9	3.4	1375	1553	2.25	3.21
Escanaba	65.3	0.1	1278	1344	0.50	3.14
Sault Ste. Marie	63.9	0.4	1168	1344	1.03	3.14
Lake City	66.7	0.6	1546	1744	3.33	2.75
Pellston	66.9	2.9	1555	1744	0.64	2.75
Traverse City	70.5	2.4	1825	1744	1.00	2.75
Alpena	67.1	1.8	1523	1689	1.61	2.74
Houghton Lake	67.2	1.1	1600	1689	3.17	2.74
Muskegon	70.9	1.9	1800	1930	0.97	3.15
Vestaburg	69.3	0.2	1832	2006	3.63	3.17
Bad Axe	69.1	0.4	1693	2022	4.55	2.62
Saginaw	71.5	2.0	2062	2022	1.15	2.62
Grand Rapids	72.7	3.3	2088	2228	0.24	2.75
South Bend	71.8	1.6	2190	2228	0.24	2.75
Coldwater	71.0	0.6	2059	2182	1.29	2.95
Lansing	70.4	1.3	2005	2182	3.63	2.95
Detroit	73.2	2.5	2327	2193	0.39	2.79
Flint	71.2	2.4	2053	2193	0.57	2.79
Toledo	72.8	1.6	2377	2193	0.72	2.79

Observed totals accumulated from April 1. Normals are based on district averages.

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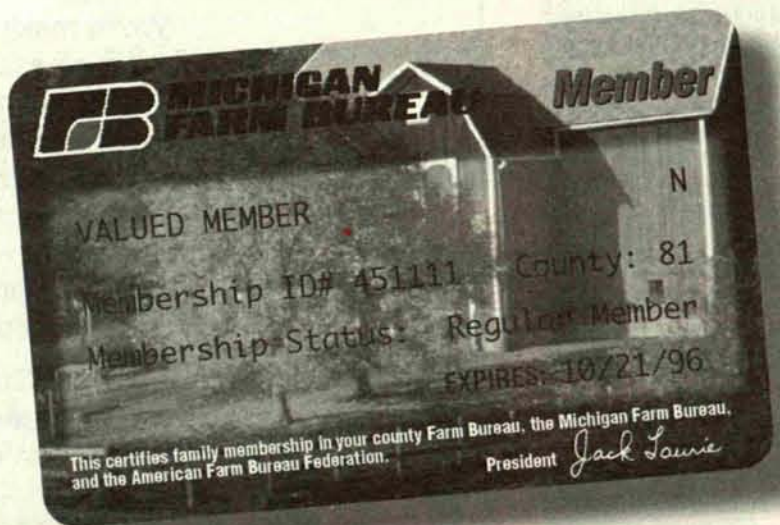
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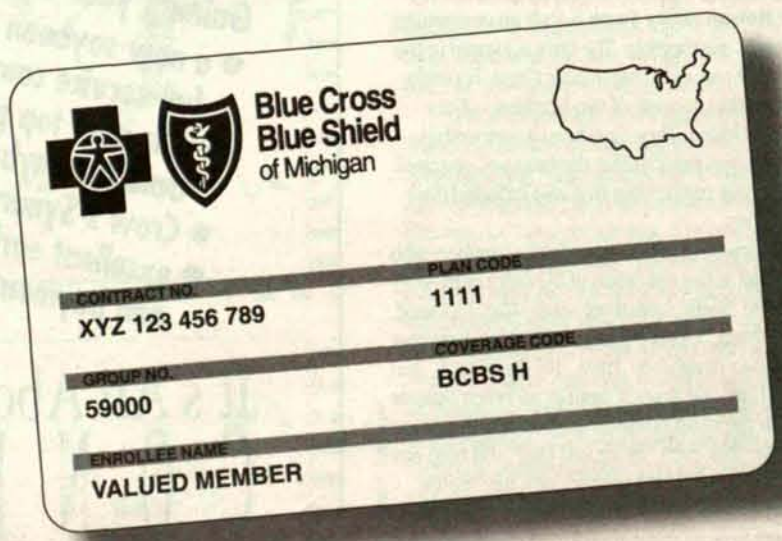
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HEALTH HARVEST



WHAT SHOULD YOUR ANNUAL PHYSICAL EXAM INCLUDE?

The annual physical examination has long been a tradition in modern medicine and, for the fortunate among us, may be the only time we see a physician. Yet that tradition is changing — both in name and in manner.

What we used to call the annual physical is now more appropriately known as a "period health evaluation," says Grant Fowler, M.D., associate professor of family practice and community medicine at the University of Texas-Houston Medical School. Instead of running a battery of expensive tests, the trend in health check-ups these days is to tailor preventive medicine for each individual.

Rather than a standard hour-long, head-to-toe examination, the evaluation should target risk factors for each individual, with time spent assessing family history and personal lifestyles. Information about diet, exercise and stress can pinpoint areas that may need further examination. Aggressively targeting risk factors for an individual and following up where needed may actually yield more helpful information than generic physical checks.

The highest risk factor for individuals in their first 40 years is trauma. After 40, cardiac disease starts to become a risk factor, and by age 50, a number of different factors come into play that should be examined when patients visit their physicians.

By age 50, "cardiac disease is number one, two and three on the risk factor list for both men and women," says Dr. Fowler. For some men, 40 is the age that cardiac disease becomes the primary risk factor.

Dr. Fowler begins his evaluations with a routine

physical examination that measures weight and blood pressure. He listens to the heart and lungs, and for patients age 50 and over, checks the carotid artery (the main artery to the brain) to listen for any evidence that there has been any narrowing in the artery. Women should have a mammogram, a breast exam and a pelvic/rectal exam. Men over the age of 40 should have a routine rectal exam to check for prostate, colon and rectal cancer. Lab work is generally limited to cholesterol and checking stool samples for rectal cancer. He includes the PSA test for men, although it remains controversial, as some health care providers believe the PSA may lead to treatments that aren't necessary. The American Cancer Society recommends annual PSA tests and digital rectal exams after age 50. Obviously, individual risk factors will determine any further tests that may be recommended. Where individuals have a personal history, a family history or risk factors for colon, prostate or breast cancer, those screenings may begin sooner.

By age 70, if a person has not had problems with cardiac disease, cancers begin to have a greater relative risk factor.

Because falling is one of the major problems associated with older age, this risk factor should be explored with vision and hearing exams. This is an example where lifestyle may play a big role. An individual who exercises regularly will likely be stronger and better coordinated, thus at less risk, than someone with a sedentary lifestyle. A broken bone that renders a person immobile also makes the person more susceptible to infections, as well as many

other complications. Balance and gait (manner of walking) should also be checked for problems since certain medications can affect balance and gait.

Another risk that begins to develop in older patients is diminishment of mental ability. A baseline questionnaire at age 60 or 65 might be useful in ascertaining whether any such loss is occurring.

Given some limitations that may occur as patients age, Dr. Fowler suggests screening for depression in older patients, who generally are at higher risk.

Women who are postmenopausal should be examined for osteoporosis, although this may be less of a problem for patients who are taking estrogen supplements.

As a general rule, older patients should have flu shots, and immunizations should be kept current. Tetanus can be deadly for older patients who have not kept up their booster shots, as levels of tetanus antibodies decline as people age.

Medications are another area to be examined in older patients. Dr. Fowler says many individuals over the age of 65 may be routinely taking eight or nine drugs. Oftentimes patients with transportation difficulties may have a symptom for which a physician will prescribe medication over the phone. Or it may easily be that visits to separate specialists lead to a sort of chemical cocktail of drugs that may be helpful individually but taken together may have serious side effects such as confusion or dizziness. "The brain is much more sensitive to medicine in the elderly," says Dr. Fowler. Medicines metabolize more slowly and the risk of confusion is higher. ■

AN OVER-65 CHECKLIST

SCHEDULE: EVERY YEAR

Screening

HISTORY

- Prior symptoms of transient ischemic attack
- Dietary intake
- Physical activity
- Tobacco, alcohol and drug use
- Functional status at home

PHYSICAL EXAM

- Height and weight
- Blood pressure
- Visual acuity
- Hearing and hearing aids
- Clinical breast exam
- Pelvic exam
- Rectal exam

HIGH-RISK GROUPS

- Auscultation for carotid bruits
- Complete skin exam
- Complete oral cavity exam
- Palpation of thyroid nodules

LABORATORY DIAGNOSTIC PROCEDURES

- Nonfasting total blood cholesterol
- Dipstick urinalysis
- Mammogram
- Thyroid function tests

HIGH-RISK GROUPS

- Fasting plasma glucose
- Tuberculin skin test
- Electrocardiogram
- Pap smear
- Fecal occult blood/sigmoidoscopy
- Fecal occult blood/colonoscopy

Counseling

DIET AND EXERCISE

- Fat (especially saturated fat), cholesterol, complex carbohydrates, sodium, calcium
- Caloric balance
- Selection of exercise program

SUBSTANCE USE

- Tobacco cessation
- Alcohol and other drugs

INJURY PREVENTION

- Prevention of falls
- Safety belts
- Smoke detector
- Hot water heater temperature

DENTAL HEALTH

- Regular dental visits, tooth brushing, flossing

OTHER PRIMARY PREVENTIVE MEASURES

- Glaucoma testing by eye specialist

HIGH-RISK GROUPS

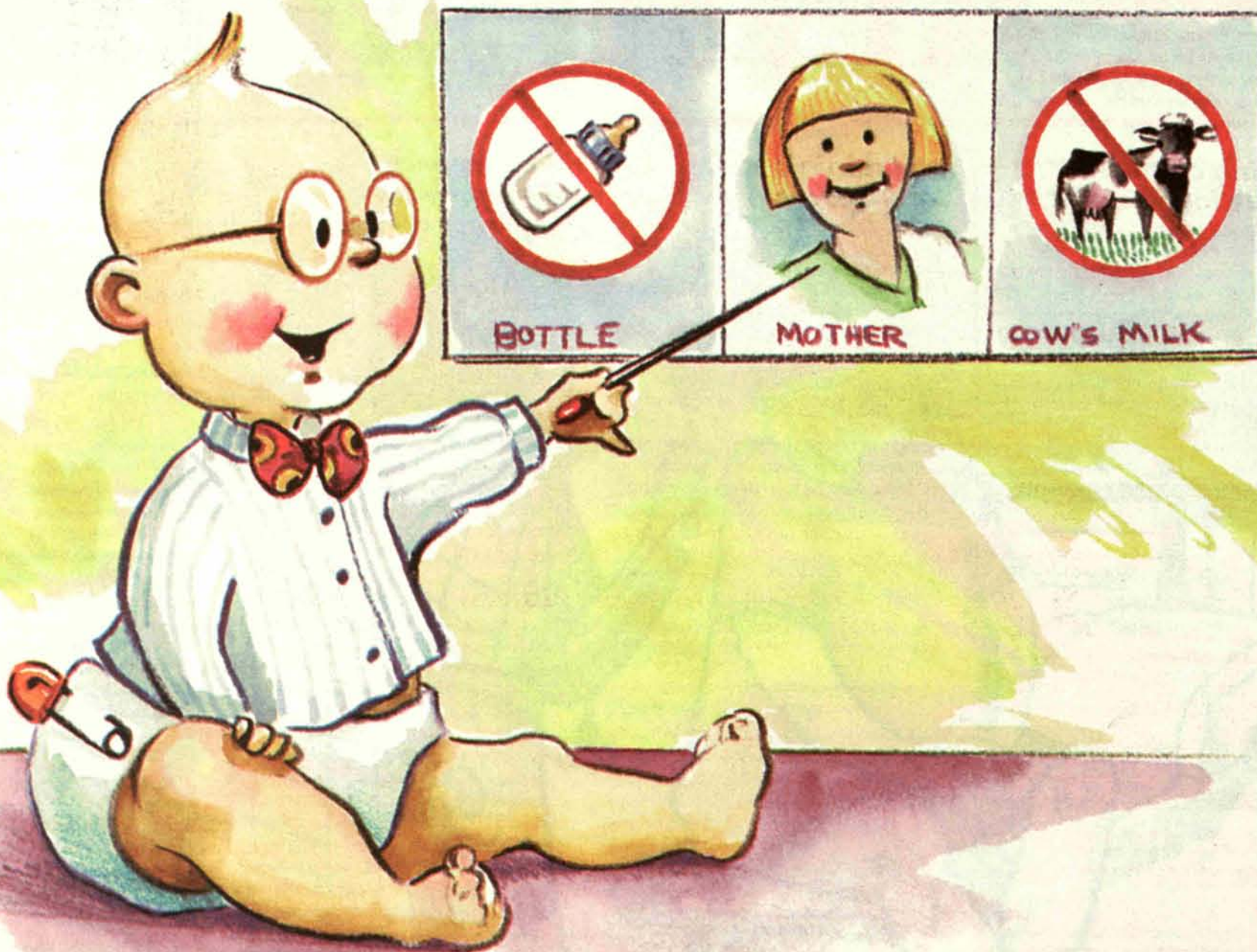
- Discussion of estrogen replacement therapy
- Discussion of aspirin therapy
- Skin protection from ultra-violet light

Immunizations

- Tetanus-diphtheria booster
- Influenza vaccine
- Pneumococcal vaccine

HIGH-RISK GROUPS

- Hepatitis B vaccine



Breast-Feeding Best Bet for Babies

New parents want to give their babies the very best. When it comes to nutrition, the best first food for babies is breast milk.

More than two decades of research have established that breast milk is perfectly suited to nourish infants and protect them from illness. Breast-fed infants have lower rates of hospital admissions, ear infections, diarrhea, rashes, allergies, and other medical problems than bottle-fed babies.

"There are 4,000 species of mammals, and they all make a different milk. Human milk is made for human infants and it meets all their specific nutrient needs," says Ruth Lawrence, M.D., professor of pediatrics and obstetrics at the University of Rochester School of Medicine in Rochester, N.Y., and spokeswoman for the American Academy of Pediatrics.

The academy recommends that babies be breast-fed for six to 12 months. The only acceptable alternative to breast milk is infant formula. Solid foods can be introduced when the baby is four to six months old, but a baby should drink breast milk or formula, not cow's milk, for a full year.

"There aren't any rules about when to stop breast-feeding," says Lawrence. "As long as the baby is eating age-appropriate solid foods, a mother may nurse a couple of years if she wishes. A baby needs breast milk for the first year of life, and then as long as desired after that."

In 1993, 55.9 percent of American mothers breast-fed their babies in the hospital. Only 19 percent were still breast-feeding when their babies were 6 months old. Government and private health experts are working to raise those numbers.

The U.S. Food and Drug Administration is conducting a study on infant feeding practices as part of its ongoing goal to improve nutrition in the United States. The study is looking at how long mothers breast-feed and how they introduce formula or other foods.

Health experts say increased breast-feeding rates would save consumers money, spent both on infant formula and in health-care dollars. It could save lives as well.

"We've known for years that the death rates in Third World countries are lower among breast-fed babies," says Lawrence. "Breast-fed babies are healthier and have fewer infections than formula-fed babies."

TIPS FOR BREAST-FEEDING SUCCESS

It's helpful for a woman who wants to breast-feed to learn as much about it as possible before delivery, while she is not exhausted from caring for an infant around-the-clock. The following tips can help foster successful nursing:

Get an early start: Nursing should begin within an hour after delivery if possible, when an infant is awake and the sucking instinct is strong. Even though the mother won't be producing milk yet, her breasts contain colostrum, a thin fluid that contains antibodies to disease.

Proper positioning: The baby's mouth should be wide open, with the nipple as far back into his or her mouth as possible. This minimizes soreness for the mother. A nurse, midwife, or other knowledgeable person can help her find a comfortable nursing position.

Nurse on demand: Newborns need to nurse frequently, at least every two hours, and not on any strict schedule. This will stimulate the mother's breasts to produce plenty of milk. Later, the baby can settle into a more predictable routine. But because breast milk is more easily digested than

formula, breast-fed babies often eat more frequently than bottle-fed babies.

No supplements: Nursing babies don't need sugar water or formula supplements. These may interfere with their appetite for nursing, which can lead to a diminished milk supply. The more the baby nurses, the more milk the mother will produce.

Delay artificial nipples: It's best to wait a week or two before introducing a pacifier, so that the baby doesn't get confused. Artificial nipples require a different sucking action than real ones. Sucking at a bottle could also confuse some babies in the early days. They, too, are learning how to breast-feed.

Air dry: In the early postpartum period or until her nipples toughen, the mother should air dry them after each nursing to prevent them from cracking, which can lead to infection. If her nipples do crack, the mother can coat them with breast milk or other natural moisturizers to help them heal. Vitamin E oil and lanolin are commonly used, although some babies may have allergic reactions to them. Proper positioning at the breast can help prevent sore nipples. If the mother's very sore, the baby may not have the nipple far enough back in his or her mouth.

Watch for infection: Symptoms of breast infection include fever and painful lumps and redness in the breast. These require immediate medical attention.

Expect engorgement: A new mother usually produces lots of milk, making her breasts big, hard and painful for a few days. To relieve this engorgement, she should feed the baby frequently and on demand until her body adjusts and produces only what the baby needs. In the meantime, the mother can take over-the-counter pain relievers, apply warm, wet compresses to her breasts, and take warm baths to relieve the pain.

Eat right, get rest: To produce plenty of good milk, the nursing mother needs a balanced diet that includes 500 extra calories a day and six to eight glasses of fluid. She should also rest as much as possible to prevent breast infections, which are aggravated by fatigue. ■

The Lactating Breast

When the baby sucks, a hormone called oxytocin starts the milk flowing from the alveoli, through the ducts (milk canals) into the sacs (milk pools) behind the areola and finally into the baby's mouth.

Healthy Bites

Vegetarians vegetate

The number of people who describe themselves as vegetarians has changed little in the last 16 years, according to the U.S. Department of Agriculture. Recent surveys show that 2 percent of the population say they are vegetarians and fewer than 1 percent say they eat no meat of any kind.

Feeling confident about food safety

The government provides a huge safety margin when it comes to pesticide residues permitted on our food products. Maximum amounts are set so that Americans could be exposed only to levels 100 to 1,000 times lower than would pose a health threat over a lifetime. For example, a 150-pound adult would have to eat 3,000 heads of lettuce a day for the rest of his life to ingest an amount of pesticide found to cause problems in lab rats.

Melatonin not proven safe



The National Institutes of Health (NIH) said melatonin has not been proven scientifically as either effective or safe.

Researchers at a conference on the use of melatonin said wide publicity about the presumed benefits of the hormone have created a brisk market at health food stores even as scientists are scrambling to determine if it has serious side effects.

Melatonin is unregulated under federal law because it is a natural ingredient in some foods. But the compound is also a natural hormone put out by the pineal gland in the brain. Studies 20 years ago showed that the natural levels of melatonin increase 10 times just before and during sleep.

More recent studies have linked the hormone to causing drowsiness in some people. Also, some studies have suggested that the hormone can reset the sleep-wake cycle, and thus help people overcome the effects of jet lag or night shift work.

New milk product

Milk made from non-fat milk and an oatmeal flour mixture is expected to hit some U.S. markets this fall, providing an alternative for those who don't find skim milk appealing. The new variety is supposed to look like whole milk, taste like 2 percent milk and lower the cholesterol levels in many people. The product will also be available in chocolate flavor, which will be sweetened with aspartame.

Meat as part of healthy diet



If you thought a cholesterol-lowering diet meant giving up meat, you'll be pleased to know it's an unnecessary sacrifice, according to the American Heart

Association. A 3-ounce portion of meat contains about 70-75 milligrams of cholesterol and an acceptable level of saturated fats, provided you take certain precautions. First, look for lean cuts of meat — those that contain a minimum of visible fat. Second, trim all outside fat from the meat before cooking.

Biotech advances

Scientists believe biotechnology will make more foods healthier and more nutritious.

Some examples:

- New varieties of fruits and vegetables containing higher levels of certain nutrients such as Vitamins C and E, and beta carotene. These food components may help reduce risk of chronic diseases such as some cancers and heart disease.
- Lower fat french fries and potato chips. A higher starch potato will mean fries and chips made from these potatoes will absorb less oil when fried.
- Rice with an improved protein profile to include higher levels of the essential amino acid, lysine. This may help reduce childhood blindness in China caused by lysine deficiency.
- Eliminating allergy-causing proteins from foods. Research to reduce the allergenic proteins in rice will help Asian nations, which have high rates of rice allergy.



Illustrations by Barbara Hranilovich

Another reason to avoid stress

New research suggests that stress could do more than just cause a headache — it may actually shrivel the brain.

According to a study published in the journal *Science*, major emotional upheaval could generate changes that damage the brain — specifically the hippocampus, which is responsible for complex memory.

Separate studies of patients with severe depression, post-traumatic stress disorder and a condition called Cushing's Syndrome all showed high levels of stress hormones called glucocorticoids. Using new, high-resolution scans, scientists were able to show brain shrinkage in the presence of these hormones. While glucocorticoids help people mobilize their bodies in a crisis situation, too much of the hormones can be damaging.

The findings on stress and brain chemistry also suggest new methods of treatment. Drugs that curtail the production of stress hormones are already under study as a therapy for depression. ■



Listen up. Take care of your ears!

Have your ears been ringing lately? Does speech seem muffled after you've been around loud noise? Think earplugs, says an Ohio State researcher.

"Agricultural workers are definitely at a risk, many at a high risk, for noise exposure," says Chris Eicher, an Extension associate in the Department of Food, Agricultural, and Biological Engineering.

Noise is measured in decibels. Normal conversation rates about 50-60 decibels, and the threshold of pain is at 140 decibels. Farm machines and tractors emit noise between about 100-110 decibels. In many tractors with soundproof cabs, operators hear only about 85-90 decibels.

The Occupational Safety and Health Administration recommendation permits 90 decibels throughout an eight-hour workday, while the National Safety Council recommends 85 decibels for the eight-hour time period for farmers. However, farmers seldom work only eight-hour days. During spring planting or fall harvest, the days tend to be much longer, Eicher says.

"We used instruments to do field measurements of sound levels on farms," Eicher says. "On one farm, we found a level of 103 decibels all day in the farmer's combine."

The rate of hearing loss is related not only to the sound's decibel level but to its pitch and to the length of exposure to the sound.

"It's very difficult to get a good noise profile on the farm, because there are so many variables to take into account," Eicher says. "We recommend that farmers go ahead and wear hearing protection, knowing that noise has been determined to be a problem on farms."

Farmers can choose earplugs or earmuffs for hearing protection, Eicher says. "For farmers with employees, buying earplugs is most cost-effective, and there is not much difference between the two in noise reduction," Eicher says. "The big problem with earplugs, though, is getting people to wear them consistently and properly."

Some warning signs of hearing damage are ringing in the ears, head noise or muffled-sounding speech after working around loud noise. "Hearing loss is cumulative, and some is natural," Eicher says. "If you sit in a quiet room your whole life, you will still have some hearing loss. Some people think that since they already know they've lost some hearing, there's no sense in wearing hearing protection. But what you have, you have, so why not keep it?" ■

How can I get my child revved up for the new school year?

If your child's not in the habit already, get him or her started each day with a meal. Breakfast fills their "empty tank" to get them going after a long night without food. And it can help them do better in school. Easy to prepare breakfasts include cold cereal with fruit and low-fat milk, whole-wheat toast with peanut butter, yogurt with fruit, whole-grain waffles or even last night's pizza!

Snacks are a great way to refuel through the course of the day. Choose snacks for your child from different food groups — a glass of low-fat milk and a few graham crackers, an apple or celery sticks with peanut butter and raisins, or some dry cereal. If they eat smart at other meals, cookies, chips and candy are OK for occasional snacking.



Office Calls

Don't forget physical fitness. It's easy to fit physical activities into their daily routine. Encourage them to walk, bike or jog to see friends. Have them take a 10-minute activity break every hour while they read, do homework or watch TV. Suggest climbing stairs instead of taking an escalator or elevator. ■

How do antiperspirants work? Do they interfere with the cleansing function of perspiration?

Antiperspirants do reduce underarm perspiration somewhat, and they also effectively suppress the bacterial growth that causes underarm odor, as well as masking odors. Deodorants, on the other hand, mask odors without suppressing perspiration. Antiperspirants are classified as over-the-counter drugs, deodorants as cosmetics.

Antiperspirants contain aluminum compounds, which reduce the amount of sweat, but no one understands exactly how these work. It is not true, as some ads imply, that antiperspirants do away with all sweating. The decrease in wetness ranges

from 20 percent to 40 percent, so it is unlikely that antiperspirants interfere with the cleansing function of perspiration. Nor do they harm the sweat glands; normal sweating resumes soon after you discontinue antiperspirant use. Antiperspirants can cause skin irritation, and if this happens, you can try changing brands, or switch to a simple deodorant. Antiperspirants should not be used if your skin is abraded (from underarm shaving, for example).

We do caution against aerosol antiperspirants. The long-term risks of inhaling them are unknown, and if sprayed in the eye, they can cause severe irritation. Some people avoid antiperspirants out of fear that aluminum exposure increases the risk of Alzheimer's disease, but there's no conclusive evidence that it does. In any case, the amount you would absorb from a nonaerosol antiperspirant is insignificant. ■

Source: University of California Berkeley Wellness Letter, September 1996.



Medical Focus



Speech after Stroke

Stroke survivors bounce back: Rehabilitation enhances recovery and lifestyle

From the first months of life, when a simple "ma" brought a smile to your mother's face, you've translated your thoughts into words to communicate with those around you.

But imagine waking up in a world where that's no longer possible. Words that once flowed effortlessly now seem beyond reach. Your mouth doesn't seem to work, turning your sentences into slurred, garbled sounds.

Each year, thousands of Americans who have strokes find themselves in this situation. Strokes can have many debilitating effects, but being unable to talk, read, write or understand those around you can be among the most upsetting.

Fortunately, awareness and understanding of stroke's effect on speech and language are growing. Once, stroke survivors were relegated to silence. Now, improving communication abilities is an important focus of stroke rehabilitation.

Damaged brain cells

When you have a stroke, a clot or rupture in one of your brain's blood vessels damages nearby cells. When this happens in areas of your brain responsible for speech and language, it can affect your ability to communicate — often without impairing your intellect.

About 500,000 Americans have a stroke each year. Of those who survive, between 25 and 40 percent will have impairments in their ability to speak, read, write or understand conversations. Sometimes, a stroke can strip away all of these skills. The three main stroke-related communication disorders are:

Aphasia — (uh-FAY-zhuh) affects the process in your brain that allows you to understand and use written symbols and speech. When you have aphasia, you may struggle, or lose the ability entirely, to read, write, speak and understand what others say. There are several types of aphasia that can affect different language abilities.

Dysarthria — (dis-AHR-three-uh) affects the control of the muscles you use to speak. A stroke may weaken or paralyze them, or cause them to be uncoordinated. This may slur your speech or make your voice sound hoarse or gurgly.

Apraxia — (uh-PRAK-see-uh) is best understood as a translation problem between the brain and the muscles you use to speak. You know what you want to say, but can't form the words.

Stroke survivors can have a combination of these disorders

Enhancing skills

Today, the value of speech rehabilitation for stroke survivors is widely acknowledged. That hasn't always been the case. Until the mid-1970s, speech rehabilitation often wasn't offered after a stroke. But many studies have shown that it can help you improve your quality of life. And even when speech can't be restored, rehabilitation can

help you communicate in other ways.

Speech rehabilitation may also help prevent depression, a serious condition that affects many stroke survivors. And it may help you regain your independence.

Diagnosing difficulties

Depending on your health, speech rehabilitation may begin very soon after your stroke, maybe even within a day. Time is critical, because speech rehabilitation may stimulate the brain as it heals.

A speech pathologist will typically assist your doctors in determining what speech or language disorders you may have. The speech pathologist may give you a series of tests. For example, you might be asked to say words, follow directions, name objects, repeat sentences, read and write.

Exercise and homework

Based on this testing, the speech pathologist will recommend a speech rehabilitation program for you. A program typically involves regular meetings with a speech pathologist, either individually or in a group, and working at home on exercises.

Speech pathologists tailor rehabilitation sessions individually, but here are some activities and objects you'll likely encounter:

Exercise and practice — Exercising weakened muscles may help you speak more clearly. Your therapist might ask you to say words, smile, close your mouth or stick out your tongue.

Practicing words and sentences may help you retrieve them more easily during conversation.

Picture cards — Cards showing everyday objects may help you sharpen your word recall abilities and increase your vocabulary. Your therapist may also ask you to say the names of objects or group similar objects together.

Picture boards — Picture boards display depictions of everyday activities or objects. By pointing to the board's illustrations, you can learn to communicate with those around you.

Workbooks — Books with worksheets may also help you recall objects' names and help you work on reading, writing and listening skills.

Computers — There are many computer programs designed to help sharpen your speech, reading, recall and listening skills. For example, you may be asked to identify objects that appear on the screen.

Some stroke survivors with dysarthria or apraxia may benefit from small, hand-held computers that display a message you type. Some computers can provide a mechanical voice output of your message. Prices can range from about \$150 to about \$500.

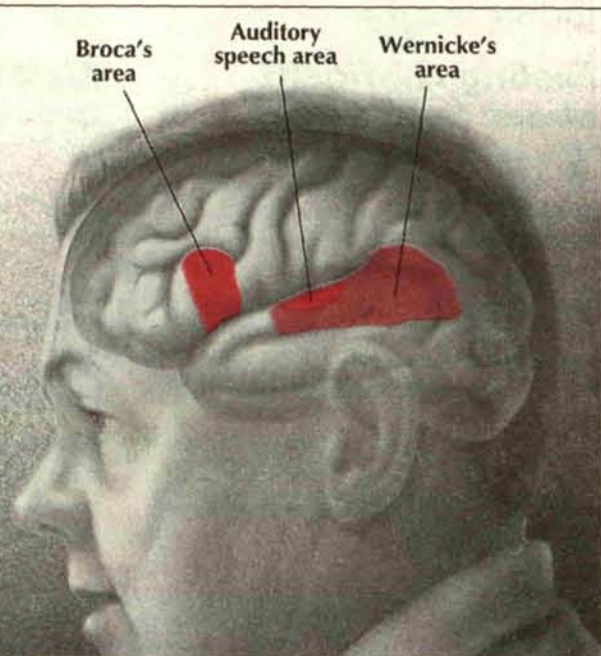
Effort required

Therapy sessions usually last 30 minutes to an hour. Although the activities may sound easy, they can be challenging.

When speech rehabilitation begins, you're often still adjusting to the change a stroke has made in your lifestyle. In addition, exercising weakened or paralyzed muscles, even facial ones, requires a lot of effort. Sometimes therapy sessions can feel more tiring than working out in a gym.

Speech rehabilitation can also be mentally exhausting for both stroke survivors and those close

Stroke can have a variety of effects on your speech and language abilities, depending on which area of your brain is injured. Damage to the Broca's area may make it difficult for you to form words and express yourself. If the auditory speech area is affected, others may sound as if they are speaking gibberish or another language. Injury to the Wernicke's area may cause you to use sounds or words that don't make sense.



to them. Activities and exercises that once would have been easy are now difficult or impossible.

Family members may also find it uncomfortable or painful to watch a loved one struggle to name an object or say a word. Don't take it personally if a stroke survivor becomes emotional or angry. Recovering from a stroke can be very frustrating.

Family roles and activities may also need to be modified. Social workers and other members of the rehabilitation team can help you find the support you need.

Regaining your place

Although stroke-related disabilities can be permanent, many people lead healthy, active lifestyles after a stroke. About two-thirds of stroke survivors are able to resume everyday life and responsibilities.

Medical professionals can't restore all the skills a stroke might have impaired or taken away. What they can do is offer techniques, guidance and support to enhance your recovery.

Speech rehabilitation is one important tool for helping you regain your sense of place in family and community.

Family and friends play a role in recovery

Lack of knowledge or experience with stroke recovery can make it difficult to be around some-

one who has trouble communicating. But family members and friends play an important role in the recovery process.

Here are some tips to help you communicate with someone whose speech has been affected by stroke:

Stay in touch — Your friend or family member needs you but might not be able to tell you so. Make an effort to be there.

Keep conversation at an adult level — Address stroke survivors directly and don't talk down to them. Treat them the same as you did before the stroke. Just because someone has had a stroke doesn't mean he or she can't think anymore.

Use a normal tone of voice — Unless there's a hearing loss, you don't need to speak louder than normal.

Speak at a comfortable pace — Allow time for your words to be processed. Pause often.

Avoid distractions — Reduce background noise from televisions or radios.

Talk one-on-one — A stroke survivor may understand best when the conversation includes just one or two people.

Keep caregivers in mind — They need support and friendship, too. Include them in your thoughts and plans.

Reprinted from August, 1996, Mayo Clinic Health Letter with permission of Mayo Foundation for Medical Education and Research, Rochester, Minnesota 55905

Stroke Clubs

Stroke Connection is a service coordinated by the AHA National Center. "Stroke families helping stroke families in partnership with the American Heart Association" is what Stroke Connection is all about. Stroke Connection network partners are stroke support group leaders, caregivers, family members and health care professionals working with the AHA to fight stroke and to improve the quality of life for stroke survivors with disabilities. National clearinghouse volunteers provide hope and encouragement, daily living tips, resource information, and support group referrals over the toll-free hotline (800-553-6321).

Stroke Connection networks with over 1,000 stroke groups or clubs and more than 50,000 stroke survivors, caregivers and professionals throughout the country. Stroke Connection supports the development of stroke groups and offers program ideas and activities (such as workshop guidelines) to groups that are registered in the Stroke Connection directory.

Stroke groups and clubs may register by calling 800-553-6321. Once the group is registered it will receive:

- Opportunities to network with other stroke groups and gain ideas from them.
- A complimentary single-copy subscription of *Stroke Connection Magazine* (to the group leader), an educational, informative

bi-monthly publication.

- *Stroke Group Leader Quarterly* — Our free publication in which group leaders share ideas on activities, group development and other issues.
- Stroke Awareness Month media kit and activities.
- Referral of potential new members.
- Opportunities to educate the public about stroke.

Stroke Connection provides ongoing support for stroke groups through group leader mailings and activities, such as Stroke Awareness Month.

Stroke Connection Magazine is the main publication and one of the benefits of registration. For information on ordering *Stroke Connection Magazine* and subscription rates, call 800-553-6321.

A *Stroke of Luck* newsletter is a free publication composed of letters from persons with aphasia as well as their families and caregivers. It is published three times a year. To be added to the mailing list for *A Stroke of Luck*, call 800-553-6321.

Stroke Connection now coordinates the Common Threads PenFriends. Common Threads PenFriends helps link people in similar circumstances, enabling them to support each other in a way that only "someone who has been there" can.

Stroke Connection also has a line of stroke-related products available to the public. Information on these products can be found in *Stroke Connection Magazine*.

If you or someone you know has experienced stroke firsthand, call the AHA's Stroke Connection at 800-553-6321 for more information.

Alternative feeds for dairy cattle

by Craig Burns, MSU Extension dairy agent

Current high feed prices have nutrition consultants and dairy farmers looking for economical feed sources and substitutes. This article discusses the use of some alternative and by-product energy feeds that can be substituted for corn. It should be noted that availability and prices of alternative and by-product feeds vary widely throughout the state.

Corn is the concentrate base of most Michigan dairy rations. Corn contains a high concentration of starch (carbohydrates; see Table 1). There is very

little simple sugar (e.g., glucose) in corn and most grains. Starch and sugars are fermented by rumen bacteria to volatile fatty acids (VFAs). The VFAs are absorbed and metabolized to provide energy to the cow and some are converted to blood glucose, which the mammary gland requires as a precursor to milk lactose, a sugar. Table 2 lists the nutrient composition of selected feed ingredients.

Corn Alternatives

Barley has a rapid digestion rate and is high in starch. Barley can be substituted pound for pound for corn, but needs to be coarsely ground. Inclusion rate for barley is 20 to 40 percent of total ration dry matter (DM). In Michigan, barley is planted in early spring and harvested in August and can be used to extend energy supplies until corn harvest, if corn inventories are low.

Wheat, like barley, is high in starch and has a rapid digestion rate. Wheat needs to be rolled or coarsely ground and should be limited to less than 20 percent of the total ration dry matter because of grain density, lack of effective fiber, rapid rumen degradability, and palatability problems caused by grinding. Wheat prices generally are high enough to limit its use in dairy rations. However, sprouted or out-of-condition wheat often is very competitively priced.

Oats are lower in starch than barley or wheat but have a similar rapid rate of digestion (Table 1). Oats can be substituted pound for pound for corn and be coarsely ground for lactating dairy cows.

Energy By-product Alternatives

Hominy: There are two types of hominy feed available. One contains 4 to 5 percent fat and the other contains 8 to 9 percent fat. Hominy is lower than corn in starch content and more slowly fermented. The fat content of both types of hominy feed is higher than that of corn. Hominy feed can be included up to about 30 to 40 percent of the total ration DM. Hominy feed prices lag behind, but follow corn prices closely. Therefore, deciding to include hominy feed in dairy rations will require close examination of the markets.

Corn gluten feed is comparatively lower in starch and ferments at a little faster rate than corn. Corn gluten feed has twice the protein (25 percent), but a little less energy than corn (Table 2). Corn gluten feed is very palatable with a maximum inclusion rate of about 30 percent of the total ration DM.

Wheat co-products are by-products of the wheat milling industry. They are very variable in starch content, which determines the inclusion rates of the different wheat co-products (bran, flour, germ and screenings) in the feed. Therefore,

Continued on page 13

Table 1 — Starch content and ruminal degradation rate of selected feed grains and by-products¹

Feedstuff	Starch (% of DM)	Soluble starch (% of starch)	Degradation rate (%/hour)
Barley	60.4	64.5	24.2
Corn	73.5	27.6	4.0
Corn gluten feed	32.4	62.0	10.2
Hominy feed	49.5	33.9	5.3
Oats	47.3	96.1	18.8
Potato	78.1	33.9	4.9
Wheat	68.7	69.1	18.2
Wheat flour	83.0	87.2	19.8
Wheat shorts	57.5	86.6	15.7
Wheat middlings	29.0	88.5	24.2
Wheat bran	19.1	87.0	20.8

¹Nocek, J.E. 1995. Characteristics of starch among alternative feeds. Page 233 in Proc. 2nd National Alternative Feeds Symposium, Univ. Missouri-Columbia.

Table 2 — Nutrient composition of selected feed ingredients¹

Feedstuff	DM (%)	CP (%)	Fat (%)	Ash (%)	NFC (%)	Limit (%)	NE _l (Mcal/lb)
Bakery waste ²	—	—	—	—	—	<20	0.94
Barley	88.0	13.5	2.1	2.6	62.8	40	0.88
Cereal waste ²	—	—	—	—	—	10-20	—
Corn, shelled ground	88.0	10.0	4.3	1.6	76.1	40	0.89
Corn gluten feed, dry	83.0	25.6	2.4	7.5	19.5	30	0.87
Hominy	87.0	11.5	7.7 ³	3.1	22.7	40	0.91
Oats	89.0	13.3	5.4	3.4	45.9	40	0.80
Potatoes ^{2,3}	23.0	9.5	0.4	4.8	—	20	0.85
Wheat	88.3	12.9	1.8	1.9	68.1	<20	0.94
Wheat bran	89.0	17.1	4.4	6.9	20.6	25	0.73
Wheat middlings	89.0	18.4	4.9	5.2	34.5	25	0.71

¹National Research Council. 1989. Nutrient requirements of dairy cattle. 6th ed. Natl. Acad. Sci., Washington, D.C. DM = dry matter; CP = crude protein; Fat = crude fat (ether extract); Ash = total minerals; NFC = non-fiber carbohydrate [100-(neutral detergent fiber+CP+EE+Ash)]; and NE_l = net energy for lactation. All concentrations are a percentage of dry matter.

²By-products too variable to list or information is not available.

³Varies with processing and source.

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Here's a Bt corn hybrid that's gaining plenty of attention in our area. High stable yield performance, along with remarkably superior ear retention and late season intactness. N6800Bt demonstrates exceptional season-long control of European corn borer from emergence to black layer. It also provides control of Southwestern corn borer and supplies some protection from fall armyworm and corn yearworm. Moderate resistance to gray leaf spot, too. N6800Bt is well suited for early planting and reduced tillage. 110-114 RM. Order your N6800Bt corn seed for next year's planting.



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Planting guidelines for improved wheat fields

by Rick Ward, MSU Wheat Breeding

The old adage that you reap what you sow is particularly applicable to wheat grown in Michigan. The planting period probably represents the greatest opportunity for Michigan farmers to improve wheat yields!

The big message is: wheat performance is influenced very much by 1) how many seeds (not how many pounds) are in a foot of row, 2) how deep the seed is planted, and 3) when the seed is planted.

Seeding Rate

To help assure the best possible yield, winter wheat should be seeded at a rate of 1.8 million to 2.1 million seeds per acre. That equates to 24 to 30 seeds per row foot when wheat is planted in 7-inch rows.

Seed size varies tremendously in wheat. All Michigan Certified seed has that seed lot's seeds-per-pound information on the tag. Seed lots can vary in size from 11,000 to 18,000 seeds per pound, so the old method of calibrating planters based on pounds or bushels per acre, without regard to actual seeding rates, is clearly misleading.

The point is that using a fixed rate of pounds per acre does nothing to give you a fixed planting

rate. Since *planting rate matters in wheat*, this means you are inadvertently losing and gaining yield potential when you calibrate to pounds per acre instead of seeds per acre!

Calculate your pounds per acre requirements by dividing the targeted seeding rate per acre (million seeds per acre) by the seeds per pound for your seed lot. For example, the proper seeding rate for a target of 1,800,000 seeds per acre using seed that is 18,000 seeds per pound is: $1,800,000/18,000 = 100$ lbs/acre. Achievement of the same targeted seeding rate with a seed lot that has 11,000 seeds per acre would require 1,800,000/11,000 or 163 lbs/acre. The difference is a bushel of seed per acre, but both the 100 and 163 lbs/acre rates achieve the same plant stands and therefore the same yield potential!

Calibrate drills by following equipment-specific instruction manuals. Periodic checks of seed placement and distribution in uncovered furrows is a good way to ensure accurate seeding. Pull your drills out of storage early enough to make sure they are doing the job you want them to do. Check within and among row variation in seeding depth and spacing.

Planting rate should increase as planting is de-

layed beyond 10 days after the fly free date. Rates could sensibly be increased to 2.6 million seeds per acre if farmers are forced to plant in the latter half of October. Extra seeds per acre help compensate for lost development time in the fall, and they help ensure winter survival through additional snow trapping.

Planting Date

The recent data suggests that average yield potential generally decreases as planting is delayed past the end of September or the beginning of October. Test weight also generally declined with

Continued on page 13

Results of Wheat Survey

Show Weaknesses

A wheat planting survey conducted in 1995 by MSU Extension field crop agents across Michigan shortly after planting on 61 different fields looked at planting populations, seeding depths, visual problems, previous crops and tillage methods.

Since it's estimated that 60 percent of the wheat yield is determined at the time the drill leaves the field, some important deficiencies were identified. Thirty-nine percent of the fields surveyed had plant populations less than MSU recommendations. Another 28 percent of the fields had been planted either too shallow, too deep, or inconsistently.

Wheat Survey

Plant Populations	Percent of Total
Less than 1.49 million plants/acre	39%
1.50 to 1.9 million plants/acre	38%
Greater than 1.9 million plants/acre	23%
Visual Problems	
No Problems	43%
Uneven Emergence	20%
Too Deep	11%
Compaction	11%
Too Shallow	8%
Uneven Residue	8%
Uneven Broadcast	7%
Unlevel Seedbed	7%
Cloddy Seedbed	3%
Seeding Depth	
Less than 1 inch	13%
1 to 2 inches	72%
Greater than 2 inches	9%

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With a good growing year of the imidazolinone-resistant and tolerant corn under their belt, corn producers and consultants are looking at their choices for 1997 and how best to manage those choices. Farmers will have more than 130 IMI-Corn™ hybrids (hybrids that tolerate imidazolinone family of herbicides, such as Resolve™ and Contour™) in 1997 from which to select.

Lessons learned last year with IMI-Corn will bear a lot of weight on this year's planting decisions, says Jim Penney, crop consultant for Central of Iowa, a subsidiary of Heart of Iowa Co-op. According to Penney, corn growers in western Iowa have had good results with IMI-Corn, especially in controlling problems with shattercane and switch grass.

Experience with some genetically improved hybrids has shown that yields have dropped off when new traits were added. The first seed company to introduce IMI-Corn hybrids was keenly aware of the perception of yield loss. That's why ICI/Garst is pleased with company and university yield results, which place its IMI-Corn hybrids in as high or better yielding category as their non-IMI counterparts. So confident is the company, that ICI/Garst's most popular hybrid 8481 was released only as an imazethapyr-tolerant (IT) hybrid in 1995 and will not be sold at a premium often associated with other companies' IMI hybrids. ICI/Garst has the IT trait in more of its leading hybrids than any other corn company.

In 1983, American Cyanamid, developer of the imidazolinone chemistry, discovered a recessive gene (IR gene) that made corn resistant to this popular soybean herbicide family. In the meantime, a combined team of plant breeders and bioscientists at ICI/Garst discovered a dominant gene that gave corn a tolerance or resistance to imazethapyr. Because it is a dominant trait, it only had to be put into one parent line, which is the genetic difference between IT and IR corn.

What the future holds

With new hybrids coming out, ICI/Garst's Alan Hawkins says IMI Corn won't retain its novelty long. "Most IMI hybrids are a copy of another hybrid that is available without the IR or IT gene," he says. "Eventually, I don't expect to see two versions of the same hybrid being released."

Looking further ahead, Hawkins says most hybrids eventually will have some kind of herbicide tolerance "for insurance."

"Science keeps advancing," he states. "I expect that by the year 2000 there will be some new herbicide family that's even better than the imidazolinones, and plant breeders and biotechnologists will be scrambling to find another gene."

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Wheat 2000 — Calibrating grain drills for seed population

Researching indicates seeding rate not only affects yield, but also test weight and lodging. Because of seed variability, seeds per pound may vary by 30 percent, thus greatly affecting seeding rate. Therefore, drills should be recalibrated when changing varieties and at least annually to assure proper seeding rate.

Knowledge of the number of seeds per pound and germination are critical factors that need to be known before the proper seeding rate can be determined (see Table 1). It is recommended that samples be analyzed for germination and seeds per pound be determined. Michigan Crop Improvement Association, P.O. Box 21008, Lansing, MI 48919-1005, telephone (517) 355-7438, can perform these tests for a small fee.

Optimal seeding rate for wheat should be in a range from 1.6 to 2.1 million seeds per acre, based on 90 percent or more germination. Growers should plant 2.5 million seeds when sowing after Oct. 15.

Calibration Method 1 or 2 (shown below) requires knowledge of seeds per pound. Method 3 does not require seeds per pound, but uses seeds per foot to make the proper determination of population per acre.

MSU no longer recommends planting rates in bushels per acre. The most accurate method is seeds per acre or seeds per foot.

Method 1 — Field Calibration

- Locate the drill row spacing and corresponding $\frac{1}{100}$ acre feet for that row spacing in Table 2. (Example: $\frac{1}{100}$ acre for 7-inch rows is 746.8 feet.)
- Measure the hundredth acre (feet) in the field.
- Determine appropriate driving speed and drive planter for that length, collecting seed from one row.
- Carefully weigh pounds of seed collected, multiply by 100, which equals the pounds per acre.
- Multiply pounds per acre by predetermined seeds per pound. This equals seeds per acre.
- Adjust planter appropriately to achieve desired seeding rate.
- Example: 7-inch rows. 14,000 seeds per pound. Use the equation (Pounds of Seed Collected \times 100) \times seeds per pound — seeds per acre; e.g. 1.5 lbs. \times 100 = 150 lbs/acre \times 14,000 = 2,100,000 seeds per acre.

Table 1 — The effect of seed size on seeding rate in pounds per acre at different target seeding rates

Seed size (seeds/lb)	Seeding Rate, Million Seeds/Acre					
	1.6	1.7	1.8	1.9	2.0	2.1
10,000	160	170	180	190	200	210
11,000	145	155	164	173	182	191
12,000	133	142	150	158	167	175
13,000	123	131	138	146	154	162
14,000	114	121	129	136	143	150
15,000	107	113	120	127	133	140
16,000	100	106	113	119	125	131
17,000	94	100	106	111	118	124

Method 2 — Stationary Calibration

- Raise and block planter off the ground so planter drive wheel(s) spin freely.
- Measure the circumference of planter drive tire in feet.
- Divide the circumference into the hundredth acre (feet) (From Table 2). Then divide the number of rows seed is to be collected from. This will determine the number of times the planter drive tire will have to be turned. Use the equation (one hundredth acre feet divided by drive wheel circumference) divided by number of rows seed collected = needed revolutions of drive tire; e.g. (746.8 ft. \div 7.2 ft) \div 21 rows = 4.94 revolutions.
- Mark the drive tire, turn the number of revolutions figured in Step 3. Note: If collecting from all rows, use a tarp placed under the drill to collect seed.
- Carefully weigh the sample in pounds and multiply by 100 to get the pounds of seed per acre.
- Multiply pounds per acre by the predetermined seeds per pound. This equals seeds per acre.
- Adjust planter accordingly to achieve desired population.

Table 2 — Row Length to Equal an Acre

Row Width (inches)	Feet	1/100th Acre (feet)
6	87,120	871.2
7	74,676	746.8
8	65,340	653.4
10	52,272	522.7

Method 3 — Seeds Per Foot

- Locate flat, compacted and straight area where planter can be driven; i.e. driveway, etc.
- Reduce down pressure springs and/or set depth control as shallow as possible.
- Drive planter at the desired speed dropping wheat on top of the ground.
- Using a yardstick, lay it beside the row and count the number seeds. Do this at least five (5) times.
- Determine average number of seeds per foot.
- Consult Table 3 to determine seeds per acre planted.
- Adjust planter to achieve desired population.

Table 3 — Number of seeds/foot of row for different combinations of row spacing and target seeding rates

Desired seeding rate Million seeds/A	Broadcast seeds/ft ²	(row spacing in inches)				
		6	7	8	9	10
1.6	37	18.4	21.4	24.5	27.5	30.6
1.8	41	20.7	24.1	27.5	31.0	34.4
2.0	46	23.0	26.8	30.6	34.4	38.3
2.2	51	25.3	29.4	33.6	37.9	42.1
2.4	55	27.5	32.1	36.7	41.3	45.9
2.6	60	29.8	34.8	39.7	44.8	49.7
2.8	64	32.1	37.5	42.8	48.2	53.6



MSU Telfarm program picks farm managers of the year

Continued from page 7

Richard Hale Dairy — Hillsdale County



The Hale Dairy Farm, located near Jonesville, has been successful for many years. The Telfarm enrollment began with Richard's parents, Keith and Betty Hale, in 1967. Currently, the farm consists of 270 high producing holstein cows with 300 acres of corn, 120 acres of corn silage, 170 acres of alfalfa, 170 acres of soybeans and 25 acres of wheat.

Richard and his wife, Judy, have been married for 28 years and have two children — Christen and Leslie. A son, Dustin, died in 1989. Judy has been a high school English teacher in Jonesville for 28 years. The farm employs three experienced full-time employees who contribute to the success of the business. Each is provided with housing and other employee benefits. Richard and his mother, Betty, have a great deal of well-deserved pride in their attractive well-maintained farmsteads.

Although Richard has always been interested in the farm business, his involvement started in 1968 when he returned from Marine duty in Vietnam; a formal 50/50 partnership was formed between Richard and his father, Keith, now deceased. During the partnership "era," Richard purchased some land outside of the partnership structure. This helped reduce property transfer problems when, in 1991, Richard acquired his father's interest in the partnership and other real estate assets.

The acquisition of assets from his father creatively involved both a purchase agreement on the cows and 125 acres along with a 10-year lease/purchase of the machinery and rental of the remaining land. The agreement continues with Richard's mother, Betty.

Richard started entering the Telfarm records in 1991 when he became the full owner of the operating business. In 1994, after some "persuasion" by Area Dairy Agent Ron Green, Richard started using MicroTel, the microcomputer version of the Telfarm program.

Today Richard uses MicroTel's Checkwriter, Accountant and Payroll programs. He says, "I absolutely love the Telfarm MicroTel system. I do my complete payroll including cutting checks in 15 to 20 minutes." He adds, "I enter invoices into Checkwriter to keep track of unpaid bills and then pay bills usually only twice per month. The Checkwriter program helps to save time and reduce mistakes."

Richard works with Ron Green at year-end to develop the annual business analysis and utilize the information to monitor business strengths and identify potential opportunities.

Richard believes in "planning your work and then working your plan." Like his father, Richard believes in paying attention to detail and that "little things done correctly" add up to a profitable business. By keeping the Telfarm records himself, he is easily aware of all costs and incomes and is a strong supporter of the Telfarm program.

David and Margaret Klump — Monroe County



David Klump, of Monroe County, began farming in 1953 at the age of 21 after the death of his father, John. For the last 43 years, he and his wife, Margaret, have farmed the ground his grandfather purchased and they live in the house his grandparents built in 1882. They bought another 250 acres, adding to the 100 acres he inherited; altogether he farms about 750 acres, raising corn, wheat and soybeans.

For several years, they fed out about 150 steers in what had been the cow barn and lot. They also grew tomatoes for Hunt's, quitting in 1968 in order to take their family of seven children on a summer camping trip, and never returned to tomato growing. For 10 years, their younger son, Ben, was involved in the farming operation, while David worked as a mail carrier out of Lambertville.

David retired from the post office last year when Ben took a job with an engineering firm in Toledo, Ohio. With some help during harvest from Ben, another son, and a son-in-law, David is able to handle the farming. Some of Margaret's duties include driving a truck and handling the marketing and the Telfarm accounting.

David has served on the local school board and Whiteford Township Board. He is presently on the Township Planning Commission and on the Zoning Board of Appeals.

Both are active in their church, First Baptist of Temperance, where David teaches an adult Sunday school class and Margaret plays the organ. "We have to depend on God in this business," David says. "He is the One who sends seedtime and harvest, whether it is 100 bushel or 180 bushels of corn per acre. He sees us through every year."

In 1995, David and Margaret participated in the FINAN financial analysis workshop held in Monroe County. David commented, "The financial analysis workshop helped us find out we were better off than we thought we were." They have been with Telfarm 36 years and, Margaret adds, "It is well worth the money! The help we get at tax time is invaluable."

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Department of the Treasury Internal Revenue Service										
Name of proprietor										
SCHEDULE F (Form 1040) Profit or Loss From Farming <small>Form 1040, Form 1041, or Form 1085</small>										
A Principal business:										
C Business:	<table border="1"> <tr> <td>26</td> <td>Rent or lease (see page F-4): a Vehicles, machinery, and equipment</td> <td>26a</td> </tr> <tr> <td></td> <td>b Other (land, animals, etc.)</td> <td>26b</td> </tr> <tr> <td>27</td> <td>Repairs and maintenance</td> <td>27</td> </tr> </table>	26	Rent or lease (see page F-4): a Vehicles, machinery, and equipment	26a		b Other (land, animals, etc.)	26b	27	Repairs and maintenance	27
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Michigan Professional Dairy Farmers host summer tour

Michigan dairy producers from across the state had an opportunity to tour three unique dairy operations in northern Michigan during the recent Professional Dairy Farmers Summer tour. Stops included the Benthem Homestead Farm, the John and Bonna Baas Farm near McBain and the Clossen Prosperous Farms near Falmouth.

Benthem Homestead Farm

This 120-year-old, 135-cow dairy operation has made a transition in the last two years to baleage for the herd's replacement stock. Producing over 400 acres of alfalfa each year, Steve Benthem says the operation was looking for a way to reduce labor demands, while also improving on harvest time requirements, when they first tried baleage. The operation's labor force consists primarily of Steve, two full-time hired men and his father, who helps out on calf chores.

Feed quality, however, has made Benthem an avid fan of baleage. "We started out using baleage as a labor-saving effort and found out that the rate of gain on our heifers was fantastic," he explained. "We're stuck on it!"

Crude protein has averaged between 21 and 23 percent, with an NE_i of 0.64 to 0.67, says Benthem. The operation uses an all-haylage, high moisture corn diet for the herd, which has a rolling herd average of 30,306 pounds on a three times per day milking schedule.

Heifers receive only four pounds of shelled corn per day, and free choice baleage through self-feeders. Heifers, although ready for breeding at 13 months in most cases, are bred at 14 months.

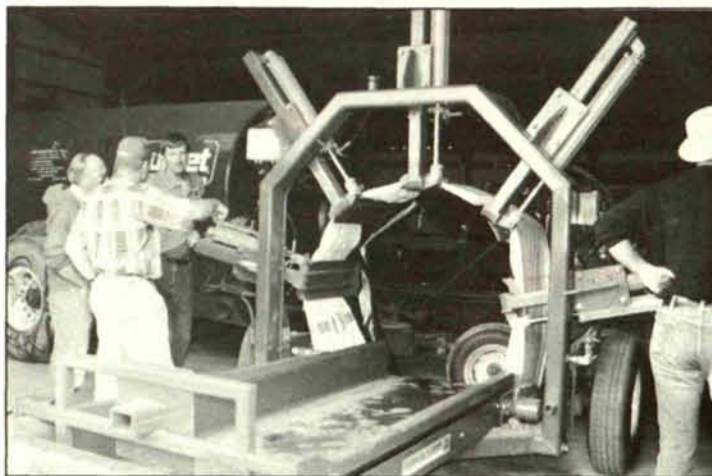
Benthem, who typically bales over 900 round bales annually in addition to putting up haylage, rolled up 240 bales of baleage last year and plans to do at least that many bales this year. He traded in a two-year-old 640 New Holland round baler for a 644 New Holland Silage Special this year, and purchased the machine needed to stuff the 1,600-pound 4' x 5' bale into a 150-foot-long silage bag.

He estimates his storage cost per bale at roughly \$4.50, figuring a total of 35 to 38 bales per bag. Since Benthem was already using an acid on his dry bales, at a cost of \$4 per bale, he figures the baleage is costing him just an additional 50 cents, allowing for the cost of the bag and a silage inoculant on the baleage.

Weather worries this year have really made the baleage concept shine in Benthem's eyes. Although 50 percent moisture is the goal, he generally starts baling for baleage at 60 percent moisture and stops at 45 percent. "Third cuttings this year will be light and late and chances of drying it down will be pretty poor," he concluded.

John and Bonna Baas

After milking cows for 10 years under a conventional management system, John Baas made some large-scale changes in 1988, liquidating a good deal



Steve Benthem responds to questions about his recently purchased bale stuffer used for bagging up to 38 bales for baleage in a 150-foot-long bag.

of his machinery inventory and roughly 100 acres of owned and rented crop land. He continued, however, milking 55 cows on the 80-acre main farmstead, relying on rotational grazing, custom hire operators, and purchased feed to overwinter his herd.

"We had all the appropriate stuff — mixer wagons, computer feeding and so on — but we weren't making any money," Baas recalled. "We have found this system to be much more profitable,

John Baas has relied on rotational grazing for eight years to manage his summer feeding program. A total of 55 cows are rotated on 70 acres starting in April until mid to late October. The operation custom hires any needed mechanical harvesting and buys all of its winter feed supplies.



we've got a lot less herd health problems, and we like our lifestyle."

Since converting to the rotational grazing system his biggest herd health headache has been milk fever, and Baas has had to deal with only one D.A. in nine years.

Using 14 paddocks spread over 70 acres, Baas uses poly wire to break the paddocks down to even smaller sizes as needed, and will move the cows as often as four times per day. He uses a stocking rate of 1,000 pounds live weight per acre and harvests 50 tons of excess forage as hay early in the growing season.

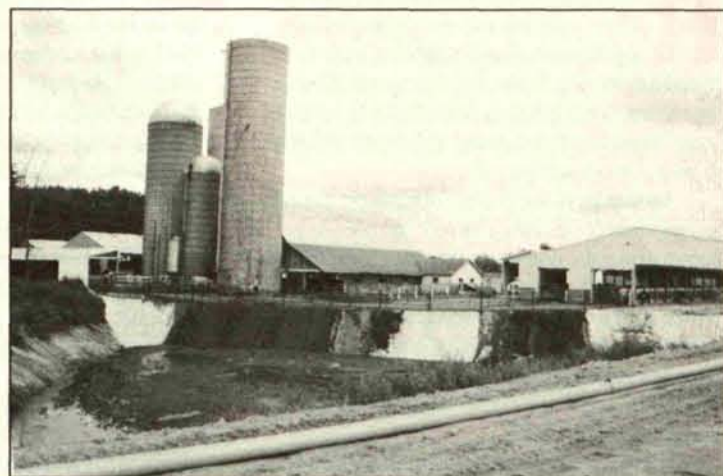
Over 50 percent of the Baas herd is now jersey, with a rolling herd average of 13,000, a 3.9 percent butterfat, and a 5.2 percent protein level. Supplemental feeds include mineral and 14 pounds of ground corn for holsteins and 10 pounds of corn for the jerseys.

He says the jerseys seem more adapted to the pasture and seasonal dairying management scheme and expects to continue converting the herd to the smaller breed. He's also experimenting with some cross breeding between holsteins and jerseys to capitalize on the benefits of both breeds.

"Last year the jerseys bred back much better than the holsteins," Baas said. "Our conception on first service with the jerseys was about 80 percent compared to 30 percent on the holsteins."

Although Baas was close to being considered a seasonal dairy operation, breeding problems have kept him from reaching that goal. Although he finds the idea of four to eight weeks off from milking appealing, he's seriously considering a fall freshening herd as well to maximize his labor and facilities.

Other changes being considered by Baas include renting additional pasture land to raise his own heifers, and developing a more site-specific forage plan to maximize production and increase the stocking rate to 1,200 pounds per acre.



Harold and Bob Clossen can access this just-completed manure storage structure from all of their livestock facilities, which includes 190 cows and another 30 head of breeding age heifers.

Clossen Prosperous Farms

Owned for nearly 100 years by the Clossen family, Bob Clossen and his wife, Daralee, in partnership with Bob's parents, Harold and Karen, are the fourth generation to run the farm business. The operation has grown over the years to a 190-cow herd, that also raises 350 acres of corn, 420 acres of hay, and 85 acres of small grains and soybeans.

A recently completed 1.2-million-gallon manure storage facility, with a six-month storage capacity for a total of 220 head, has made daily manure handling just a fond memory. Although just completed, Bob says the manure handling facility was always factored into the location and design of other livestock handling facilities.

Even though the operation relies on sand for bedding, the Clossens plan on irrigating as much of the manure as possible. A cement ramp and floor will allow the use of loaders and regular manure spreaders to haul out solids from the bottom of the pit once emptied.

A cement wall also borders the livestock facilities to create a push-off ramp for manure into the 14-foot-deep pit. An earthen bank on the remainder of the pit will allow for future expansion as needed.

The operation has always expanded and designed their facilities with the future in mind. When Harold built a new parlor six years ago, he relocated the milking center into a new 40' x 100' building that's naturally shaded by a stand of trees. His double-10 parallel rapid exit parlor, considered somewhat of a novelty at the time, has generated a great deal of curiosity and visits to the parlor.

Using a haylage and high moisture corn ration fed once per day, the operation's rolling herd average stands at 24,093 pounds, 893 pounds of fat and 779 pounds of protein, with a twice per day milking schedule. The Clossens use another 1,000 round bales for heifers and dry cows, all of which are stored inside. A 32' x 32' commodity shed, built in 1995, is used for storing cottonseed and soy meal. ■

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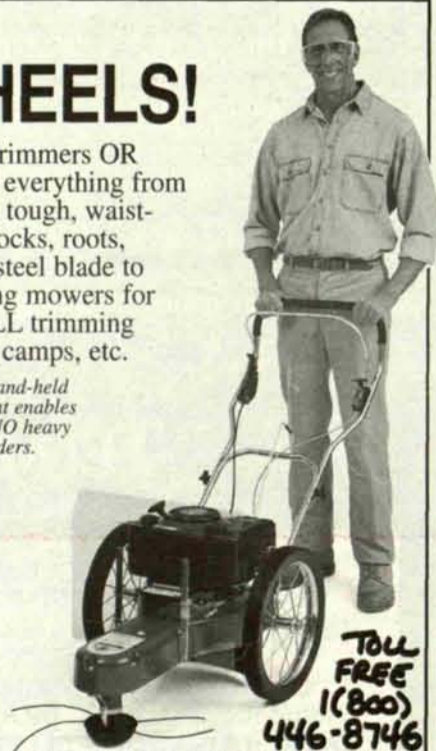
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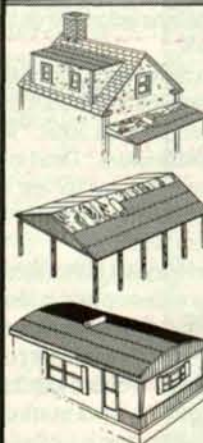
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Narrow row corn interest showcased by tour

Clinton County Farm Bureau member Dave Motz attended an informational meeting early this year in Frankenmuth to learn how to plant and harvest narrow row corn and seven months later found himself hosting the first of four stops on the narrow row corn tour so more producers could learn from him about the challenges he is facing going to narrower rows.

Almost 100 mid-Michigan producers attending the tour stops, coordinated by MSU Extension, Michigan Corn Growers Association and the Corn Marketing Board got a chance to literally "kick the tires" of some of the new equipment each of the producers was utilizing to plant narrow rows or building to harvest the corn in 15-inch rows.

In his first year with narrow rows, Motz planted 600 acres of no-till corn and 150 acres of conventional tillage corn to 15-inch rows using his White 6200 eight-row planter with seven splitter units. But his biggest challenge is yet to come — harvest. The visitors to his farm got a chance to see the corn head he was building to tackle the narrower rows, as well as a 16-row John Deere corn head fabricated by Rod Van Middlesworth, of Fulton.

"I went to a narrow row day in Frankenmuth this winter that the Extension put on and it sold me on everything so I went for it," explained Motz. "It's been proven you can get better yields with narrow row corn."

"Building a narrow row corn head is not for everybody and if anybody wanted me to build one I'd tell them it's not a simple project — a lot of cutting and grinding and thought that goes into it," explained Motz. "Get your wire welder out and a torch and start going at it, because it's going to take three guys two weeks to build one."



Bill Wesenberg's narrow profile tires on his John Deere 4455 caught everyone's attention on the narrow row tour as a way to keep the tire's compaction off the plant.

According to Van Middlesworth, the decision to go to narrow rows was a simple one. "We needed to get our beans planted no-till and we had been hiring our beans planted with a drill," he explained. "But the expense of the drill overrode the expense of a 15-inch row planter, which does a little nicer job in my opinion of planting beans anyway. We needed to get corn to 15 inches to make the whole thing work for us all the way around. The opportunity was there to get corn into 15 inches, and then we went to Frankenmuth and saw what's been done and the research that's been done, and decided to go for it."

The second stop on the all-day tour was Bill Wesenberg's farm in Southern Gratiot County. He bought a new Kinze eight-row planter with seven interplant rows to get down to 15-inch rows for his 300 acres of corn. What caught everyone's attention was the conversion Wesenberg made on his John Deere 4455 to a narrow tire width to reduce compaction in the row.



The first of its kind, produced by Rod Van Middlesworth, this 16-row John Deere narrow row corn head was originally an eight-row head. Van Middlesworth had to extend the sides of the head by 6 inches to accommodate the eight extra rows. He estimates it cost him \$2,000 per extra row installed on the corn head.

"When I had those tires put on I know that a lot of people told me I had a funny-looking tractor," laughed Wesenberg. "When I hit a wet spot or anything like that, I couldn't tell any difference; never slowed it down, it even seemed like it might've got down a little bit faster and grabbed something that was solid and pulled right through it. The tractor never got stuck or even got it close to getting stuck and we've had a lot of wet conditions this year."

Why go to narrow rows?

"After the research was done, we indicated that we'll show a 7 percent or somewhere between a 10 to 13 bushel yield increase on corn," explained Steve Poindexter, Saginaw County's MSU Extension agent. "You'll also see 2½ bags on dry beans, you may or may not get a yield increase on soys, and when we

look at sugar beets, anywhere from a ton-and-a-half to more, depending on how they emerge."

According to Poindexter, many growers are in a rapid phase of adapting to narrower rows depending on the crops they are currently planting. Numerous sugar beet growers adopted 22-inch rows almost 10 years ago, but strictly soybean and corn producers have pushed the row widths even further to 15-inch rows. "We're looking at a systems approach," he explains. "Whatever you adapt has to work out for all the crops."

"I certainly believe narrow rows will be the standard of the industry at least in the northern Corn Belt states," states Poindexter. "As you get further north, you tend to get a bigger yield increase as you squeeze rows in. As I look at many growers, we've worked with them on fertilizer, herbicide, and fine-tuning their insecticide program, and they're doing pretty much everything right. I can't tell a grower something that will gain 7 percent just by changing a production practice anymore. And that's why this narrow rows looks like it's going to be a real positive thing in the future."

When will equipment manufacturers make the first narrow row harvester?

"Equipment manufacturers are now catching up to what the growers want," explained Poindexter. "When equipment's not available, growers will tear things apart, put them together and fabricate into what they need. John Deere, for example, now offers a 20- or 22-inch row corn head and they offer kits to convert a corn head to a narrow row with an existing one. That was not available even two years ago."

"Case International is definitely looking at narrow row width equipment," he adds. "So the equipment companies are certainly reacting."

Planting guidelines for improved wheat fields

Continued from page 10

planting date in recent experiments. Never plant prior to your fly free date. Though we are generally free of hessian fly, that is probably largely because of our continued adherence to the fly free dates as the earliest acceptable planting date.

Optimal planting dates will vary from year to year. Planting too late reduces yields by shifting spring development out of the optimal time frame and by reducing the plants' ability to survive winter. Ideally, the crop should develop two to three tillers prior to winter. That amount of growth seems to be ideal for winter survival and optimal timing of spring development. This means the crop needs to accumulate enough heat to germinate and produce five to six leaves prior to winter.

Planting too early is risky for two reasons. First, plants are more likely to lose their winter hardiness because they begin to develop heads too early in the spring. Second, early plantings may be

infected with barley yellow dwarf, powdery mildew and even leaf rust.

Fertility

Wheat grows best in soil with a pH between 6.5 and 7.0. Soil fertility is critical to good wheat growth as well. Soil with an 80-bushel yield potential will require upwards of 75 pounds of phosphorus and 150 pounds of potassium per acre.

Apply about 10-20 pounds of actual N pre-plant in most situations, followed by split application of 90 pounds of N per acre in the spring.

Miscellaneous Items

Plant wheat 1 to 1.5 inches deep. Slightly shallower planting is acceptable as long as this doesn't result in seed on the surface. Have germination tests done on any seed lots for which current germination information is lacking. Seed treatment is an absolute must! Ensure that bin treatments are applied uniformly.

Alternative feeds for dairy cattle

Continued from page 9

knowing the exact description of the type of wheat co-product and the nutrient composition is very important. Maximum ration DM inclusion rate is 10 to 15 percent because of rapid rumen degradability and lower than predicted gains of growing cattle using net energy equations.

Cereal by-products come from the cereal processing industry. They are rapidly fermented and very variable in nutrient composition. Maximum inclusion rate for lactating cows is 10 to 20 percent of total ration DM.

Bakery waste primarily consists of stale bakery products and some other bakery wastes. They contain variable amounts of starches, sugars and fat. The starch and sugars will ferment rapidly. Bakery waste is an effective corn substitute, but should be

limited to less than 20 percent of total ration DM because of high variability, high sodium and fat content, and low effective fiber content.

Potato by-products come from the potato chip and french fry industry. Starch content is high and similar to corn. Maximum ration DM inclusion rate for fried by-products is 10 percent because of the high fat content and 20 percent for raw by-products because of low fiber content. Consideration of moisture content is important for raw potato by-products.

When comparing alternative feeds as substitutes for corn, careful nutritional and economic evaluations must be done.

In a future issue of *Michigan Dairy Review*, protein commodity and by-product alternatives will be discussed.

Discussion Topic

October 1996
A monthly resource
for the Community
Action Groups
of Michigan Farm
Bureau



Two wildlife management proposals will appear on the Nov. 5 ballot. MFB supports Proposal G and opposes Proposal D.

Proposal G specifies that the Commission of the Department of Natural Resources has the sole authority to regulate the taking of game in the state.

Proposal D, on the other hand, is a radical attempt to begin eliminating all sport hunting and fishing. The animal rights groups that are pushing Proposal D don't care about the problems farmers face in controlling wildlife crop damage. They just care about advancing their anti-hunting, vegetarian agenda.

Farm Bureau's position on these proposals is based in part on Policy #62 from the 1996 MFB policy book. That policy states:

"Hunting and trapping of all game in Michigan require different strategies and hunting methods. Farm Bureau supports all current and legal methods of hunting due to the importance of keeping wildlife in balance with the general public. Farm Bureau strongly opposes a current initiative that will attempt to restrict the hunting of bear. We encourage all county Farm Bureaus to actively oppose this precedent-setting issue."

Keeping game management under the control of wildlife management experts (the purpose of Proposal G) is crucial if agriculture is to have any hope of making progress on the wildlife crop damage issue, said MFB Associate Legislative Counsel Scott Everett. "Of special interest to farmers is that Proposal D specifies you can't hunt bear during deer season," he said. "Under the proposal, we couldn't expand deer hunting to the month of September because bear hunting would be in that same month."

Everett said that passage of Proposal G is important to agriculture because it will reinforce basing hunting management decisions on sound scientific principles instead of emotion and sensationalism.

Between now and Nov. 5, MFB will be providing additional talking points and a Proposal G action plan for county Farm Bureaus. In the meantime, it's important to remember to promote a "yes" vote on

Proposal G, and a "no" vote on Proposal D, because the proposal that passes with the most votes will go into effect.

PROPOSAL D

A legislative initiative to limit bear hunting season and prohibit the use of bait and dogs to hunt bear.

- The proposed law would:
- Prohibit the use of bait and dogs to hunt bears at any time.
 - Prohibit bear hunting during open season for deer, bobcat and raccoon if baiting or hunting with dogs is permitted during these seasons.
 - Create penalties for violations, including temporary and permanent denial of hunting license.
 - Allow individuals to sue for damages caused by violations and to seek injunctions.
 - Allow bear hunting by any method by government officials acting in their official capacity and for any person acting in defense of life.

Should the proposed law be adopted?

yes no

PROPOSAL G

A referendum on public act 377 of 1996 — an amendment regarding the management

of Michigan's wildlife populations.

- Public Act 377 of 1996 would:
- Grant the Natural Resources Commission the exclusive authority to regulate the taking of game including bear hunting. (Currently under the authority of the director of the Department of Natural Resources.)
 - Require the Natural Resources Commission to utilize "principles of sound scientific management" in making decisions regarding the taking of game and to minimize human/bear encounters.
 - Require that a public meeting be held prior to the issuance of any orders by the Natural Resources Commission regarding the taking of game.

Should this law be approved?

yes no

Discussion Questions

1. What activities can your group undertake to focus attention on the problem of wildlife crop damage?
2. What are some reasons to vote yes on Proposal G?
3. How will your group help promote a yes vote in your community on Proposal G?



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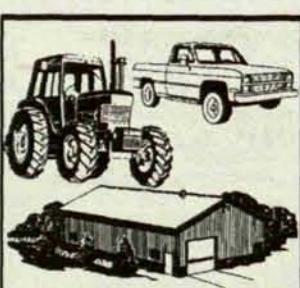
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Precision Agriculture GPS-based soil sampling

by Neil R. Miller

In 1996, many Michigan farmers will have the option of geo-referencing their soil test data with satellite (GPS) equipment. Independent consultants and elevator personnel are offering grid sampling and other GPS-based services in many parts of the state.

In addition, this year for the first time, several custom applicators in Michigan are capable of using GPS to apply lime or fertilizers at varied rates within fields using the computer files generated during soil sampling (known in the industry as VRT application).

Farmers contemplating using such services should ask their service provider several questions at the outset:

Will GPS-Based Sampling Benefit My Operation?

Grid sampling can cost a farmer up to twice as much as conventional soil testing (approximately \$6.50-\$10.50/acre). Sampling alone may give you an idea of the variability present in your fields. However, unless you are planning to hire a custom applicator with VRT application equipment, you will have little ability to remedy problems caused by this variability. A well-conducted conventional soil testing approach based on soil textures, topography and crop history is probably a better buy.

If you do have VRT options in your area, be wary of providers who claim a predictable dollar return on your soil testing and VRT application. I am confident that some of the GPS-based services we are now offering will pay for themselves in the long run. However, the technology is still largely experimental, and the economics of VRT lime and NPK applications are far too poorly understood to be quoting rates of return (more on that in my next column).

Who Owns the Data?

If you make a substantial investment in soil testing, be sure that your provider will give you the results on computer disk as well as on paper. Ask for specific details on which software program they will use and what systems it is compatible with.

Many systems are not currently intercompatible, and thus your choice of soil testing providers may reduce your ability to shop around for inputs and maintain your independence. Contact me if you have questions on intercompatibility.

What is Your Sampling Approach?

Most providers offer grid sampling with 2.5- to 10-acre cells (Figure 1). Intensive grid sampling is certainly an improvement over treating an entire field as a uniform management unit. However, in our highly variable Michigan soils, even 2.5-acre grids are often rough approximations of what goes on in the field. Some providers can improve on the accuracy of square grids by "smoothing" their boundaries through various processes of interpolation (Figure 2).

GPS can also be used to geo-reference samples taken according to soil texture, topography, field history or other criteria (Figure 3). These boundaries can serve as the basis for a VRT application in some systems. Under conditions of high variability, I have found that this approach provides the best correlation with yield monitor data and the truest representation of the real variability in the field.

Ask your soil test provider whether they are capable of geo-referencing more than square grids. Some have the capability but don't like the hassle of providing other services. Others are limited by software that only allows them to work with square grids. Since you are paying a substantial amount of money for their service, you should insist on the highest quality available.

FIGURE 1
GPS technology is most often used to produce maps with square grids as management units.

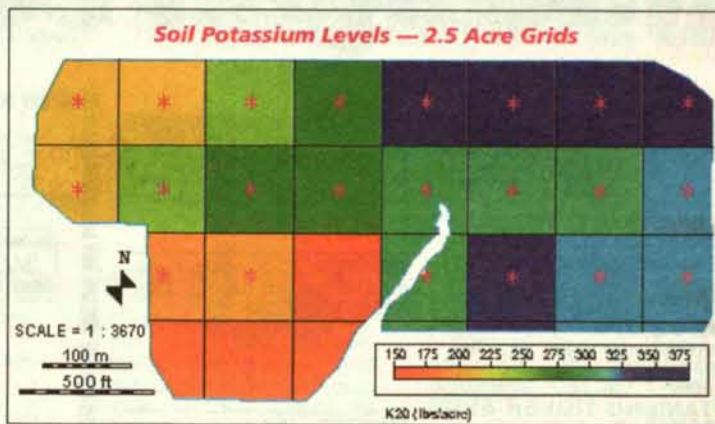


FIGURE 2
The accuracy of grid sampling can be improved by smoothing boundaries through interpolation.

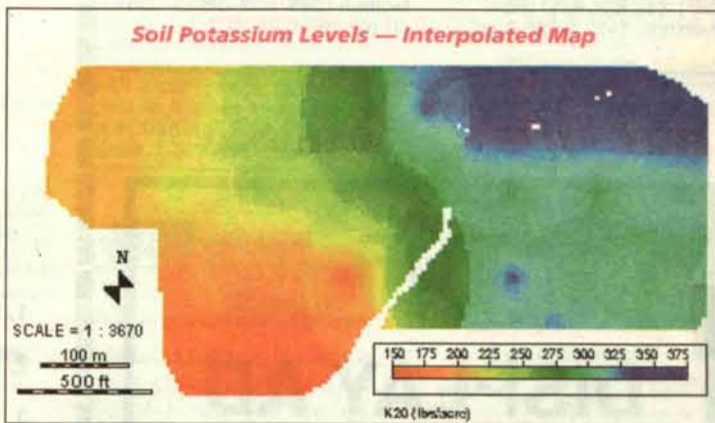
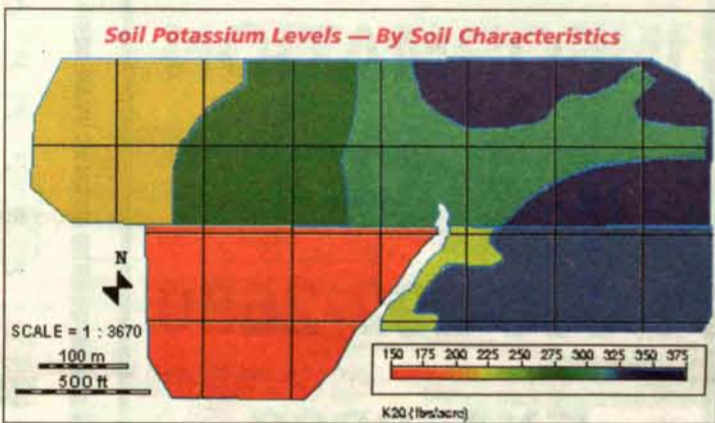


FIGURE 3
GPS can also be used to geo-reference soil samples taken by soil texture, topography, field history or other criteria.



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