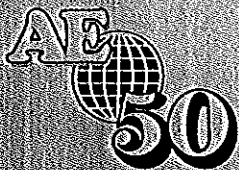


# Resource

## Outstanding Innovations 1995



**Company Recognition Program**

# A Vision of the Best

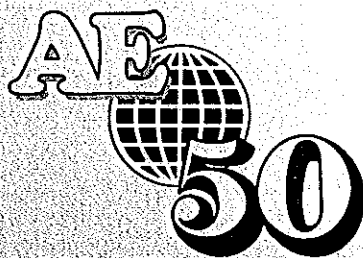
**T**en years ago, *Agricultural Engineering* magazine began sponsoring the **AE 50** Company Recognition Program for Innovative Products. *Resource: Engineering & Technology for a Sustainable World* continues that tradition.

Since the beginning of the **AE 50** program, entries have been solicited from hundreds of companies – both large and small. The program seeks to bring attention to the products intended principally for use in the production, processing, storage, packing or transportation of agricultural products. Over the years, there have been repeat winners with new innovations. Companies are always extremely pleased when notified of the award. Their products can then be presented to the public as having been among those receiving this outstanding recognition.

The entries are thoughtfully reviewed by a panel of judges for the purpose of identifying those products most likely to be of use to those who work as designers, developers, managers or other individuals who are actively involved in engineering of agricultural, food and biological systems.

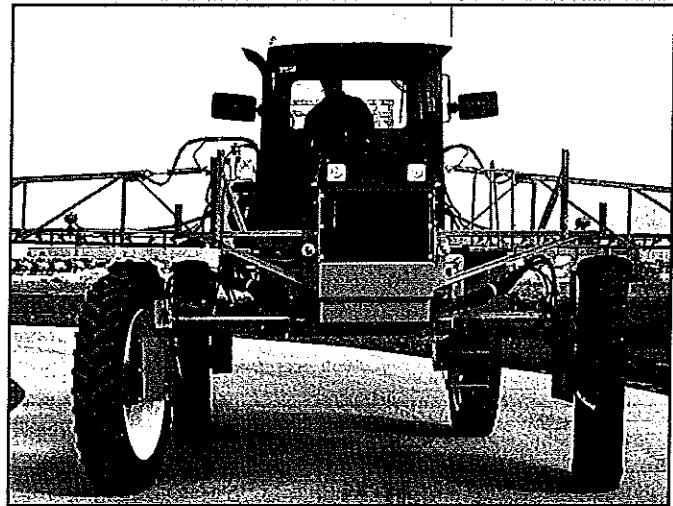
Read this section to find that product you've been looking for, or that idea for a product that you may one day enter yourself.

To the companies and their employees who were actively involved in the conception, design and development of these products, we extend a HEARTY HANDSHAKE AND A WELL DONE!



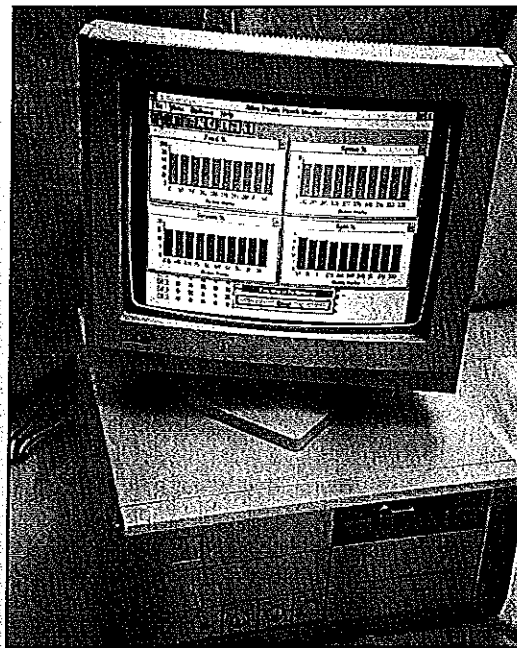
## Applicator's axle track width can be adjusted on the go

**R**oGator® 854 is a precision liquid applicator with a high clearance chassis with adjustable track width. The Automatic Tie Rod System allows the front steerable axle track width to be adjusted on the go, even when cornering, while automatically maintaining correct toe-in. The operator, using just two switches, can adjust the right front track or left front track to obtain any track width between a minimum of 120 inches and a maximum of 152 inches. This enables the operator to quickly set the track at the optimum position for any crop row spacing to minimize crop damage and maximize machine productivity. The system uses a hydraulic tie rod cylinder, and track adjust cylinders equipped with lock valves for safe operation. The design is rugged and reliable. All moving parts operate in hydraulic oil for long life. The Automatic Tie Rod System option further enhances the productivity of the RoGator® 854. Ag-Chem Equipment Co., Inc., Minnetonka, Minnesota; 612-933-9006.



## Software monitors fruit processing machines, identifies problems

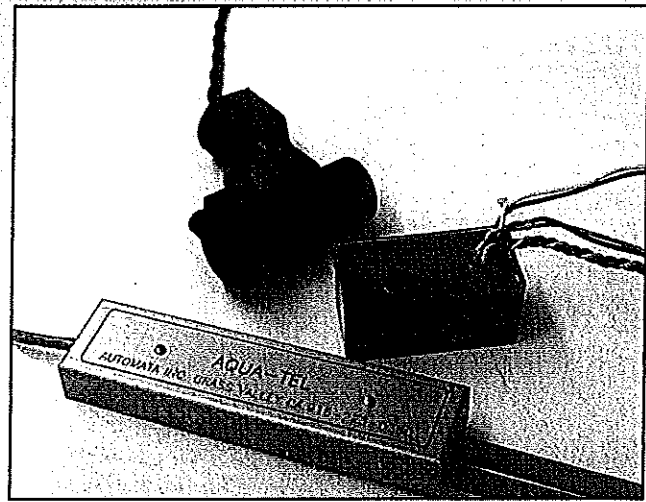
**A**tlas Monitor System is a PC-based software package that monitors the performance of up to 254 fruit processing machines. Machines not performing properly (or not running) deliver lower quality fruit, create unnecessary rework, and ultimately increase the cost of the final product. The monitoring system is designed to help plant personnel easily identify problem machines, indicate possible causes of their problem, and prioritize machine repair. The idea is to spend mechanics' time repairing machines rather than looking for problems to fix. This Microsoft Windows-based system is quick to learn and easy to use. Atlas Pacific Engineering, Pueblo, Colorado; 719-948-3040.





## Device operates valve to irrigate on demand

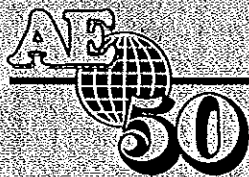
**H**ORIZON Irrigation Controller is a very simple, inexpensive device capable of operating an irrigation valve to water a zone on demand, when it needs water. A time-proven AQUA-TEL Soil Moisture Sensor plugs into the HORIZON for soil moisture input to the HORIZON Irrigation Controller. A soil moisture setpoint adjustment is available on the HORIZON Irrigation Controller. When the moisture level drops below the setpoint, the valve is opened. Any timer may be put in series with the HORIZON Irrigation Controller to allow irrigation only during a time window. Automata, Inc., Grass Valley, California; 916-273-0380.



## Programmable washer for milking systems offers versatility and monitoring

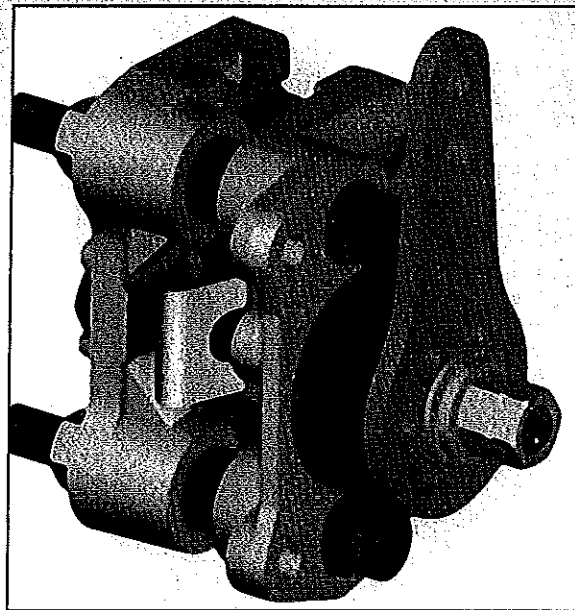
**G**uardian II is a programmable washer for CIP (clean in place) washing of milking systems. It offers the capability of programming water temperatures, circulation times, chemical amounts and many more parameters that make it very versatile for small or large dairies. Programming is done by using two buttons while viewing the menus on a LCD (liquid crystal display) in one of seven languages selected by the user. The Guardian II will automatically dispense the chemical amounts selected by the user for proper cleaning of the milking system. The Guardian II monitors the washing and will alert the user of problems such as the sink not filling due to a failed water valve or that the water is not hot enough. The use of an optional printer will give the water temperatures, cycle times and any errors that might have occurred during the washing. Bou-Matic - the Dairy Equipment Division of DEC International, Madison, Wisconsin; 608-222-3484.





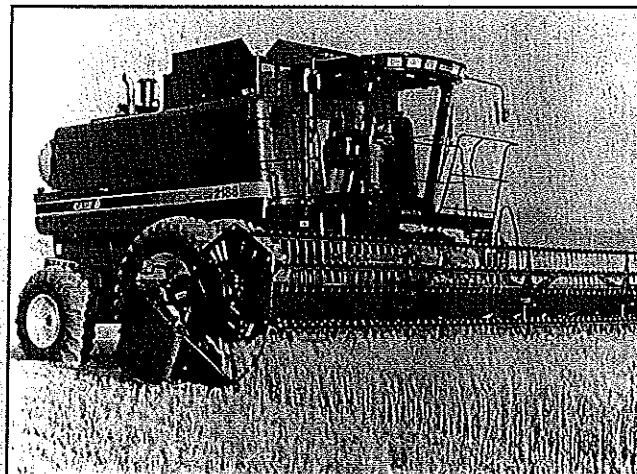
## Brake design simplifies installation and service

**R**T Mechanical Brake Park is an innovative, cost-effective brake design, which offers high performance in a variety of applications. Its independent, floating-caliper design significantly improves serviceability and installation requirements. The simplified design, using proven technologies, has greatly reduced parts-complexity. The brake may be mounted in numerous attitudes and arrangements. It is intended for use on light construction equipment as a park/secondary brake. The brake is mechanically applied by rotating a ball and ramp assembly, which advances two floating brake calipers toward the disc. Carlisle Motion Control, Bloomington, Indiana; 812-334-8703.



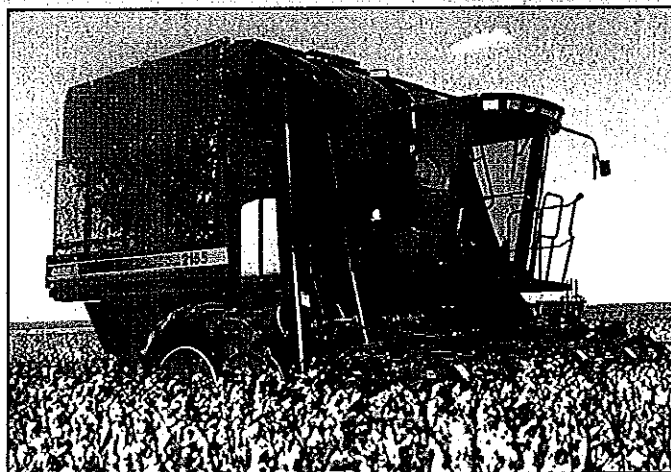
## Combines' improved ergonomics ease operator fatigue

**S**eries 2100 Axial-Flow® Combines feature include improved operator comfort, more controls, increased performance, increased reliability, enhanced safety and convenience. Farmers can operate longer days with less fatigue. Increased visibility eliminates stretching to see. All instrumentation is located on the right hand front post near operator's normal line of sight. The control console adjusts to the operator and frequently used controls are within thumbs reach. More functions are controlled directly from the cab. Power-assisted brakes reduce pedal effort. Pressure-flow compensated hydraulics increase efficiency. The cab mounts on a new "focalized" suspension system to minimize perceived noise and vibration. Trim and shields cover all moving components practicable, yet open easily for increased serviceability. Added ladders and service decks aid servicing. Case Corporation/Case IH Division, East Moline, Illinois; 309-752-3805.



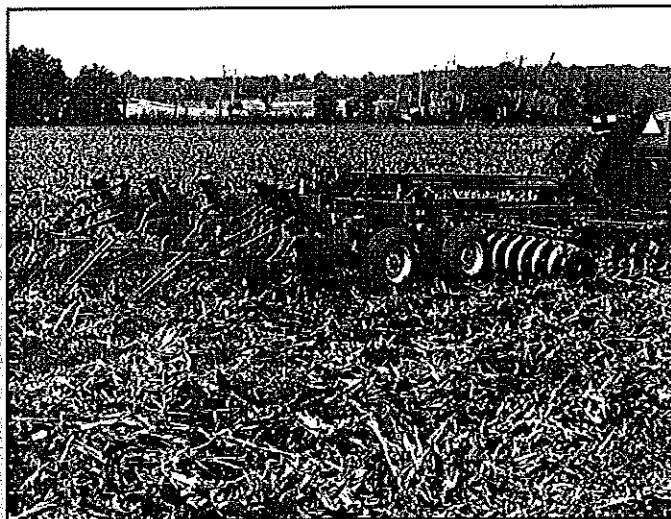
## Improved operator comfort in cotton picker means longer days, less fatigue

**S**eries 2155 Cotton Express Cotton Picker features improved operator comfort, control layout, performance reliability and convenience. In the new cab, farmers can operate longer days with less fatigue. Visibility has been increased — the operator can easily view key harvesting activities in drum and basket areas. A right-hand cab access has been added, which provides improved service and ventilation. All instrumentation has been ergonomically arranged on the right hand console near the operator's normal line of sight. Frequently used controls are provided in the propulsion control handle. The cab mounts on a new "focalized" suspension system — creating a virtual cab suspension where the cab and operator react as if physically supported at their combined center of gravity. A dual-wheel option halves the ground pressure, extends the farmer's harvest period, and provides increased flotation. **Case Corporation/Case IH Division, East Moline, Illinois; 309-752-3815.**



## Tillage tool meets conservation tillage requirements and greater productivity

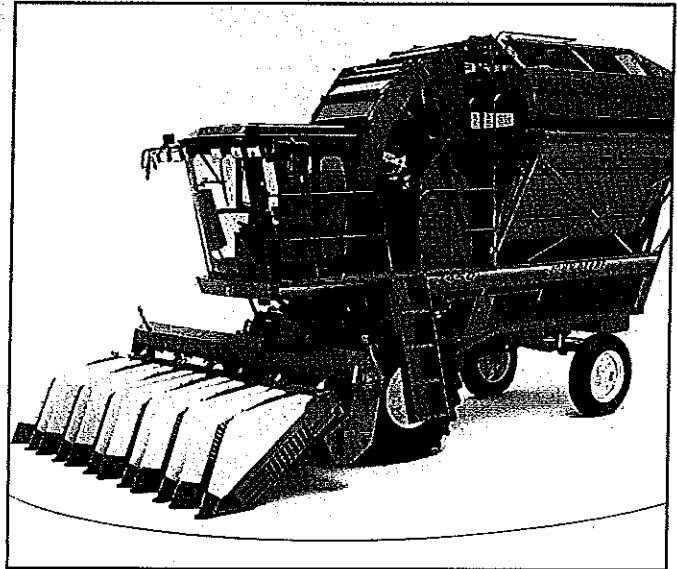
**T**he 6800 Combo Mulch/Ripper allows one-pass deep ripping in varied residue conditions. Designed to meet today's conservation tillage requirements, this primary tillage tool offers greater productivity with fewer passes through the field. The 6800 features a caddy cart design with an underslung disk supported by a three-point hitch. A second rear-mounted, three-point hitch supports the subsoil ripper. The disk gang is designed with the heavy duty components found on all Case IH disks. The disk and ripper have independent hydraulic control. It is available in 10- and 14-foot widths, and is easily adjusted to meet specific residue management requirements. The rear-mounted ripper also comes in 10- and 14-foot sizes and features a true "V" design, new semi-parabolic high clearance deep-till shanks, high alloy recyclable shank points and optional attachments that shatter even wider paths at the base of the hard pan. Each long-wearing easy-pulling shank provides outstanding soil shatter while keeping soil and fertilizer profiles intact in the critical plant root zone area. Available with shear-bolt protection or Auto Trip II® automatic reset shanks. **Case Corporation/Product Development & Engineering Center, Burr Ridge, Illinois; 708-887-2144.**





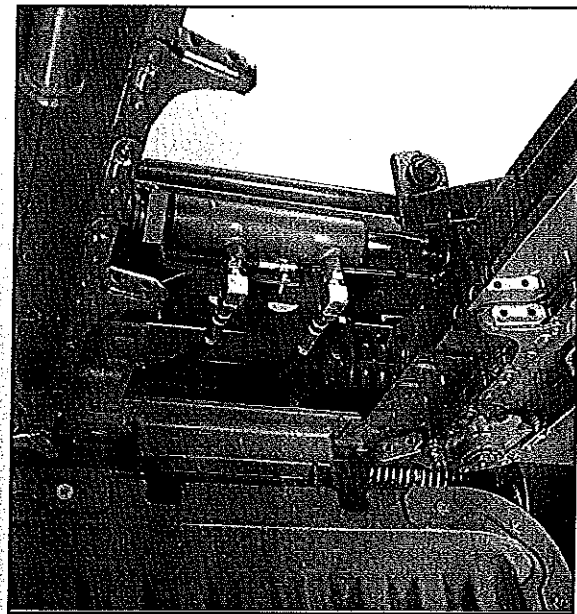
## Cotton stripper combines increased performance with improved operating convenience

The 7450 Cotton Stripper combines reliable and dependable performance with "cutting edge" technology in the cotton harvesting spectrum. Increased harvesting performance and improved operating convenience highlight the generous features the 7450 provides. New additions on the 7450 Cotton Stripper include totally redesigned and patented row units, cross auger with reversing capability, exclusive Twin-Jet separation zone, three-speed hydrostatic transmission, and electric fingertip controls located on the restyled right-hand console and hydro-handle. An electronic information system, conveniently mounted on the front right-hand corner post of the cab, monitors harvesting functions and alerts the operator of system malfunctions with visual and audible indicators. A redesigned closed-center hydraulic system, supplied by one common hydraulic reservoir, features a hydrostatic pump and hydraulic pump working in tandem. John Deere Des Moines Works, Des Moines, Iowa; 515-289-3399.



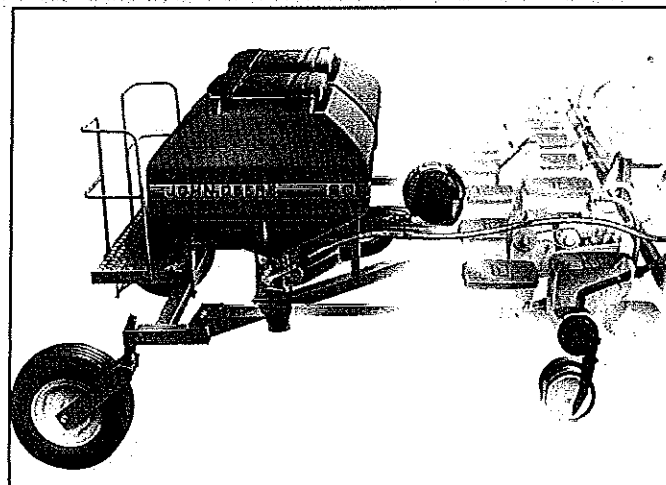
## System eases adjustment of corn head deck plates

Corn Head Hydraulic Adjustable Deck Plate System is a new option for the John Deere 90 Series corn head. The system provides an easier method of adjusting corn head deck plates. In the past, deck plates had to be adjusted on each individual row by hand using wrenches. A double-acting hydraulic cylinder under the corn head is attached to a tube that transverses across the width of the corn head. The tube is attached to an arm on each row. The movement of the cylinder, tube, and arms moves the left deck plate in and out. The right deck plate is stationary. An indicator on the rear of the corn head displays the deck plate setting. John Deere Harvester Works, East Moline, Illinois; 309-765-8000.



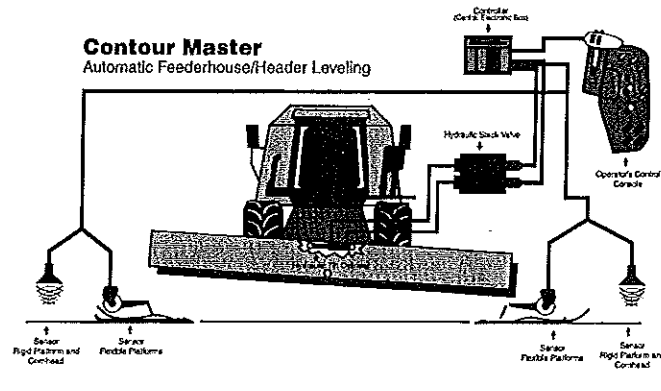
## Seed cart provides more capacity, speeds refilling

The 60 Seed Cart provides increased productivity for row crop planters. Greater seed capacity and central fill location provide fewer and faster refilling stops, which make a 12-row planter with the Seed-On-Demand system up to 40 percent more productive than an existing 12-row planter. A hydraulically driven fan delivers air into the manifold to pressurize the cart tanks and move seed through individual seed-hose lines to the seed hoppers. The Seed-On-Demand system allows seed metering to be done at the row unit, to maintain accuracy in population control and seed placement. The seed cart is integrally attached to the planter frame to allow for maximum maneuverability. The 60-bushel capacity cart is compatible with 8- and 12-row John Deere 1760 planters. John Deere Harvester Works, East Moline, Illinois; 309-765-2042.



## Automatically controlled feeder house ensures responsiveness

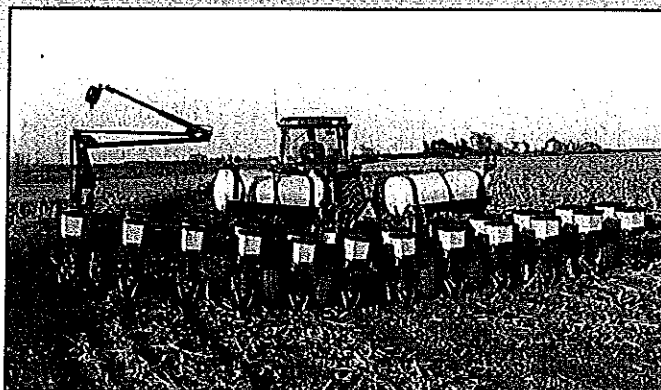
Contour Master™ System is an automatically controlled lateral tilt feeder house on John Deere 9400, 9500 and 9600 corn and small grain combines as well as the small-grain version of the CTS combine. It is available as a factory-installed option and will accommodate Deere rigid and flexible cutter bar platforms 15 feet and larger as well as all corn heads 6-row narrow and larger (including the 12 row). The system employs advanced technology to ensure good ground sensing and responsiveness. Flexible cutter bar heads are equipped with sensors which locate the cutter bar position as it floats over ground contours. Rigid cutter bar heads and corn heads use a non-contact, ultrasonic sensor of Deere design to sense ground location. Tilt response rate is more than two degrees per second. John Deere Harvester Works, East Moline, Illinois; 309-765-2057.





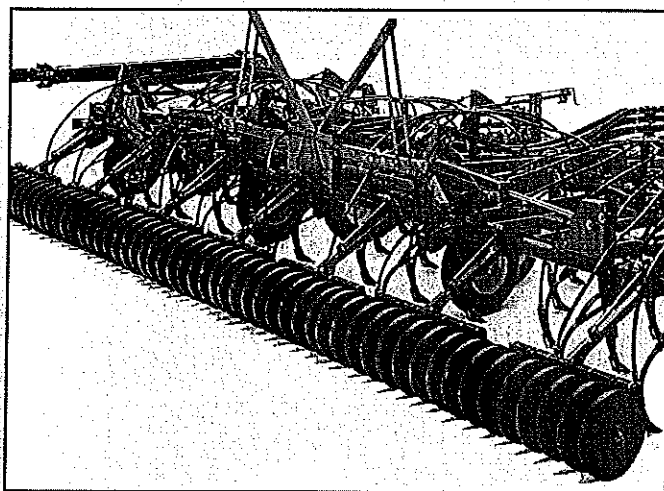
## Planter offers unique combination of features to satisfy operators

The 1760 Wing-Fold Planter offers a unique combination of planting features to satisfy row crop producers' operational requirements. It provides fertilizer capability and frame flexing on a compact wing-fold style frame. In addition, it has contact tire drive systems, fold-over markers, and a variable stroke piston liquid fertilizer pump, optional hydraulic wing fold, and optional half-width seed drive disconnect. The 1760 utilizes the field-proven MaxEmerge2 planting units, and is compatible with a variety of attachments for conservation planting. The 1760 is available with eight rows at 30-, 36- or 38-inch spacing, or twelve 30-inch rows. John Deere Harvester Works, East Moline, Illinois; 309-765-2165.



## Consistent seed-to-soil contact of adjustable drills provides improved seed placement in all conditions

The 737 Air Hoe Drills are designed for use with the 787 Air Seeding System and are offered in 31-, 36- and 41-foot sizes with 7.5-, 10- or 12-inch row spacing. The five-rank tillage frames have 28-inch underframe clearance and a minimum of 30 inches between openers on the same frame bar for excellent residue handling. Two opener styles with a 250- or 550-pound tripping force are available with a variety of seed boots and soil-working tools to match seedbed conditions, tillage and weed control practices. The openers are followed by 3-inch wide, 21-inch diameter press wheels offered in a steel or semi-pneumatic design. The front-to-rear distance between the frame depth control wheels is only 105 inches, which allows the frame to closely follow changes in ground contour. This short "footprint" combined with a floating hitch and continuous tractor hydraulic pressure on the press wheels results in consistent seed-to-soil contact and improved seed placement in level or rolling fields. Downforce on all press wheels is easily adjusted to an infinite number of settings with one pressure control valve. John Deere Harvester Works, East Moline, Illinois; 309-765-2237.



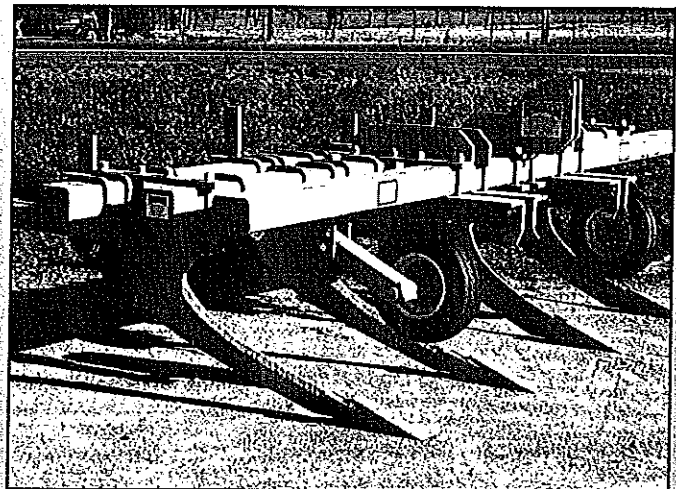
## Serviceability, comfort and maneuverability make tractors extremely flexible

**T**he 8000 Series Tractor is a 160 to 225 PTO hp tractor family creating a new meaning for the word "flexible." The tractors have better visibility and maneuverability than a 100 hp tractor. They are serviceable from the ground like the smallest of tractors and have an available 540 rpm PTO. The "CommandVIEW" cab provides convenience, visibility and comfort, with all major controls in the seat-mounted "CommandARM." The convenient "TouchSET" hydraulic setup panel permits making all hydraulic adjustments from inside the cab. Performance and efficiency are provided by a two-gear mesh 16-speed power shift transmission with 14 percent speed changes. This is coupled with an emission certifiable engine that provides a 10 percent PTO power bulge and 40 percent torque rise. Most systems are computer-controlled and self-diagnosed. John Deere Product Engineering Center, Waterloo, Iowa; 319-292-8858.



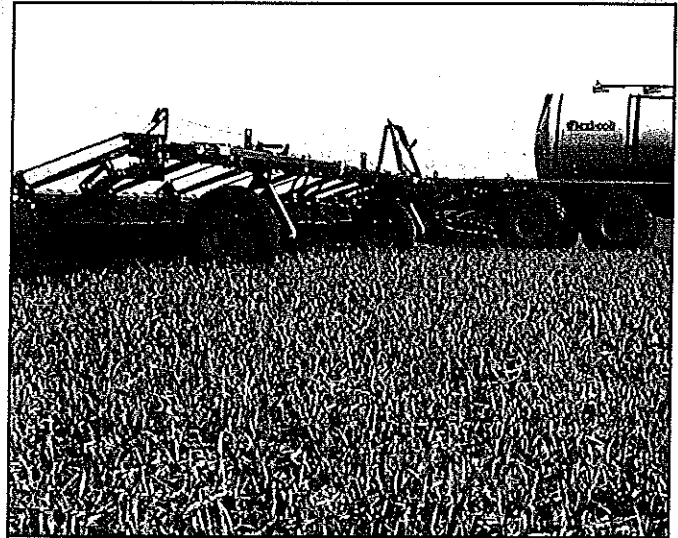
## Angled shanks reduce disturbance, horsepower requirements of subsoiler

**S**toneville Low-Till Parabolic Subsoiler uses true parabolic shanks angled 28 degrees from vertical. This angle allows the point to run directly under the drill for fracturing hard pans. When operating 12- to 16-inches deep, the shank runs out in the row middle and does not disturb the stubble row or root ball. The leading edge of the shank is beveled 45 degrees to reduce clodding, surface disturbance and horsepower requirements. Spring-loaded, fluted 20-inch coulters can be added to cut residue and to further reduce clodding and surface disturbance. The 3x12-inch face of the point runs parallel to the surface like a conventional subsoiler. Twelve- or fifteen-inch middle buster sweeps may be added so that beds can be built in the same pass. Adjustable gauge wheels with tires are standard. M.G. Dickey Industries, Inc., Bastrop, Louisiana; 318-281-6143.



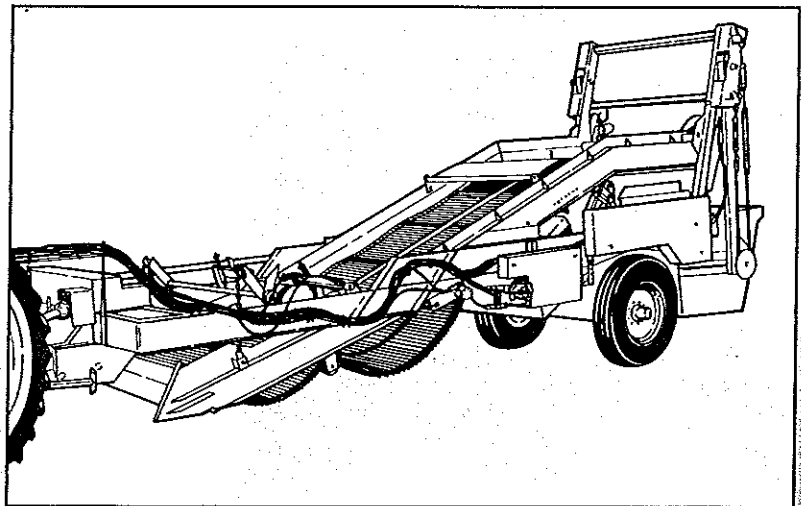
## Environmentally friendly sprayer has two independent spray systems

**M**odel 65 XLT Twin Tank Field Sprayer allows for greater versatility in weed control, providing a positive impact on the environment. The main spray booms are supported by castor wheels with a coil spring shock suspension which allows for greater operational speed, reduced boom vibration and excellent ground-following characteristics for the spray pattern. The 65 XLT consists of two complete and independent spray systems mounted on one sprayer cart, providing the option of spraying two chemicals at the same time without tank mixing. This gives the operator the option of selective spraying in a single pull-type sprayer configuration that is easy and efficient to use. The Model 65 XLT is a pull-type implement that requires a 130 hp or larger tractor as a propulsion unit for the larger widths available. The sprayer pumps can be driven by 540, 1000 rpm PTO or with the tractor hydraulics, depending on the type of tractor available. The spray tanks and plumbing are constructed of a polymer material, while the cart and boom support structures are of metal construction. Flexi-Coil Ltd., Saskatoon, Saskatchewan, Canada; 306-934-3500.



## Ginseng harvester replaces most field workers

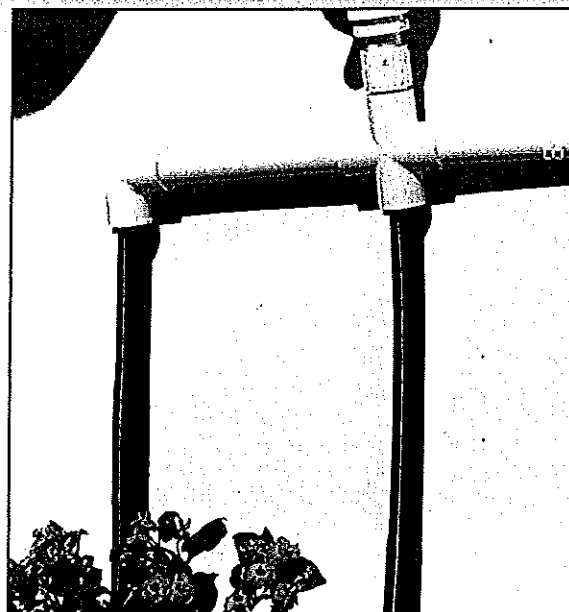
**H**arvestAire® Ginseng Harvester is designed to reduce the number of field workers needed to harvest ginseng by more than 90 percent. The machine comes standard with a 540-RPM PTO mechanical drive with slip clutch, and features two 32-inch conveyor beds, a steerable axle and standard 32mm and 36mm pitch chains. The two-yard hopper has a dumping height of 64 inches and raises to 80 inches. Equipped with a heat-treated steel blade that can dig to a depth of 12 inches, the HarvestAire first unearths the roots and then moves them up the primary conveyor section to a porcupine belt. A mechanically driven fan blows the roots up to the next section, allowing rocks to drop through to the ground or a conveyor. Before roots are deposited in the unit's hopper, a star table sifts and breaks up dirt clumps. Gallenberg Equipment, Inc., Antigo, Wisconsin; 715-623-3754.





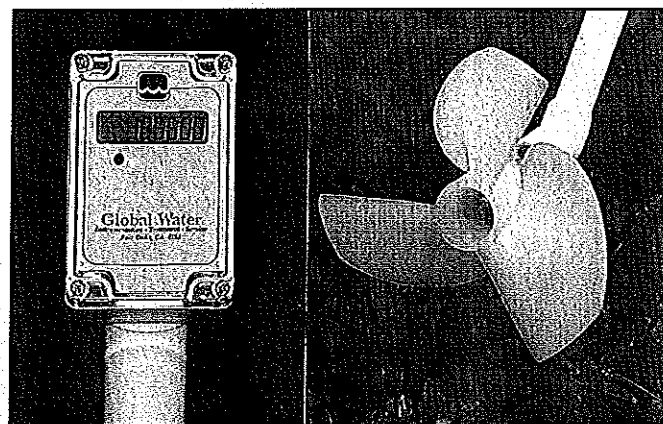
## Subsurface irrigator uses reclaimed water, controls root intrusion and bacterial buildup

**W**ASTEFLOW™ Subsurface Drip Irrigation is used to safely use reclaimed water for agriculture, landscaping, parks and turf, as well as wastewater disposal. It has a turbulent flow, wide flow path emitter which incorporates the herbicide TREFLAN® to prevent root intrusion, inserted into a three-layer polyethylene tube which incorporates the bactericide -10,10' oxybisphenoxarsine only in the inner layer. By incorporation of the bactericide on the inner wall of the tube and the herbicide in the emitter, both the buildup of bacterial slime and root intrusion are effectively controlled for at least ten years. The outer layer of the polyethylene has two purple stripes which identifies non-potable water. **Geoflow, Inc.**, Sausalito, California; 415-553-8048.



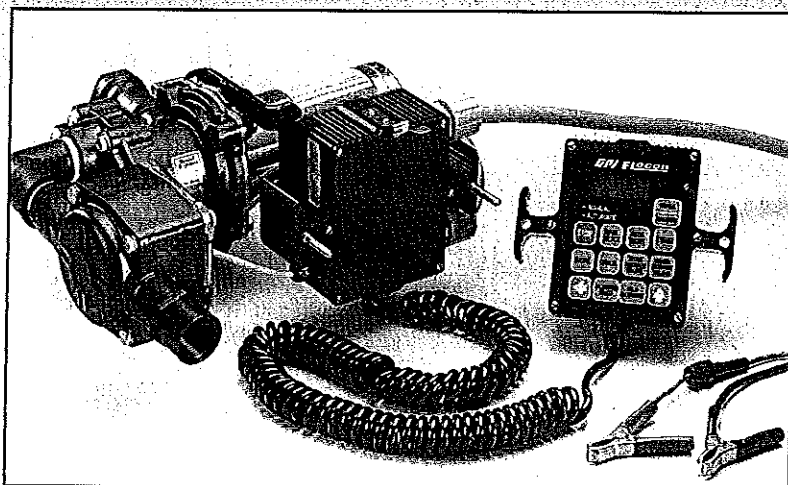
## Debris-shedding flow meter measures total amount of water delivered to farms

**I**rrigation Flow Meter, IRR100, uses a propeller inserted into an outlet pipe to determine flow rates in large irrigation pipes. It measures rates in excess of 15 cubic feet per second in order to provide flow-rate measurements and total amount of water delivered to farms. It features an electromagnetic spin count, and it has a state-of-the-art free-spinning, debris-shedding propeller design which makes it ideal for use in water containing moss, grasses, branches, or any other trash. The IRR100 is constructed of weather-resistant plastic pipe with a battery-powered computer to display the flow total. It can be calibrated accurately and reconfigured in the field. **Global Water**, Fair Oaks, California; 916-863-0804.



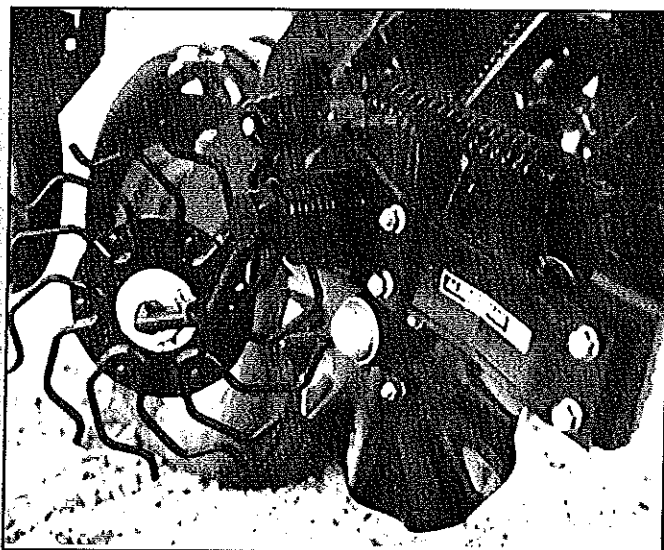
## Compact, lightweight pump controller system is easily calibrated in the field

**F**locon Pump Control System works in conjunction with 12-volt GPI® pumps and the FM-300H meter to provide a fully automated transfer system for a wide range of liquids. Using a keypad, a predetermined amount can be programmed into the system. Then, by pushing one button, the system automatically starts, dispenses the programmed amount to an accuracy of within  $\pm 0.5\%$ , and turns off automatically. The system can be easily calibrated in the field to more accurately deliver specific fluids under specific conditions. With the inclusion of the Dry Break Coupling, the entire system can be easily moved from tank to tank with little or no chemical spill or drip. The entire system is compact enough to be mounted on a mini-bulk tank, lightweight enough for one person to easily carry, and rugged enough to be used outdoors in year-round conditions. **Great Plains Industries, Inc.**, Wichita, Kansas; 316-686-7361.



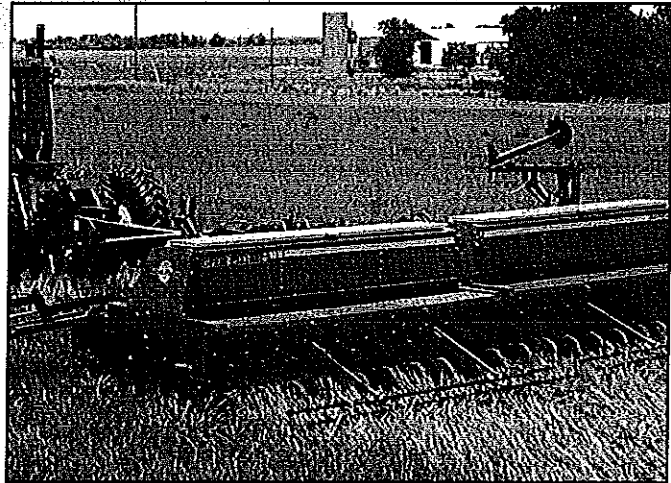
## Row cleaner allows optimum seed placement in no-till conditions

**T**erra-Tine™ Row Cleaner will clear residue in front of conventional planter units for optimum seed placement in no-till conditions. The single 16-inch wheel features a floating arm with adjustable downpressure and replaceable spring steel teeth that work as a depth control, prevent residue from wrapping, and will clear a full 8- to 10-inch wide path. It does this without trenching while maintaining low cost and minimal maintenance. It works best when positioned alongside and behind the center hub of a coulters. The coulters will cut the residue allowing the Terra-Tine to pick up the cut edge and roll the residue away from the row. It will also work by itself in picking up residue and rolling it to the side. **Great Plains Manufacturing, Inc./Ausherman Division**, Assaria, Kansas; 913-667-5421.



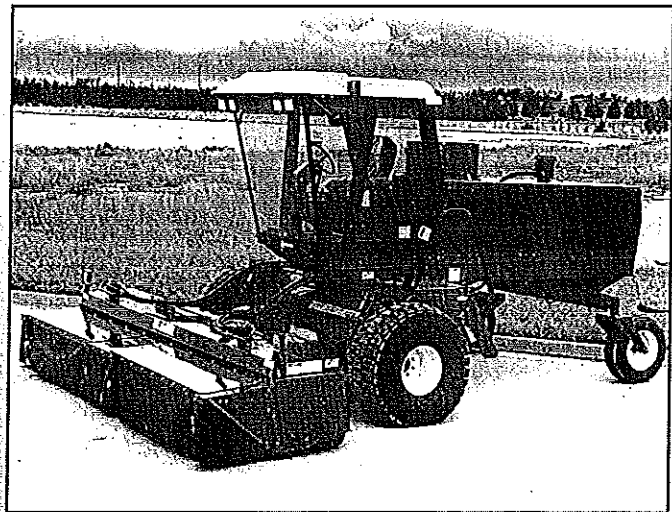
## No-till drill is wide for planting, compact for transport

**F**olding No-Till Drill offers 24-foot and 30-foot planting widths with a rugged precision planting system that folds to a compact 17-foot transport width. A unique folding frame is designed to take the punishment of no-till planting and give confidence when transporting. With electro-hydraulic controls, the drill is conveniently operated from the tractor seat. The planting system features a proven Great Plains set of ground-working components, which include a coulters in line and directly ahead of a parallel linkage opener that gives a full 11 inches of travel. Coulters are offered with a variety of blade styles and have the convenience of central lubrication points on each box. The opener is designed to give superior trash residue flow with adjustable downpressure, T-handle depth adjustment, available Seed-Lok, fully enclosed seed chute and a cast of supporting press-wheel options to give seed placement the way you want it. **Great Plains Manufacturing, Inc./Grain Drills Division, Assaria, Kansas; 913-667-4755.**



## Self-propelled windrowers combine maximum capacity and durability with maneuverability

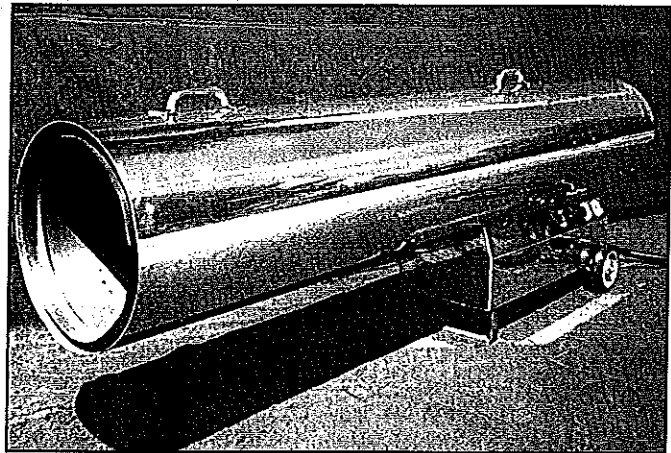
**T**wo Windrowers, the Hesston (Model 8500) and Case IH (Model 8850), both manufactured by Hay & Forage Industries, are self-propelled disc cutoff machines of 15-foot, 3-inch cutting width and with 110-inch length steel hay conditioning rolls. Both units utilize six-cylinder turbocharged diesel engines of 152 hp, hydrostatic propulsion drive and hydraulic load sensing header drive for maximum capacity and durability. Ten high-speed cutting discs and six unique feeding baskets cut and convey crop into two intermeshing steel hay conditioner rolls with the speed and capacity of disc cutoff plus the maneuverability and efficiency of a self-propelled machine. **Hay & Forage Industries/Engineering Department, Hesston, Kansas; 316-327-6216.**





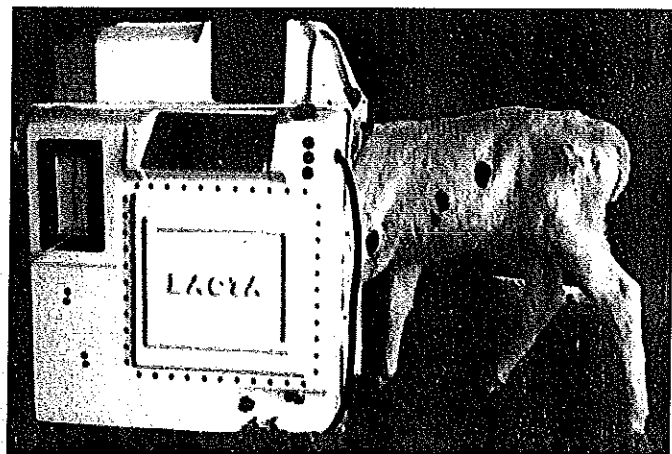
## Frost control and prevention with clean-burning fuel

**I**nferno is a trailer-mounted, portable, liquid propane, gas-fired machine designed to produce clean heated air. Inferno can be transported by and operated from a small towing vehicle. It will produce either by a row-by-row application or, in conjunction with a stationary wind machine, the necessary thermal rise needed for frost control and prevention. A positive impact on the environment is achieved because the oil-fired smudge method is replaced by clean-burning fuel. The heater can be easily stored during the warmer season or used for other applications. **INFERNO**, Clackamas, Oregon; 503-284-6297.



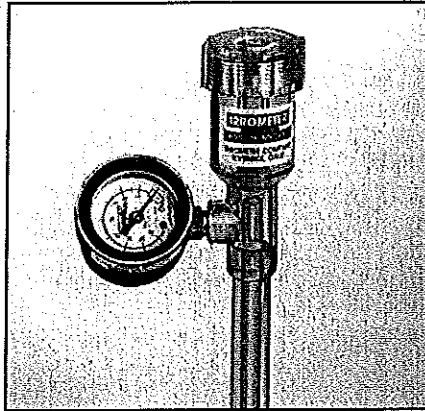
## Automatic feeder serves individual diets to 30 calves

**L**ACTA is an automatic calf feeder designed to feed an individual diet to calves from birth to weaning. It feeds up to 30 animals in a group. Using a unique non-RF, passive identification collar placed around the neck of the calf, the system allows each calf to be fed whatever amount the farmer desires. The amounts are set by the farmer on the user-friendly, menu-driven controller located on the side of the feeder. The greatest advantage of this feeder is that the farmer now can raise his calves with 10 minutes per day of labor instead of hiring a full-time calf feeder. Calves of different ages can be fed in a group because each calf is fed an individual diet preset by the farmer. The resulting calves are healthier and larger than pen-raised animals. **INTERSOFT-AGRI Feeding Equipment**, Tullahoma, Tennessee; 615-455-6446.



## Tensiometer accurate in very "wet" end of soil water suction range

**M**odel "LT" (low tension tensiometer) is capable of directly and accurately measuring soil water suction (matric potential) at the very "wet" end of the soil water suction range. Standard tensiometers, using a Bourdon Tube gauge, have a commercial accuracy of P/M 30% for suction below 10 kPa. The Model "LT" improves this to approximately P/M 12%, with gauge readings in 1 kPa increments. It is designed to operate in coarse sandy soils and in nonsoil mixes. **Irrrometer Company, Inc., Riverside, California; 909-689-1701.**



## Versatile agricultural tractor travels up to 40 mph on highway

**F**astrac is a four-wheel-drive, high-speed agricultural tractor with a full suspension system capable of completing all the field work typically expected of an agricultural tractor, but with the added benefit of being able to travel at higher speeds on the land and up to 40 mph on the highway. Two versions are available — one with a 138 hp Perkins diesel engine, and one with a 163 hp Cummins diesel. The Fastrac is designed with a 48-inch long and 88-inch wide platform behind the cab. The platform has the capacity of 5,625 pounds and can be used for carrying bales, tools, seed or fertilizer. **JCB Landpower, White Marsh, Maryland; 410-335-2800.**



## Attachment applies and incorporates slurry into soil directly from transport tanker

**S**hallow Tillage Applicator is an attachment for Van Dale slurry manure transport tankers. Slurry manure transport tankers are used to convey manure as a slurry from on-farm storage to the field for soil application. As the tank is emptied, utilizing the on-board centrifugal pump, the Shallow Tillage Applicator applies the slurry manure to the soil surface from an underslung manifold at low-contact velocities. Immediately behind this distribution manifold, a series of modified field cultivator shanks incorporates the manure slurry into the top four to six inches of soil. Rapid incorporation virtually eliminates odors associated with land application, the manure nutrients are available for immediate plant uptake and not lost to volatilization, and power requirements are less than half of that for a conventional deep injection system. **J-Star Industries, Van Dale Waste Handlers Division**, Fort Atkinson, Wisconsin; 414-563-5521.



## Shaker system offers selective coffee cherry harvesting

**M**odel 9200 Coffee Harvester, developed for both Hawaiian gourmet and Brazilian commodity growers, uses an aggressive, horizontal, forced-balance shaker system to remove the coffee cherries from the tree. Selective harvesting is possible by using a variety of picking fingers and adjusting the power and frequency of the picking heads. Once the cherries are picked, the large trash is removed on a lower flighted chain conveyor. The product is elevated to an air-density cleaning system which removes the light trash and chaff. Product is stored in a bulk storage bin on the harvester. Unloading is accomplished with a hydraulically controlled dumping system. The storage bin can be tilted and stopped anywhere along a 135-degree arc, allowing easy transfer of product to a trailer. **Korvan Industries, Inc.**, Lynden, Washington; 360-354-1500.





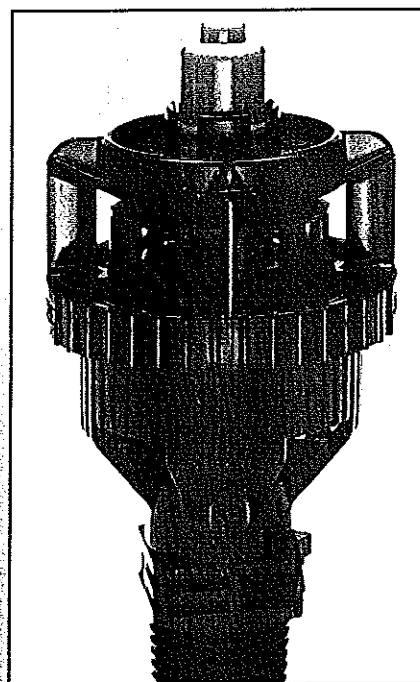
## System combines safe hookup with contour-following capability

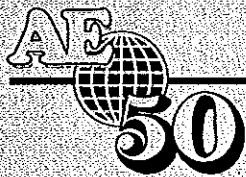
**G**reenLink 80i, an integrated front three-point system for the John Deere 8000 Series tractors, incorporates the InterCoupler quick-attach frame for safe hookup of front-mounted equipment and full ground contour-following capability of soil engaging equipment. It has a lift capacity of 5,500 kg at hook-end (3,670 kg ISO). Available electronic controls make use of the John Deere onboard computer to achieve position and traction control as well as weight transfer from a front-mounted implement. **LAFORGE SYSTEMS Inc.**, Concord, California; 510-827-2010.



## Sprinkling device designed for versatility, precision and water conservation

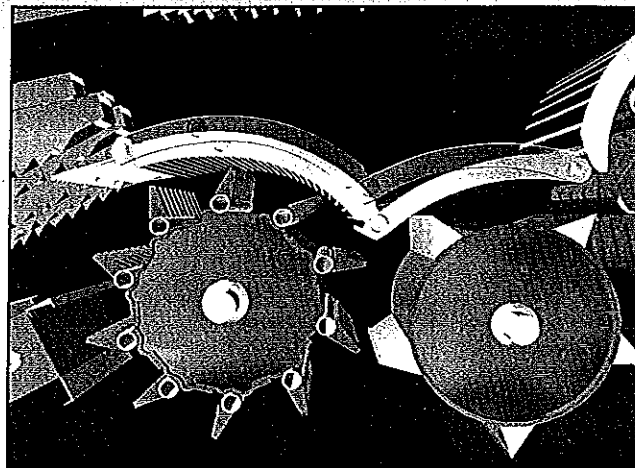
**R**2000 Rotator™ has been designed for a wide spectrum of uses, including portable hand-moved sprinkling systems, solid set, wheel lines, and orchard irrigation. With the R2000, higher overlap uniformity can be achieved than with any comparable sprinkling device. This is accomplished with a new diffuser mechanism that interrupts the rotating stream in programmed locations filling in the sprinkler pattern. The Flow Control Nozzle option in the R2000 delivers a constant flow over a wide range of pressure. Flow Control nozzles improve over-all field uniformity. The R2000 is a tool with which the progressive farmer can apply irrigation water more precisely; increase yields and conserve water. The proper management of sprinkling systems with higher uniformity will reduce fertilizer and pesticide leaching into the ground water. **Nelson Irrigation Corporation**, Walla Walla, Washington; 509- 525-7660.





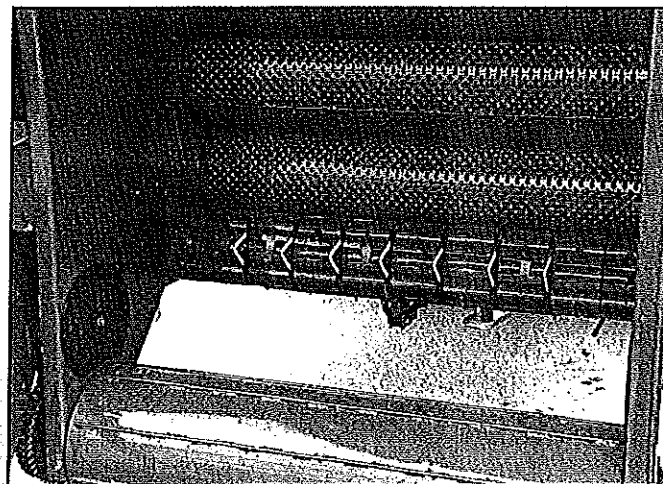
## Easily adjusted threshing system gives maximum performance in all crop conditions

**M**ulti-Thresh™ System is now available on New Holland TX combines. Besides the conventional threshing cylinder, the TX combines are equipped with a large diameter beater, a rotary separator and a strawflow beater. Through a combination of rotor speeds and concave clearances, the combine can be adjusted instantly to obtain maximum performance in any type of crop condition. Maximum throughput capacity, minimum grain loss or minimum grain damage can be easily obtained through a quick change in rotor speeds and/or concave clearances. High rotor speeds and tight concave clearances provide aggressive threshing and separation for maximum output. Lower rotor speeds and bigger concave clearances allow for minimizing grain and straw damage in more sensitive crops. **New Holland Belgium N.V., Zedelgem, Belgium; +32-50-25-31-75.**



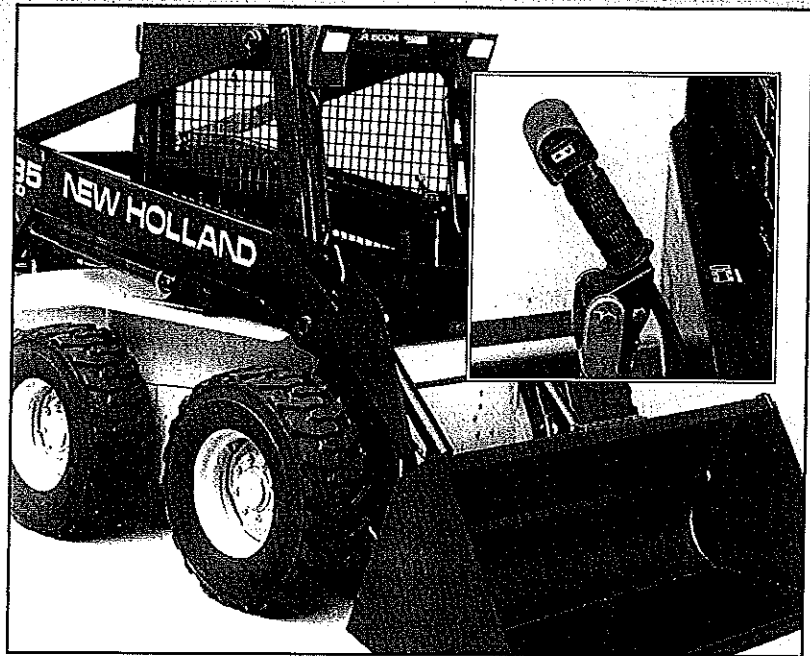
## Balers cut the crop as bale is being formed

**C**ropcutter™ Cutting System for New Holland Models 640 and 650 Roll-Belt™ balers allows the operator to cut the crop as the bale is being formed in the variable bale chamber. Cut bales make feeding out easier and have been found to reduce waste during feeding. The Cropcutter system consists of a pivotable knife assembly which automatically moves into the bale during bale formation. The knives continue slicing the bale until the wrapping cycle begins. The knives are automatically retracted to permit wrapping with either net or twine. The operator can use 1, 3, 4, or 7 knives and can change the length of cut by varying the knife penetration to adapt to specific end-use requirements. **New Holland North America, Inc., New Holland, Pennsylvania; 717-355-1302.**



## Loader features on-the-go, one-touch shifting at top speed

**O**n-The-Go, Two-Speed Shift gives operators of the New Holland Super Boom™ skid-steer loader Model Lx885 the ability to shift from high to low range at the touch of a fingertip. To shift from high to low or from low to high, all the operator has to do is touch a switch on the right-hand operator handle, which activates the hydraulics used to control the system. This can be done on-the-go, even at the loader's top speed of 12 mph. The system was designed with controlled reaction speed to eliminate any lurch when shifting. In addition, the default is set so that the shift automatically returns to low range when the engine is shut off. **New Holland North America, Inc.**, New Holland, Pennsylvania; 717-355-1302.



## Front hitch improves front-tool control

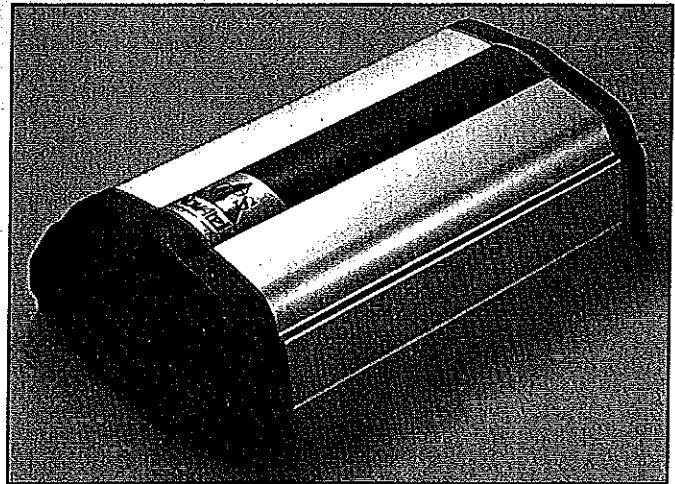
**F**ront Hitch, designed for the SuperSteer™ front-wheel-drive axle on the GENESIS™ 70 Series agricultural tractors, provides better front-tool control than that offered by conventional mounts. The axle steers about a point two feet behind its center. This moves the inside wheel out, away from the frame, providing more room for the wheel to steer. At the same time, the outside wheel moves forward, in front of the tractor. The Front Hitch is carried on the axle for maximum tire clearance. Simultaneous axle and wheel steering combine to provide greater turn angularity (up to 65 degrees). With the front tool attached to the steerable axle's front hitch, maneuverability is greatly enhanced. The clearance circle benefits from both a reduced turn radius and the steering tool that the axle-mounted hitch provides. Even with ground-engaging tools, the steering hydraulics control side draft. Attachment control is also aided by oscillating the hitch with the front axle. **New Holland North America, Inc.**, New Holland, Pennsylvania; 717-355-1302; **LAFORGE SARL**, Tuignicourt, France; +33-23798585.





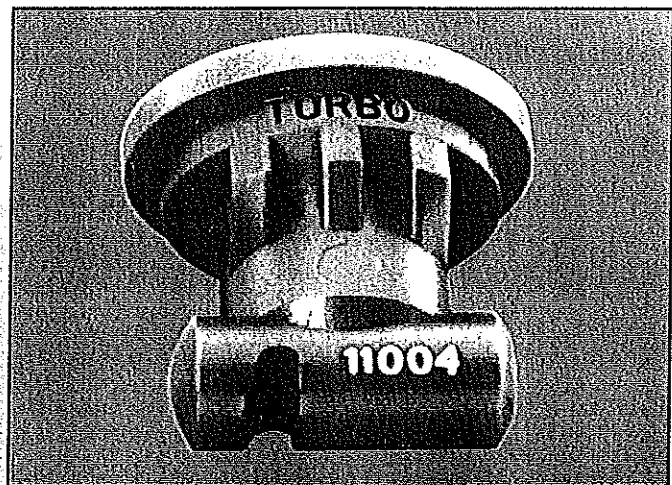
## GPS receiver enables on-the-go positioning within 20 centimeters

**A**G-20™ GPS receiver incorporates revolutionary technology, in a rugged water-resistant housing, which enables the user to determine the position of equipment within 20 centimeters while on the move. The AG-20 is ideal for agricultural applications including night spraying, soil-fertility mapping, variable-rate fertilizer application, yield monitoring, weed-infestation mapping and site-specific chemical application. The AG-20 is manufactured from a strong aluminum extrusion with water- and dust-tight endcaps. Connectors are also water resistant, ensuring dependable connections to the user's equipment. A sturdy, versatile bracket ensures the unit can be mounted in a variety of positions in the cabs of agricultural machinery. **NovAtel Communications Ltd.**, Calgary, Alberta, Canada; 403-295-4629.



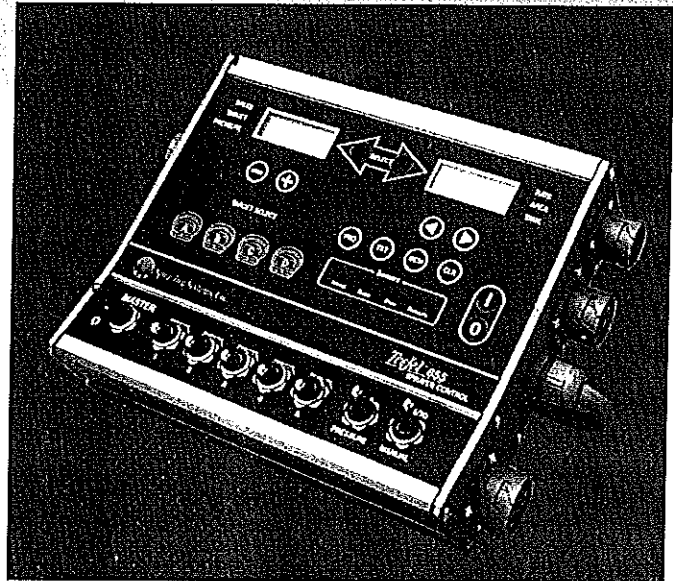
## Spray tips reduce drift, increase pattern uniformity

**T**urbo TeeJet® flat fan spray tips offer a leap in drift management technology. The pre-orifice design creates significantly larger droplets across a wider pressure range than comparable tips, dramatically reducing the amount of driftable particles. This new design also creates a spray pattern with unparalleled uniformity. It is one of the most versatile spray tips available. Rated for use at a wider range of pressures than other low-drift tips, this tip is an excellent choice for drift-sensitive applications from 15 psi to 90 psi. The Turbo TeeJet tip design maintains pattern uniformity over a longer useful life than any other polymer spray tip and is specially designed to resist clogging. **Spraying Systems Company, Agricultural Division**, Wheaton, Illinois; 708-665-5201.



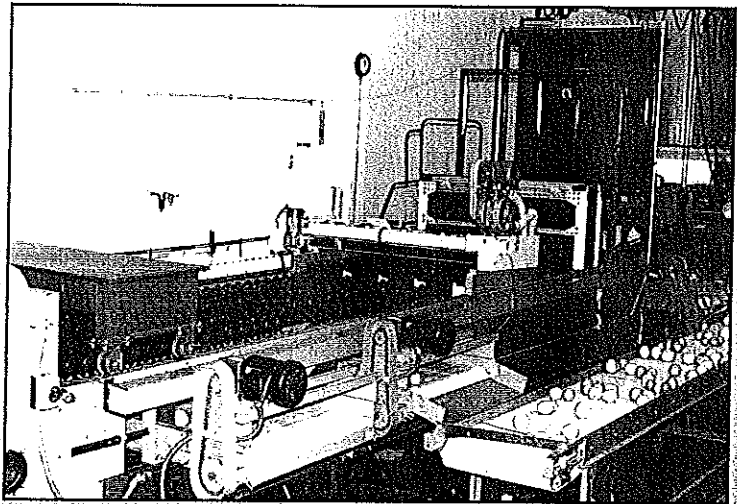
## Sprayer control ensures application accuracy

**T**eeJet® 885 Sprayer Control provides on-going flow and pressure comparisons to ensure consistent application accuracy. With the capability of using both a pressure sensor and flowmeter, the 885 system increases reliability by offering redundant rate regulations. Features include aluminum console housing with sealed computer switch panel; fully automated and manual rate control; separate boom controls along with master shut-off; sensor monitors to confirm system function; four user programmable application rate settings, non-volatile memory even after power disconnect; information down loading; "boost mode," and high quality electrical cables and connections. **Spraying Systems Company, Agricultural Division, Wheaton, Illinois; 708-665-5201.**



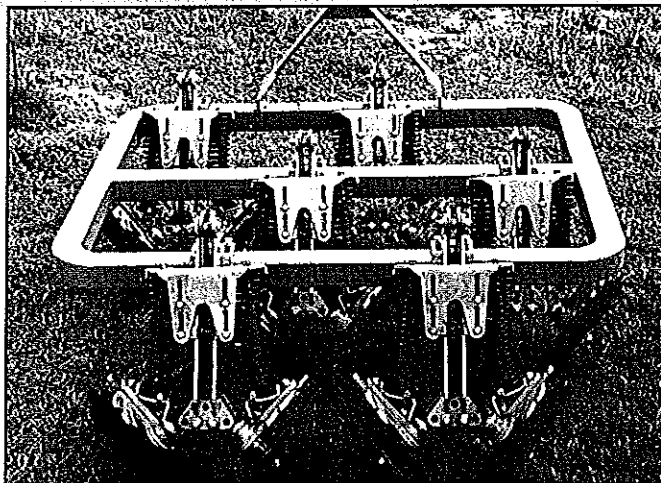
## High-speed, high-resolution citrus sorter is cost-effective

**G**oldRush Color-Sizer is a high-speed, high-resolution optical sorter for citrus; capable of measuring the size, color, shape and weight of fruit at a range of 6-12 fruit per second, per lane. The fruit are loaded into a prefeed unit which singulates, separates and motivates fruit into the main feed unit. Fruit are then pocketed, oriented and transported through a solid-state optical chamber which captures a high-resolution image of the entire fruit surface. This image is then evaluated for size, color and shape. The pocket is further transported over a load cell which acquires the fruit weight. These values are then compared to user defined inputs. The fruit may then be labeled by up to four labelers. The fruit is tracked and ejected on one of up to 60 takeout locations, depending on operator preference. Flexibility of machine configuration for packing-house layouts and functional application highlights the benefits of this cost-effective sorter. **Sunkist Growers, Inc., Ontario, California; 909-983-9811.**



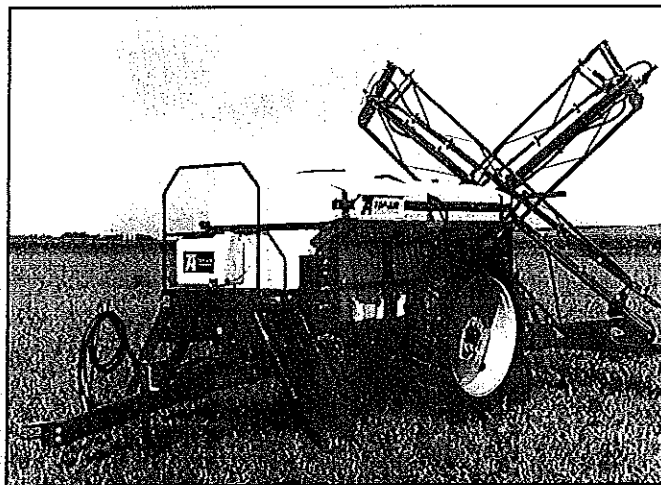
## Mulch tillers offer minimal disturbance and low energy consumption

**V**YTILL 600, 900, 1200 & 1500 Mulch Tillers will till soil in agricultural or pasture situations to a depth of 6 inches with minimal disturbance of the surface mulch layer and low energy consumption per cubic meter of soil tilled. Flat notched discs of 22-inch diameter and 1/4-inch thickness give excellent trash clearance and low tool wear rates even at higher operating speeds. The discs may be inverted to keep the cutting edge sharp and to reduce underside rub. Each disc is supported by tapered roller bearings which are protected by novel gravity-assisted labyrinth seals in series with conventional seals to reduce maintenance requirements. This unique tillage system can be used to obtain weed control in conditions too dry or cold for effective herbicide treatment while allowing farmers to comply with surface residue requirements. **Terratend Pty. Ltd.**, Esk, Queensland, Australia; +61-74-242030.



## Agricultural sprayers provide increased versatility

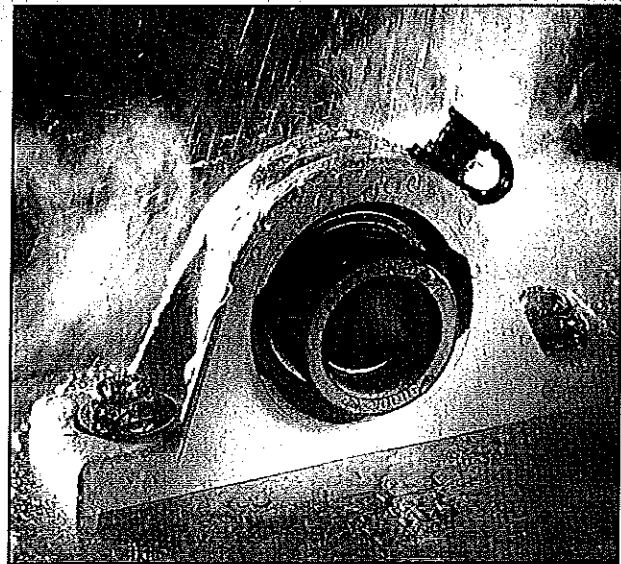
**T**-Tank Models 550, 800 and 1100, designed for agricultural spraying, have a unique shape providing increased spraying versatility. The T-Tank allows large-diameter tires on 60-inch spacing — greatly reducing compaction. The T-Tank's adjustable axle allows tire spacing from 60 to 120 inches, and an infinite number of spacing in-between. The axle and tongue design allow the entire T-Tank to be raised or lowered for varying crop and tractor heights. The adjustable axle can also be moved fore and aft for mounting booms. Electrical shutoff valves and regulator are conveniently mounted on a swing-out hinged door — easily removed for service. The "command center" valve bank is centrally located for easy access. Filling the tank is easier and there's less spillage with the enlarged 16-inch positive seal and hinged flip-top lid. **Top-Air Manufacturing, Inc.**, Parkersburg, Iowa; 800-553-3307.





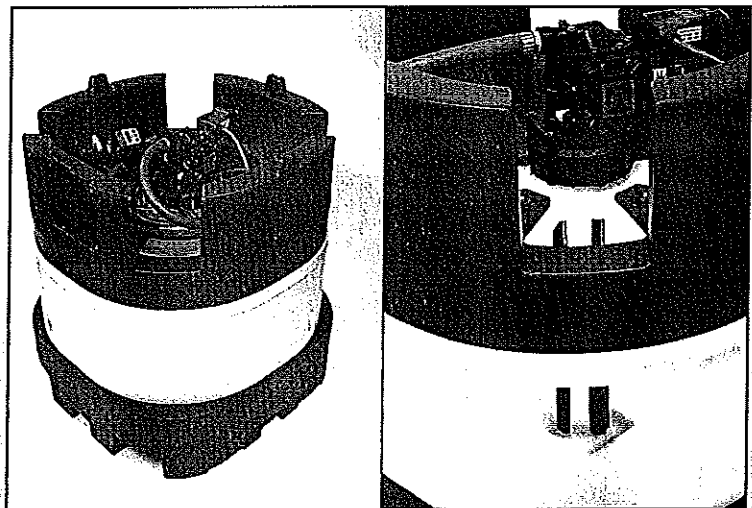
## Superior corrosion protection in ball bearing housing

**S**URVIVOR™ PT Ball Bearing Housed Units are the first in the industry to combine an advanced polymer housing with a completely corrosion-resistant bearing insert. The innovative design provides superior corrosion protection that can dramatically reduce bearing failure and equipment downtime under harsh operating conditions. The durable polymer housing and Fafnir TDC™-coated ball bearing insert withstand a wide range of corrosives and contaminants found in the food processing, bottling and agricultural industries. The units are available as pillow blocks and flanged units in both inch and metric series, with self-locking collar or setscrew locking devices. **The Torrington Company, Fafnir Bearings Division, Torrington, Connecticut; 203-626-2622.**



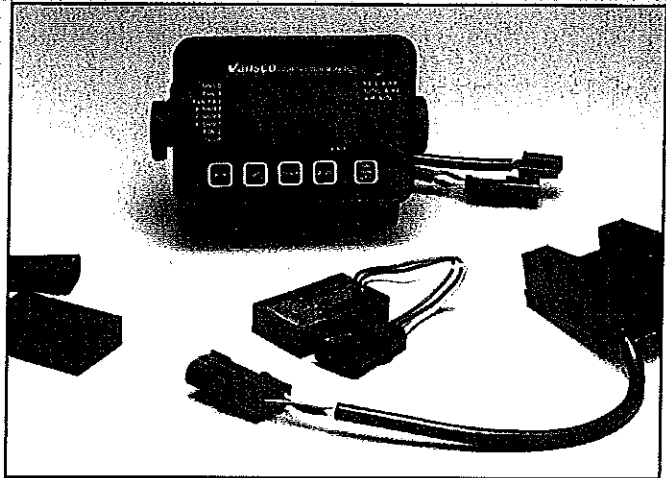
## Efficient chemical mixing and transfer systems are environmentally friendly and low maintenance

**F**ill-Rite Mix-N-Go™ chemical dispensers are innovative new systems for efficient mixing and transfer of agricultural chemicals from bulk tanks to field sprayers. The Mix-N-Go combines the mixing power of air sparging, the reliability of the patented Fill-Rite spring driven diaphragm pump, and the accuracy of the Fill-Rite nutating disc meter into a convenient, effective, and economical chemical transfer package. The systems have been proven highly effective with difficult fluids that could not have been marketed in bulk using conventional dispensing systems. The dispensers also protect the environment by reducing the need for small, disposable packaging. The extremely low maintenance requirements of the Mix-N-Go system also minimize the chance of user exposure to the chemicals. **Tuthill Corporation, Fill-Rite Division, Fort Wayne, Indiana; 219-747-7524.**



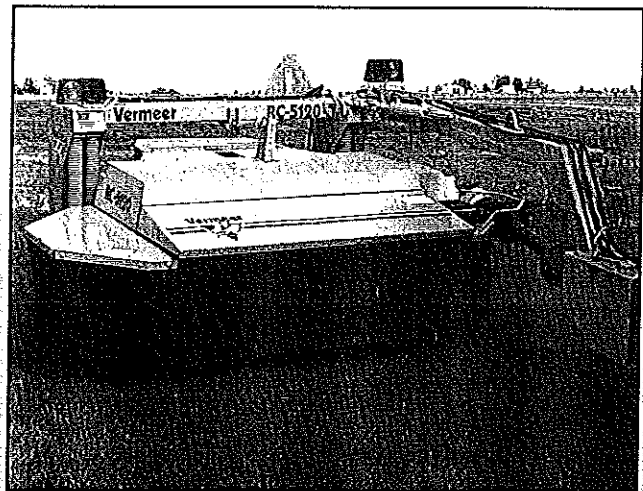
## User-friendly monitor system offers increased reliability

**M**ultiplexed Monitor System was developed to increase reliability and simplify operation of monitoring systems. The monitor can communicate with up to 36 "smart" sensors or modules on a three-wire communication/power bus. The sensors are microprocessor-based and contain circuitry to monitor their designated function, show diagnostic information where possible, and communicate with the monitor. The monitor itself has been designed to be user-friendly and is small enough to fit easily into virtually any application. The system is expandable using Vansco's series of smart sensors, which can monitor bin levels, shaft rotation, seed flow, etc. A typical system of machine monitoring and flow sensing can monitor well over 200 points on a machine. As well, new sensor types can be added relatively easily because of the system's network-based architecture. **Vansco Electronics Ltd.**, Winnipeg, Manitoba, Canada; 204-452-6776.



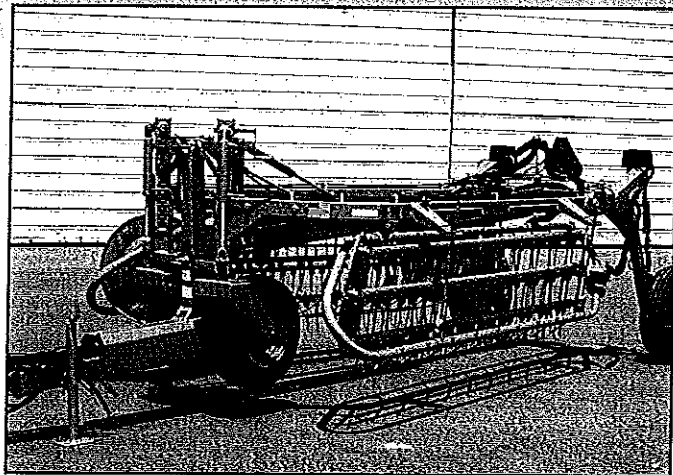
## Mower conditioners work with a wide variety of forage materials

**R**C5120 and RC9120 Mower Conditioners utilize a rotary disc mower and rubber conditioning rollers to harvest and condition a wide variety of forage materials. A positive mechanical drive system is employed to provide an economical alternative to the swivel-hitch gearbox systems currently found in the industry. To improve the mowing performance, a two-position attachment on the front lid is used. Two gas spring cylinders aid in lifting and supporting the large front lid on the RC9120. The front lid on both machines can be lifted with the tongue in any position. On the RC9120, a two-way jack is used to support and allow adjustment of the cutter bar angle of the mower conditioner head. The angle displacement is achieved with a crank mounted to the head of the two-way jack. The two-way jack can sustain the load in both tension and compression, movement side-to-side, and rotational directions. **Vermeer Manufacturing Company, Agricultural Division**, Pella, Iowa; 515-621-7399.



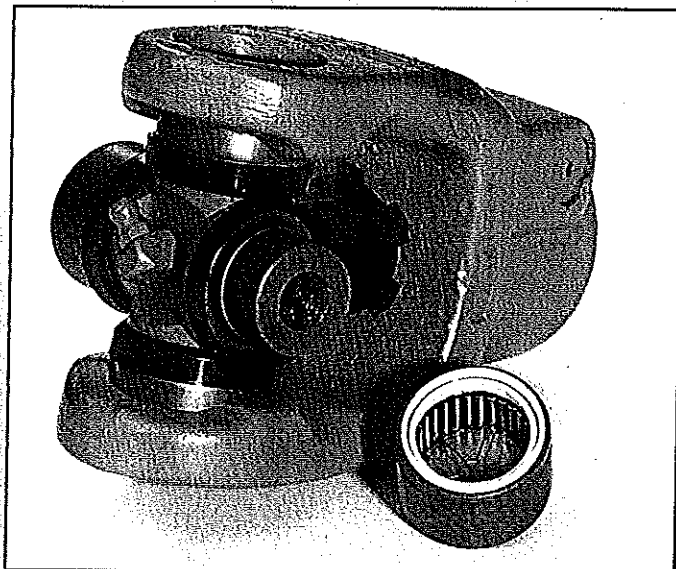
## Versatile rake is easily transportable and operator-friendly

**R**24 TwinRake will rake 18-24 feet of crop into a user-selected windrow width of 3-6 feet. The electro/hydraulic controls permit the operator to quickly go from field to transport position without leaving the tractor seat. The R24 Command controller allows the operator to select which hydraulic circuit will be active – front tower lift which raises the front caster wheels off the ground for road transport, hydraulic lift for raising and lowering the rake over windrows and obstacles, raking width and windrow width. The adjustable raking width utilizes a two-stage hydraulic system that employs a main fold cylinder to extend rake to 18 feet and two arm-fold cylinders to allow adjustment between 18 feet and 24 feet. The R24 has two baskets with each basket having six bars and 120 rubber-mounted tines. The baskets are hydraulically driven and a flow control valve limits the speed of the baskets for gentle crop handling. Vermeer Manufacturing Company, Agricultural Division, Pella, Iowa; 515-621-7806.



## Universal joints help increase performance and reduce maintenance

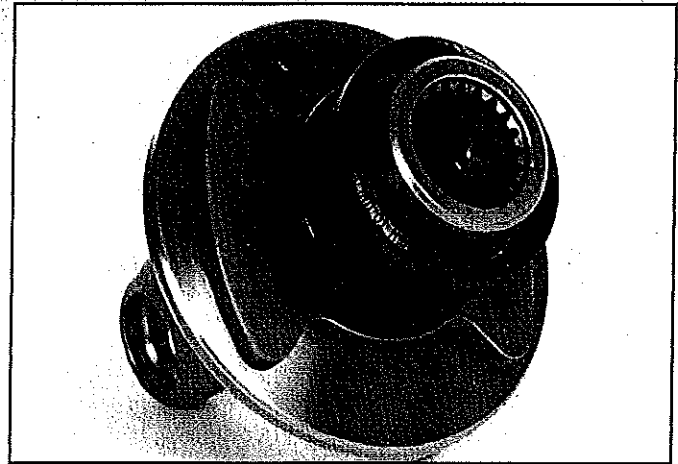
**E**xtended Lube Universal Joints help to meet the demand of today's agricultural industry for increased performance and reduced maintenance in machine operation. The S-seal variant, available in ASAE Categories One through Six, extends lubrication intervals by a factor of 30 times those required by conventional universal joint seals in many applications. The S-seals reduce lubricant loss, and further prevent contamination from entering the bearing caps. Recommended lubrication intervals are extended to once every 250 hours of operation or once per season, depending on the application. The Extended Lube Universal Joints convert maintenance hours into operating hours to reduce costs and increase productivity. Reducing required maintenance is especially beneficial when inbuilt drivelines are difficult to access for frequent lubrication. The increased service life offered by extended-lube universal joints in extreme moisture, dust or harsh chemical environments make mechanical drive an option for applications previously not feasible. GKN Walterscheid, Inc., Burr Ridge, Illinois; 708-887-7022.





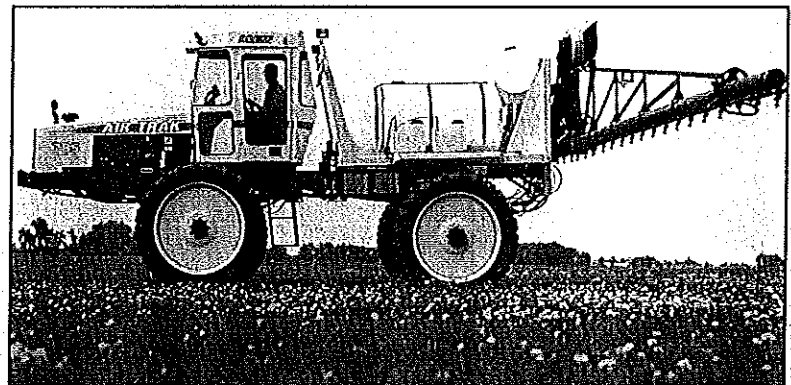
## Free motion ball shear yoke provides freedom of movement for ease of hookup

**F**ree Motion Ball Shear Yoke combines the unique features of the Weasler ball shear yoke with 60 degrees of free movement. The free movement allows the tractor yoke splines to be aligned with the tractor PTO shaft splines for ease of hookup. Today's tractors with their PTO brakes, and implements with complicated drive systems and/or large mass, make it very difficult to connect the implement input driveline to the tractor. The free motion ball shear yoke provides the freedom of movement necessary to make this an easy task. A built-in ball bearing and induction-hardened shear edges allow long life through repeated shears. The compact size allows it to replace a standard yoke with minimal effect on driveline geometry. It is intended for use at the implement end of the primary driveline or at a secondary location in the implement drive system. **Weasler Engineering, Inc.**, West Bend, Wisconsin; 414-338-2161.



## Applicator provides reduced drift, improved coverage and optimum penetration

**A**ir-Trak™ is an applicator for crop protection products utilizing patented Air Spray technology. It provides reduced spray drift, improved coverage, and optimum penetration with adjustable air speed that energizes spray droplets to reach and cover even the most difficult target. The TriMizer™ boom gives the application three spraying options, providing flexibility to accommodate application needs and conditions that occur during various stages of the crop production cycle. **Willmar Manufacturing**, Willmar, Minnesota; 612-231-9420.





## AE 50 Winners' Index

**Ag-Chem Equipment Company, Inc.**  
RoGator® 854 (Automatic Tie Rod System)  
Page AE 50/4

**Atlas Pacific Engineering/Engineering Dept.**  
Atlas Monitor System  
Page AE 50/4

**Automata, Inc.**  
HORIZON Irrigation Controller  
Page AE 50/5

**Bou-Matic - the Dairy Equipment Division of DEC International**  
Guardian II Pipeline Washer  
Page AE 50/5

**Carlisle Motion Control**  
RT Mechanical Brake Park  
Page AE 50/6

**Case Corporation/Case IH Division - Crop Harvesting**  
2155 Cotton Express Cotton Picker  
Page AE 50/7

**Case Corporation/Case IH Division**  
2100 Series Axial-Flow® Combines  
Page AE 50/6

**Case Corporation/Product Development & Engineering Center**  
Case IH 6800 Mulch Ripper System  
Page AE 50/7

**Deere & Company, John Deere Des Moines Works**  
7450 Cotton Stripper  
Page AE 50/8

**John Deere Harvester Works, Product Development**  
Corn Head Hydraulic Adjustable Deck Plate System  
Page AE 50/8

**John Deere Harvester Works**  
737 Air Hoe Drill  
Page AE 50/10

**John Deere Harvester Works**  
1760 Wing-Fold Planter  
Page AE 50/10

**John Deere Harvester Works**  
60 Seed Cart  
Page AE 50/9

**John Deere Product Engineering Center**  
8000 Series Tractor  
Page AE 50/11

**John Deere Harvester Works**  
Contour Master™ System (Automatically controlled lateral tire feeder house)  
Page AE 50/9

**M.G. Dickey Industries, Inc.**  
Stoneville Low-Till Parabolic Subsoiler  
Page AE 50/11

**Flexi-Coil Ltd.**  
Model 65 XLT Twin Tank Field Sprayer  
Page AE 50/12

**GKN Walterscheid, Inc.**  
Extended Lube Universal Joints  
Page AE 50/27

**Gallenberg Equipment, Inc.**  
HarvestAire® Ginseng Harvester  
Page AE 50/12

**Geoflow, Inc.**  
WASTEFLOW™ Subsurface Drip Irrigation (new multilayer version)  
Page AE 50/13

**Global Water**  
IRR100 Irrigation Flow Meter  
Page AE 50/13

**Great Plains Industries, Inc.**  
GPI Flocon Pump Control System  
Page AE 50/14

**Great Plains Manufacturing, Inc./Grain Drills Division**  
2410 and 3010 Folding No-Till Drill  
Page AE 50/15

**Great Plains Manufacturing Inc./Ausherman Division**  
Terra-Tine™ Row Cleaner  
Page AE 50/14

**Hay & Forage Industries/Engineering Dept.**  
Hesston (Model 8500) and Case IH (Model 8850) Windrowers  
Page AE 50/15

**INFERNO/Agricultural, Industrial Frost Control**  
INFERNO (Liquid propane gas direct heater)  
Page AE 50/16

\* Joint development

**INTERSOFT-AGRI Feeding Equipment**  
**LACTA (Automatic calf feeder)**  
 Page AE 50/16

**Irrrometer Company, Inc.**  
**Irrrometer Model "LT" (Low tension tensiometer)**  
 Page AE 50/17

**J-Star Industries/Van Dale Waste Handlers Division**  
**Shallow Tillage Applicator**  
 Page AE 50/18

**JCB Landpower**  
**JCB Fastrac (4WD, high-speed agricultural tractor)**  
 Page AE 50/17

**Korvan Industries, Inc.**  
**Model 9200 Coffee Harvester**  
 Page AE 50/18

**LAFORGE SARL**  
**Front Hitch for New Holland SuperSteer™ FWD Axle\***  
 Page AE 50/21

**LAFORGE SYSTEMS, Inc.**  
**Greenlink 80i (Integrated front 3-point program)**  
 Page AE 50/19

**Nelson Irrigation Corporation**  
**R2000 Rotator™**  
 Page AE 50/19

**New Holland North America, Inc.**  
**Front Hitch for New Holland SuperSteer™ FWD Axle\***  
 Page AE 50/21

**New Holland Belgium N.V.**  
**Multi-Thresh™ System**  
 Page AE 50/20

**New Holland North America, Inc.**  
**Cropcutter™ Cutting System**  
 Page AE 50/20

**New Holland North America, Inc.**  
**On-the-Go, Two-Speed Shift for New Holland Super Boom™ Skid-Steer Loader Model Lx885**  
 Page AE 50/21

**NovAtel Communications Ltd./GPS Business Unit**  
**AG-20™ (GPS receiver)**  
 Page AE 50/22

**Spraying Systems Company/Agricultural Division**  
**Turbo TeeJet® (Flat fan spray tip)**  
 Page AE 50/22

**Spraying Systems Company, Agricultural Division**  
**TeeJet 855 Sprayer Control**  
 Page AE 50/23

**Sunkist Growers, Inc.**  
**GoldRush Color-Sizer**  
 Page AE 50/23

**Terratend Pty. Ltd.**  
**VYTILL 600, 900, 1200 & 1500 Mulch Tillers**  
 Page AE 50/24

**Top-Air Manufacturing, Inc.**  
**T-Tank Models 550, 800, 1100**  
 Page AE 50/24

**The Torrington Company/Fafnir Bearings Division**  
**SURVIVOR™ PT Ball Bearing Housed Units**  
 Page AE 50/25

**Tuthill Corporation, Fill-Rite Division**  
**Fill-Rite Mix-N-Go™ (chemical dispenser)**  
 Page AE 50/25

**Vansco Electronics Ltd.**  
**Multiplexed Monitor System**  
 Page AE 50/26

**Vermeer Manufacturing Company, Agricultural Division**  
**R24 Twin Rake**  
 Page AE 50/27

**Vermeer Manufacturing Company/Agricultural Division**  
**RC9120 and RC5120 Mower Conditioners**  
 Page AE 50/26

**Weasler Engineering, Inc.**  
**Free Motion Ball Shear Yoke**  
 Page AE 50/28

**Willmar Manufacturing - Sales**  
**Air Trak™ (Self-propelled applicator with Tri-Mizer™ boom)**  
 Page AE 50/28

**\* Joint development**