



**RESOURCE
MAGAZINE'S**

***Outstanding
Innovations 1998***

AE50 COMPANY RECOGNITION PROGRAM

New Technology for a Better World

Each year, AE50 awards are presented for up to 50 products developed by companies striving to improve the lives and work of people around the globe. These products reduce operating time and costs, lower consumer costs, expand capabilities and improve precision. The advancements involve engineering for agricultural, food and biological systems.

This year, 50 products were chosen – from numerous entries – to represent the best technology made available for sale or order during 1997. This technology will help producers improve processing, storage, packing and transporting of agricultural products.

A panel of ASAE-member judges representing various areas of industry carefully reviewed the entries before making decisions. They would like to thank all the entrants for their participation and to encourage each to enter in future AE50 programs.

In this special 1998 AE50 section of *Resource*, the winning products are highlighted with photographs and descriptions. Readers may use the phone numbers listed at the end of each description to learn more about the product. An index at the end of the section lists each winner by company and product name.

AE50 winners are proud of their accomplishments and deserve to be honored. In the long run, everyone will benefit from their contributions to society.

ASAE and *Resource* magazine offer heartfelt congratulations to this year's AE50 winners – and our appreciation to all who accepted the challenge to make this a better world.





Ag-Chem's Terra-Gator 3104 Shifts Effortlessly and Performs Multiple Tasks



The **Terra-Gator 3104** is a four-wheeled, self-propelled vehicle with a heavy-duty articulated chassis and operator selectable 2WD or 4WD. The power train includes a John Deere 6081H diesel engine, rated at 300 hp, and a Deere Funk 11-speed Terra-Shift transmission. The engine is EPA/CARB/EEC emission certified. The transmission offers more working gears and can shift under full power by tapping the shift lever left or right. Operator comfort is improved with a new Ag-Chem designed cab, which features improved visibility and ergonomics. The cab is designed to meet California EPA filtration standards and uses electronic gages and controls to keep out contaminants. The chassis is designed to be used with various tire sizes. The chassis can be used for numerous tasks in the agricultural and industrial industries that require transporting heavy payloads with minimal ground pressure. **Ag-Chem Equipment Co. Inc.**, Minnetonka, MN, USA; 612-945-5812.

DataTouch™ System is User-Friendly for Agricultural Applications



The **AGCO DataTouch™** command center combines the ease of touch screen operation and display with modern precision farming. Available as part of the Fieldstar™ Yield Monitoring/Mapping system, the DataTouch terminal mounts comfortably in the cab of **GLEANER®** and **Massey Ferguson®** combines. The sleek, slim line design provides a large viewing screen and reduces cab clutter. The DataTouch system features touch screen adjustable contrast, ensuring clear night and day visibility. The terminal accepts a PCMCIA card for data logging, storage and programming. Installed with a single knob and plug, the DataTouch terminal can be quickly and easily transferred from one machine to another. The terminal can also be easily programmed for various applications to provide for future expandability. **AGCO**, Duluth, GA, USA; 800-992-2426 (Enter 2 for Fieldstar.)



Soil and Plant Damage are Reduced with BEI's Berry TraX Harvester

BEI's Berry TraX blueberry harvester uses dual path hydrostatic powered rubber track technology to promote timely, efficient harvest of high quality blueberries with minimum impact to the field and blueberry bushes. Rubber track, dual path drive technology has reduced machine weight 23% and ground pressure 60%. High flotation and good traction of the rubber tracks allow harvest operations in high moisture soil conditions without excessive damage to the field or bushes. The narrow profile reduces costs and damage to bushes while enhancing safety of machine movement on public roadways. Drive-by-wire electronic steering and propulsion control reduce operator fatigue and improve visibility. The simplicity of the track drive system has allowed BEI to modify its manufacturing process, reducing assembly time and labor. **BEI Inc.**, South Haven, MI, USA; 616-637-8541.



Dairy Cattle Barn System Makes Cleanup a Breeze and Cuts Ammonia Emission 50%

The grooved floor system reduces ammonia emission in dairy cattle houses and offers good slip resistance. The system consists of grooved and perforated solid prefabricated concrete floor elements and a dung scraper with an indented blade. The floor elements for paving passages in a cubicle house for cattle span from 2 m to 3.5 m long and are 1.1 m wide. The 30-mm-deep, 35-mm-wide grooves are 160 mm from center to center. Urine drains via the grooves through perforations into a slurry pit beneath. Every two hours, the dung scraper moves the solid feces to the end of the passage, cleaning the floor and perforations. This system reduces ammonia emission nearly 50% more than a slatted floor with the same locomotion. In The Netherlands, this flooring has been recognized as a low-emission system for cattle houses, called a Green Label system. **Brouwers Stalinrichtingen**, Leeuwarden, The Netherlands; 31-58-2133641 and **Den Boer Beton**, Nieuw Lekkerland, The Netherlands, 31-184-688800.





More Horsepower Contributes to the Case IH 2300's Increased Throughput



Case IH 2300 Series Combines provide increased productivity and value to owners and operators who participate in high production agricultural harvests worldwide. These combines enhance the proven Axial Flow rotary threshing and separating technology well known for its simplicity, grain saving ability and high quality grain sample. The increased horsepower of the 2300 family is the major contributor to the throughput increase. The addition of an in-cab electronic tailings monitor allows the operator to optimize harvest settings, balancing the demand for high productivity and grain quality. The automatic cab climate control increases operator comfort, with little temperature variation as the combine travels into and away from the sun. **Case Corp.**, East Moline, IL, USA; 309-753-3804.

Seed Manager™ Offers Accurate Seed Counts for Planters



The DICKEY-john **Seed Manager™** is a precision planter monitor that simultaneously monitors up to 36 rows in 12-row segments. When using Seed Smart™ sensor technology, Seed Manager provides accurate seed counts including precise "singulation," or the percentage of seeds dropped, to indicate planter performance. Alarm conditions are sounded for over/under population conditions and total population is updated continuously. Harnessing is reduced and simplified using the Seed Smart sensor, which connects serially, eliminating the dedicated row wiring harness. Planter codes are implemented in the setup to adapt this system to all planters and other unique planter configurations. The Seed Smart sensor automatically learns its row number from these configurations. **DICKEY-john Corp.**, Auburn, IL, USA; 217-438-2234.



FieldMaster Quickly and Easily Adapts to a Variety of Field Conditions

The Gallenberg **FieldMaster Pusher Unit** was designed for versatility, increased visibility and accuracy to provide less crop damage while reducing operator stress and fatigue. The unit allows various implements to be carried between the front and rear wheels, making them self-propelled. The user can couple current equipment to the unit, changing the attachment throughout the season to reduce operation costs. The pusher unit adapts to different field conditions easier and quicker than traditional equipment. **Gallenberg Equipment Inc.**, Antigo, WI, USA; 800-533-2662.



Wide Pickup and Stuffer Allow More Uniform Bale Chamber Filling

The **Hesston Model 545** and **Case Model 8435** are variable chamber round balers that produce dense bales 4 ft. x 5 ft. in dry hay and straw or in silage hay. The wide pickup and stuffer allow uniform bale chamber filling in all crop conditions. The forming belts and drive and idler rolls are designed to decrease roll wrappage when baling silage hay. **Hay & Forage Industries**, Hesston, KS, USA; 316-327-6216.



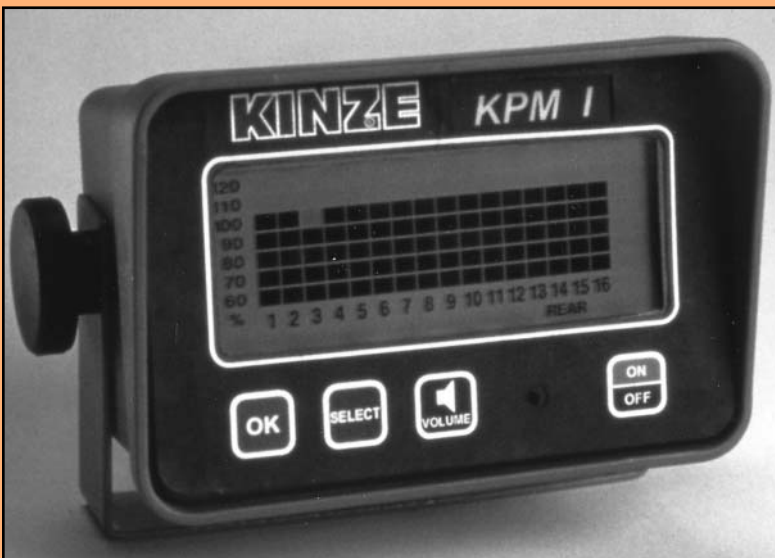


Variable Rate Sludge Applicator Offers Precision Handling of Liquid Organic Byproducts



The **variable rate sludge application system** is a new product for precise liquid based organic byproduct application for production agriculture. Proper byproduct handling, control and application is ensured with the Ag-Chem FALCON™ controlled pumping and application system. The controller adjusts the application rate of a material based on nutrient analysis, an agronomic prescription map and location via GPS. Material is loaded through a 6-in. reload station and filtered before entering the pumping system's 4,500-gal. tank. During application, the substance is spread evenly across the tillage tool with a hydraulically powered distributor. The pumping system has a capacity of more than 1,500 gallons per minute, which allows the machine to apply from 1,000 to more than 20,000 gal. per acre. All controls are electronic and automated to increase operator comfort. **Ag-Chem Equipment Co. Inc.**, Minnetonka, MN, USA; 612-945-9006.

Monitor System Offers Easily Understood and Intuitive User Interface

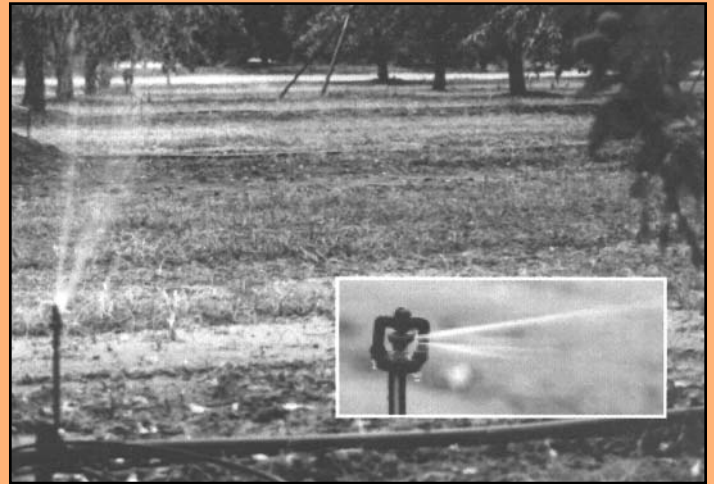


KPM I and KPM II model planter monitoring systems from KINZE Manufacturing, Inc. feature state-of-the-art technology and a bar graph LCD display that provides "at a glance" planter performance status. The KPM II features a second LCD display for population rates, seed spacing, speed and accumulated acres. Both monitors accept up to 36 seed flow and a variety of other sensors. The new monitor systems use MUXBUS communications technology and sensors developed by Vansco Electronics Ltd., Winnipeg, Manitoba. The system provides accuracy and fast response over a range of seed types and sizes at all planting rates with an easily understood and intuitive user interface. Self diagnostic features communicate system problems, such as blocked seed tubes or broken electrical connections, through the console. **KINZE Manufacturing Inc.**, Williamsburg, IA, USA; 319-668-1300.



Micro Sprinkler Gives Growers New Production Management Opportunities

The Nelson **R5 ROTATOR™** is a micro sprinkler for tree, vine and greenhouse irrigation systems. With a radius greater than that of comparable micro sprinklers, the R5 provides between 75% and 150% more total coverage. Higher overlap uniformity and full coverage are the primary benefits. The R5 can be retrofitted in place of most fan jet or spinning micro sprinklers. The R5 offers growers better dust control, improved application uniformity of water, fertilizers and pesticides through the irrigation system, and improved irrigation water infiltration. The R5 is available with optional Nelson flow control nozzles, which emit a constant flow over a wide range of pressure. It can be mounted for upright use on a plastic stake or on a PVC riser. For inverted operation, it can be mounted on a trellis. **Nelson Irrigation Corp.**, Walla Walla, WA, USA; 509-525-7660.



All New Terra-Gator Gives Operators More Power, Visibility and Versatility

The **8103 Terra-Gator** is a three-wheeled, self-propelled agricultural sprayer and spreader. Terra-Gators have been on the market about 30 years. The 8103 is a new machine from frame, to cab, to overall appearance. Power for the 8103 comes from the John Deere 6081 300-hp diesel engine. The transmission is a Deere Funk 11-speed TerraShift, which shifts under full power at the bump of a lever. Operator comfort is improved with a new Ag-Chem designed cab, which offers 45% more glass than the previous cab to improve operator visibility. It is equipped with all electronic controls and gauges, and is designed to meet California EPA filtration standards. This machine can be equipped with a liquid system or one of several dry fertilizer systems. **Ag-Chem Equipment Co. Inc.**, Minnetonka, MN, USA; 612-945-5814.



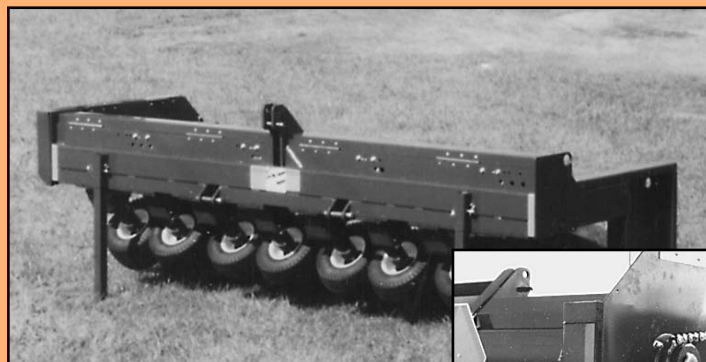


Computer Software Helps Users Choose the Most Profitable Crop Systems



Ag Decisions® is a new and innovative decision support software for farm management that uses mathematical optimization (operations research techniques used by large companies in a multitude of industries) to identify the most profitable combination of crops, acreage and inputs. Ag Decisions allows the user to easily and systematically change controllable variables such as operating capital, land, labor, rotation options, diversification strategies, forward contracts and crop insurance. Alternative crop mixes are created and Ag Decisions evaluates the robustness of combinations in terms of impact on potential profit from uncontrollable variables such as crop prices and yields. From this analysis, the crop mix that best meets the grower's financial goals, risk tolerance and management preferences can easily be identified. **Ag Decisions Inc.**, Idaho Falls, ID, USA; 208-522-4610 or 800-797-4610.

Single Pass Machine Cuts Time and Costs for Managing Cotton Plants



The AMADAS **CSP01 Cotton Stalk Puller/Chopper** is designed to streamline post-harvest cotton stalk management and field preparation. Pulling up an entire cotton stalk and chopping it into small pieces, the CSP01 can perform in a single pass what previously took several machines and three to five passes. Operating at 8 to 12 mph, it is common for this four-row machine to cover 100 acres per day, resulting in time and cost savings. Other benefits include

reduced field compaction and minimal soil disturbance, which makes the CSP01 well suited to all cultivation methods including no-till. Designed with the farmer in mind, the CSP01 features a robust design built to withstand years of use. All drives are easily accessible and protected by a bi-directional clutch. Available in two-row and four-row models, the unit is adjustable for 36-, 38-, and 40-in. rows. **AMADAS Industries**, Suffolk, VA, USA; 757-539-0231.



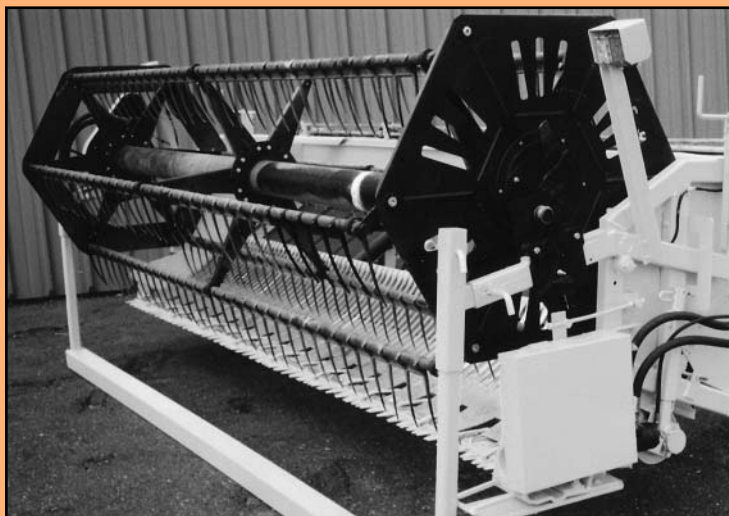
Sukup Air Seeder Places Seed Precisely into Planting Furrows

The Sukup **Air Seeder** incorporates Sukup grain handling knowledge, Marliis planting technology and Sukup implement durability into one unit. A venturi design in the air lines eliminates the need for a pressurized seed tank. A Sukup centrifugal fan, driven by a hydraulic motor, provides airflow for the system. Marliis seed meters individually meter each row and consistently deliver seed to the drill openers. The drill openers place the seed precisely into the planting furrow. The Sukup Air Seeder has a 30-ft. working width, a 17-ft., 6-in. transport width; transport clearance of 25 in.; a 120-bushel seed tank and a choice of two opener styles. The unit uses three hydraulic remote controls for folds, lifts, colter caddy depth adjustments, marker operations, centrifugal fan operation and optional drill fill operations. **Sukup Manufacturing Co.**, Sheffield, IA, USA; 515-892-4222.



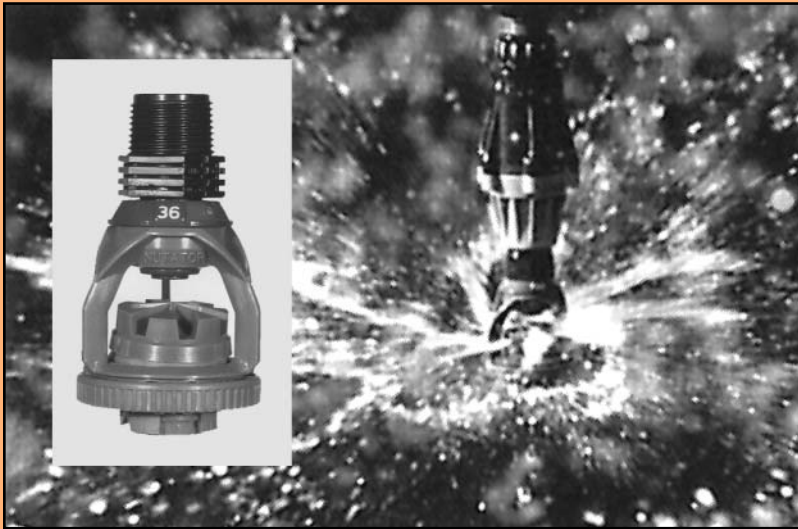
Pixall SP150 Head and Chassis Provides High Volume Vegetable and Leaf Crop Harvest

The Pixall **SP150 head** for spinach, greens, collards, mustard and other vegetable leaf crops offers high capacity harvesting while avoiding damage to fields for multiple harvests. The 150-in.-wide head provides a double action sickle for a clean cut and the Pixall floatation system for precision height control. A standard variable speed reel has adjustment for reel tine pitch and height. The SP150 also features an adjustable stainless steel concave and options for reducing sand and insects. The head is mounted on the proven Pixall Big Jack chassis used to harvest green beans. The chassis provides continuous side loading or a self contained hopper. The Pixall Big Jack is an all weather harvester. The unloading elevator pivots up to a 45° angle into a truck 15 ft. high. After harvest, the elevator can be folded into transport position remotely from the cab. **Pixall**, Clear Lake, WI, USA; 715-263-2112.





N3000 Offers Two Plates for Droplet Configurations Specific to Sites and Soils



The Nelson **N3000 Pivot Nutator®** sprinkler provides a highly uniform, wind-penetrating water pattern for center pivot irrigation systems. This low pressure sprinkler is mounted on drop tubes and uses low trajectory angles to keep water out of the wind for maximum water and energy conservation. To achieve high uniformity and wide throw distance at operating pressures of 10 to 15 psi, the patented sprinkler technology combines rotating action with continuously offset plate axis movement. The N3000 is completely modular with other Nelson 3000 Series sprinklers. The low droplet kinetic energy and consistent droplet size maintains soil structural integrity and reduces runoff potential. The N3000 Pivot Nutator allows farmers to minimize water, energy and fertilizer inputs while maximizing production and quality in crops. **Nelson Irrigation Corp.**, Walla Walla, WA, USA; 509-525-7660.

RTME-1100 Semi-Automatic Transplanter Fulfills the Smaller Grower's Needs



Renaldo's **RTME-1100 Semi-Automatic Transplanter** for plastic mulch has been designed and developed especially for smaller growers (approximately 25 to 50 acres). The RTME-1100 utilizes the time tested Posi-Flow™ ground engaging system. Simplicity is the key feature of this new model with 30% less moving parts, resulting in less adjustments and maintenance. RTME-1100 is 30% cheaper than its predecessor, the RTM model, and is smaller and lighter. The RTME-1100 performs four planting functions at once. It burns holes into plastic mulch, inserts a plant in a previously burned hole, packs the transplant into the bed and spreads water over the transplant. In-row spacing can be changed from 8 in. to 26 in. and the RTME-1100 can be equipped to plant one or two lines of plants on a single bed. **Renaldo's Sales & Service Inc.**, North Collins, NY, USA; 716-337-3760.



New Corn Head Designed by Byron Improves Productivity, Reduces Damage

Byron Equipment Company's **Model 3000 Series Corn Head** is designed to further minimize sweet or seed corn ear damage with its reduced angle and polyethylene row dividers. The new design reduces maintenance costs for repainting and allows the operator to salvage fields of down corn and minimizes the number of ears lost. A unique feature of the Model 3000F is that the operator can fold the two end rows, reducing the overall head width and eliminating the need to remove the head for road travel. The patented unobstructed auger produces undamaged product and the patented adjustable stripper plate mechanism is designed inside the row frame to eliminate material buildup between the rows. This feature allows for easy cleaning when changing to different varieties or fields. **Byron Equipment Co.**, Byron, NY, USA; 716-548-2665.



Campbell's Micrologger Offers Measurement Versatility and Remote, Unattended Use

Campbell Scientific's **CR23X Micrologger** is a powerful, compact, portable datalogger ideal for agricultural, meteorological and industrial research. The CR23X features a wide operating temperature range, low power use, a powerful on-board instruction set and the ability to directly measure a variety of sensors. The rugged, low-power design allows the Micrologger to act as a stand-alone datalogger at a measurement site or as a portable datalogger. With scan rates up to 100 Hz and 15-bit resolution, the CR23X is well suited to research or operational measurements. Features include 24 single-ended analog input channels, four pulse count channels, eight digital I/O ports, four continuous analog output channels, four precision voltage switched excitation channels, an on-board optically isolated RS-232 interface and CE compliance. On-site use is simplified by a two-line, 24-character display with field prompts. **Campbell Scientific Inc.**, Logan, UT, USA; 435-753-2342.





CARLISLE's New Brake is Geared for Safety with Towed Equipment



The CARLISLE Full Circle Agricultural Brake is a dry friction caliper, fully enclosed, wheel hub driven, hydraulic actuated brake intended for use on agricultural towed equipment such as heavy liquid manure tanks and implements. Other applications include two-wheel grain carts and four-wheel forage boxes. The brake was designed to meet 1998 ASAE S318 safety standards. The Full Circle brake is hydraulically actuated with either mineral oil or brake fluid, develops high torque and fits in a 16-in. wheel. A simple circular bolt mounting pattern is featured on the brake that fits over a 4.375-in. diameter industry standard heavy duty wheel hub. The brake is available in single and dual rotor versions. **CARLISLE Motion Control**, Bloomington, IN, USA; 812-334-8793.

Performance, Productivity Improve with the MX Series' Electronic PTO and Hitch

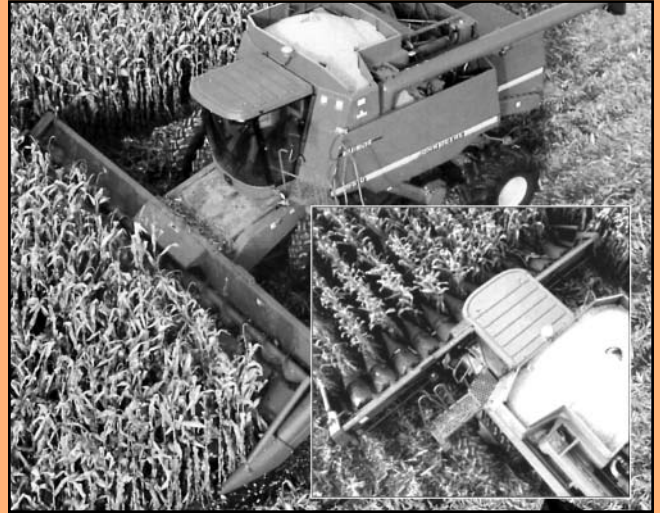


The Case IH MX Series MAXXUM 2WD agricultural tractors, developed as high value products, meet a wide variety of application needs and offer maximum economy, comfort, reliability and durability. Engine cooling system performance is enhanced by a viscous fan and increased grille screen area. Machine performance and operator productivity are improved with a new electronic PTO and hitch. The operator can select automatic disengagement/engagement of the rear axle differential lock and/or front axle drive mode for easier headland operation. The slip limit feature automatically raises the rear hitch when the rear wheels exceed a pre-set slip limit. The MX Series is compatible with Case IH's site specific farming technology, Advanced Farming System (AFS), and offers a spacious, quiet and ergonomic cab with all-around vision. **Case Corp.**, Racine, WI, USA; 414-636-6705.



Visibility Improved, Fatigue Reduced For Combine Operators

The **Air Flow system** reduces airborne dust and crop debris escaping from the feeder house opening on John Deere combines. Forward visibility for the combine operator is improved, reducing operator fatigue and increasing the productivity of harvest operations. The Air Flow system has been designed as an integral feature of John Deere Ten Series combine harvesters. The system uses two impeller fans, one on each side of the feeder house, mounted on a common shaft. The fans draw airborne dust and crop debris inward through the feeder house crop intake opening. The fans discharge material downward and rearward along each side of the feeder house, out of the operator's field of view. **John Deere Harvester Works**, East Moline, IL, USA; 309-765-2091.



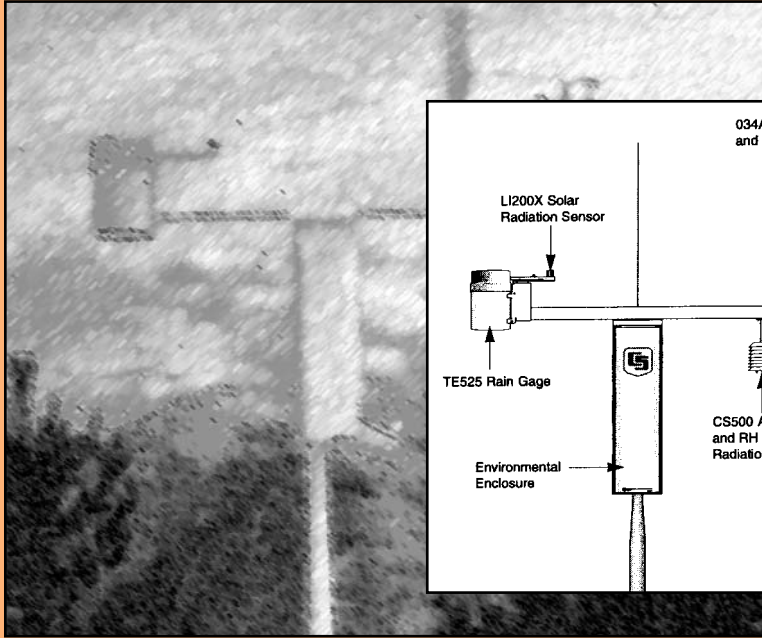
Upgradeable Land Manager II® Helps Control Field Applications

The DICKEY-john **Land Manager II** assists operators in applying chemicals, seeds and fertilizers based on radar ground speed or GPS/GIS information. This unit simultaneously controls two applications of liquid, granular, NH₃ or seeding. Land Manager II is software upgradeable as new features, functions or foreign languages are available via an RS232 interface and a graphic module LCD. A formal reporting feature allows the operator to electronically record and print information, such as customer name and location, chemical used, weather information, start and finish time and date, on up to 10 application jobs. An application library allows the operator to customize 10 different vehicle or application configurations when the console is used in varied applications. A retrofit kit is also available to allow upgrading of the previous CCS100 system. **DICKEY-john Corp.**, Auburn, IL, USA; 217-438-2234.





ET/Weather Data Collected by ET101 and ET106 Benefits Crop Management



The Campbell Scientific **ET101** and **ET106** are pre-configured stations that calculate potential evapotranspiration (ET_o) using a turf grass reference. The **ET101** measures a reduced set of meteorological sensors and the **ET106** measures a standard set of meteorological sensors. Using the gathered data, an on-board program calculates the potential ET_o and provides practical information for making crop management decisions. Both stations consist of electronics in an environmental enclosure, sensors and a 2- or 3-m aluminum mounting pole. Eight alkaline D-cells, or a 7 Ahr sealed battery recharged by AC or solar panel, power the stations. The enclosure includes electronics for measuring sensors, processing and storing data and communicating with a central computer. Data can be telemetered via phone or short-haul modems. **Campbell Scientific Inc.**, Logan, UT, USA; 435-753-2342.

Universal DGPS Receiver Gives Users Options for Improved Accuracy



The Case IH **Advanced Farming System (AFS) Universal Receiver**, developed with Trimble Navigation, is the first high-performance sub-meter Differential GPS (DGPS) receiver that combines a 12-Channel GPS receiver, a coast guard beacon and a satellite differential correction receiver in one housing. A user can select either the free beacon correction signals available locally, or more accurate L-Band satellite correction signals available worldwide. The Universal Receiver provides accurate position coordinates for a variety of precision agriculture applications including yield monitoring, soil sampling, variable rate application and portable crop scouting. The receiver and antenna weigh less than 2 lbs., making the system easy to move from one application to another. The upgradeable receiver has an LCD display and keypad for easy installation. **Case Corp.**, Burr Ridge, IL, USA; 630-887-5433.



Unique Depth Control System Featured on Deere's 1820 Flex Air Hoe Drill

The new **1820 Flex Air Hoe Drill** from John Deere is designed for use with the 1900 Commodity Cart and is offered in six sizes from 29 ft. to 61 ft. with 7.5-in., 10-in. or 12-in. row spacing. The wing sections can flex up or down 10° side to side, and fore aft up to 3.3 ft. This frame flexibility provides improved ground-following capability and seed placement in rolling terrain. The four-rank seeding tool frame has 28 in. of under-frame clearance and a minimum of 30 in. between openers on the same frame bar for excellent residue handling. Two opener styles with a 250 or 550 lb. 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 a choice of six different press wheel options to match seed patterns and ground conditions. The unique new depth control system allows operators to set the seeding depth of each frame section independently. **John Deere Seeding Group**, Moline, IL, USA; 309-765-2237.



Improved KINZE Planter Includes Optional Liquid Fertilizer Package

The **KINZE Model 2210 Flex Econo-Fold® Planter** is available in eight-row wide (36 in. or 38 in.) or 12-row narrow (30 in.) sizes. This improved version of the Model 2200 Flex Econo-Fold allows the addition of an optional liquid fertilizer package that offers 400 gal. capacity, a piston pump and choice of notched single disc or double disc openers. All KINZE row unit mounted tillage attachments may be used with the new planter. Seed meter drive is provided by two contact tires and end-mounted transmissions. The frame is centrally hinged to allow for flex over varying terrain, and wings may be folded manually or with optional hydraulic cylinders for a compact transport arrangement. **KINZE Manufacturing Inc.**, Williamsburg, IA, USA; 319-668-1300.





Rugged, Reliable Harvesting Units Offer Dependable, Multi-Season Operation



The FMC **CropCommander™ Series** multi-crop system harvests vegetable and seed crops. The series is composed of: the **PeaCommander™** pull-type threshing combine and accompanying stripper head, which picks and threshes green peas and lima beans; the **CornCommander™** corn head and elevator, which picks, cleans and conveys sweet corn or seed corn into a trailing cart or directly into an accompanying truck; and the **BeanCommander™** stripper head with an elevator and cart for green bean harvesting. A John Deere 400-hp PowerTech engine drives hydrostatic ground drive and hydraulic function pumps for the power unit, attached heads and trailing units. Harvesting, cleaning, conveyor and threshing functions are cab-controlled by the operator. The Harvest Vision System (HVS) electronic display monitors functions and provides electrical diagnostics and online maintenance information. **FMC FoodTech**, Hoopeston, IL, USA; 217-283-8300.

Track Tractors Cover Tough Terrain with Varied Tread Spacings and Track Widths

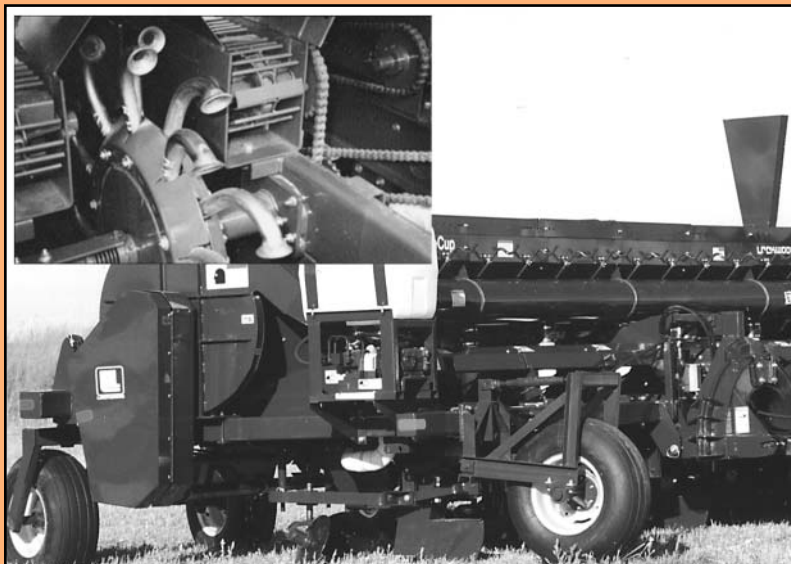


The John Deere **8000 Series of Track Tractors** offers a unique synergy of tractor technology. This development combines the proven features of the 8000 Series wheel tractors, such as 8.1 L. PowerTech engines, TouchSet hydraulics, CommandView cabs and CommandARM controls, with rubber tracks and associated innovations. The variable ratio electro-hydraulic steering system provides accuracy, control and maneuverability to complement the solid stability of a tracked vehicle. Eight different tread spacings between 60 in. and 88 in. can be obtained using the built in adjustment features. The spacings combine with track widths of 16 in., 24 in. and 30 in. to provide combinations to suit most operations and conditions. Four models are available ranging from 160 to 225 PTO horsepower. **John Deere Product Engineering Center**, Waterloo, IA, USA; 319-292-8510.



Lockwood's Potato Planter Uses Vacuum and Air Pressure for High Speed Accuracy

The Lockwood **AireCup®** potato planter addresses a problem for potato growers: How can I plant seed potatoes accurately, quickly and reliably without injuring the seed piece? The AireCup uses a vacuum to grab the seed piece, then shuts off the vacuum to release the seed piece. The planter uses air pressure to clear any obstructions in the seed cup opening before picking up another seed piece. This revolutionary planter consistently achieves planting accuracy in the 90% range and speeds up to 6 mph. The simplicity of design offers high reliability. The basic planting mechanism has one moving part and one seal per row unit. The unit is driven from a tractor PTO and can be controlled with a radar drive, giving the AireCup planter site-specific planting capability. Crop yields for 1997 showed an 8.6% increase with no additional inputs. **Lockwood Manufacturing Inc.**, Gering, NE, USA; 800-488-8085.



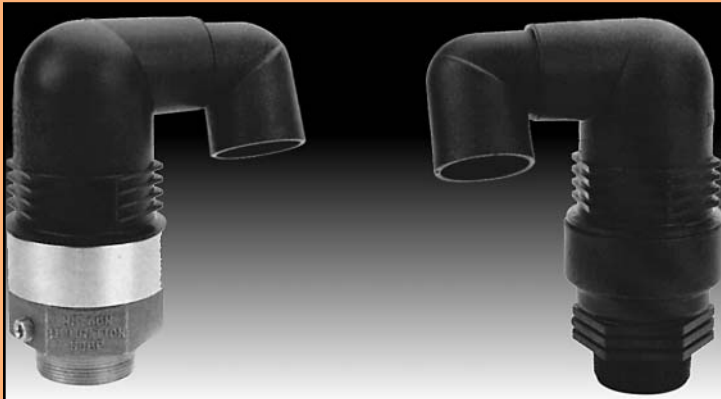
John Deere Commodity Cart Meters More than 50 Different Products

The John Deere **1900 Commodity Cart** transports, meters and delivers seed and fertilizer using a pneumatic air line system. There are nine sizes in a tow-between, or tow-behind, configuration spanning 195- to 430-bushel capacity. Two or three large non-corrosive tanks feed a fluted metering system that injects seed and fertilizer in separate or combined airflows. Ground driven variable speed drive boxes rotate meter roller sections, which deliver a constant rate of product to the airstream. Product is introduced to the airstream in a venturi. More than 50 different products are metered including wheat, barley, soybeans, lentils, peas, canola, sunflower, flax and various fertilizers. The 1900 is used throughout the world where large acreage dryland farming occurs. **John Deere Seeding Group**, Moline, IL, USA; 309-765-7142.



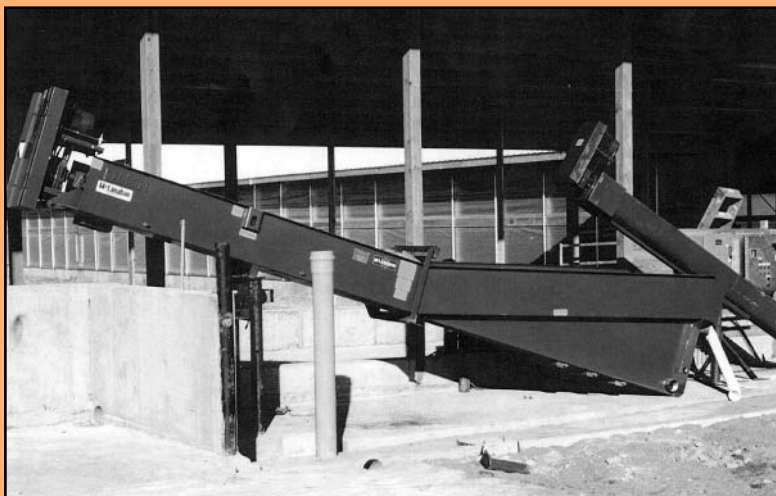


Nelson Continuous Air Control Valve Solves Irrigation Problems



The Nelson **ACV200 Air Control Valve** provides superior air control for pressurized irrigation pipeline systems. This new valve has the continuous acting function built into the valve without adding complication or cost. Using an innovative two-port airflow design at the valve – with an aerodynamic float design – gives the valve a high flow discharge capacity. A 50% greater air discharge capacity is possible without blowing the valve float shut. The new valve also operates with self cleaning float guides to ensure reliable operation in dirty water present in agricultural irrigation systems. A new approach was taken to engineer the product for cost efficiency. Now all pipeline locations requiring air control can be fitted without adding excessive cost. **Nelson Irrigation Corp.**, Walla Walla, WA, USA; 509-525-7660.

Sand/Manure Separator Uses Wastewater Treatment Techniques



Separating sand from manure facilitates long-term manure storage and environmentally sound application methods. The patented McLanahan **Sand/Manure Separator** separates 90% of bedding sand from manure before it is added to long-term storage. Separating sand from manure yields a manure stream containing a minimum amount of sand and a sand fraction that is clean enough for reuse as bedding. The Sand/Manure Separator, developed by McLanahan Corp. and Michigan State University's Agricultural Engineering Department, uses techniques from the aggregate processing and wastewater treatment industries. Sand-Manure Separators (SMS) are available in two sizes: SMS-10 and SMS-20. These machines treat sand-laden manure produced by 300 to 1,500 cows per day, respectively. **McLanahan Corp.**, Hollidaysburg, PA, USA; 814-695-9807.



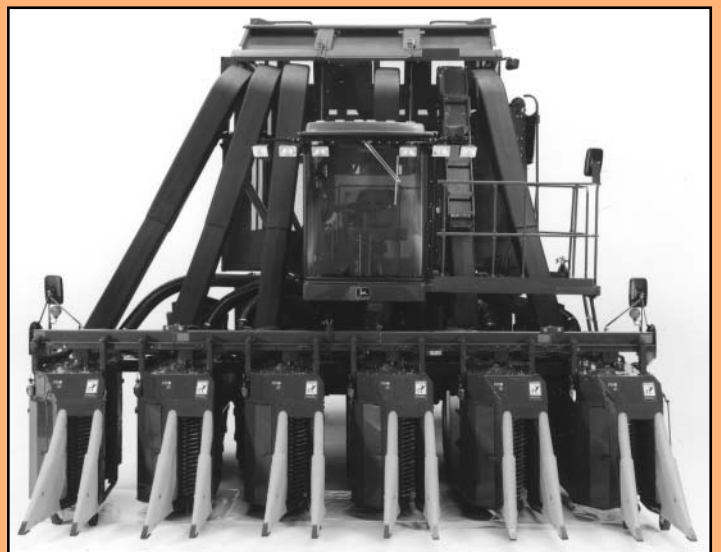
Model 1431 Makes Tight Turns Without Driveline Noise, Vibration or Binding

The New Holland **Model 1431 Discbine®** disc mower-conditioner is available with a heavy-duty, swivel-hitch tongue for ultimate maneuverability. The swivel-hitch tongue enables operators to easily make square or over-square corners and cut around obstacles without missing crop. The design features a pull-through swivel gearbox with specially developed high-strength alloy connecting members. When making a tight turn, there is no driveline noise, vibration or binding. The swivel-hitch frame has two positions for hitch pins, enabling hook-up to a wide variety of tractors with or without a quick-hitch adapter. The need for a different-length PTO drive line is eliminated. The unit can be towed by truck using an optional tow bar easily attached by one person without tools. **New Holland North America**, New Holland, PA, USA; 717-355-3663.



Cotton Picker Harvests Six Rows with Improved Unloading Control

John Deere's **9976 PRO-SERIES Cotton Picker** is the industry's first picker capable of harvesting six rows. Equipped with PRO-16™ picking units, the 9976 harvests high yield cotton at speeds up to 4 mph. The PRO-16 unit features a 16-bar front drum and 12-bar rear drum, each with 20-spindle-high bars. The chassis is equipped with a transverse mounted engine to allow space for an added rotating radiator screen. The screen continuously removes and expels trash from the air intake of the heat exchangers. Grease, water and fuel tanks are located at the rear of the machine to improve weight distribution and provide convenient ground-level servicing. The PRO-LIFT™ basket features a variable unloading height and independent floor and door conveyor sections for improved control of the cotton unloading process. **John Deere Des Moines Works**, Ankeny, IA, USA; 515-289-3091.





Data Logger Benefits Growers, Consumers and the Environment



The Spectrum Leaf Wetness and Temperature Data Logger is an affordable, versatile alternative to sophisticated weather stations for integrated pest management. The compact size (1.5 in. × 2 in. × 4 in.) and integral design allow sensors to be positioned for more representative sampling within the many micro-climate and canopy positions in orchards, vineyards and fields. Recorded data – leaf wetness and temperature – is presented graphically using special software. The data can be exported into disease prediction models such as Apple Scab and TomCast for disease risk assessment. The unit features a waterproof enclosure, integral radiation shields for accurate temperature measurement and an easily replaced gold plated leaf wetness grid. **Spectrum Technologies Inc.**, Plainfield, IL, USA; 800-248-8873.

Layout and Function Flexibility are Key to the "Quality Plus" Defect Sorter

The Sunkist "Quality Plus" defect sorter for citrus is a novel, high-speed, high resolution, total surface digital imaging system capable of measuring grade defects, color distribution, size and shape at fruit transport speeds of 6 to 12 fruit per second per lane. A dual belt prefeeder provides high performance singulation and separation, further energizing the fruit to the main conveyor. Fruit gently files into individual spool pockets for transport through a solid-state optical chamber for imaging and evaluation of the fruit surface. Results of the fruit analysis are compared to operator defined inputs to determine the category of grade, color, size, shape and product destination. Fruit can be

labeled with multiple labels, then tracked and discharged. Up to 60 destination points can be defined and machines are available in lengths exceeding 150 ft. **Sunkist Research Engineering**, Ontario, CA; 909-933-2221.





Rotary Cutter's Spring Protected Lift System Absorbs Shock in Rough Fields

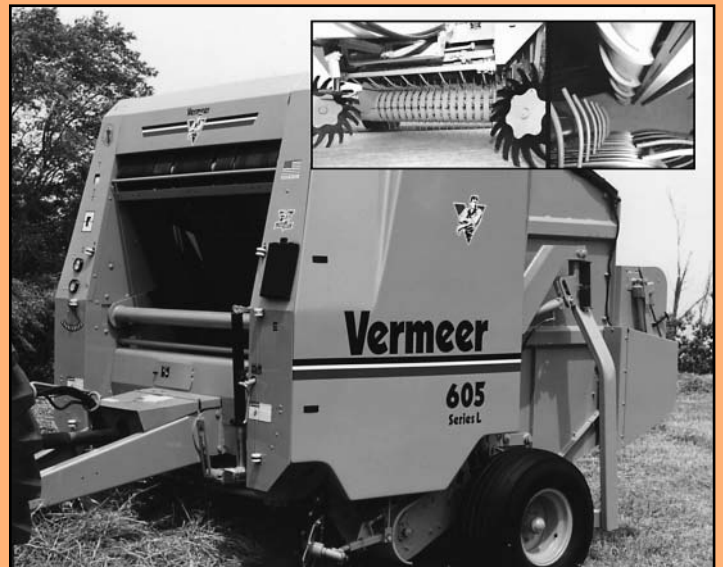
Woods has taken the multi-spindle flex wing rotary cutter another step with the introduction of its model **3240 Batwing rotary cutter**. The flagship model in the Woods flex wing cutter line, the 3240 is one of the most technically advanced Batwing rotary cutters in the industry and is state-of-the-art in 20-ft. flexible wing cutters. It features a smooth top deck that sheds water and debris to prevent corrosion. The patented Intra-Drive gearbox system for solid dependability and high blade tip speed delivers a near finish quality cut even in 3-in.-diameter brush. The unit incorporates independent springs on each of four wheels and includes a spring protected lift system to absorb shock loads in rough field conditions. This 6,000-lb. unit is pulled

using a swivel clevis, self-leveling hitch designed to accommodate a full range of tractor drawbar heights. **Woods Equipment Co.**, Rockford, IL, USA; 800-319-6637.



L-Series Balers Feature Improved Durability, Flexibility and Operator Convenience

The Vermeer **L-Series Balers** are designed to process a variety of hay materials into round bales that are convenient to handle and store. All models feature a constant velocity PTO, open throat design, floating five-bar pick-ups, adjustable bale density and size, double-arm twine tie, hay saver wheels and transport/safety lights. All models have indicators for bale size, twine wrap position and tailgate latch. The 504L has the flexibility to bale wet or dry material without making adjustments. Options include netwrap, silage kits (standard on the 504L), flotation tires and bale kickers for the 600 Series. The four L-Series models cover bale sizes ranging from 5-ft. to 6-ft. in diameter, 4-ft. to 5-ft. width, and 1,200 to 2,400 lbs.; depending on crop moisture content. **Vermeer Manufacturing Co.**, Pella, IA, USA; 515-621-7797.





Model HW340 is a Comfortable, Universal Workhorse with High Field Capacity



The New Holland Model HW340 Self-Propelled Discbine® Disc Mower-Conditioner is a new high-speed, high-volume capacity harvesting tool for custom operators and large, multi-crop growers. The HW340 has a new cab, structure and engine (166 hp, 7.5 L, 6-cylinder Turbocharged Genesis™). The Mower-Conditioner also has a new disc cutterhead, New Holland disc cutter bar and 20-in. undershot floating auger. The HW340 produces a clean, 15-ft., 4-in. cut with the 12-disc modular cutter bar. The auger is designed to converge cut material from a wide cutter bar to narrower conditioner rolls efficiently, smoothly and with good control. The standard quick-attach lift system allows an operator to detach the disc cutterhead to quickly remove conditioning rolls or attach a sicklebar header. **New Holland North America**, New Holland, PA, USA; 717-355-3663.

Deere's New Cotton Stripper Handles Heavy Crops with Ease



John Deere's 7455 Cotton Stripper provides several enhancements to increase machine productivity and efficiency. An open center hydraulic drive system for the header provides ample power to the stripping units to handle the heaviest crops. This design also allows the operator to reverse the header from the cab, with the flip of a switch, to clear an obstruction or jam. Improvements to the air system provide more even cotton distribution into the cleaner. Increased saw speeds provide increased cleaner capacity. Chassis features include a heavy-duty 4-in. x 6-in. tubular mainframe and a 157-hp POWERTECH™ engine. **John Deere Des Moines Works**, Ankeny, IA, USA; 515-289-3330.



Walterscheid Sets Standard with "Power Drive" Drive Shafts

Walterscheid's "Power Drive" drive shaft was developed in response to today's competitive agribusiness environment where higher performance, increased durability and reduced maintenance are of growing importance. New universal joint seals, telescoping member seals and guard bearings minimize time and expense for drive shaft maintenance by extending service intervals up to once per season, or every 250 hours. Guard cones can be axially displaced with simple tools for quick PTO drive shaft assembly and maintenance. The guard rotation restraint chain can be eliminated in the full guard version. **GKN Walterscheid Inc.**, Burr Ridge, IL, USA; 515-628-3141.



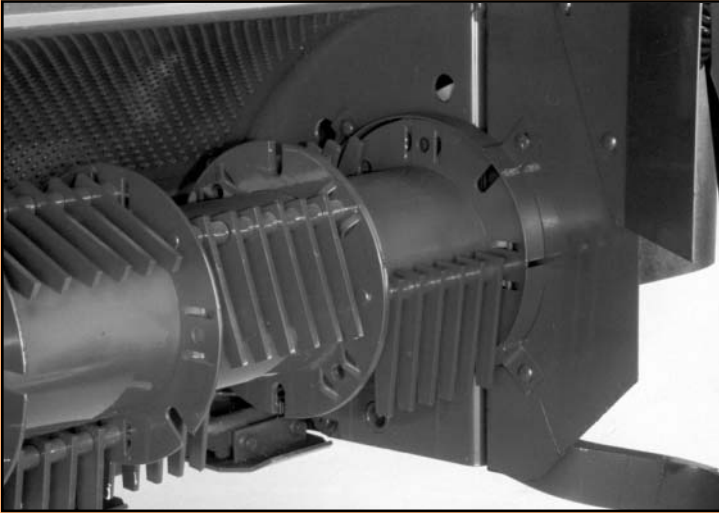
Barton Opener Places Seed and Fertilizer Separately with Little Soil Disturbance

Flexi-Coil's patented **double-shoot Barton opener** offers the benefit of seed and fertilizer separation in a low-disturbance, no-till seeding tool. Separating seed and fertilizer is critical for maximum recommended rates of fertilizer to be placed without harming the seed. The double-shoot Barton uses an 18-in. primary disc mounted at a compound angle to place fertilizer in a narrow furrow. A secondary 12-in. disc uses the same soil incision as the primary disc but cuts at an opposite angle, penetrating the side wall of the furrow to place seed above and to the side of the fertilizer. A V-shaped press wheel follows the second disc to close and pack the slot for excellent seed to soil contact. This design penetrates residue and soil better than vertical discs with less down pressure. **Flexi-Coil**, Saskatoon, Saskatchewan, Canada; 306-934-3500.



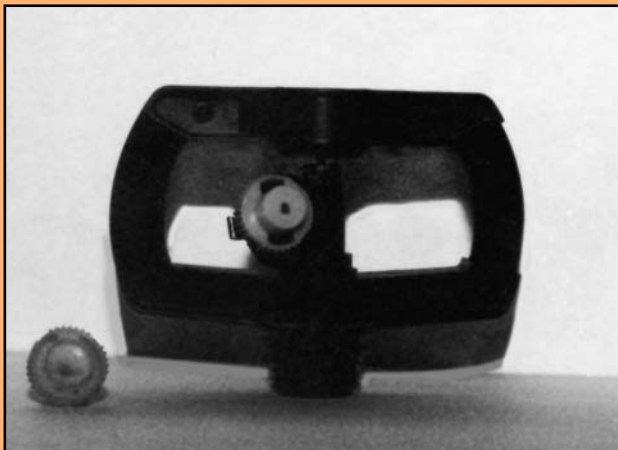


New Holland Mower Keeps on Cutting – Even During Extra-Sharp Turns



The New Holland Model 1412 Discbine® Disc Mower with flail conditioner combines Discbine disc-cutting technology with fast-drying flail conditioning in a highly maneuverable machine. Unique tapered flails pick up the cut crop as it leaves the cutter bar. The crop pieces rub together and against the conditioning hood, removing the waxy layer from stems for faster drydown. The eight-disc cutter bar is modular, limiting the potential of failures to a single module which can be easily removed for repair. Stubble height can be adjusted on-the-go from 32 mm (1.25 in.) to 76.2 mm (3 in.). Flail-to-rotor hood clearance, swathgate and windrow shield positions are independently adjustable for variable crop and field conditions. This machine has a 3.16-m (10.4-ft.) cutting width and 2.6-m (102-in.) flail rotor length. **New Holland North America**, New Holland, PA, USA; 717-355-3663.

Rain Bird® SideWinder™ 2000 Series Sprinkler Offers Enhanced Performance

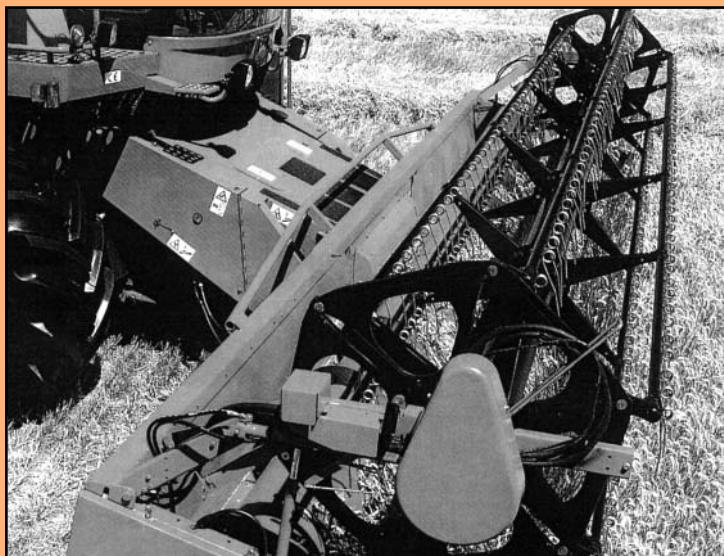


The SideWinder 2000 series plastic sprinkler now offers improved throw distance and distribution uniformity. The new design features the “step” nozzle and an elbow with internal vanes. These vanes create laminar flow, resulting in up to 12% greater throw distance than the old product. The step nozzle also incorporates a recessed area on the face of the nozzle for improved distribution. The step nozzle includes the patented Quick-Fit™ connection, which allows the nozzle to be changed by hand, without using special tools. The vaned elbow can also be installed on existing SideWinder sprinklers, allowing growers to retrofit their systems without removing the sprinklers from the risers. **Rain Bird Agri-Products Co.**, Glendora, CA, USA; 800-HELLO-AG (800-435-5624).



CTSE Offers Capacity, Durability and Functionality to the European Market

A European market demand exists for the proven reliability and durability of the John Deere 900 Series Cutting Platform if modifications could be made to meet specific European harvest conditions. A joint development team from Deere's design, test and marketing departments identified key product changes to meet that demand. The following unique product features became the John Deere **CTSE Cutting Platform**: optional steel or plastic pick-up reel fingers; high torque, hydraulic reel-drive motor; European-style telescoping back shafts; European stone dams; extended lift reel arms; European-style knife sections and fabricated knife guards; optional long or short European-style crop dividers; and simplified reel finger adjustment. **John Deere Harvester Works**, East Moline, IL, USA; 309-765-2177.



TNF Narrow Tractors Save Fuel and Reduce Tire Wear and Turf Damage

New Holland **TNF Narrow Tractors** are a new line of compact, powerful vineyard/orchard tractors with unsurpassed horsepower and maneuverability using the best in large-tractor technology. By combining the tight turning ratio of the exclusive New Holland SuperSteer™ 4WD axle with a new automatic traction management system that engages and disengages the 4WD as needed, TNF tractors allow the operator to easily turn into the next orchard row. This combination, plus clutchless, electro-hydraulic shuttle transmission, provides high productivity, greater fuel savings and reduced tire wear and turf damage. Operators also benefit from the comfort of a fully suspended cab and time-saving serviceability. The three models in the series produce up to 32% torque rise and run at 2,300 rpm with four-cylinder, 238-cu.-in. engines. **New Holland North America**, New Holland, PA, USA; 717-355-3663.





Farmers Benefit from Safety and Convenience of FlexControl



FlexControl is a new electronics system that gives farmers more control of a range of implements with a single console. The system monitors and controls Flexi-Coil's seeding, planting, fertilizing, spraying and seed treatment equipment – individually or in combination. With each implement, FlexControl allows the operator to change application rates on-the-go and offers multiple alarm and monitoring features. FlexControl also operates with several Precision Farming GPS systems to fully automate the rate control function. The system uses the ISO standard controller area network (CAN) bus for plug-in connectivity and future expandability. The alpha-numeric, four-line display produces a user-friendly readout with prompts and plain, easy to understand language. **Flexi-Coil**, Saskatoon, Saskatchewan, Canada; 306-934-3500.

John Deere Ripper Provides Versatility to Suit Changing Needs



The new John Deere **955 Row Crop Ripper** provides strength, versatility and functionality for breaking up compacted soil. The Ripper also combines multiple tillage operations in a single pass for cotton, corn, soybeans and other crops. Besides its deep ripping capability, the 955 offers a rear toolbar that can be attached to the mainframe for ripping while bedding, chiseling or cultivating. The 955 Row Crop Ripper is versatile and can be configured in various ways and row spacings to adapt to a farmer's changing needs. This flexibility and combining of two tillage operations in one pass saves time, eliminates a trip across the field and results in improved efficiency and productivity. **John Deere Des Moines Works/Tillage Div.**, Ankeny, IA, USA; 515-289-3552.



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