



TerraGator® 3104 NMS

AGCO Application Equipment Division
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FULLY INTEGRATED

NMS Injecting Into Wheat Stubble

MODELS 3104 · 9105
TerraGator® Nutrient Management System (NMS)



Adapting to Meet Changing Needs.

TerraGator NMS



NMS Side Loading



NMS Reloading Arm



NMS Load Arm Connection



NMS Field Injection

CAFO'S and municipalities generate manure and bio-solids respectively that contain materials such as nitrogen, phosphorus, metals and pathogens. If not properly managed, these materials can enter the environment and waterways as a pollutant. EPA has already established the 503 rules for municipalities. Now, EPA under the new CAFO regulations is requiring that CAFO's become NPDES permitted. These permits also require a Comprehensive Nutrient Management Plan (CNMP) and Nutrient Management Plan (NMP) and calls for manure to be land applied under Best Management Practices (BMP). NMP and BMP technical standards will include manure sampling or N & P, soil sampling, P-index, crop removal, crop residue conservation practices and record keeping.

Ag-Chem Application Equipment Division has provided the Ag industry with leading edge equipment and technology to land apply beneficial use products (fertilizers, pesticides, bio-solids and now manure) for agriculture. Present day technology and equipment can provide the following for manure and bio-solids:

- Precise control of low to high application rates including variable rate application
- We can avoid application in setback areas automatically
- We utilize attachments that manage soil residue, while simultaneously injecting manure to save nutrients and reduce odor
- The process is done automatically avoiding operator error
- Accurate measurement and recording of actual application
- These processes can cash flow

A Fully Integrated Package. The TerraGator Nutrient Management System involves a package of AgChem products wrapped together into a fully integrated system. The foundation is the TerraGator 3104 or 9105 floater chassis outfitted with GPS capabilities. Additional components include a Falcon II controller with SGIS software and European manure application technology. Together, they provide new agronomic and environmental solutions via a four-step process.

1. Gather the data. This can include soil types, grid soil tests, manure and bio-solid nutrients, harvest yield maps, yield goals, field history, etc.

2. Create an application map. The map is created using the SGIS desktop software and entered into the Falcon II controller. SGIS is a commercial customized Geographic Information System (GIS) for mapping and data management, which is used to manage the point, line, and polygon data.

3. Inject bio-solids and manure. The Falcon II controller, as part of the specialized, geo-referenced Nutrient Management System, controls site specific, prescription application of these organic materials as directed by the map and nutrient needs of the crop.

4. Manage the records. As-applied data and histories are generated as the machine goes through the field, providing proof of application, weather and other field information for further analysis and supplemental commercial fertilizer applications and reporting requirements.

As you can imagine, such capabilities provide a wealth of opportunities for retailers, custom applicators, municipalities, farmers and livestock producers.

NMS TerraGator

..... TerraGator NMS Chassis Specifications Continued

Tool bar Hydraulic Distribution	Vogelsang Hydraulic distributor evenly separates product flow to each 2" hose, also works as a chopper and cuts small foreign material to prevent hose plugging.
Kongsilde Arable Land Injectors	Danish tine incorporation systems with product flow injected directly behind each tine, a covering bar behind the tines levels the soil and completely covers all product being applied. 2" or 4" reversible sweeps are available, gauge wheels on both tool bars. Model 4025 - 4 rows of tines, 15'5" working width, 9" spacing of tines, folding wings. Weight: 3,649 lbs.
Veenhuis Euroject 350 Grassland & No-Till Injection	36 discs (24 cm or 9.44 in.) with sealed bearings, disc distance 19 cm (7.47 in.), parallelogram floating system, continuous variable hydraulically adjustable working depth, double acting hydraulic base shut-off valves system, hydraulic foldable, transport lock, 3-point coupling, working width 7.84 m (22.44 ft), hydraulic transport locking device, transport width 2.80m (9.2 ft) and Vogelsang distributor. Weight: 5,512 lbs.
Controller	Toggle switch allows operator the choice of two control operations, Falcon controlled for variable rate and straight rate capability, PLC controller can operate system in a straight rate function. The PLC monitors all valve positions, pump rpms, hitch positions and also if pump, separator/ filter or distributor are plugged. Manual over ride switch allows a manual setting of the pump if pump rpm sensor or speed sensor fail.
Reload Arm	Cab operated switches allow three way movement of the loading arm to allow for tank reload without leaving the cab. The Reload Arm is located at the front left corner of the tank. The reload arm utilizes 8" plumbing.
Reload Controls	PLC system automatically starts pump for reload when in-cab switch is set at load and the reload valve located at either the loading arm or side port is opened.
Hitch	Hydraulically operated hitch with (2) 3 1/2" cylinders, locking pins for transport, operation options of float and rigid, down pressure adjustable from the cab. Up and down controls from the cab and on the rear of the system.

..... TerraGator Dry and Cake Spreader Features

Capacity	Up to 20.5 cu. yd.
Rates	1.0-30.0 tons per acre
Spreading Discs	Two with 6 blades per disc. Spread width 30 to 65 feet

: : : : : TerraGator NMS Specifications : : : : :		
MODEL	3104	9105
Power	300-hp, 8.1 liter John Deere diesel engine 6-cylinder, turbocharged Peak torque of 968 ft. lb. at 1,400 rpm Cruise control Tier II certified 150-gallon fuel capacity with equalization tube between two 75-gallon tanks	400-hp, 629 cu. in. CAT C-10 diesel engine 6-cylinder, turbocharged, charge air after-cooled Peak torque of 1,282 ft. lb. at 1,500 rpm Cruise control Tier II certified EPA off-road 130-gallon fuel capacity with equalization tube between two 65-gallon tanks
Drive	Terra Shift transmission with Select Shift 11 speed forward/3 reverse Push button 2- or 4-wheel drive Shift on the go under full power Automatic shifting between preselected speed ranges	130-hp rear engine for power take-off Fuller Road Ranger RTLO transmission with torque capacity of at least 1,650 ft. lb 18 speed forward, 4 reverse, close ratio, manual range and air shift Rockwell-International planetary, tandem axle with 4-wheel drive
Chassis	Articulated design with independent front and rear frames Steering angle of 35° for turning radius of 23 ft Oscillating angle of 12°	Hendrickson tandem walking beam rear suspension to allow independent axle oscillation over rough ground
Wheels/Axles	4 - 73 x 44-in. Goodyear, Firestone or Michelin radial tires John Deere axles - Out board air actuated drum brakes On-board tire pressure regulation	Large, high flotation tires 66 x 43.00-25 Air actuated brakes On-board tire pressure regulation
Electrical System	Six halogen work lights Two sealed beam halogen road lights Radar equipped	Eight halogen work lights Road lights with high/low beams Triple auxiliary utility outlets Fuse panel for ease of maintenance
Cab	3-point rubber mount Air-ride captain's chair 3-level environmental filtration Multi-duct heat and air conditioning High pressure fluid-free cab	3-point rubber mount/air suspension Air ride captain's chair 3-level environmental filtration Multi-duct heating/air conditioning High pressure fluid free interior
: : : : : TerraGator Chassis Specifications : : : : :		
Tank Capacity	3940-4490 gal steel tank, front mounted liquid level indicator, 6" rear discharge, baffled design, 6" reload pipe, 20" diameter man way with internal ladder, top load opening with internal baffles.	
Pump	Borger 1036 rotary lobe positive displacement pump, 136 - 1584 gpm, hydraulically driven	
Separator/Filter	Vredo separator/filter separates all heavy material such as rocks and chops all other material to +/- 1-inch. All product is run through separator/filter before reaching the pump for pump protection.	

FULLY INTEGRATED



NMS Load Arm for Rapid Reload and Quick Turn Around

Custom/Retail Opportunities

New EPA regulations are forcing livestock producers to review their manure application systems and rising commercial fertilizer prices are forcing crop producers to seek alternative nutrient sources. TerraGator NMS equipment creates an opportunity for full service ag retailers and custom applicators to meet both of these needs. Precision application of manure allows retail businesses to expand the range of agronomic services offered to their customers. Plus, it allows them to extend their

business season. Using the appropriate attachments, which include Grassland and Arable Land Injectors, applicators can inject manure into alfalfa ground between hay crops, or into small grain and row-crop stubble immediately after harvest. But that's only the beginning of the opportunities available to retailers and custom applicators equipped with the TerraGator NMS capabilities.

- The data generated during an application is fully integrated into SGIS, allowing custom applicators to fill in the nutrient gaps with site-specific applications of commercial fertilizers.
- By selling a service rather than just a product, retailers aren't as dependent on the ever-decreasing profit margins on commercial fertilizer sales, and are less affected by the continuous fluctuation of fertilizer prices.
- Crop yield potential, infiltration rates and the fate of unused nutrients are all dependent upon soil type. The NMS program permits crop service providers to expand soil testing services to prescription applications based on soil samples.
- Other NMS-based service opportunities include record keeping, map production and comprehensive nutrient management planning.



Dry and Cake NMS Spreader

Contractor/Municipality Potential

Farmers aren't the only ones facing environmental pressures these days. In most parts of the country, municipalities with sewage disposal needs are under more severe environmental regulations than livestock producers. What's more, city governments seldom have any adjacent land for disposal. That means hauling it to the country.

Whether the job is handled by city staff or by private contractors to meet EPA 503 Regulations, there's not a better solution than the TerraGator Nutrient Management System. Bio-solids can be precisely applied to nearby public or private lands, while protecting setback areas and high-nutrient zones. All can be programmed into the application map, so there is no material applied on or near these sensitive areas.

The TerraGator NMS provides contractors with additional opportunities, as well. Whether services are contracted to city municipalities or agricultural clients, the benefits include:

- Productivity, thanks to application and injection rates of up to 30,000 gallons per hour.
- Even distribution via injectors spaced every 9 inches across the tool bar at 4-6 inch working depth.
- Low maintenance. A separator and filter prevent damage of the hydraulically controlled, positive-displacement rotary lobe pump.
- Ability to apply low rates, standard rates or variable rates with the flip of a switch.
- Multiple tool bar choices to match opportunities and application needs.
- Rapid turnaround. The operator can reload at a rate of 1,600 gallons per minute and transport from fill site to field in less than 10 minutes. Even in the field, the Falcon II controller keeps product application within a 5% variance from map recommendations, regardless of vehicle speed.

Farmer/Landowner Solutions

It's been said that when the public sees a livestock operation or poultry farm, they see much more than buildings and facilities. They see an attitude, which is exhibited as either pride in the business or indifference. They also see an environmental protector or an environmental polluter. The TerraGator Nutrient Management System is not only environmentally friendly, but helps foster a good neighbor policy as odors are buried along with valuable nutrients. Thanks to the NMS injection process, nutrients are retained in the soil and utilized, rather than leaching out, running off or volatilizing into the atmosphere. Equally importantly, the TerraGator system allows producers to reduce input costs by utilizing lower-cost nutrients versus commercial fertilizers. In one university study, the use of agronomically applied manure plus micro nutrients, instead of commercial fertilizer only, was shown to save \$53.85 per acre, based on a corn yield of 180 bu./acre.

Other agronomic benefits of the TerraGator NMS are:

- Better distribution and use of nutrients. Up to 98% of nutrients are retained through injection.
- We utilize attachments that manage soil residue, while simultaneously injecting manure and bio-solids to save nutrients and reduce odors.
- Reduced compaction versus pull-behind units and other waste applicators.
- Injected products provide slow release nitrogen into next year's crop from carryover organic residuals.
- Choice of TerraGator 9105 or 3104 allows producers to meet both capacity and budget requirements.
- Injection provides better distribution of humus, which results in slow release nitrogen, better soil texture and increased water-holding capacity.
- Optional attachments on the tool bar provide finishing tillage, allowing producers to plant right behind the unit. Benefits include potential reductions in field work time, maintenance, fuel cost and wear and tear on other equipment.
- Provides the potential for custom application income from neighbors and area livestock operations.



TerraGator® 9105 NMS Injecting Into Alfalfa



TerraGator® 3104 NMS Injecting Into Corn Stubble