NEW HOLLAND PLM
Precision Land Management

Experts in our Field – Precision in Yours

NEW HOLLAND PLM – AN INTRODUCTION TO GPS

WHAT IS GPS?

The GPS (Global Positioning System) operated by the U.S department of Defence and GLONASS operated by the Russian Federation are a space-based navigation system formed from a network of satellites which determine the position of a vehicle using signals from the 32 satellites that circle the earth. These satellites travel in known orbits that allow a land based receiver to determine its own position in relation to each satellite from which it receives a signal.

The GPS antenna fitted to the machine receives continuous signals from the GPS satellites. Ground based GPS receivers, at known locations across the country, receive the same signals. As their absolute location is known, they can calculate the real time position and send a position correction signal. Geostationary satellites then return the correction signal to the GPS receiver on the vehicle, and the correction can be applied to the received position.

The signals generated by GPS alone are not accurate enough for use in agriculture. Therefore, corrections must be made to GPS signals to improve their accuracy. With these correction signals we refer to the system as DGPS (Differential Global Positioning System).

There are two main DGPS correction services available today:

SBAS

The GPS (Global Positioning System) operated by the U.S department of Defence and GLONASS operated by the SBAS-Satellite Based Augmentation System,communicate difference via geostationary satellite.

RTK

Real Time Kinematics, communicate difference directly to the vehicle via short wave radio from a local base station.

HOW ACCURATE IS GPS?

An uncorrected GPS or GLONASS signal gives you position accuracy between 5 to 10 meters. This is more than adequate for car navigation systems, but not accurate enough for vehicle guidance in agricultural applications, where we need Pass-to-Pass and Year-to-Year accuracy and repeatability.

Pass-to-Pass accuracy measures the relative accuracy over a 15 minute interval. This is usually thought of as skip/overlap from one pass to the next when driving swaths. A New Holland receiver with pass-to-pass accuracy of +/-2.5 cm means you get less than +/-2.5 cm skip or overlap, 95% of the time.

Year-to-Year accuracy is the measure of repeatable accuracy which means that you can drive the same rows a day, week, month, or year later. So, +/- 2.5 cm year-to-year accuracy means you can drive the same rows next year within +/- 2.5 cm of this year's rows, 95% of the time.

MAXIMISE YIELDS, CONTROL INPUT COSTS + OPTIMISE PROFITS

WHY GPS GUIDANCE? BENEFITS OF VEHICLE GUIDANCE

GIVE YOUR BUSINESS A COMPLETE AND FLEXIBLE GPS SOLUTION

From the enhanced productivity of lightbar guidance, to the pinpoint accuracy of fully integrated guidance, and the valuable analysis of yield data, our Precision Land Management offering will help maximise yields, control input costs and optimise profits.

REDUCE OPERATIONAL COSTS

The primary purpose of New Holland's Precision Land Management is to save fuel and input costs by ensuring parallel passes when working either in straight lines, curves, pivots or on undulating ground minimising skips and overlaps.

IMPROVE PRODUCTIVITY, EVEN IN DUSTY CONDITIONS

When planting, spraying, cultivating or harvesting in difficult weather conditions or at night, the operator can focus on his task without any risk of overlap or joining rows while driving faster.

INCREASE OPERATOR'S COMFORT

Operators using guidance solutions often report "being less fatigued and stressed" as one of the fundamental advantages of precision farming, leading to increased work rates and efficiency.

CONTROLLED TRAFFIC FARMING PRACTICES

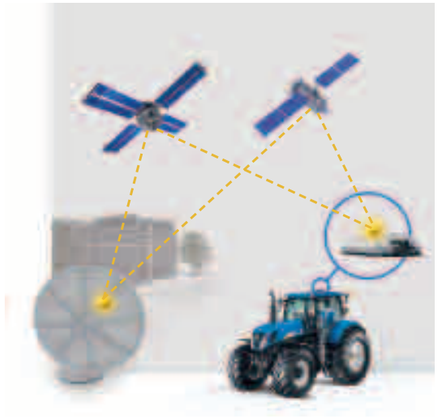
With RTK enabled New Holland guidance systems the practice of Controlled Traffic Farming can be adopted, leading to a significant reduction in field compaction improving overall yields.

CHOOSE A SIMPLE AND VERSATILE SOLUTION

For your new purchases of New Holland Machines, we offer factory installed fully integrated guidance solutions.
For all makes and models of equipment of your existing fleet, we provide a full range of leading aftermarket solutions for GPS-based guidance, from entry-level to high end.
Regardless of your farm operation, the brands of your machines and your budget, this precision farming brochure will help you determine which system is right for you.

NEW HOLLAND PLM – THE COMPLETE, FLEXIBLE GPS SYSTEM

FOUR LEVELS OF ACCURACY



1. AUTONOMOUS WITH ONPATH FILTER

For Autonomous systems only, utilising mathematical filters to increase the system accuracy. The OnPath filter provides +/-30-45cm pass to pass accuracy without the use of a correction signal.

2. OMNISTAR VBS (SINGLE FREQUENCY CORRECTION)

The vehicle with a DGPS antenna receives signals from the GPS satellite constellation.

The OmniSTAR® services, which have a number of ground based GPS receivers spread across the area for which they deliver a correction, receive the same GPS messages as the vehicle. They are able to calculate the real time position error and send this as a message to control stations, which then upload the message to a geostationary satellite. The geostationary satellite receives the correction message, and re-transmits it as a single frequency signal back to the receiver on the vehicle.

3. DIFFERENTIAL GPS WITH OMNISTAR® (DUAL FREQUENCY CORRECTION)

Process as per OmniSTAR VBS.

On this higher accuracy system, the geostationary satellite, transmits the correction message as a dual frequency signal back to the receiver on the vehicle.

4. RTK (REAL TIME KINEMATIC)

This is a highly precise technology that results in +/-2.5 cm year-to-year accuracy.

This accuracy can be achieved with two communication technologies, depending upon your needs in terms of working area coverage:

RTK (RADIO TRANSMISSION)

RTK uses a local ground based station which receives the same position data as the mobile unit. By comparing the received position to its known actual position, the real time error can be calculated. This error is then transmitted via short wave radio to the mobile unit.
Radio repeaters can be positioned to fill in any areas of signal loss from the base station. Signal loss could be caused by rugged terrain or thick vegetation.

Accuracy level	Pass to Pass	Year to Year
OnPath	+/-30cm	+/-90cm
OmniSTAR® VBS*	+/-20cm	+/-60cm
OmniSTAR® XP*	+/-7cm	+/-12cm
OmniSTAR® HP*	+/-5cm	+/-10cm
RTK	+/-2.5cm	+/-2.5cm

*Information from OmniSTAR®

HOW TO CHOOSE YOUR GUIDANCE SOLUTION

Application	OnPath +/-30 cm pass-to-pass	OmniSTAR® XP +/-7 cm pass-to-pass	OmniSTAR® HP +/-5 cm pass-to-pass	RTK +/-2.5 cm pass-to-pass and year-to-year repeatable
Spraying	✓	✓	✓	✓
Spreading	✓	✓	✓	✓
Tillage	✓	✓	✓	✓
Mapping	✓	✓	✓	✓
Mowing		✓	✓	✓
Harvesting		✓	✓	✓
Seeding		✓	✓	✓
Bed Forming				✓
Planting				✓
Strip Till				✓
Display				
EZ-Guide® 250		✓		
FM-750	✓	✓	✓	✓
FM-1000™	✓	✓	✓	✓
Intelliview™ III	✓	✓	✓	✓
Guidance Type				
Manual – Lightbar	✓			
Assisted – EZ-Steer®	✓	✓	✓	
Integrated – Autopilot™		✓	✓	✓
Integrated – IntelliSteer™		✓	✓	✓

PRECISION LAND MANAGEMENT

MANUAL GUIDANCE

MANUAL GUIDANCE WITH LIGHTBAR

The entry level guidance solution allows you to explore GPS guidance through a simple and affordable lightbar display. A lightbar based guidance system provides you with quick on-line visual feed back to keep you on your intended path. The lightbar assists you with the direction and how much manual steering is required. A manual guidance system provides a less expensive option, ideal for most applications and minimises the investment required.

EZ-GUIDE 250

The EZ-Guide® 250 is a simple and affordable, user friendly tool offering you an accuracy of +/-20 cm pass-to-pass. The built in OnPath® filter technology provides improved pass-to-pass accuracy. The EZ-GUIDE 250 is compatible with all makes and models.

11 CM COLOUR SCREEN

Choose between plan and 3D perspective views, to see at a glance where you are and what you've been doing.

FREEFORM™ GUIDANCE PATTERN

Offers the ultimate in guidance flexibility, allowing you to work in different patterns and shapes that best fit your field's layout and contours.

15 BRIGHT GUIDANCE LEDS

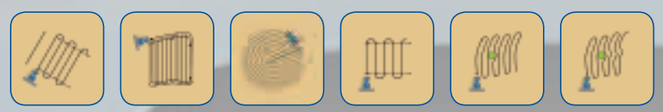
Give you quick on-line visual feedback to keep you on track

NIGHT OR DAY USE

Switch to Night Mode for better visibility. Mark and locate in-field hazards with feature mapping.
Find easily the next path with SwathFinder assistance.

FIELDFINDER TECHNOLOGY

Automatically locate stored fields as you drive near them.



USB FLASH DRIVE

Simply transfer your day's coverage maps to your computer using a USB flash drive and easily print out coverage reports import/ export fields and coverage maps via USB.

PRECISION LAND MANAGEMENT

ASSISTED GUIDANCE

ASSISTED GUIDANCE – EZ-STEER™

Enhance your guidance package by upgrading to the EZ-Steer® assisted steering system, which delivers an excellent hands free solution.

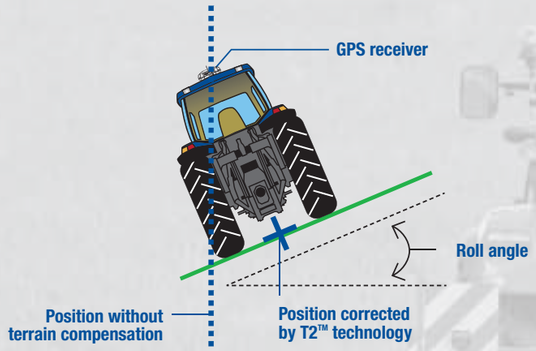
EZ-Steer® is the world's simplest portable hands-free farming system for all vehicle models, old and new.
The EZ-Steer® system turns the steering wheel for you by combining a friction wheel and a motor thanks to a DGPS guidance signal from the EZ-Guide® 250, FM-750™ or FM-1000™ displays.
While the EZ-Steer® keeps you on line on undulating land, ditches, waterways and terraces, you can focus on many different tasks, such as sprayer or planter performance, improving job quality and crop yields while reducing stress.

EZ-STEER® MOTOR

The EZ-Steer® motor receives electrical signals from the EZ-Steer® controller and converts them to precise commands that the vehicle's steering system uses to keep the vehicle on track.
You can resume the control of your machine at anytime by turning the steering wheel.

EZ-STEER® CONTROLLER

Using data from the GPS receiver, the EZ-Steer® controller sends precise instructions to the steering wheel motor. T2™ technology continually corrects for roll and yaw by using 4-axis solid state inertial sensors to give you a true on-ground position.



T2™ TERRAIN COMPENSATION TECHNOLOGY

Terrain compensation technology calculates the difference between the DGPS antenna's location and the desired "working position" of the vehicle's centre point on the ground. No matter what angle the vehicle may be tilting, it improves accuracy when driving on flat ground with rough terrain and accuracy on slopes, hills and when driving over terraces, ditches and waterways.

COMPATIBLE DISPLAYS

EZ-GUIDE 250
FM-750
FM-1000

ASSISTED GUIDANCE – DISPLAYS

FM-750

The cornerstone of guidance, capable of 2.5 cm accuracy. The FM-750 has a built-in receiver that allows you to choose the accuracy your application requires from +/-20 cm to +/-2.5 cm pass-to-pass, year-to-year. When you need a DGPS guidance system that saves you time, fuel and inputs, look no further than the FM-750.

20.3 CM TOUCH SCREEN
With an all new intuitive user experience.

VIRTUAL LIGHTBAR
A virtual lightbar gives you quick on-line feedback.

ATTACHABLE RTK RADIO

DUAL EXTERNAL VIDEO INPUT

BUILT-IN 220 CHANNEL GNSS RECEIVER
that is GPS and GLONASS capable

CAPABLE OF WIRELESS DATA TRANSFER
between the field and office using Connected Farm solutions

FM-1000

The FM-1000™ brings you the best performance and reliability with the industry leading dual integrated GPS + GLONASS receivers. Capable of handling everything you need in guidance, steering, mapping at your fingertips the FM-1000™ gives you a choice of accuracy between +/-20 cm and +/-2.5 cm pass-to-pass and year-to-year.

LARGE 30.73 CM TOUCH SCREEN
Best visibility from a bright and large screen. Toggle between plan and 3D views or zoom in/out with just a tap of your finger.

FREEFORM™ GUIDANCE PATTERN
Offers the ultimate in guidance flexibility, allowing you to work in different patterns and shapes that best fit the layout and contours of your field.

FIELDFINDER TECHNOLOGY
Automatically locate stored fields as you drive near them.

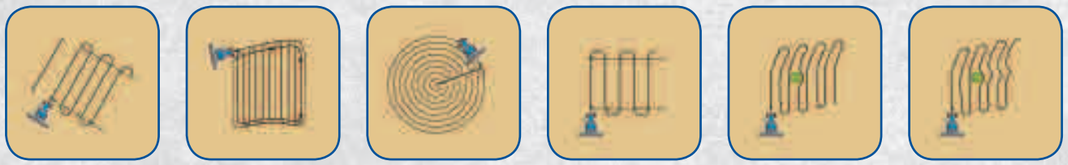
SUPPORTS FIELD-IQ CROP INPUT CONTROL SYSTEMS FOR SPRAYING, SPREADING, STRIP TILL AND PLANTING

GUIDANCE OPTIONS (FM-750 & FM-1000)
- Manual – Lightbar
- Assited – EZ-Steer®
- Integrated autoguidance – AutoPilot™ – On autoguidance ready machines or as a retrofit package

IMPLEMENT CONTROL (FM-750 & FM-1000)
- Planter and sprayer monitoring and control
- TrueGuide: correct the position of your tractor to keep the implement on path (FM-1000 only)
- TrueTracker: correct the position of your implement to keep it on path (FM-1000 only)

INTERNAL RADIO (OPTIONAL)
Integrated 900MHz radio for RTK accuracy.

GNSS DUAL RECEIVERS (OPTIONAL)
Two GPS receivers provide you with ultimate precision for both your tractor and the implement you are pulling when you need it most.



PRECISION LAND MANAGEMENT

INTEGRATED GUIDANCE AUTOPILOT™ RETROFIT INSTALLATION

AUTOPILOT – PRECISION YOU DEMAND

The Autopilot™ automated steering system used with an RTK signal will give a +/-2.5 cm repeatability from plant to harvest with any field pattern. The AutoPilot™ system can be integrated into most brands of tractor and harvesting machinery. Using the machine's electro hydraulic circuit to provide automatic guidance, this retrofit solution will significantly increase your efficiency during field preparation, planting and harvesting by driving more accurately and consistently during extended periods behind the wheel.

DISPLAY

FM-750 or FM-1000 delivering down to +/-2.5 cm GPS accuracy with RTK technology.

NAVIGATION CONTROLLER II

The industry leading T3™ terrain compensated corrections (roll + pitch + yaw) and precise steering instructions to the vehicle by using guidance and DGPS information from the FM-1000™ or the FM-750™

AUTOSENSE™ STEERING SENSOR

This unique steering sensor measures highly accurate wheel angle information on all terrain and sends it to the Navigation Controller II providing faster correction and increased steering accuracy.

ANTENNA

Mounts on to the tractor, combine or implement to provide up to +/-2.5 cm pass-to-pass and year-to-year accuracy

VEHICLE INTERFACE

Receives navigation commands from the Navigation Controller II which controls the vehicle's steering when engaged.

RTK BASE STATION

An RTK base station includes a DGPS antenna, receiver and radio link to provide RTK correction signals to the auto-guidance system.

IMPLEMENT GUIDANCE AND RTK INCREASE YOUR ACCURACY AND YIELDS

Thanks to a DGPS antenna mounted on the implement, the TrueGuide™ & TrueTracker™ systems keep your implement on a repeatable path on sloped fields with steep gradients. Retrofit installation kits are compatible with all manufactures' implements.

TRUE GUIDE – IMPLEMENT CONTROL

The TrueGuide™ implement guidance system uses the existing Autopilot™ system to improve implement accuracy. There is no need to hang additional steering equipment on the implement just to get better control. Let the tractor guide the implement. Minimise the downdraft effect on severe hillsides. Let your Autopilot system pull the implement up the hill and hold the line. FM-1000 compatible.

TRUE TRACKER – TAKE FULL CONTROL

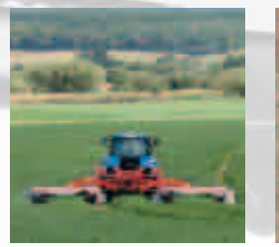
The TrueTracker™ system is an independent navigation system that works with the Autopilot system to provide you the highest level of accuracy. The TrueTracker system independently steers the implement using one of many hydraulic solutions on a repeatable path even on extreme slopes and variable soils. Maintain accuracy on rolling terrain using T3™ terrain compensation technology mounted on the implement. FM-1000 compatible.

EZ-REMOTE

The EZ-Remote joystick mounts to any tractor console, providing an even more convenient way to control a variety of guidance display functions from the cab.
Enhances a wide range of tasks, from basic guidance operations to more advanced operations like manual offset of the scraper in field levelling applications.

PRECISION LAND MANAGEMENT

INTELLISTEER – THE NEW HOLLAND INTEGRATED GUIDANCE PACKAGE



INTELLISTEER™ AUTOMATIC STEERING SYSTEM

IntelliSteer is a fully integrated New Holland designed and developed Automatic Steering System. Available from the factory or as retrofit package, the IntelliSteer™ system offers fully automated steering with repeatability and precision. With features including RTK accuracy, IntelliSteer helps you maximize productivity for optimal crop yields.

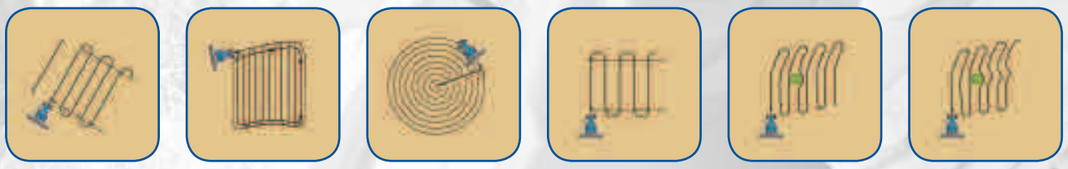
Using DGPS Technology and fully integrated control systems the IntelliSteer™ system helps ensure parallel pass to pass accuracy of up to +/-2.5cm*. The IntelliSteer™ system is ideal for seeding and planting in the most demanding situations and dramatically improves operator performance and comfort.

The New Holland IntelliSteer™ System uses built in steering angle sensors to keep the Navigation Controller II informed of wheel direction. Also integrated into the hydraulic system is a control valve which converts the signals from the Navigation Controller II into hydraulic movements of the steering system.

An additional benefit of using RTK correction with the IntelliSteer™ system is the guaranteed year-to-year repeatability, which is becoming more important with today's modern farming techniques. IntelliSteer with RTK is ideal for Controlled Traffic Farming (CTF) practices. All this and more at the touch of a button.
**Using RTK correction signal.*

INTELLIVIEW™ III MONITOR

The IntelliView™ III colour touch screen Monitor enables the programming and personalising of settings for auto guidance, and provides the visual interface when operating the IntelliSteer ™ System.
The IntelliSteer™ System, when linked to the intelliView™ III Monitor ,can perform a number of different steering patterns.

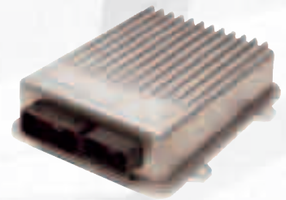


NEW HOLLAND INTEGRATED STEERING SENSOR

Measures highly accurate wheel angle information on all terrain and sends it to the Navigation Controller II.

NAVIGATION CONTROLLER II

The industry leading Navigation Controller II is the main control system which continually corrects for roll, pitch, and yaw by using state of the art 6-axis solid state inertial sensors to give you a true on-ground position.



NEW HOLLAND VEHICLE INTERFACE

Receives navigation commands from the Navigation Controller II which control the vehicle's steering when engaged.

NH 262 RECEIVER

The New Holland 262 antenna receives the DGPS signals to guide the vehicle. This antenna can easily be transferred from tractor to tractor or even to your combine. For RTK applications a slim profile radio mounts underneath the receiver.

RTK BASE STATION

An RTK base station includes a GPS antenna, receiver and radio link to provide RTK correction signals to tractor-mounted auto-guidance systems and can be either portable or permanently mounted.

INTELLIVIEW III – DISPLAY

INTELLIVIEW™ III TOUCHSCREEN

The Intelliview™ III display can be used throughout a farming operation and is fitted as standard equipment on your New Holland T7, T8 or T9 tractors as well as CX8000 and CR9000 combines.

The Intelliview™ III will communicate with and display machine function information in real time on just one screen.Maximum operator comfort is provided on a 17.8 cm touch screen display, see where you are and choose information you want to view, monitor and control.

All the information you need at a glance, from

- Fingertip adjustment of all key settings and compatible with the New Holland IntelliSteer™ guidance system.
- Monitor and record field performance operations such as area and distance, fuel usage, hectares per hour and engine efficiencies, slip and work rate.
- Full ISOBUS integration – Intelliview™ III will serve as a virtual terminal for any ISO11783 compliant implement
- Yield, moisture and grain temperature monitoring
- Automatic crop setting monitoring and control
- On-screen real-time mapping.
- Up to three cameras can be linked to the IntelliView™ III system, perfect for monitoring implements and avoiding blind spots.

POSITION SIDEWIDER II – EXACTLY WHERE YOU WANT IT

The SideWinder™ II* armrest adjusts via the touch of a button.
It can be quickly moved by the operator to suit individual preference. It can also be easily moved to match different applications.
**T7 / T8 / T9 tractor models*

PLUG AND PLAY ISO BUS COMPATIBILITY

The IntelliView™ III in-cab information monitor can do so much more than detail tractor functions.
Fully ISO BUS compatible, it can be used to operate a range of equipment to include balers and sprayers.
This saves the need for a separate control within the cab and reduces the time to switch between jobs.

PRECISION FARMING – INTEGRATED PACKAGE

MAXIMISE CUSTOMER PROFITABILITY

New Holland offers a Precision Farming package that is integrated into the combines' control system.

INTEGRATED NEW HOLLAND SYSTEMS HELP INCREASE YIELDS

Precision farming is integrated into the design of CX8000 & CR9000 combines to provide you with information to maximise crop and equipment performance. New Holland Precision Land Management equipment is factory installed.
Standard equipment includes

- Yield and moisture monitor for on-the-go yield and moisture readings with data logging.
- Yield and moisture monitor with a DGPS receiver to set you up with on-screen yield mapping with data logging.
- Optional equipment includes the NH262 DGPS with IntelliSteer™ auto guidance.

YIELD MEASUREMENTS WITH LESS CALIBRATION

New Holland's exclusive, patented yield mass sensor design allows accuracy with one crop, one load calibration. The grain mass flow sensor measures all the grain continuously for more accurate yield measurements. The sensor plate is mounted at the top of the grain elevator and incorporates a pivoting device and counterweight. This design keeps the system balanced when working on slopes, and reduces the friction effect of various grain moistures and densities to ensure a precise measurement. Unlike other yield measurements systems, there's no need to re-calibrate when you change crops.
*The New Holland system requires calibration only once per season in one crop.**

REAL TIME MOISTURE SENSING

New Holland's moisture sensor measures grain moisture in real time. Samples are taken every 30 seconds and the data is sent to the IntelliView™ III monitor. Sensor calibration is required for each crop type.

LIVE ON SCREEN MAPPING

The IntelliView™ III monitor allows the display of yield, moisture, fuel usage and coverage maps as you harvest.

PRECISION LAND MANAGEMENT

PRECISION FARMING MAP IT, ANALYSE IT AND PRINT IT

CX8000 & CR9000 combines equipped with the New Holland's DGPS system allows you to use the valuable field data you collect with the yield and moisture sensors to prepare yield maps and better understand yield variations. Yield and moisture readings are stored on a USB flash drive, which you can download into your desktop computer. Using New Holland's Precision Farming Software, the data can be viewed and thoroughly analysed. The desktop software allows for mapping and data conversion from the yield monitor system and is capable of reading and processing yield data from many competitive brand systems. From such analysis, prescriptive maps can be constructed for variable rate application.

All New Holland machinery can utilise the data collected from the IntelliView family of monitors. Guidance lines can be easily created and transferred between vehicles so that all machines entering the field use exactly the same tramlines throughout the crop cycle. If an AutoPilot Kit is fitted to another brand of machinery, again information can be transferred between that, the PFS Desktop Software and the New Holland family of monitors.

PRECISION FARMING – VARIABLE RATE

FIELD-IQ CROP INPUT CONTROL SYSTEM

The Field-IQ™ crop input control system is a section control and variable rate application control system that is simple to install and use. It prevents seed and fertilizer overlap and controls the rate of seed, liquid or granular materials. The Field-IQ system is compatible with the FM-1000™ integrated display and the FM-750 system.

PREVENT SEED AND FERTILIZER OVERLAP WITH FIELD-IQ SECTION CONTROL

- Automatically control up to 48 rows individually for maximum savings in seed and increased yields
- Eliminate seed overlap in your headlands and point rows with TruCount Meter Mount™ air clutches
- Eliminate fertilizer overlap with the new TruCount LiquiBlock™ valves that easily connect to clutch air lines

VARY SEED POPULATION IN YOUR FIELD WITH FIELD-IQ VARIABLE RATE CONTROL AND RAWSON™ DRIVES

- Adjust your seed population manually or using a prescription map delivered from your precision farming software (PFS)
- Apply a high population to fertile or well irrigated soils to maximize yield potential while reducing the rate on less fertile or poorly irrigated soils

VARY THE RATE OF FERTILIZER OR LIME, USING FIELD-IQ VARIABLE RATE CONTROL AND RAWSON DRIVES

- Apply the correct amount of lime to manage your soil's PH in every location

PRECISION FARMING – PLM PORTAL

PROFESSIONAL CUSTOMER SUPPORT

To support New Holland customers who have purchased Precision Farming and Auto Guidance products, a purpose built website called the PLM Portal has been created.

The PLM Portal is available to all New Holland customers and can be accessed from the following web address:

www.newhollandplm.com

Once you have signed into the website you can gain access to advanced information on all New Holland Precision Farming and Auto Guidance systems.

For New Holland's Precision Farming software customers, a purpose built section of the website provides training videos and information for customer support.

TAILORED TRAINING

Customers who have purchased a PLM-Support Package will receive a special PLM key which will enable them to sign-up for training courses and access individual on-line support for the Precision Farming Desktop software.

EXPERTS IN OUR FIELD – PRECISION IN YOURS

AT YOUR OWN DEALER

NEW HOLLAND AGRICULTURE

YOUR SUCCESS - OUR SPECIALTY

Visit our web site at: **www.newholland.com / www.newhollandplm.com**
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tel: **+61 2 9673 7777**

THINK SAFETY

Safety begins with a thorough understanding of the equipment. Always make sure you and your operators read the Operator's Manual before using the equipment. Pay close attention to all safety and operating decals and never operate machinery without all shields, protective devices and structures in place.

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