vantage AUSTRALIA

The Beginner's Guide to Landforming

The complete farmer's guide to understanding what landforming is and when you need it

The Next-Generation of Land Forming

Whether it's too much, not enough, or wrongly placed; improperly managed water is almost certainly limiting your crops potential yield.

Planar laser levelling is a well used and understood way to level fields for irrigation - but how do you manage ponding and inconsistent drainage on dry land and pivot irrigation land effectively and economically?

At Vantage Australia, we are proud to say that, with 40 years of experience under our belts, we are a leader in water management and offer the industry's leading end-to-end land forming solutions for effective water management using industry-leading technology.

Vantage Australia

Our ability to provide complete end-to-end solutions not only increases productivity, but simplifies overall operations, resulting in significant savings of time and money.

We have fully authorised service centres Australia-wide, specialist equipment to assist with all aspects of agricultural technology, and factory-trained specialists in hydraulics, electronics, laser technology, machine control and GPS.

What is Optimum Surface Landforming?

Optimum Surface Landforming involves modifying field topography by cutting and filling to a predetermined 3D surface using GPS machine control to improve water management with minimum earthworks.

While it is similar to laser grading in that it is the process of levelling a land surface to a desired gradient by cutting, filling, and smoothing the soil, Optimum Surface Landforming uses a variable-grade, 3-dimensional surface instead of a single plane design.

The Benefits

- ✓ Effectively manage ponding and erosion
- ✓ Minimise top soil disturbance
- ✓ Reduce earthworks costs and save up to 80%

Vantage Australia's land forming solutions are an affordable solution to:

- Improving drainage on dry land and pivot irrigated fields
- Improve productivity by reducing the impact to planting and harvesting schedules caused by wet areas
- Open up more farmable hectares - all while increasing yield
- Provide ROI that can be measured quickly, often within one crop cycle

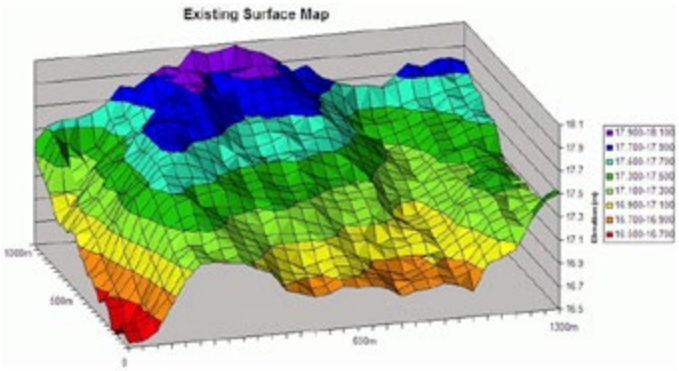
What is OptiSurface?

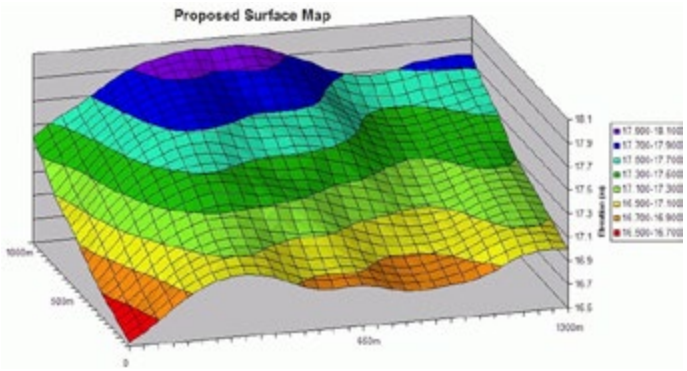
OptiSurface™ is the world's leading system for farm earthworks design and construction. It calculates optimised field topography to solve water management problems whilst saving up to 80% on earthworks.

It does this by using a patented system incorporating Artificial Intelligence to optimise Continuously Variable Grades™ and 3D GPS machine control technology.

OptiSurface Designer is the world's most powerful analysis and design software for agricultural landforming. It assesses the optimised field topography required to satisfy water management goals, while allowing the designer to control the depth of cut and fill, the locations of cuts and fills based on drainage direction, soil types, and other farming considerations.

With OptiSurface's revolutionary technology, you can improve drainage, infiltration uniformity and save money by starting your planning process.





5 Signs You'll Benefit from OptiSurface

1. Water pools in your fields for over 24 hours after rainfall or irrigation
2. Field operations are delayed because localised spots hold water, delaying planting, spraying, and harvesting
3. You want to lower earthworks costs
4. You often over-scalp topsoil
5. Ditches throughout your field reduce your productivity, spread weeds, and more

Top 5 Benefits of OptiSurface compared to laser

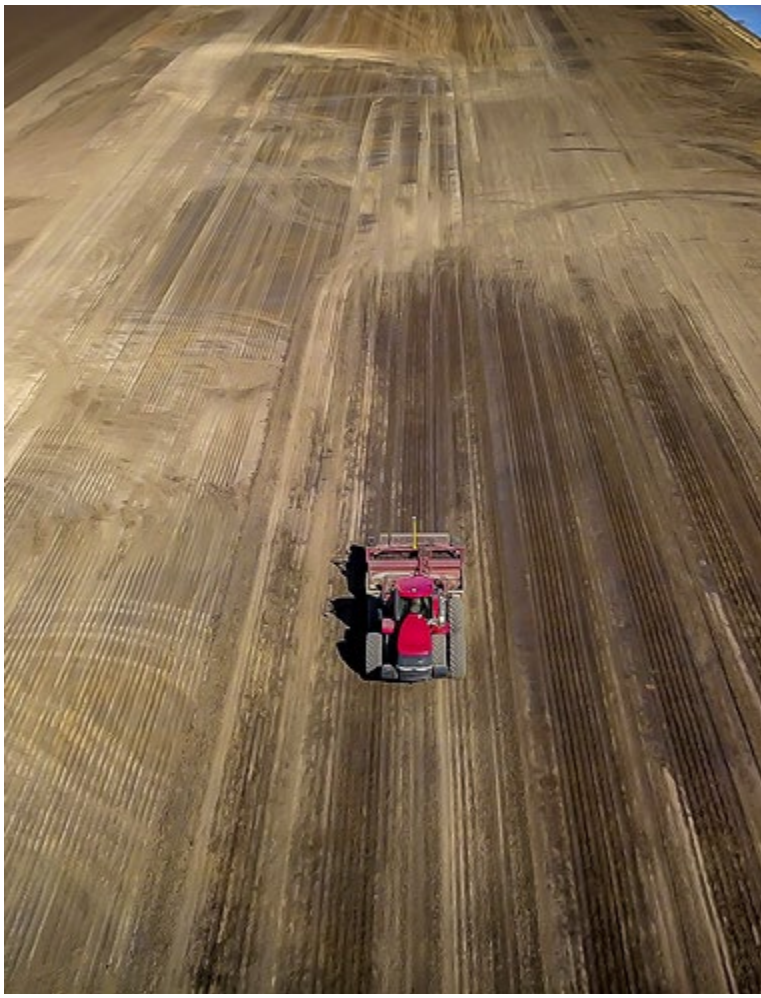
1. Lower earthworks = lower costs
2. Less topsoil movement = less yield impact
3. Easier operation (GPS machine control) & setup
4. Elimination of infield drains
5. Better field layout

When Optimum Surface Landforming will not offer a significant benefit?

- Dead levelling (0% grade) - e.g. Rice Bays
- Field has already been laser graded
- Cutting against the natural grade
- When water is not standing in the field (e.g. seeps require subsurface drainage)

Landforming with Vantage Australia

Our Field Level II system and accompanying OptiSurface landforming software allow you to optimise your field surfaces and improve your bottom line. Here's how it works:



Step 1

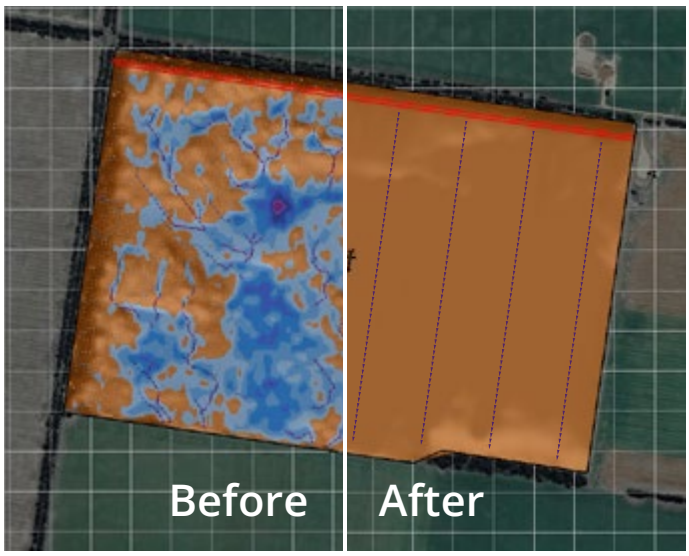
Survey

Using the Trimble GFX-1260 Display and the CenterPoint RTX correction service for sub 25mm vertical accuracy we can:

- Conduct highly accurate topographic survey and precisely map your fields
- Create boundaries, interior points, and surfaces with ease
- Calculate and report on the true acreage of your survey area for optimal field coverage and accurate surface designs
- This survey data is then ready for design

Step 2

Design & Consultation



Our experienced designers then load your accurate topographical survey into our land forming software, OptiSurface Designer.

Using intuitive surface design tools and flexible parameters, we can redesign your field to optimise water distribution and surface drainage.

With our landforming software, our designers work with you to create:

- Multi-direction variable grade designs
- Multiple plane designs
- Custom section control
- Cut fill volume estimates
- Ditch, water way, and contour design.

Because most crop yield losses are due to too much water, our designers aim to optimise the water across the field.

This allows farmers to get on the field and plant earlier due to minimal or no boggy patches. Better retention of topsoil slows down the water flow where necessary or drains that erode less are included into the landform design.

We produce a number of land form optimisation options to give you the ability to choose a design that balances your drainage requirements and budget.

Our design software allows us to optimise your fields drainage and erosion control whilst minimising the earthwork required.

When compared to planar laser levelling, our land forming service can save up to 80% on earthworks costs, because the aim is not to totally level the surface, but to optimise.

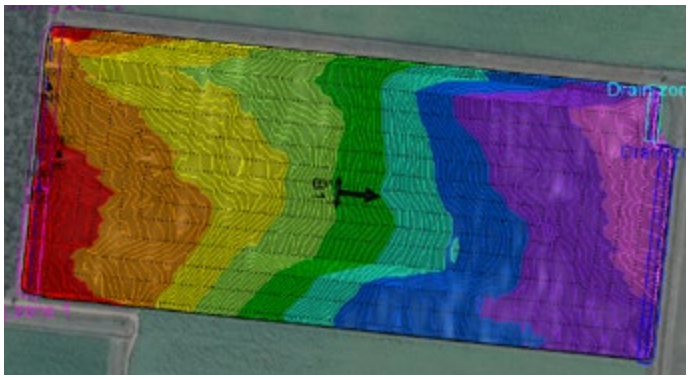
Design Surface Options

OptiSurface 1D

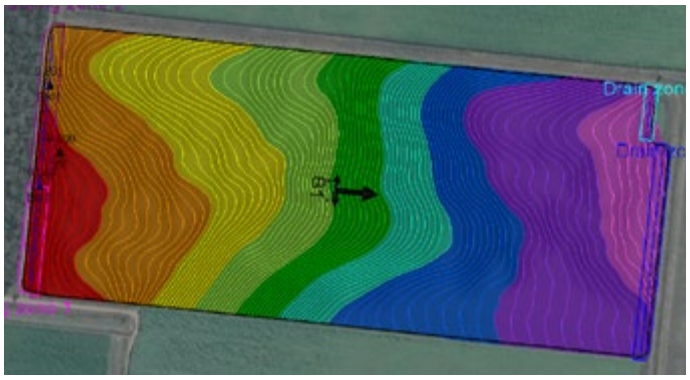
Row drainage in one direction only

The below One Directional Gradient Model has been design by Vantage Australia's expert design team using OptiSurface. This particular design is for a local Burdekin cane farm with flood irrigation supplied via plastic fluming from the western boundary as the higher elevation end of the field watering to the east on row direction.

Existing Topography



OptiSurface Design

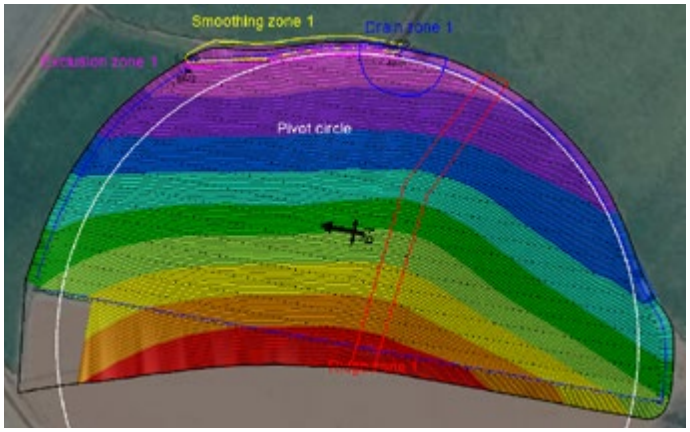


OptiSurface 2D

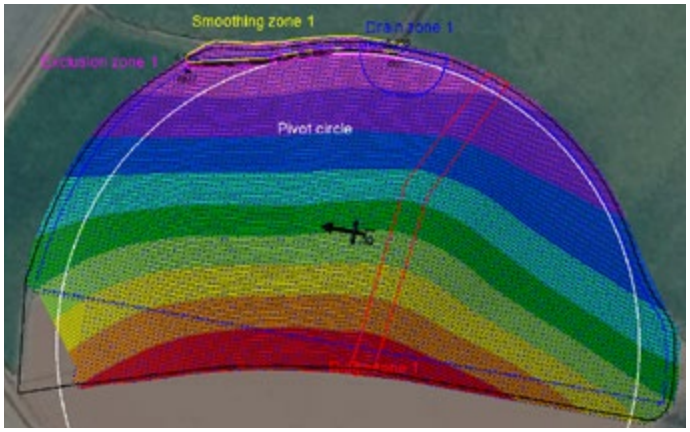
Row drainage in two directions

The below Two Directional Gradient Model was designed for an Atherton Tablelands cane farm with pivot irrigation supplied via overhead sprinklers. The land has an East – West row direction, falling either side of the Red Ridge zone shown slightly east of centre on the Design map.

Existing Topography



OptiSurface Design

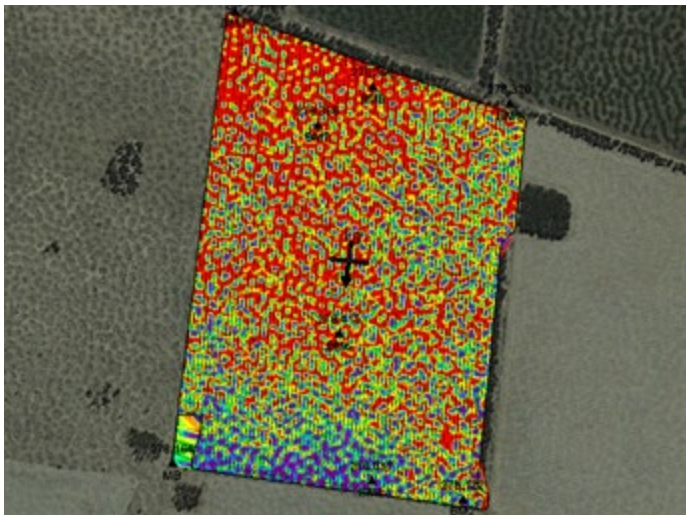


OptiSurface 4D

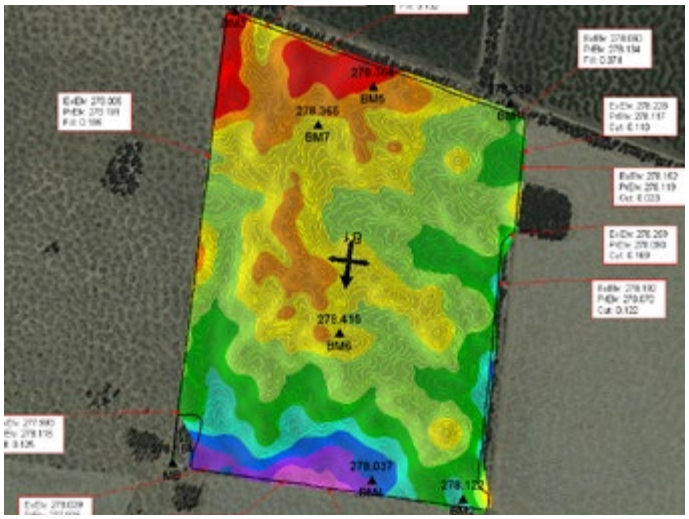
Can drain in any direction as long as it leaves the field

The below Four Directional Gradient Model was designed for an outer Darling Downs dryland farm. The 4D design allows the water shed from rainfall events to exhaust the water to the boundary in one or all four directions without leaving ponding in the block area.

Existing Topography



OptiSurface Design



Step 3

Earthworks

Once you select your preferred design, a control file is uploaded to the Field Level II system installed on your grading equipment.

As you move across the field, the system will automatically control the hydraulic valves on any type of bucket or scraper for accurate land forming.

There are numerous earthworks options open for farmers depending on the volume of material required.

Buy Rent Contract

Buy

At Vantage Australia, we have scrapers and blades that have been specifically designed to be pulled by lower horespower tractors than those traditionally used by land levelling contractors. If you're not sure if purchasing a scraper is a worthwhile investment for your operation, our experienced team can help you decide.

Rent

Not ready to commit to purchasing the land levelling solution you need? Rent our land levelling control systems and scrapers and get straight to work.

Contract

The team at Vantage Australia work with a large range of professional land levelling contractors across Australia. If you're interested in outsourcing the job, contact us and we can connect you to a suitable contractor.

How Does OptiSurface Dramatically Reduce Earthworks?

- Instead of fitting a plan of best fit, OptiSurface fits a 3D surface of best fit
- A 3D surface has much flexibility to follow the natural topography
- OptiSurface doesn't require single grades for drainage or surface irrigation

Case Study

DAVCO Farming

Area: 92 Ha

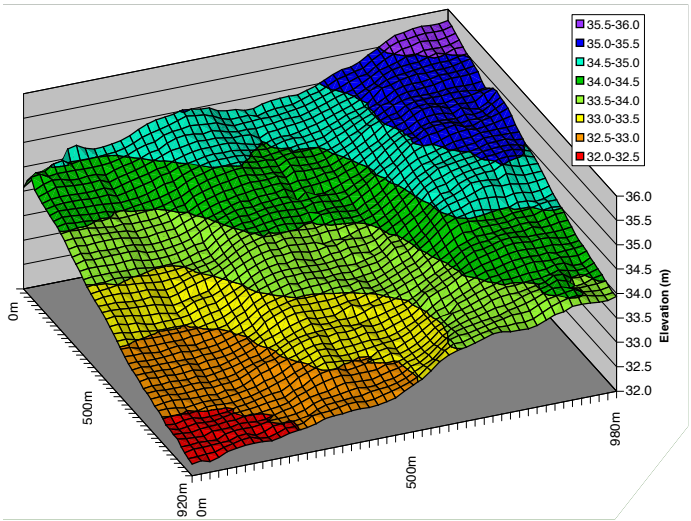
Location: DAVCO Farming, Burdekin

Row cropping (Sugar cane)

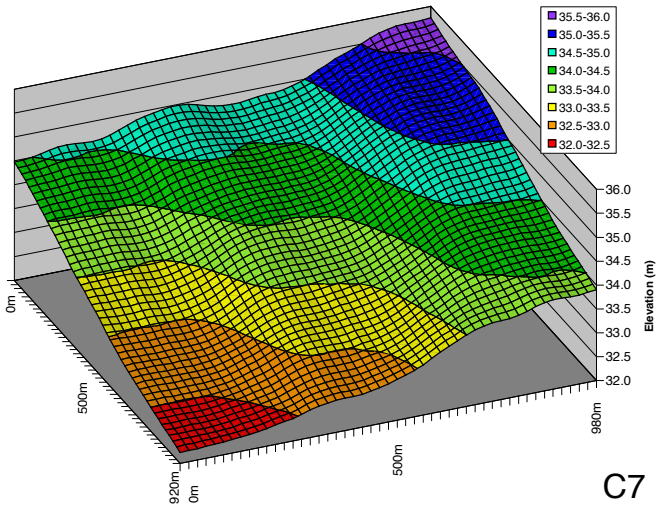
Lateral move irrigation

Existing Topography

Vertical scale exaggerated x100

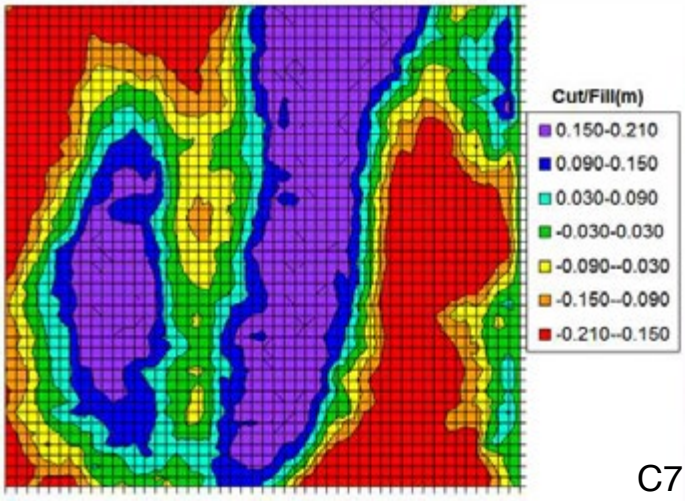


OptiSurface Design

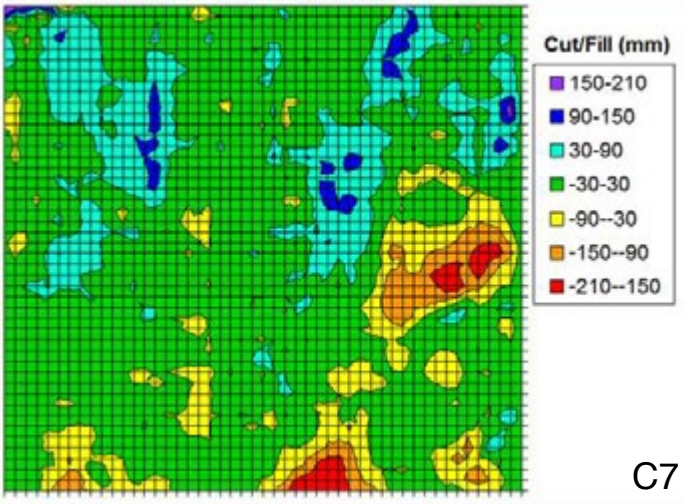


Plane of Best Design Fit vs OptiSurface Design

Cut: 765m³/ha
Cost: $1502/ha
Max Cut: 0.350m



Cut: 170m³/ha
Cost: $334/ha
Max Cut: 0.270m



Are you ready to improve your yield and profitability?

Vantage Australia provides landforming solutions for purchase and hire. Alternatively, we can connect you with one of our approved contractors. Call 1800 482 682 to speak with a representative and learn more.

Buy **Rent** **Hire**

Learn more about Vantage Australia's landforming solutions

Learn More

Contact us today!

1800 482 682

www.vantage-au.com

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