

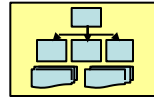
# Business Activities



## Concepts



## Processes



## Machinery



## Results



**Precision-Ag** and **Soil science** tailoring soil amelioration to the specific soil needs in horticulture

**Organic Matter blended** into the soil profile at depth

**Mixing** of stratified **soils**

Unique **one-pass establishment** system

**Concentrating natural organic matter** over planting line

**Growing new soil** and re-mounding

**One-pass midrow ripping** system

**Continual improvement strategy-** of existing developments

**Soil Survey** process which highlights structural properties for remediation  
**Soil amelioration plan** is a unique process where we tailor the amelioration to the specific soils to improve uniformity for site

**Groundwork process** implemented with the use of Soilworks specific tools & machinery to realise the Soil amelioration plan

**Audit Journal Checklist** conducted during job, ensures that the outcomes recommended in the Soil amelioration plan are implemented as intended.

**Development cycle audit** ensuring all parts of the process are carried out to specification.

**Annual Audit** providing ongoing monitoring of development, fine tuning performance of specific under performing areas to improve uniformity and ROI.

**Vibrosoiler**® parabolic, vibrating winged keel ripper customised to specific soils with variable size wings, rams or as a fixed wing ripper

**Establishment Moulder**® which is fitted to the **Vibrosoiler**® unit with fertiliser bin, discs, grader blades & roller for one-pass suitable for all horticulture

**Midrow Vibrosoiler**® fitted with coulters & roller for one-pass machine

**Mid-row moulder**® with 4 sets of grader blades designed for V mounding with flat or vfloor

**GPS-RTK**® software enabling the **Soil Amelioration plan** to be translated to the ground

- **Higher returns**
- **Higher quality fruit**
- **Reduced irrigation**
- **Uniform growth**
- **Sustained** soil porosity
- **Larger root** systems
- **Low input** farming
- **Drought tolerance**
- Gains in water efficiency:**
  - Vineyards water reduction by 30%
  - Water infiltration 600mm from 25ml rain vs 100mm
- Faster establishment**
  - Almond 0.5kg crop 2<sup>nd</sup> leaf
  - Vineyards 20 ton/ha 2<sup>nd</sup> leaf
- Higher yields – remediation:**
  - Proven CSIRO results in 14% increased in yield Vineyards
  - 25% increase in yield of Chardonnay & Shiraz
  - 30% increase in yield of Olives



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## PROBLEMS ASSOCIATED WITH TRADITIONAL RIPPING & DEVELOPMENT

### Site Planning & Preparation by Convenience

- Irrigation pumping volumes per shift
- Row alignment relative to aspect only
- Maximum length run

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- Irrigation pumping volumes per shift
- Row alignment relative to aspect only
- Maximum length run

•See handout  
and copy text

# How we are different?

## Open field Developments



### Industry Standard

**Surveying** is carried out on every row and brow lines for laser ripping

**Tractor alignment** subject to human error

- Laser – accurate laser set-up is skilled position
- GPS – manual steer on dozers-fatigue

#### Ripping

- Plate dozer high wheel compaction – 32psi
- designed for civil purposes – rock ripping
- V shaped ripline
- Ripper shape creates compaction
- Duplex soils resettle
- can't mix organic matter into soil
- large soil boulders to rework
- Ripline cavities and air pockets

#### Bedding & Mounding

- Separate machinery operation to the ripping process
- Machinery not designed to put soil over rip line
- Ripline subsidence

#### Precision-Ag

Translating Soil maps to the ground is not currently carried out

### Soilworks Solution

**No surveying** required, can peg block corners for QA purposes

**Tractor alignment** no human error

- GPS RTK auto steer 2cm,
- computer steers tractor,

**Ripping - Vibrosoiler**© is

- Low tractor wheel compaction – 7psi
- designed to work soils to specification
- Soft U shape ripline-4 times the breakout/soil volume
- ripper shape minimises compaction
- Mixes duplex soils
- incorporates organic matter into profile.
- Soil broken up into small pieces

**Bedding & Mounding - Establishment Moulder**© which is fitted to the **Vibrosoiler**© unit carries out ripping, bedding, mounding & fertilising in the unique one-pass system.

**Precision-Ag - Utilising the Soilworks GPS-**

**RTK**© software enabling the Soil Amelioration plan to be translated to the ground changing ripping depths, wing angles, mound shapes in real time.

### Outcomes

- Save survey pass \$\$ up to 5% development costs

- Accurate layout, no costly reworking

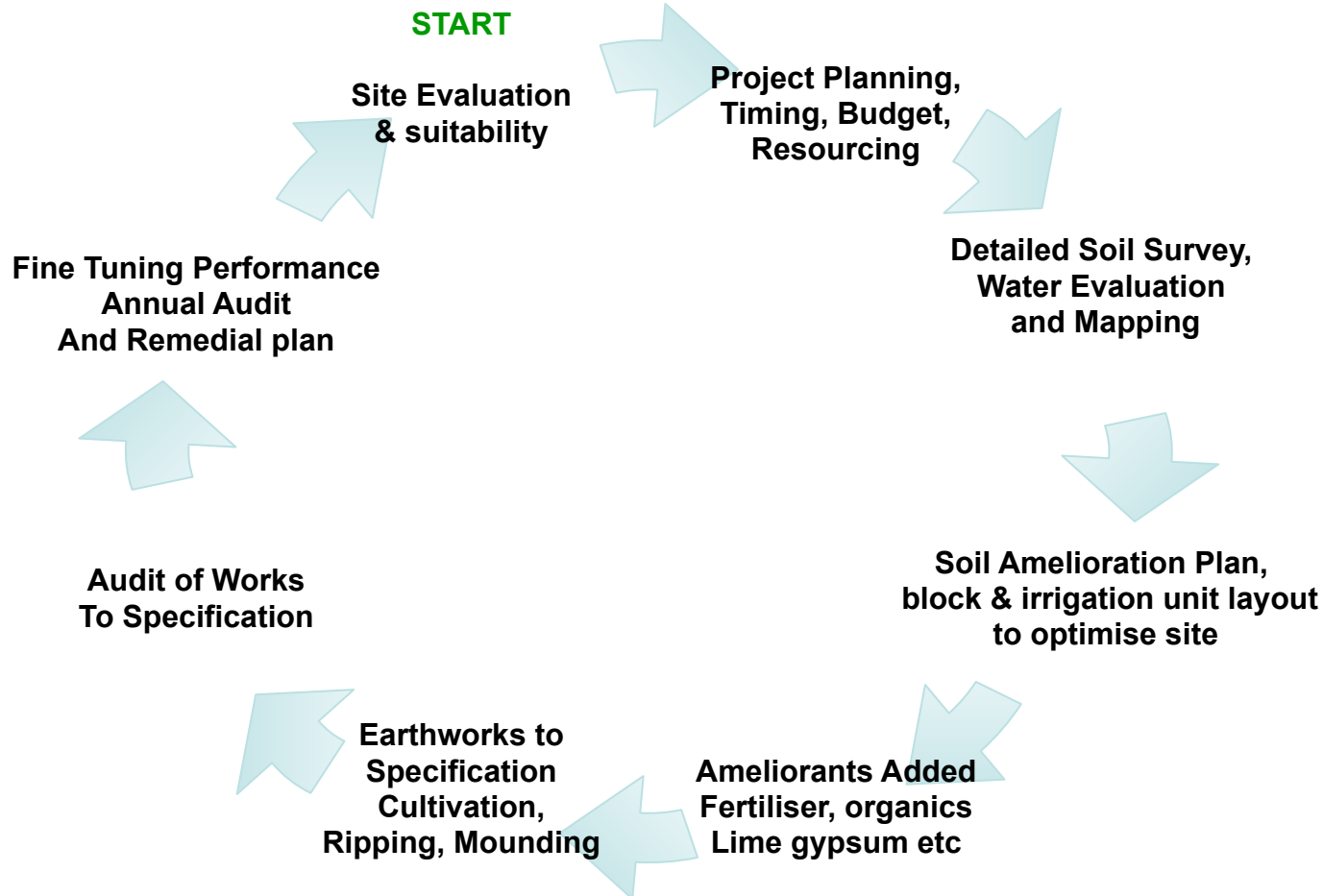
- Higher returns
- Higher quality fruit
- Reduced irrigation
- Sustained soil porosity
- Larger root systems
- Low input farming

- Gains in water efficiency
- Faster establishment

- Improved soil uniformity
- Uniform growth
- No soil degradation

# Process

## Establishment System



# How we are different?

Soil Science based Solutions



## Industry Standard

Detailed **Soil Survey sometimes carried out**, often by local agronomist testing top soil nutrient status OR technical consultant hired with narrow scope of horticultural skills & experience.

### Blocks laid out by

#### •Convenience

- Irrigation pumping volumes per shift
- Row alignment relative to **aspect only**

#### •Maximum length runs

**Groundwork is not tailored to the soil types.** One approach taken over whole of site is without any knowledge of whether it is beneficial or detrimental

No **on-going audit trail.** Growers may contact consultants after visual evaluation of problem areas over a number of years. Consultants will have narrow scope expertise

## Soilworks Solution

**Detailed Soil Survey by soil scientist –** Utilizing Soil science Local experience , soil pits on grid, EM38, Chemical testing, horticultural knowledge & grower experiences. Can draw on wholeistic experience of team.

### Site Optimisation

- Grouping soils by attributes into block units
- Blocks laid out relative to soils & aspect
- Row alignment relative to sun position for even ripening
- Irrigation water quality assessment & system designed to soil units and topography .

### Soil Amelioration Plan

Soil units worked to their individual attributes improving uniformity for even ripening and consistent growth. Allows inclusion of poor areas of increasing plantable area with specific

### Ongoing Audit Trail/Continual improvement

Poor yielding areas identified utilising yield mapping & plant cell density overlayed to soil map and irrigation unit layout this allows development of annual Soil Amelioration Plan optimising yield

## Outcomes

Experience & Knowledge of soils gives insight as to which crops / varieties suited, are designated goals achievable?

Even ripening and improved wine quality

Lower input farming

Less to no sun burnt fruit

Good quality water depositing less toxins and salts

Homogenous soil units requiring similar irrigation volumes for RAW.

More Useable area of blocks more\$ per purchase acre

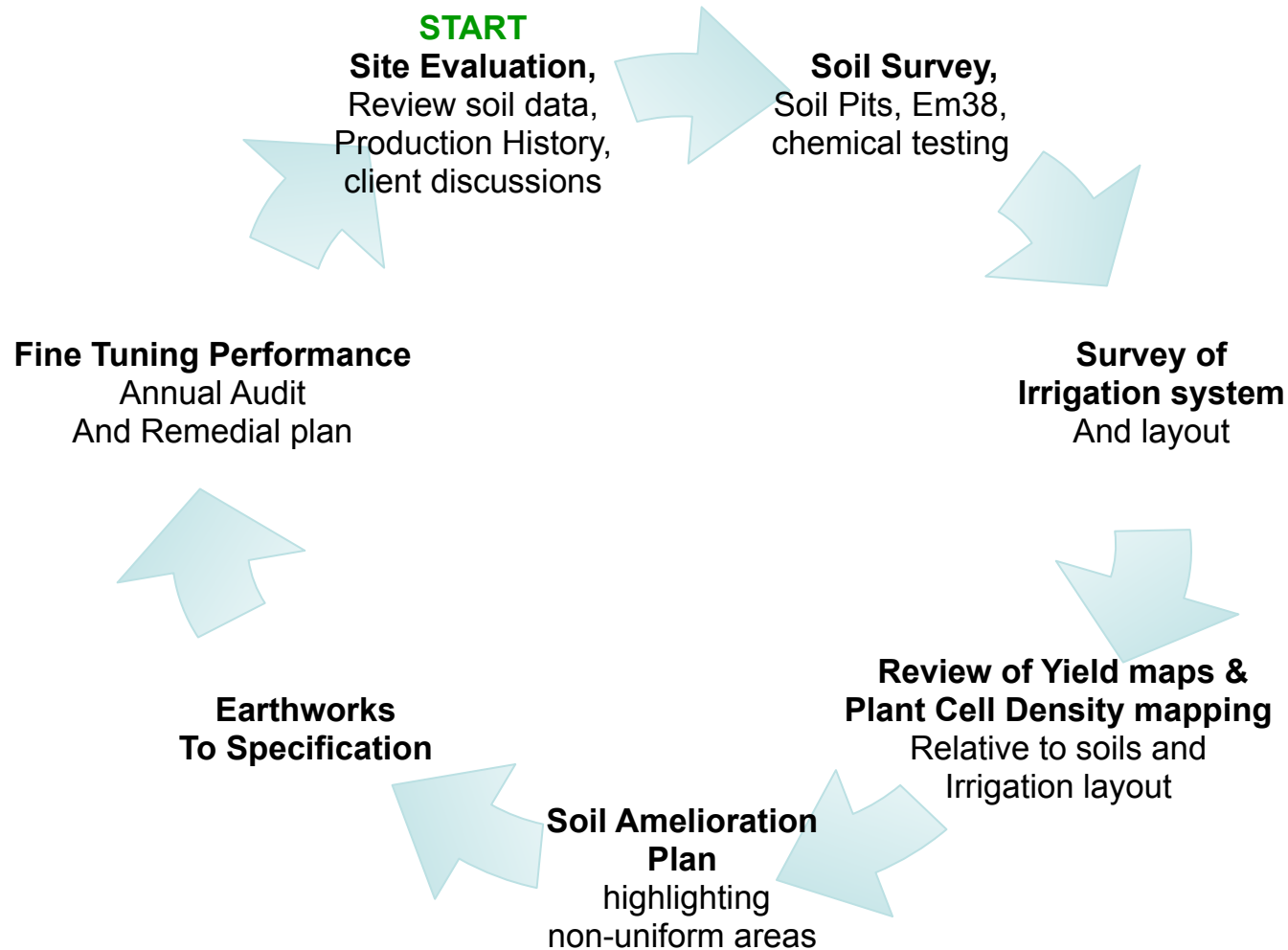
Continual improvement of returns. **Experience; able to highlight other issues-eg pathogens**

Even ripening and improved wine quality .

# Process

## Maintenance System

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# How we are different?

## Maintenance & Remedial works



### Industry Standard

**Detailed Soil Survey rarely carried out**, often by local agronomist testing top soil nutrient status

No **on-going audit trail**. Growers may contact consultants after visual evaluation of problem areas over a number of years.

#### Ripping

- Plate dozer high wheel compaction – 32psi or
- Vineyard tractor with limited power for ripping depth
- Excessive root pruning to reach uncompacted zone
- Limited breakout, not into uncompacted zone
- Ripper shape creates compaction
- Duplex soils resettle
- can't mix organic matter into soil
- large soil boulders to rework
- Ripline cavities and air pockets

#### Mounding

- with discs, cultivating below organic zone
- No finite control of depth of scalping
- not used for concentrating organic matter

#### Precision-Ag

Translating Soil maps to the ground is not currently carried out

### Soilworks Solution

**Detailed Soil Survey by soil scientist** – Utilizing Soil science Local experience , soil pits on grid, EM38, Chemical testing, horticultural knowledge & grower experiences.

**Ongoing Audit Trail/Continual improvement** Poor yielding areas identified utilising yield mapping & plant cell density overlaid to soil map and irrigation unit layout this allows development of annual Soil Amelioration Plan optimising yield

#### Ripping – Midrow Vibrosoiler© is

- Low tractor wheel compaction – 7psi
- designed to work soils to specification with many setup options
- Soft U shape ripline-4 times the breakout/soil volume
- Vibrating action breaks into uncompacted zone
- Multiple setups including for compaction/ root pruning for vigour
- One pass machine , limited cleanup required
- Mixes duplex soils
- incorporates organic matter into profile.
- Soil broken up into small pieces

#### Bedding & Mounding -

- **Using Soilworks Moulder, with 4 sets of grader blades**
- Concentrating natural organic** matter over planting line
- Growing new soil** and re-mounding with finite control

**Precision-Ag - Utilising the Soilworks GPS-RTK©** software enabling the Soil Amelioration plan to be translated to the ground changing ripping depths, wing angles, mound shapes in real time.