

Modernisation of Planting Operations

Mondi's Journey

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PRECISION FORESTRY | THUTHUKA FORESTRY | NOVELQUIP FORESTRY | AMAHLATHI ETHU TRADING | RISUTEC Builds the Forest

Planting Methods

Past → **Present** → **Future**

Manual Planting

Labour-intensive establishment

- Planting completed using hand tools (planting trowels)
- High labour requirements and slower planting rates
- Relied heavily on operator skill for planting quality
- Well suited to steep terrain and difficult sites

Semi-Mech Planting

Man-Machine interface

- Use of tractors and mini excavators for pitting and ripping
- Reduced physical strain on planting crews.

Full Mech Planting

Precision forestry

- Specialised planting machines perform pitting, planting, fertilising, and firming in a single pass
- GPS-guided planting improves spacing accuracy
- Real-time monitoring of productivity and planting quality

The Evolution of Planting in Mondi

PRECISION FORESTRY

3 Operations







2 Operations





1 Operation







Full Mechanical Planting

Objective – Evaluate the feasibility of a Fully Mechanized Planting System

Pillars/Drivers



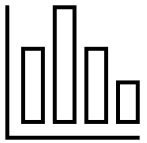
Safety and Ergonomics – Reduction of Physically Demanding Work and Slip, Trip and Fall Exposure



Productivity and Cost – Financial Viability



Quality – Planting, Survival and Uniformity



Data Collection – Data driven decision making

Driven by

SKB-120LS

- Weight – 700kg
- Working Pressure – 200 bar Max
- Max Flow Rate – 140l/min
- Seedling Capacity – 120 plants
- Apply Water/Gel



RISUTEC
Builds the Forest

PP1 Planting Head (Prototype)

- Weight – 900kg
- Working Pressure – 200 bar Max
- Max Flow Rate – 40l/min
- Seedling Capacity – 50 plants
- Apply Water/Gel
- Dual System (Pitting & Planting)



Volvo EC55D Carrier

- Water Tank – 500 l
- Fuel Consumption – 3 L/hr
- Low Maintenance Cost
- Currently in Operations (MPAT)



Trial Results

Plant Survival	Achieved an average survival rate of **96%** at 3 months across trial sites
Stocking Uniformity	Reached **74%** clone uniformity at 3 months, demonstrating good stand establishment
Planting Quality	Achieved a **94%** quality score, indicating consistent planting standards
Productivity	Average productivity of **240 plants/hr** *(planting only)* in Zululand and **183 Plants/hr** *(pit & plant)* in Mpumalanga
Trial Area	Successfully established **151** ha in Zululand and **9.8** ha in Mpumalanga

Trial Results







Learnings on Plant quality for Mechanized Planting



Shoot Specifications

- ***Height***
  - ✓ BUZ -max 27cm & BUC - max 40cm (Clipping risk)
- ***Batch Uniformity***
  - ✓ ≤ 95% - precision of machine settings (Planting depth, etc)
- ***Hardiness***
  - ✓ Withstand mechanical and environmental stress
- ***Sturdiness***
  - ✓ Ensures machine efficiency (floppy plants jam in machine)
- ***Stem form***
  - ✓ Single stem and straight – eliminate clogging

Robust root plugs

- ***Plug Mass***
  - ✓ From dense growing medium (Gravity feeding)
- ***Consolidation***
  - ✓ Well consolidated – impact and clogging





PRECISION FORESTRY

WHAT HAVE WE DONE



Investigated suitable planting systems for our landholdings



Feasibility Assessments (Desktop Exercise)



Thorough Risk Assessments



Operational Trials

WHERE ARE WE NOW



Trial Stage

Productivity Improvement Initiatives



Costing Assessments

Shadow cost for different types of carries

WHAT COMES NEXT



Focus on productivity Improvement



Strengthening machine data collection



Continuous collaboration with partners



Build local technical support

WHAT DO WE NEED TO GET THERE



Continuous buy in from partners (Pilot Contractors)



Continuous partnership with machinery manufacturers (Suppliers)



Continuous Support from management, Ops and all support functions

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SIYAQHUBEKA
Forestry for Life

Thank You!

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