



SIYAQHUBEKA

Forestry for Life

# EVOLUTION OF PLANTING OPERATIONS

OCTOBER 2021

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# Overview



- Background to modernization of planting operations
- Modernized planting operations
- Productivity learnings and comparisons
- Modernization learnings

# Background to modernized Planting Operations

- Took off in 2012 – series of trials with learnings and failures
- Ergonomics and safety risk – decent work
- Inconsistent quality challenges– operation execution
- Productivity improvements in operations
- Labor turnover concerns and aging staff
- Cost containment



# Pit and Plant Operations

- Consists of two individual operations
- Drive into compartment
- Works best with planting gel with this operation
- Reduced span of control – supervision
- Slope limitations
- Reduced frequency of incidents



# Pit and plant Operation





# Pit and Plant Analysis

Benefits	Challenges
Gel carried by trailer – drive into compartment	Harvesting Residue
Consistent pitting quality – results in consistent planting quality	Slope limitations
Gel helps retain moisture longer during dry conditions	Cost of pitting

- 0.7-1 litres per plant
- 3.49 plants per minutes ( 6.12ha / 6.5 PMH)

# Pit-less Planting Operations (Single-pass)

- Single pass planting operation
- Drive into compartment & road side
- Does not use gel – water only
- Reduced span of control – supervision
- Reduced frequency of incidents – potential for high impact
- Less area disturbed around the plant





PRECISION  
FORESTRY

# Vastrap Operation

## Pitting



1  
Pitting with the modified beak and step for better penetration and acceptable plant depth



## Planting



2  
Select plant and place into the planting tube



## Planting



3  
Slightly lift planting tube



## Firming Soil around plant



4  
Remove planting tube and firm the soil using your feet (**NB!!**  
**Avoid damage to plant**)





# Vastrap SWOT Analysis

Benefits	Challenges
Combines multiple operations (i.e Pitting , Planting)	Harvesting Residue
Less soil disturbance when making the pits	Soil Texture
Cost Saving	Slope
	Obstacles

- 0.7-1 litres of gel per plant
- 2.56 plants per minute per planter (4.5ha per 6.5PMH)



PRECISION  
FORESTRY

# Wasserfplanzer Operation

## Pitting



Pitting using water pressure



## Planting



Select plant and place into the planting tube



## Planting



Slightly lift planting tube



## Firming Soil around plant



Remove planting tube and firm the soil using your feet (**NB!!**  
**Avoid damage to plant**)

# Wasserfplanzer Operation





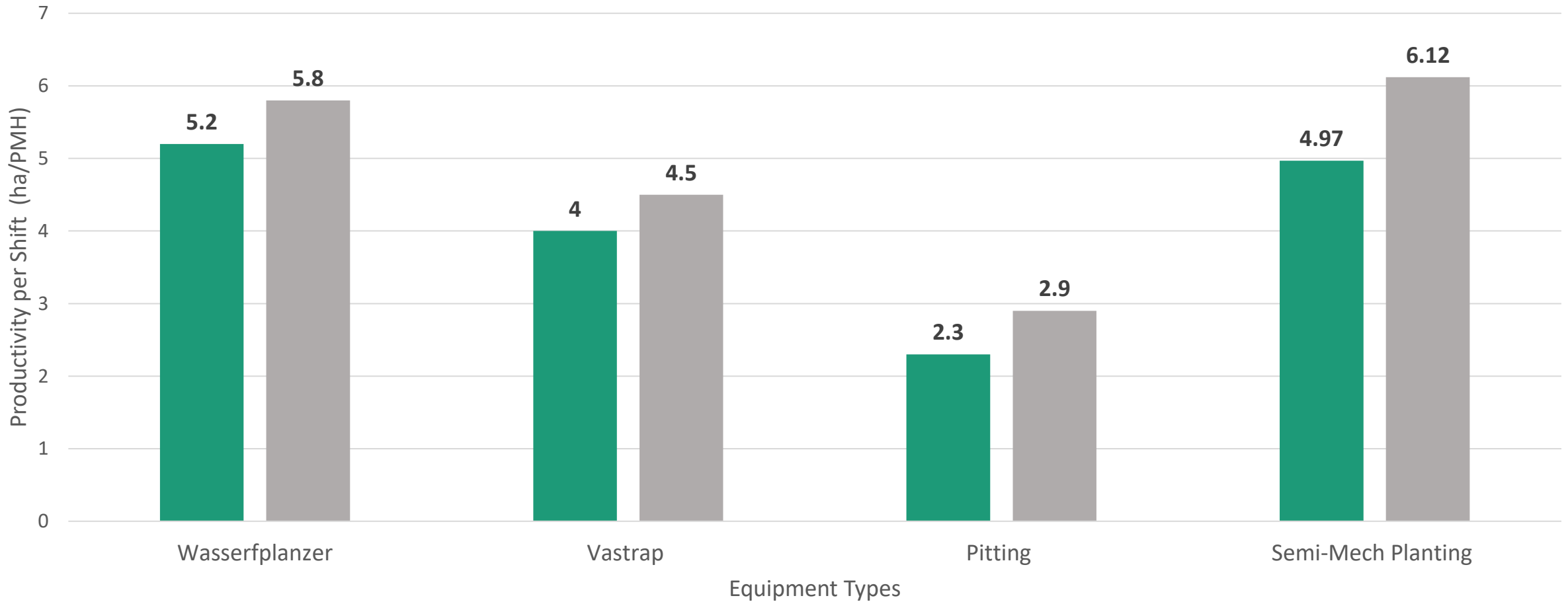
# Wasserfplanzer Analysis

Benefits	Challenges
Combines operations (Pitting & planting)	Harvesting Residue
Less material to carry (Planting Gel)	Soil Texture
Less disturbance to Pit (enough for the plant)	Slope
Cost Savings	Drought

- 1.5-2 litres per plant
- 3.3 plants per minute per planter (5.8 ha / 6.5 PMH)



# Productivity Comparison



\*\*Productivity per Shift based on 6.5 PMH

■ Time Study ■ Ops Actuals

# High level Operation Comparison

	Manual Planting	Pit-Plant with Gel	Vastrap	Wasserplanzer
Slope limitation	√	✗	✗	√
Ergonomics	✗	√	√	√
Cost Savings	✗	✗	√	√
Quality Improvements	✗	√	√	√
Harvesting Residue limitation	√	✗	✗	√
Soil Texture limitation	√	√	✗	✗
Labor Intensive	✗	√	√	√

# Modernization Learnings

- Operational planning
  - Access routes for the machinery
  - Availability of resources – water/plants/back-up spares
- Ergonomics improvements
  - Stoop bending eliminated
  - Less handling of heavy materials
- Consistent quality achieved – with consistent training
  - Better survival
  - Low blanking percentages
- Productivity improvements in operations
  - Less labor intensive
  - Plant quality has direct impact on productivity
  - Extended working hours – multiple shift system



Thank You