

# **Die verbouing en die produksiepotensiaal van turksvy kultivars / *Cultivation and production potential of cactus pear cultivars***

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# SITE SELECTION

- Climate:
  - Warm summers
  - Cool winters
  - Rainfall: 300-700 mm/year
  - Sensitive to hail damage
  - Full sun
- Soils:
  - Well drained, cannot tolerate water logged soils
  - Any soil type, clay to sand
  - pH of 6.5-7.0
- Slope
  - N = warmer, ripen earlier
  - S = cooler, ripen later
- Fence off to avoid damage by livestock/game

# SOIL SAMPLING AND PRE-PLANT FERTILISATION

- Soil sampling
  - Top (0-300mm)
  - Sub-soil (300-600mm)
  - Fertilisation should be based on soil analysis results
- Apply lime/gypsum/phosphates pre-plant
- Optimal plant nutrient levels

Element	Optimal level (mg/kg)
Phosphorus (P)	15-20
Calcium (Ca)	>400
Potassium (K)	100-150
Magnesium (Mg)	>150*

\* Ca:Mg 3:1- 8:1

Sensitive to high Na (max. 150 ppm) and Cl levels

# MAINTENANCE FERTILIZATION (kg/ha)

	Element	Year 1	Year 2	Year 4	Year 5
<b>LAN (28% N)</b>	<b>Nitrogen</b>	<b>75</b>	<b>210</b>	<b>320</b>	<b>430</b>
<b>Super phosphate (10,5% P)</b>	<b>Phosphate</b>	<b>40</b>	<b>120</b>	<b>150</b>	<b>200</b>
<b>KCl (50% K)</b>	<b>Potassium</b>	<b>50</b>	<b>120</b>	<b>160</b>	<b>200</b>

Johan Potgieter

# CULTIVAR SELECTION

- Fruit production
  - Export – Fruit colour red/pink/yellow
    - Very competitive
  - Local market - Fruit colour white or green
    - Market small
    - Fresh produce markets?
    - Niche markets are profitable
  - Cultivar / environmental interaction – harvest date
    - Harvest dates off all cultivars – January – February
    - Price at its lowest
- Animal feed
  - Use cultivar with the highest yield potential
  - No significant differences in acceptability to animals
  - Cladodes as well as fruit



**ALGERIAN**



**GYMNO CARPO**



**VRYHEID**



**ROEDTAN**



**ROSSA**

# CARE FOR YOUNG PLANTATIONS

- Insect control, scout regularly and control if observed
  - Cochineal
  - Cactoblastis (cactus pear moth)
- Flower removal
- Fertilisation, not too much N
- Pruning in following winter to shape plant



# WEED CONTROL

- Very sensitive for weed competition.
- Methods
  - Mechanically
  - Chemically
- Shallow root systems





# Pruning

- Optimal fruit production
  - Prune in June, July.
  - Plant height less than 2 m.
  - No overlapping cladodes.
  - Cladodes must not touch the ground.
- Optimal cladode production.
  - Any time of the year.
  - Intensity and frequency is an important factor.
  - Rotational harvesting?
  - Reduction in fruit production.



# CHEMICAL WEED CONTROL

- Herbicides containing glyphosate recommended.
- Products to be used.

Active ingredient	Commercial name	Formulation *	Dosage	Use
glyphosate	Roundup Mamba Glyphogan 360 SL	SL 360 g/L	2-8 L/ha	Annual/ perennial weeds and nut sedges
glyphosate	Stirrup	AL 144 g/L	5-7.5 L/ha 5-22.5 L/ha	Annual Perennials
Glyphosate trimesium	Touchdown	SL 720 g/L	0.33-6 L/ha	Annuals/ perennials

- \* Formulation: SL= soluble liquid, AL= apply undiluted
- Important: prevent spray drift.
- **Carefully follow the instructions on the label.**

# ORCHARD SANITATION



- Pruned pads, thinned fruitlets and pads broken off by wind needs to be collected on a regular basis and destroyed.
- Pads laying around serves as host plants for cochineal, cactoblastis and various diseases.
- Detached pads must be destroyed by means of a hammer mill or fed to livestock.



# PEST AND DISEASES

# Cactus Moth

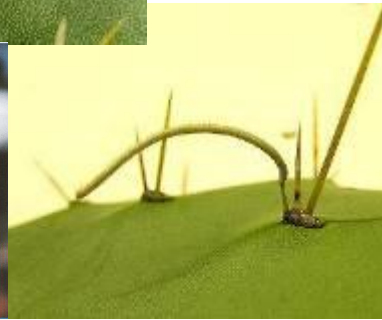
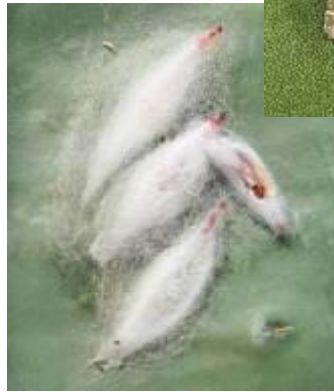
## *Cactoblastis cactorum*

Adult moth



Eagstick wit eggs  
Sept – Oct & Feb- March

Papal cocoon



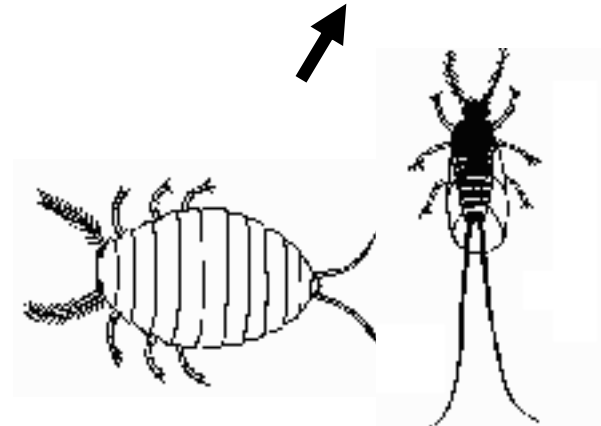
Adult Larva



Yung Larva

# Cochineal

*Dactylopius opuntiae*



# PEST CONTROL

- Control:
  - scout weekly, spot spraying, repeat,
  - mechanically: (small-scale) old brush/broom head, insecticide,
  - chemically with high pressure (1200-20 000 kPa), tractor driven sprayer,
  - destroy any infected plants in 2 km radius
- prune plants to minimise hiding places,





# CHEMICAL PEST CONTROL (COCHINEAL)

<b>A. I.</b>	<b>Commercial name</b>	<b>Formulation</b>	<b>Dosage (per 100 L water)</b>	<b>Withholding period (days)</b>
<b>carbaryl</b>	<b>Carbaryl, Karbaspay, Sevin</b>	<b>WP</b>	<b>200 g</b>	<b>1</b>
<b>methidathion</b>	<b>Ultracide, Suprathion</b>	<b>WP</b>	<b>50 g/L</b>	<b>1</b>
<b>methidathion</b>	<b>Ultracide, Suprathion</b>	<b>EC</b>	<b>50 ml</b>	<b>1</b>
<b>parathion</b>	<b>Parathion, Avima, Plaaschem</b>	<b>EC</b>	<b>60 ml</b>	<b>21</b>



GYMNO CARPO



MORADO

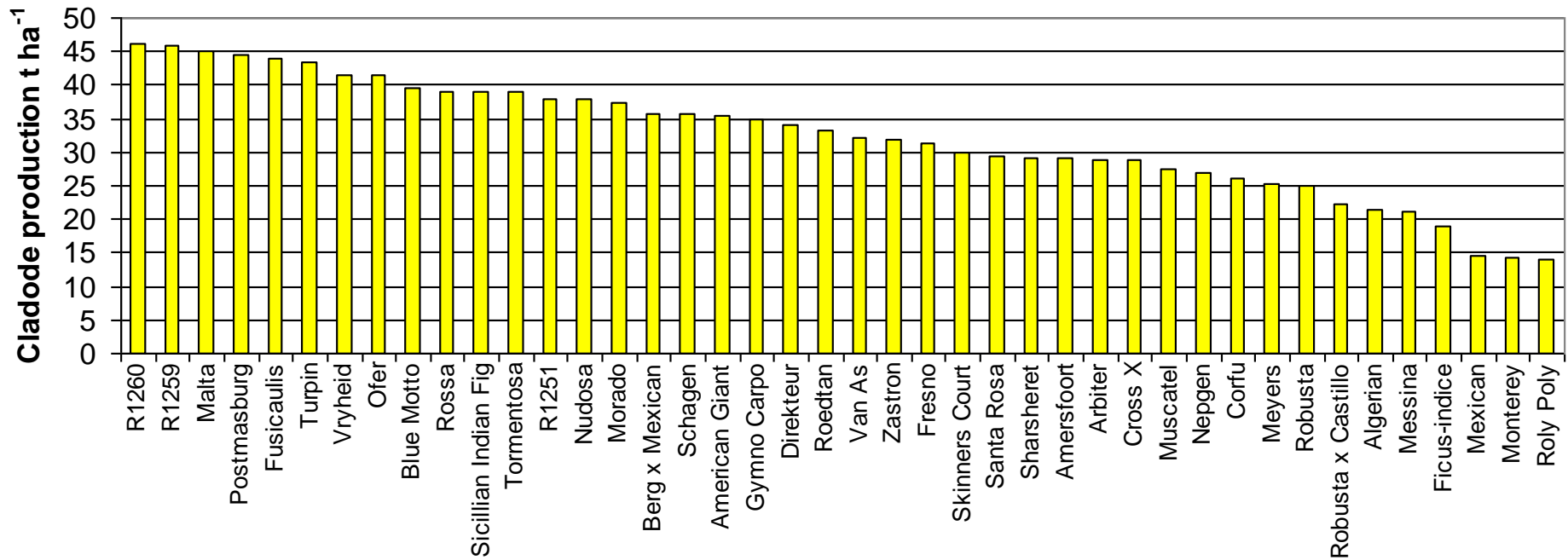


ZASTRON

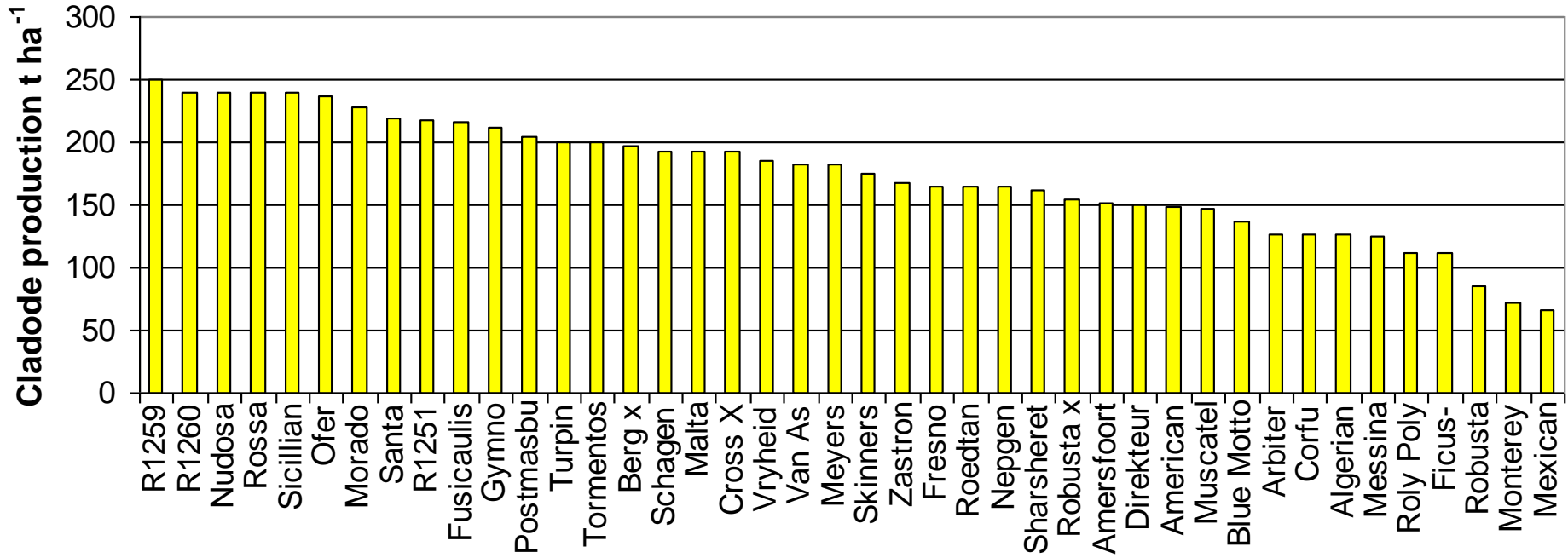
# RECOMMENDED CULTIVARS



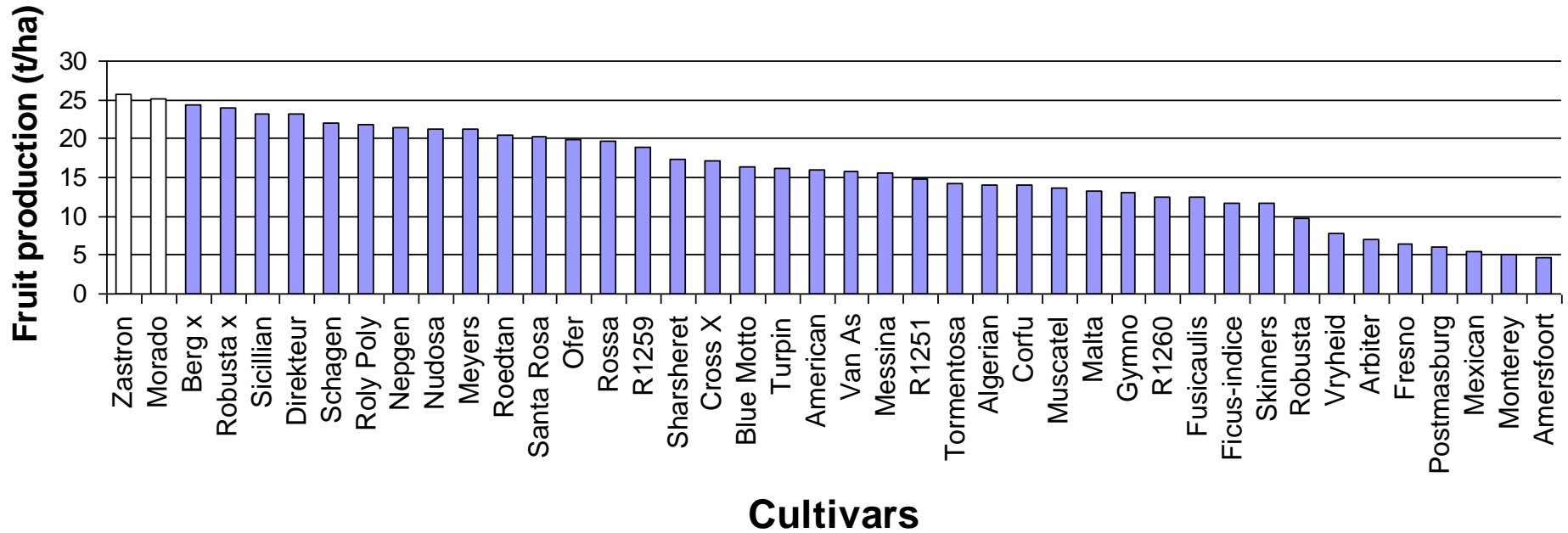
## Cladode production for the 2009/10 season



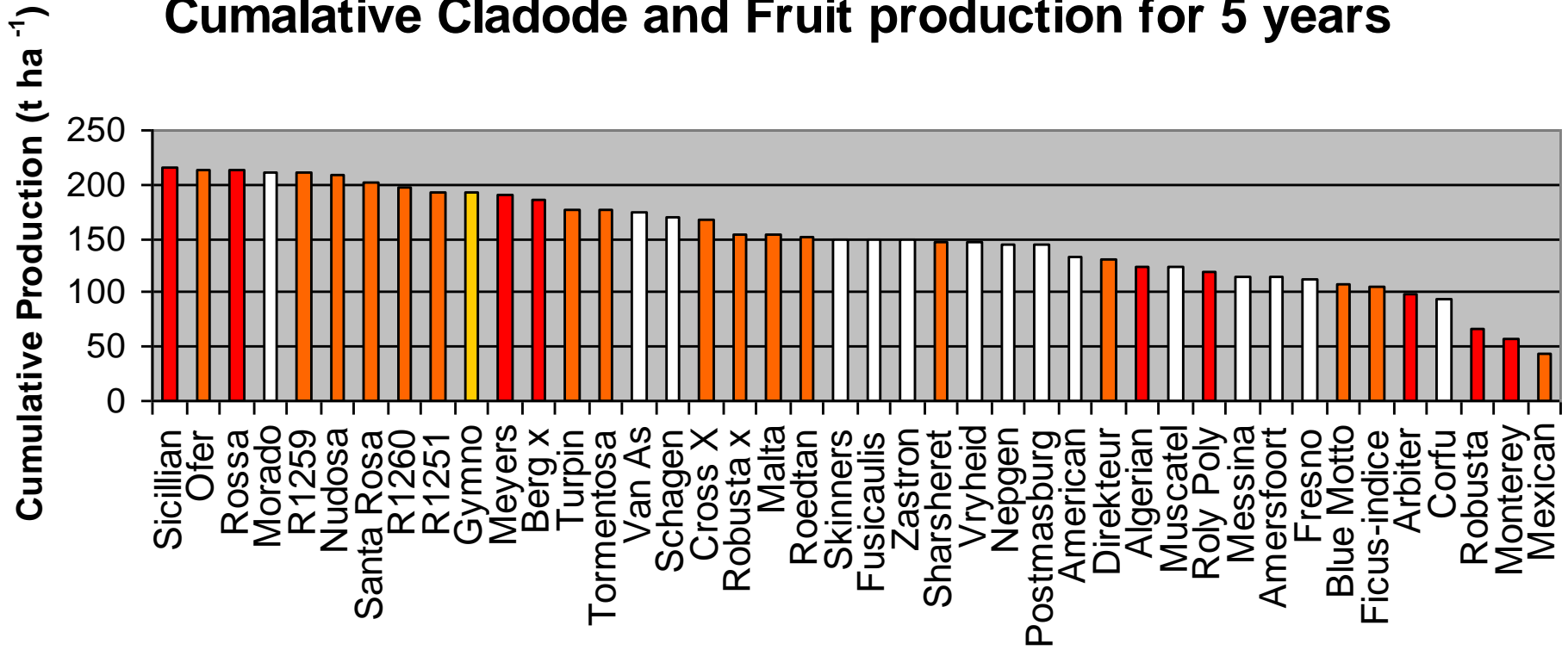
## Cummulative cladode production for 5 years



## Fruit production for the 2009/10 season



## Cumulative Cladode and Fruit production for 5 years



# RECOMMENDED CULTIVARS FOR THE CENTRAL HIGH VELD

<b>Cultivar</b>	<b>Ranking</b>	<b>Fodder</b>	<b>Fruit</b>
<b>Sicillian Indian Fig</b>	<b>1</b>	<b>Yes</b>	<b>No</b>
<b>Ofer</b>	<b>2</b>	<b>Yes</b>	<b>No</b>
<b>Rossa</b>	<b>3</b>	<b>Yes</b>	<b>No</b>
<b>Morado</b>	<b>4</b>	<b>Yes</b>	<b>Yes</b>
<b>R1259</b>	<b>5</b>	<b>Yes</b>	<b>No</b>
<b>Nudosa</b>	<b>6</b>	<b>No</b>	<b>No</b>
<b>Santa Rosa</b>	<b>7</b>	<b>Yes</b>	<b>No</b>
<b>R1260</b>	<b>8</b>	<b>Yes</b>	<b>No</b>
<b>R1251</b>	<b>9</b>	<b>Yes</b>	<b>No</b>
<b>Gymno Carpo</b>	<b>10</b>	<b>Yes</b>	<b>Yes</b>
<b>Zastron</b>	<b>23</b>	<b>Yes</b>	<b>Yes</b>

# RECOMMENDATIONS

- Start small, expand as knowledge increases
- Choose the correct cultivar
- Manage the orchard well
- Introduce water-harvesting techniques to improve plant productivity/drought tolerance
- Get expert advice
- Real value is in value adding – fruit and cladodes



# SUMMARY AND CONCLUSIONS

- The traditional animal feed cultivars (Robusta and Monterey) are the poorest performers.
- The use of cultivated cactus pear orchards as a feed source is a new concept to farmers.
- The crop has a potential of switching between feed and fruit production depending on the need and circumstances.
- Cactus pears are an ideal crop for communal and developing farmers to stabilise food security.
- One of the most versatile crops.
- Lack of creativity is our biggest constraint.