Innovations in Mechanical Harvesting and Chemical Application for Traditional and Intensive Olive Orchards

Pre-Commercial Procurement MECAOLIVAR

University of Cordoba, Spain

GI MECANIZACION Y TECNOLOGIA RURAL. ETSIAM
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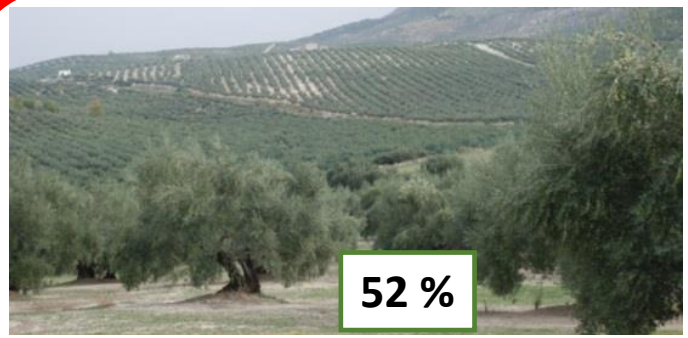
Typologies of olive orchard in Spain

Traditional orchards with difficult mechanization

96.000 ha
under rainfall conditions with low production (< 775 kg/ha)

355.000 ha
High ground slope (> 20 %)



Traditional orchards with mechanization

114.000 ha
Medium density
(150-180 trees/ha)

723.000 ha
Low density
(< 150 trees/ha)

213.000 ha **Intensive orchards**
(180-350 trees/ha)

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50.000 ha **High density orchards**
(> 500 trees/ha)

27% Irrigated crop

2.605.000 ha 2015 (+0,5%)

AEMO, 2012 (Spain)

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Composition of MecaOlivar

Line 1	Line 2	Line 3	Line 4	Line 5
Canopy shaker harvesters	Trunk shaker harvesters	Automatization and pad system for trunk shakers	Airblast sprayer	Tractor mower and automated sprayer
Traditional orchards	Intensive orchards	Traditional and intensive orchards	Traditional and intensive orchards	Traditional and intensive orchards

Line 6

Sprayer evaluation and tree pruning adaptation

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Development of Mecaolivar

33 Company applications

20 Pre-prototypes
2 Developments

9 Companies
2 Public companies

13 prototypes
2 Developments

11 Patents
3 Utility models

Line	Company
1	Moresil
	Maqtec
2	Tecniagri
	Isotrol
	Gascón
3	Tecniagri
	Isotrol
	CRISPE
4	ATASA
	Osuna-Sevillano
	Mañez y Lozano
5	ATASA
	Osuna-Sevillano
6	IFAPA
	UPC

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Line 1. Canopy shaker harvesters

Developing machinery

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Canopy contact technology

- Integral harvesting process
- High maneuverability and low weigh
- Machine soil slope stability >15%
- Reduction of fruit harvesting cost
- High fruit quality and low tree damage
- Early harvesting
- Implementation of new technologies: Traceability

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Line 2. Trunk shaker harvesters

Developing machinery

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Trunk shaker technology

- Integral harvesting process
- High maneuverability and low weigh
- Machine soil slope stability >15%
- Reduction of fruit harvesting cost
- High fruit quality and low tree damage
- Early harvesting
- Implementation of new technologies: Traceability

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Line 3. Automatization and pad systems

Developing machinery

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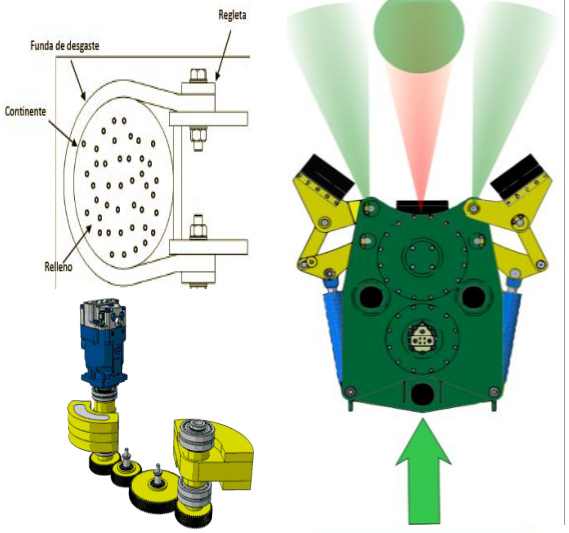
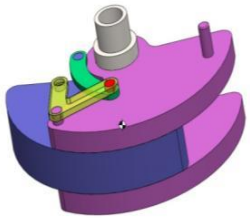
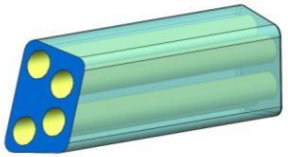
Trunk shaker improvements

- Reduction of risk to bark damage
- Regulation and automatization of operation
- Control pf vibration parameters
- Improvement of fruit detachment efficiency







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Line 4. Airblast sprayers

Developing machinery

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Chemical application on tree canopy

- Reduction of product losses
- Uniform application
- Reduction of economic cost
- Effectiveness of treatment
- Food safety and operational hazards

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Line 5. Automated sprayers

Developing machinery

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Chemical application to soil and plant cover management

- Site-specific application on weeds
- Reduction of product losses
- Reduction of cost production
- Environmental friendly
- Food safety and operational hazards
- Improvement of work safety
- Adjustment to soil slope

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Line 5. Tractor mowers

Developing machinery

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Cover crops for woody crops controls

- Reduction of power demand
- Increasing of working width
- Reduction of soil erosion
- Reduction of cover crops degradation

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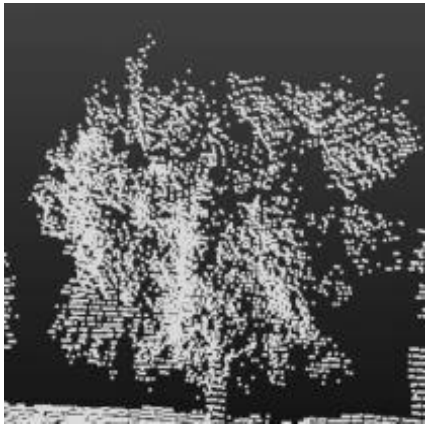
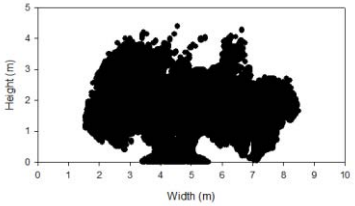
Line 6. Sprayer evaluation and tree pruning adaptation





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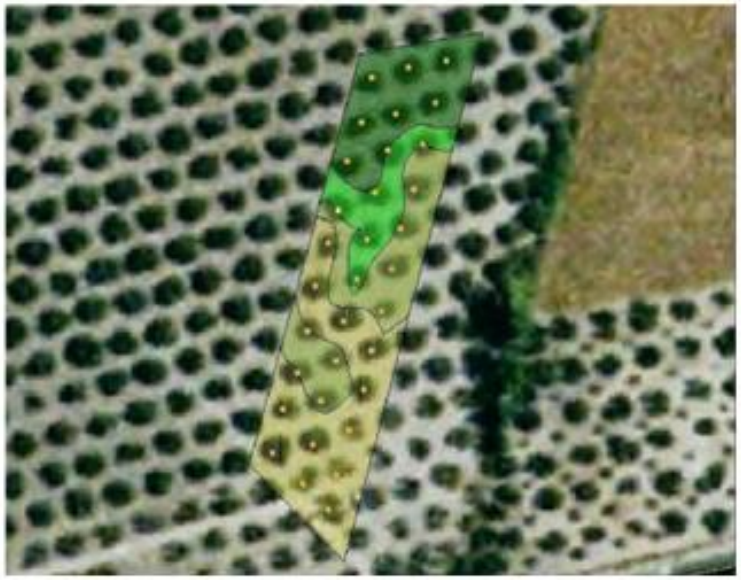
New technologies and innovation in olive growing

Mapping of tree fruit production.



Areas with different yields (kg / tree)

- 55.1 - 79.2 (0.1 ha)
- 40.7 - 55.1 (0.1 ha)
- 30.3 - 40.7 (0.1 ha)
- 17.9 - 30.3 (0.2 ha)

Continuous measurement of harvester parameters

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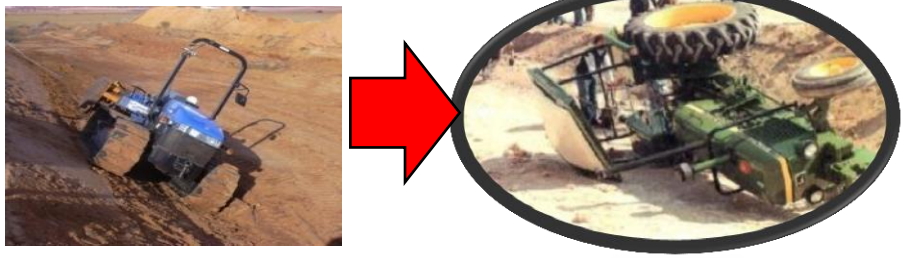
New technologies and innovation in olive growing

One fatal accident per week
70% due to vehicle rollover



Impact on security and the ability to work

Technological development: acoustic warning system vehicle rollover risk

INCLISAFE: Rollover warning device under dynamic conditions

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NATIONAL AWARDS OF INNOVATION AND DESING 2015 PRE-COMMERCIAL PROCUREMENT

THANK YOU FOR YOUR ATTENTION!

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