

# Can robots contribute to food security ?

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 ecorobotix

# Modern farming ≠ food security

Too heavy machines :

→ soil compaction, loss of fertility

Too many chemicals :

→ harmful for humans and nature

Too much fossile energy :

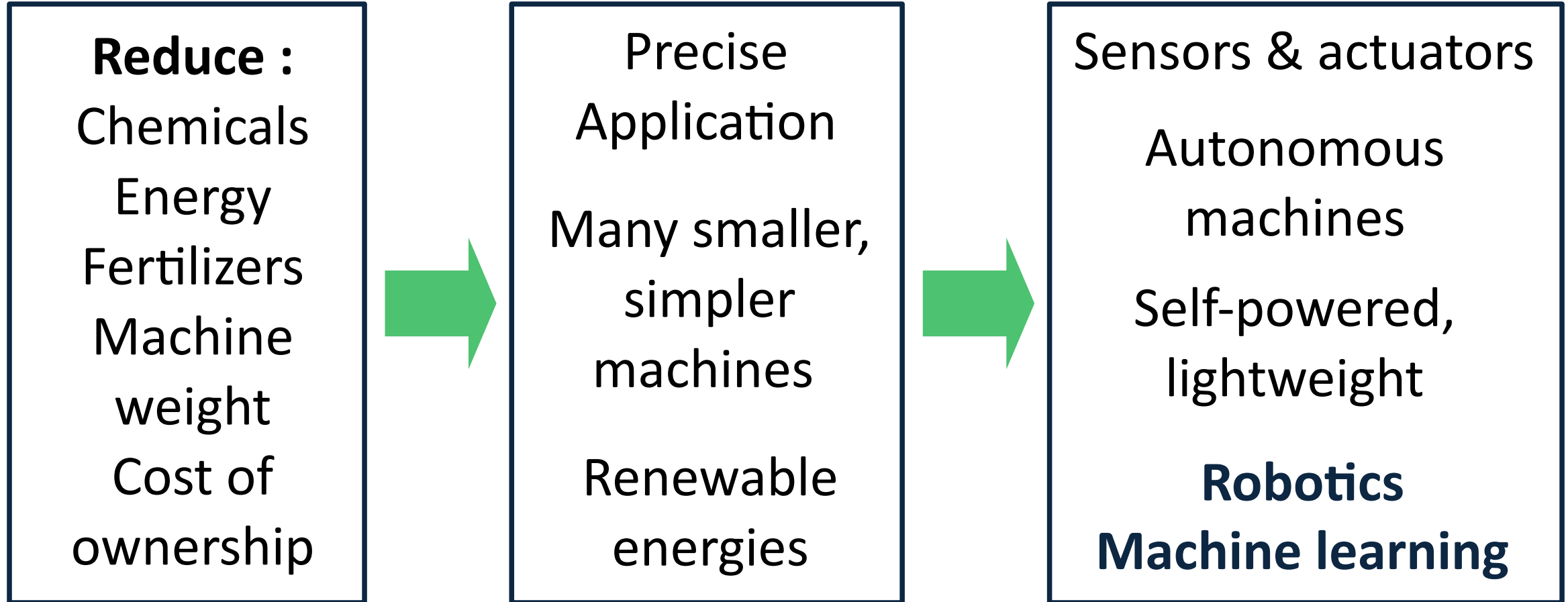
→ oil dependent, climate harmful

Too big farms & machines:

→ loss of independence for farmers



# Towards sustainable agriculture



# Field robots – two approaches

## « robotize » existing machines



EU-RHEA project

- + : flexibility, experience
- : few advantage except labour costs

→ heavy works

## Develop specialized robots



LadyBird, Univ. Sydney

- + : more specific tasks, efficiency
- : acceptance, flexibility

→ light works

# Potential applications for specialized robots

## Annual culture cycle



	Tilling	Fertilizing	Seeding	Weeding	Harvesting
Required Energy	High	Low	Medium	Low	High
Required Accuracy	Low	Low	High	High	M/High
Mass to transport	High	Medium	Low	Low	High

# Case study : robot weeder from ecorobotix



- Detects & sprays >90% of weeds
- With 20 times less chemicals
- Solar powered: unlimited autonomy
- Fully autonomous 7d/7, 12h/24
- Lightweight : no compaction, safe
- Simple : easy to deploy & fix
- For row crops, wheats & pastures
- Herbicide-free tool for organic crops  
in development

# How does it work ?



# Other weeders on market / in development



Carré (FR), hoeing



Swarmfarm (AU) spraying



Bosch (DE), mech weeding



Blue River tech (US), spraying



Rippa (AU), various tasks



Naio (FR), hoeing



# Potential of robot weeders

- Row crops : soybean, sunflower, rapeseed, corn, sugarbeet..
- Vegetables : onions, carrots, lettuces, beans...
- Weeding of dicotyledons in wheat, barley...
- Weeding of perennials in grasslands and intercultures
- Potential of > 2 millions of machines worldwide
- Can cut herbicide usage by 50 % (>1 million tons/year) in 2030
- Can help reduce costs of organic farming

# Ag robots & food security : concluding remarks

Robots can help preserve soil and reduce intrants BUT

- They shall replace less performant systems
- They must show social benefits to farmers
- They do not solve all problems (« the tech mirage syndrome »)
- They shall be produced with an environment-responsible way

Thank you for your attention



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