



Targeted droplets herbicide inputs by at least reduced in cabbages 85%

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Collaborators: Concurrent Solutions llc, Knight Farm Machinery

Context of research

- Respond to concerns about the loss of herbicide actives due to legislation
- Meet demand for more environmentally-friendly crop production by:
 - ✓ minimizing herbicide inputs
 - ✓ eliminating drift
 - ✓ reducing the run-off to the soil
 - ✓ reducing residues in the crop
- Overall aim: to develop an autonomous platform (robot) for weed control using targeted droplets



Field trial to test efficacy of glyphosate droplets for weed control in cabbages

- Manually-applied droplets (1-2 μ l) were compared with pre-emergence and band (inter-row) spraying

Weedy



Weed-free



Pre-emergence



Droplet x3

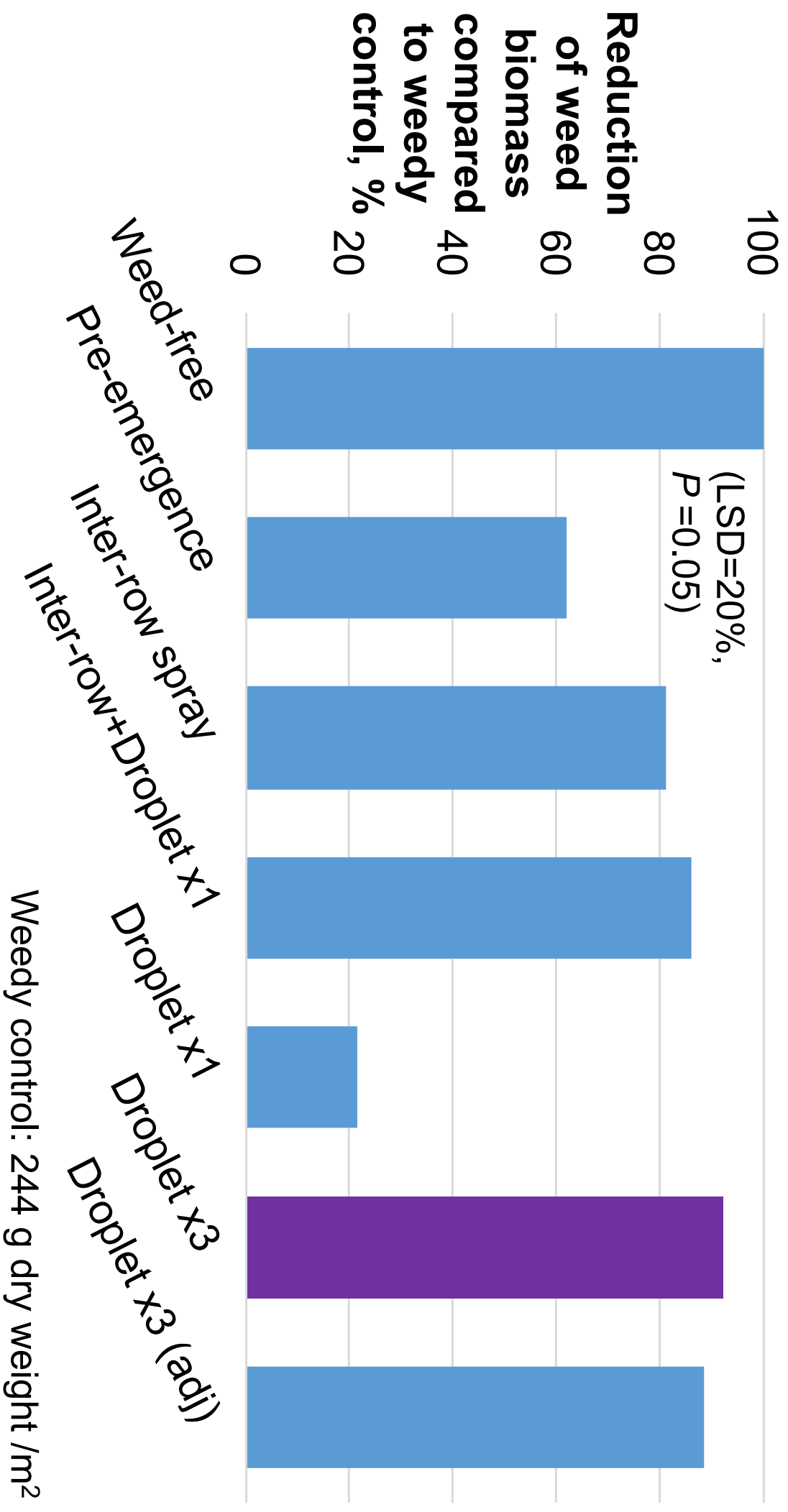


- Savoy cabbage plots seven weeks after transplanting
- Droplet x3: droplets applied 3, 5 and 7 weeks after transplanting

Efficacy of weed control

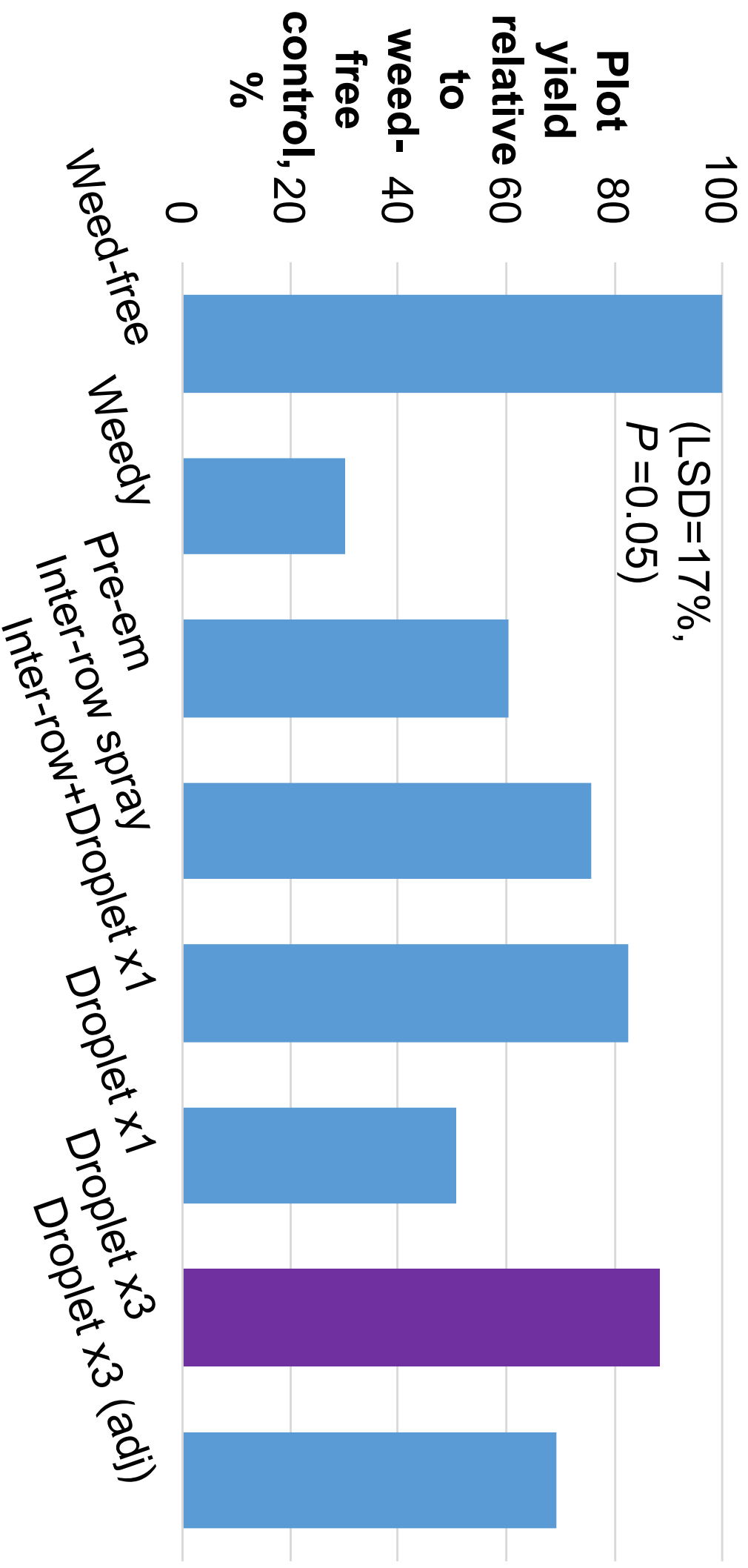
(at crop harvest – 18 weeks after transplanting)

- Droplet x3
 - reduced weed biomass by 92%
 - gave significantly better control than the pre-emergence spray



Crop yield

- Yield of Droplet x3 did not differ significantly from Weed-free



Weed-free fresh cabbage yield: 241 t biomass/ha

Herbicide applied and reductions relative to conventional

Treatments	Average herbicide amount, g/ha	Reduction relative to Pre-em, %	Reduction relative to Inter-row spray, %
Droplet x1	54	96	90
Droplet x3	83	94	85
Droplet x3 (adj)	119	91	78
Inter-row spray	540	59	NA
Inter-row+ Droplet x1	562	57	NA
Pre-emergence	1320	NA	NA

NA: not applicable