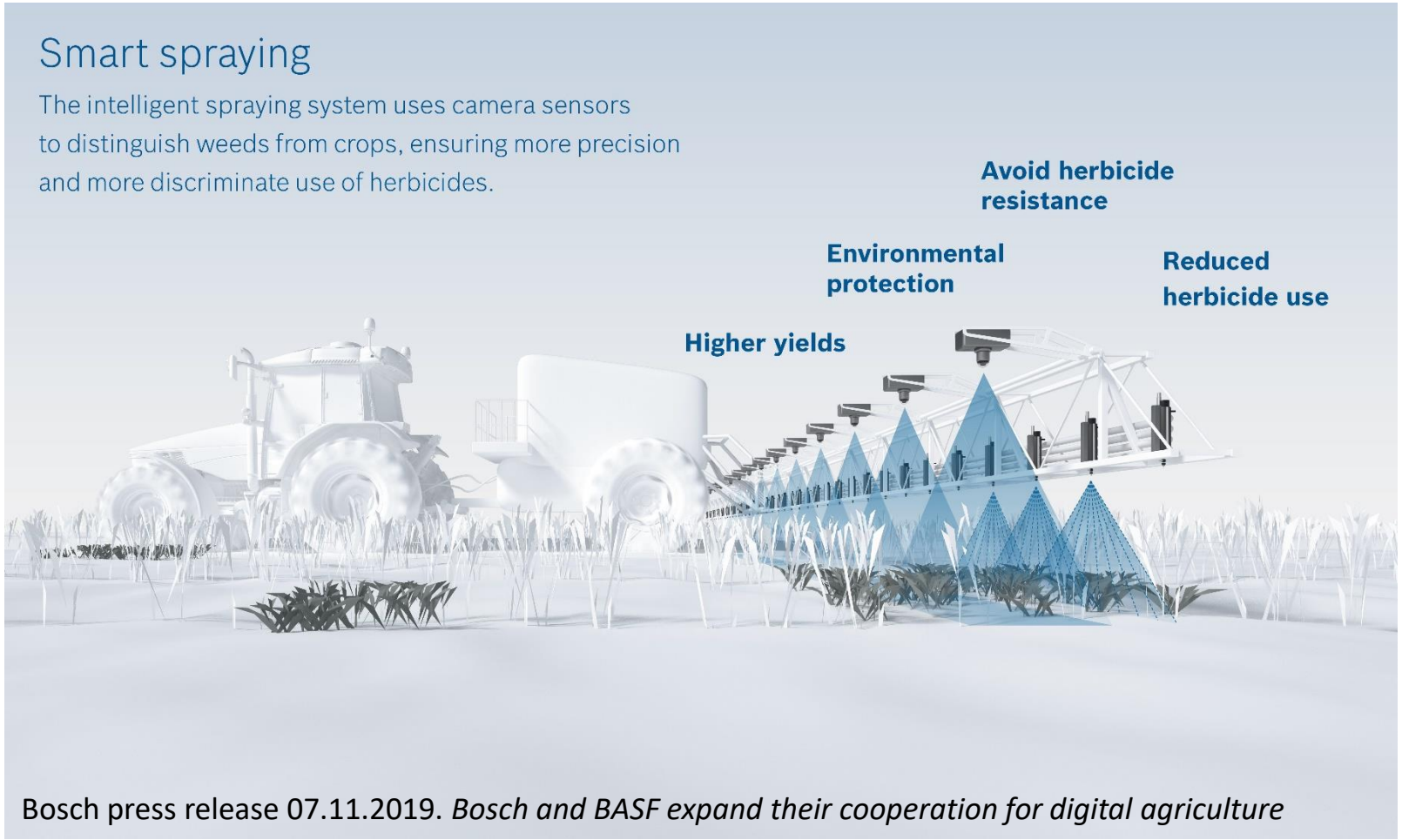
Sensor-Controlled Spot-Spraying Technology for Arizona Cotton

Pedro Andrade and Randy Norton, UA Extension Faculty



Bosch press release 07.11.2019. *Bosch and BASF expand their cooperation for digital agriculture*

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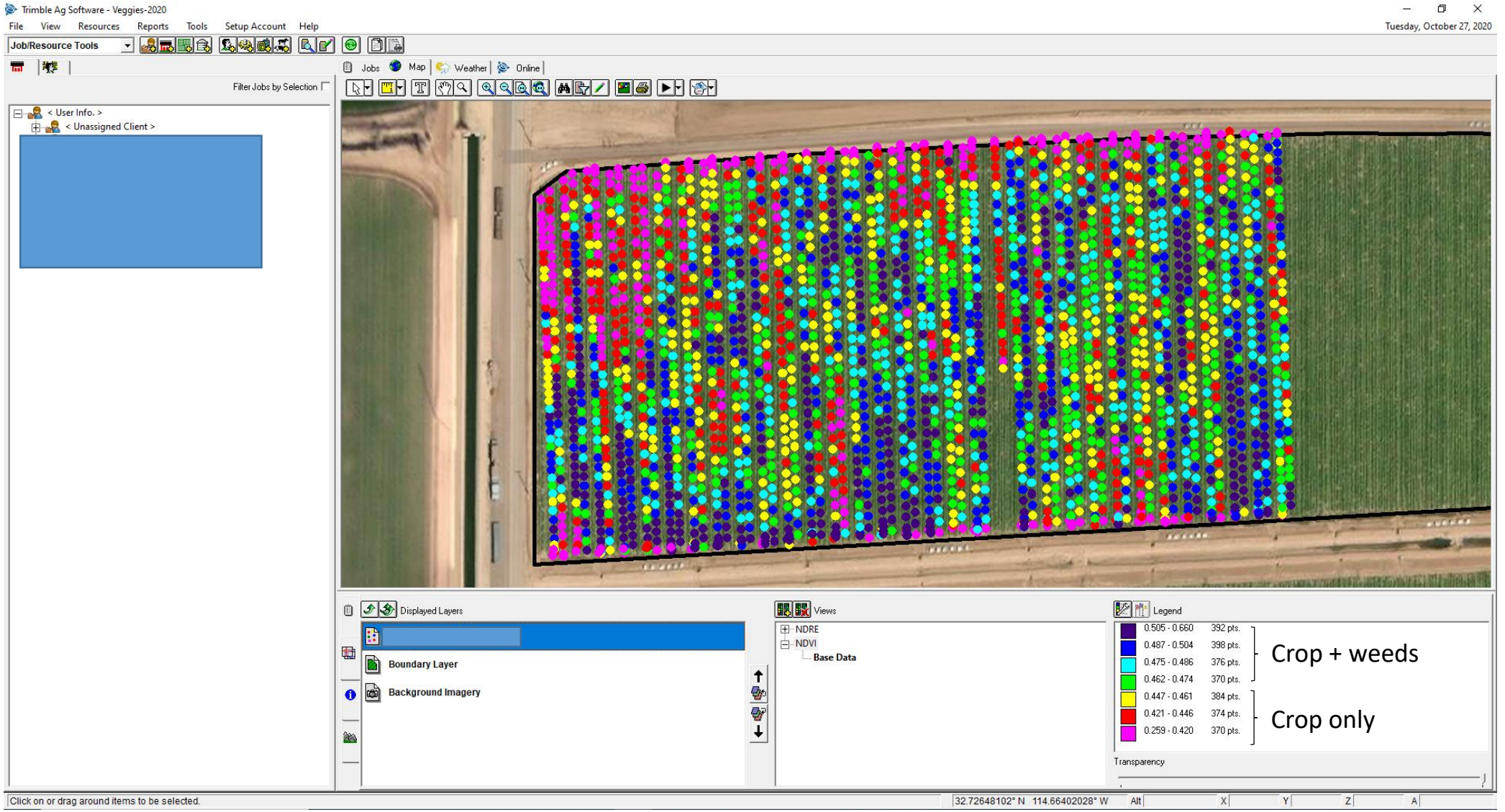

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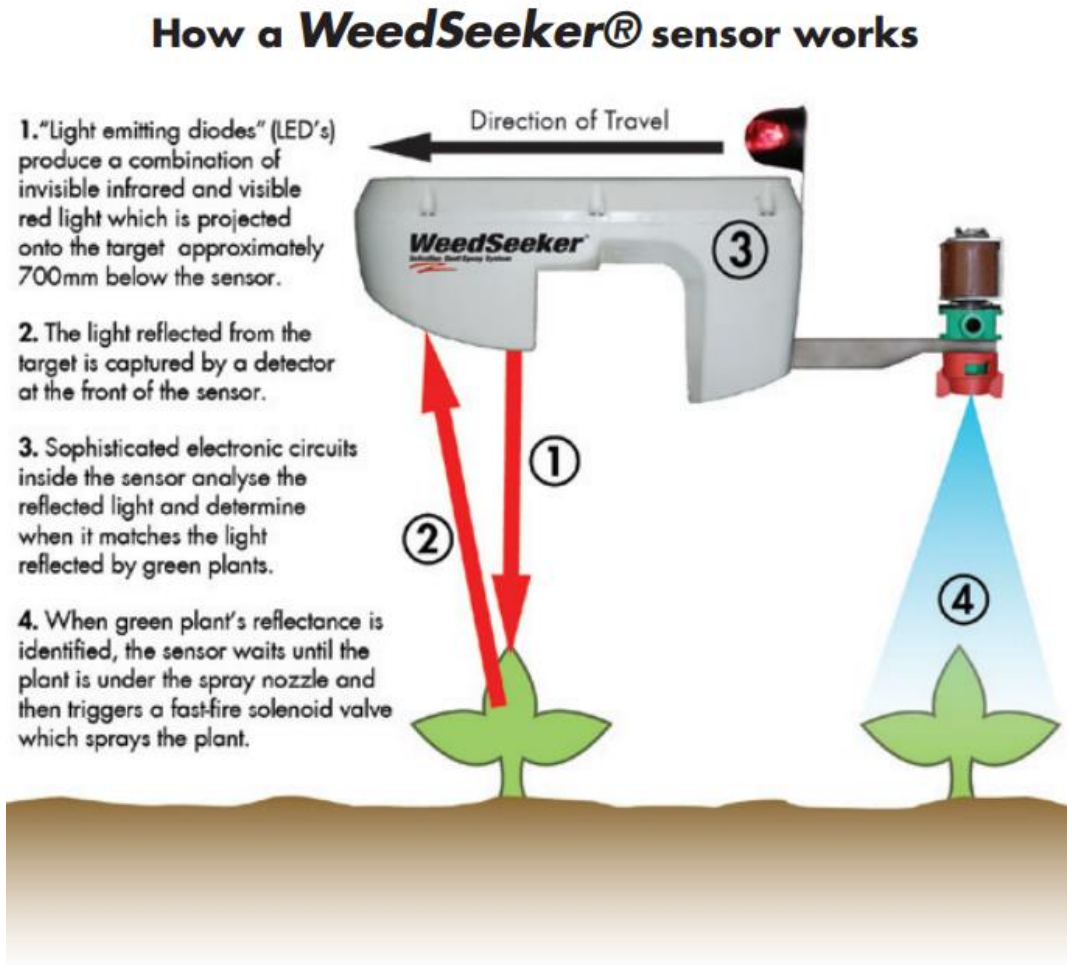

McIntosh Distribution Tamworth. www.mcintoshdistribution.com.au

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Weed-Seeker hooded sprayer in Arizona cotton planted after wheat. *Conservation tillage in Arizona cotton. 2004 Agricultural Experiment Station Research Report.*

Weed-IT hooded sprayer in Arizona cotton. Field performance testing during 2020 season. UA-MAC.

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- Improvements in sensitivity for weed detection through firmware algorithms ✓
- Improvements rate control (PWM) ✓

- Current field performance testing focused on generate information to guide adaptations needed to fit Arizona cotton farming systems
  - Hardware configurations (i.e. hood options)
  - Operational parameters (i.e. sensor height)

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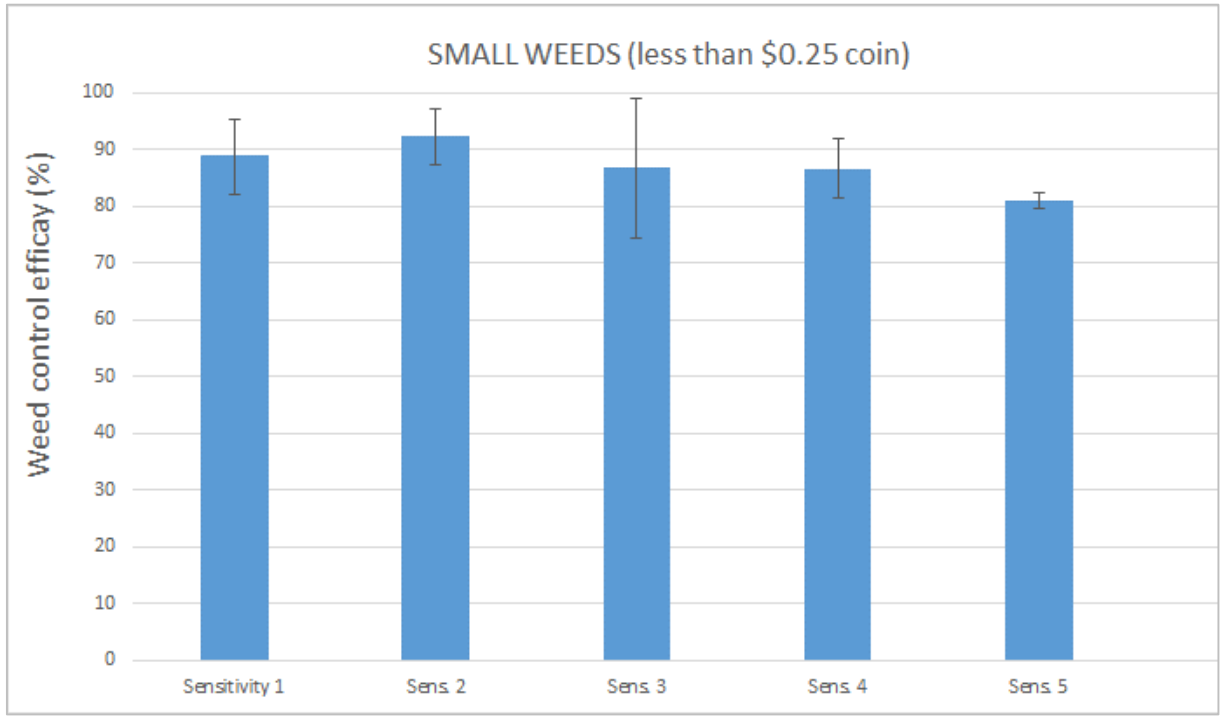
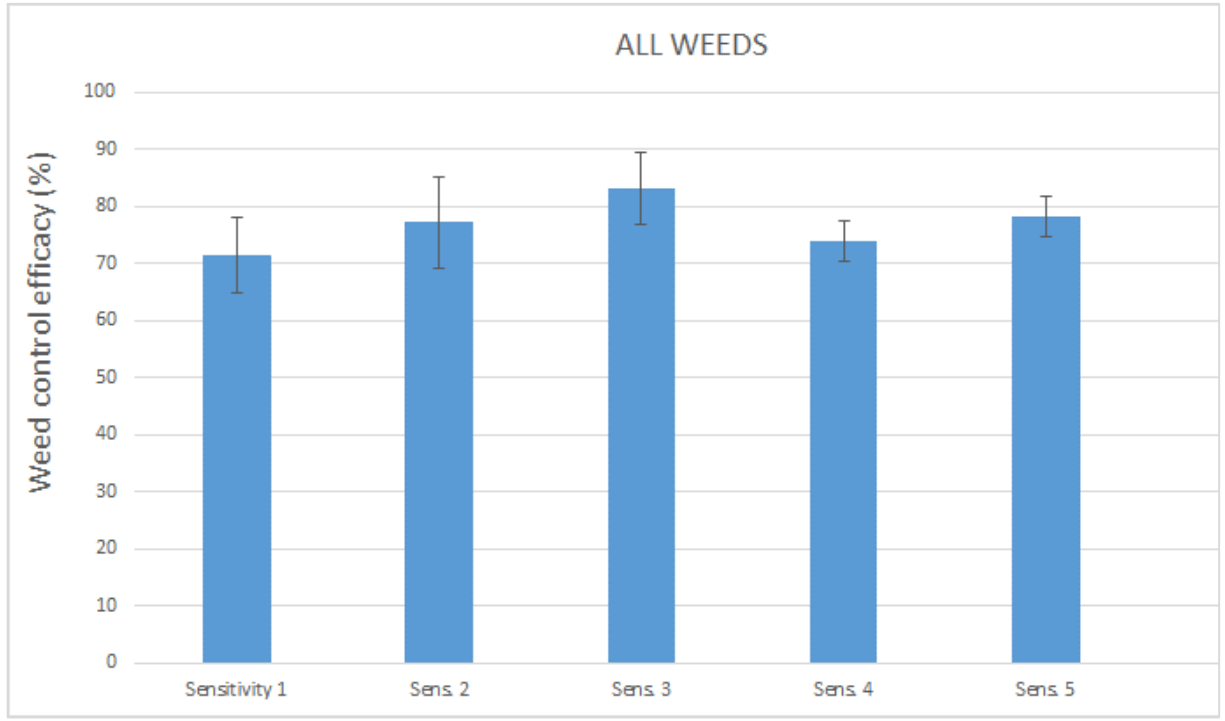
Preliminary testing – Safford Agricultural Center, September 2020





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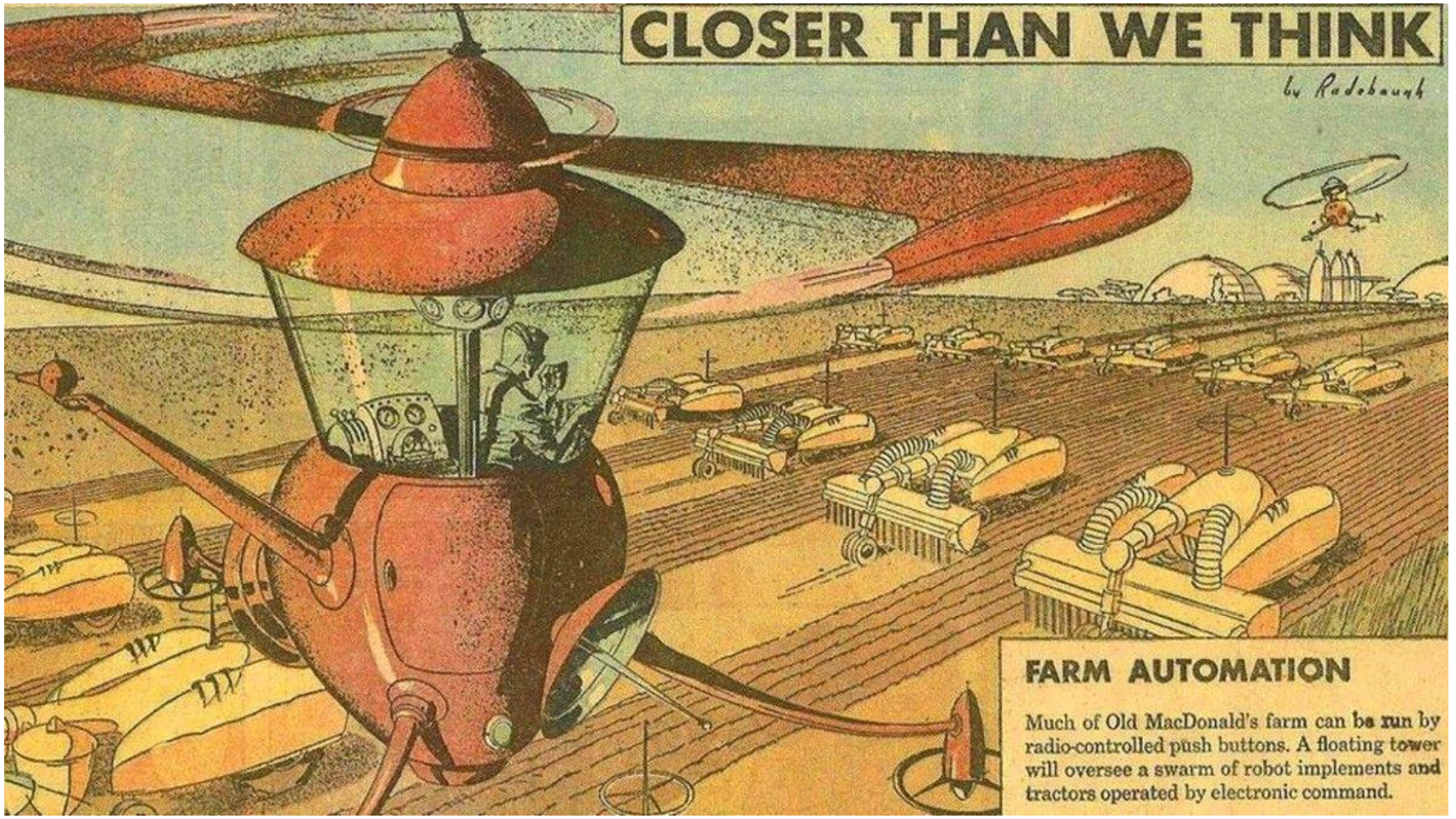

Arthur Radebaugh. *Closer Than We Think* series, 1958-1963

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1980's Micro-computer

- 1.6 x 10^6 bits/s
- Increase the information processing capacity of individuals engaged in agriculture

TABLE 1. SUBSTITUTING INFORMATION FOR ENERGY, EFFICIENCY IMPROVEMENT EXAMPLES

Operation	Current energy use joules per hectare	Possible energy savings		Information handling energy, joules per hectare	Energy saved per unit information handling energy
		joules per hectare	percent		
✓ Tractor transmission control	4 019	402	10	6.2	64
✓ Traction wheelslip control	4 019	523	13	7.4	70
✓ Irrigation water application	31 686	6 009	19		
✓ Fertilizer placement	11 238	4 487	40		
Control of tobacco curing	120 189	18 028	15	362.9	49
✓ Cotton gin management	1 444	183	13	1.6	867

W. Chancellor. 1981. Substituting information for energy in agriculture. Transactions of the ASAE. 24(4): 802-807

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Cotton Incorporated

THE UNIVERSITY OF ARIZONA Cooperative Extension

Arizona Cotton Growers Association

Thank-you for your attention!!

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