



Making No-till Systems Work for Transplanted Vegetables

Nathan Johanning

Extension Educator, Commercial Agriculture
University of Illinois Extension



Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Benefits of No-Till Production with Cover Crops

- **Cleaner fruit/fruit not lying directly on the soil**
- **Weed Control**
- **Preserve soil moisture**
- **Easier field access/harvesting under adverse weather conditions**
 - **Especially less muddy after rains**
- **Habitat for beneficial insects (pollinators!)**
- **Nitrogen production (legumes)**
- **Reduced erosion and overall improved soil health!**

Benefits of No-Till Production with Cover Crops

- Conventional Tillage
- No-till, Cereal Rye



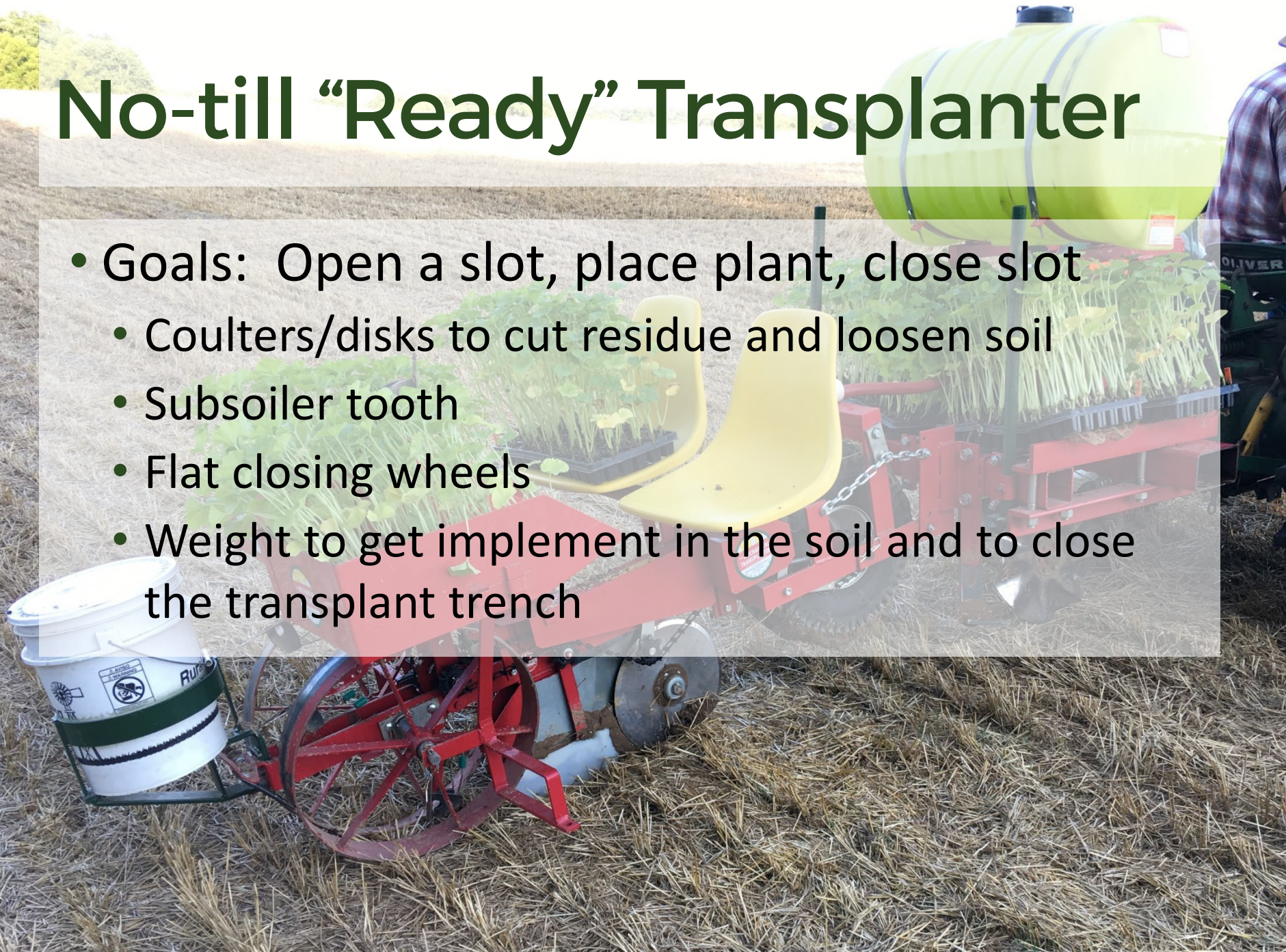
No-till/Cover Crop Transplanting Considerations

- Some cover crop residues can be difficult to plant/transplant in.
 - **Need specialized equipment**
- Heavy residue can keep the soil wet during excessively wet weather at planting
 - Know your soils and how they handle rainfall
- Requires some additional management
 - Weed & Nutrient Management



No-till “Ready” Transplanter

- Goals: Open a slot, place plant, close slot
 - Coulters/disks to cut residue and loosen soil
 - Subsoiler tooth
 - Flat closing wheels
 - Weight to get implement in the soil and to close the transplant trench









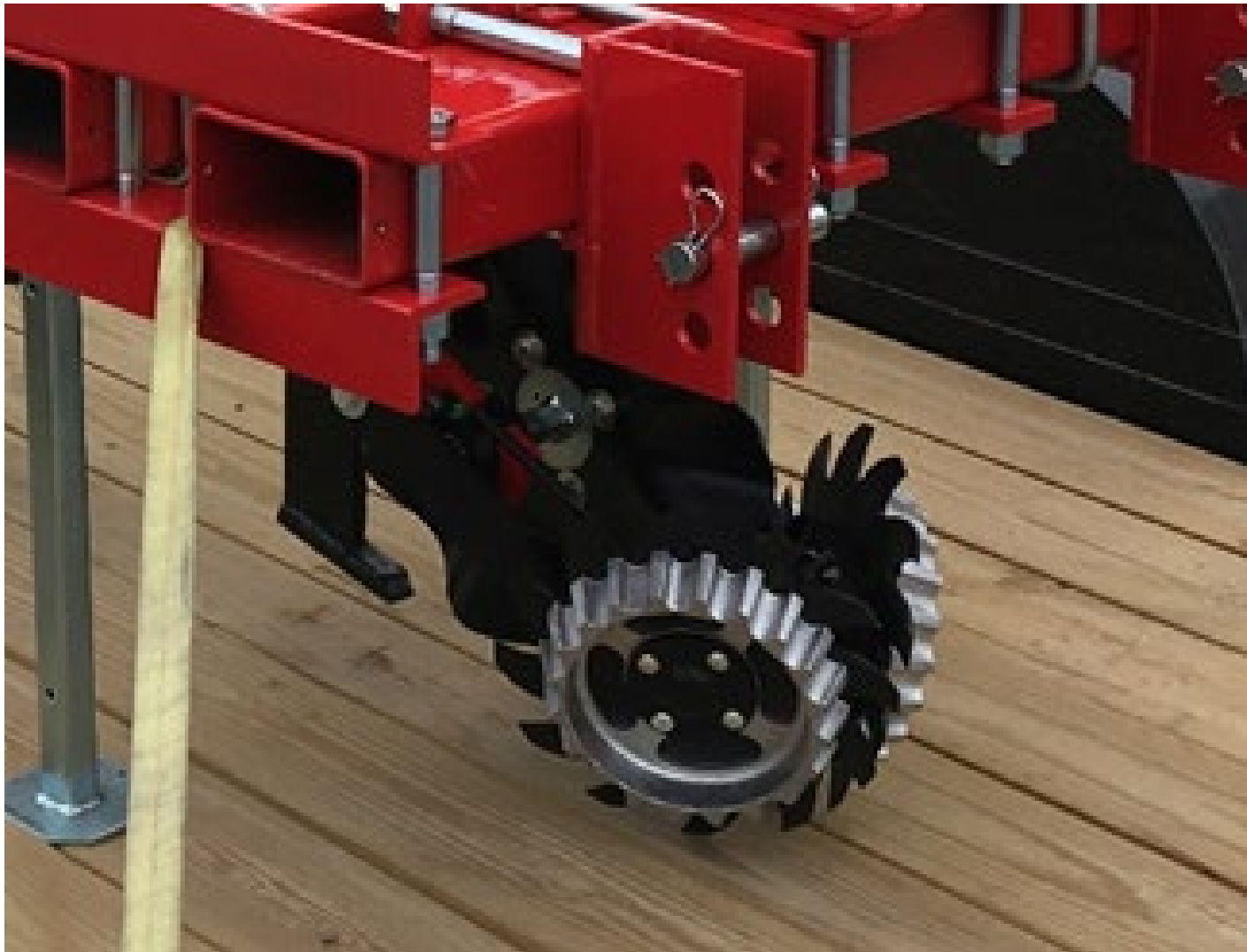
No-till “Ready” Transplanter

- Coulters to cut residue and loosen soil
 - Wavy (8 or 13) or bubble coulters to lead
- Subsoiler tooth
 - Optional but in some soil types, especially when dry it helps to loosen the soil.
- Row cleaners... maybe
- Need space between attachments for residue flow!!!





No-till Attachment...



Challenges...



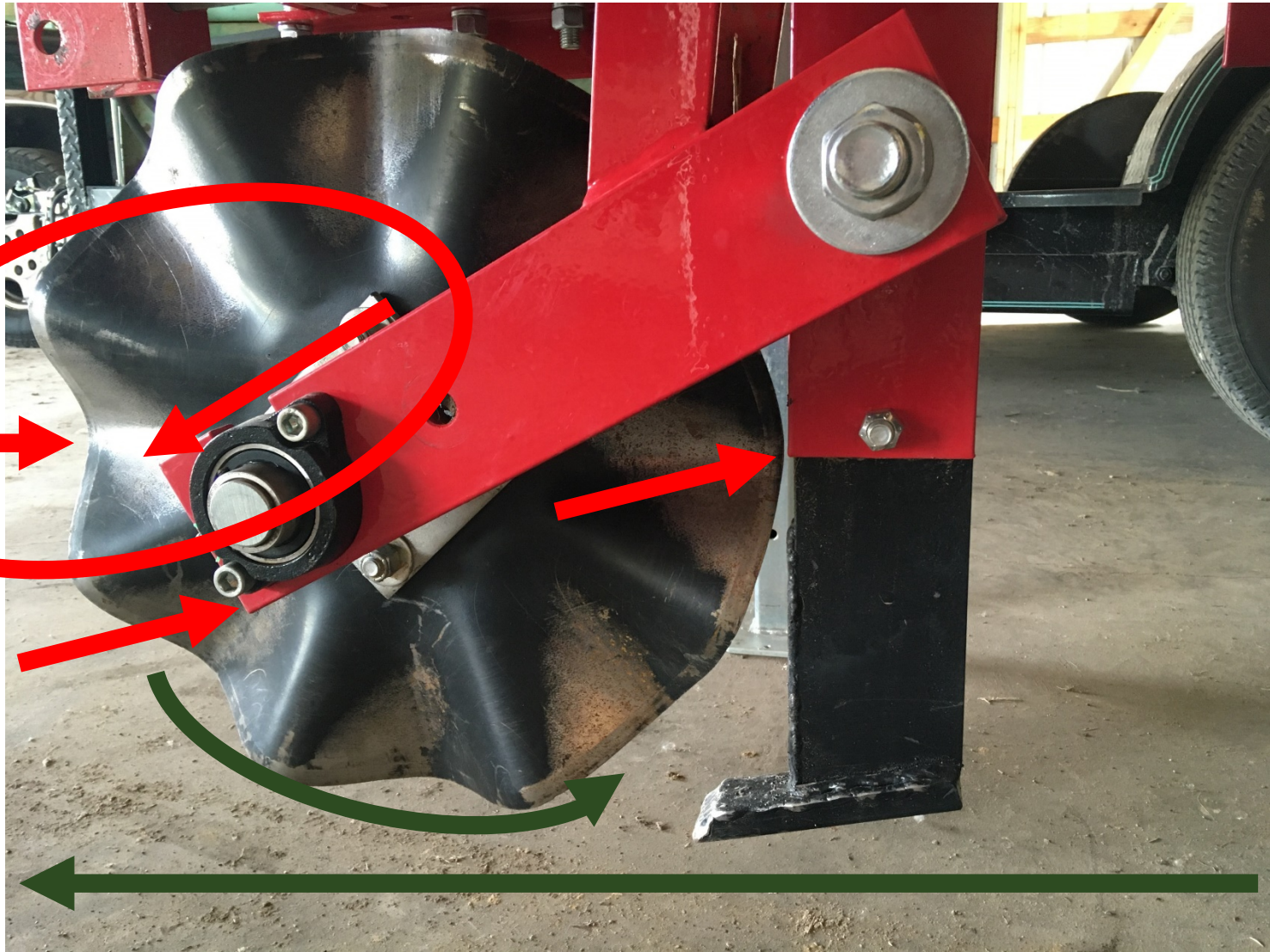
Challenges...



Challenges (cont'd)...



Challenges (cont'd)...





Solution...



No-till “Ready” Transplanter

- Double disk openers at planting shoe
 - Prevents any residue dragging in front of the transplanter shoe



No-till “Ready” Transplanter

- Flat Closing Wheels
 - Allows for better soil/wheel contact for better closing
 - Do not need the curved edge used to pull in loose soil in conventional tillage



No-till “Ready” Transplanter

- **Weight**
 - To get the implement in the soil and to close the transplant trench
 - Weight allows for **consistency** in these operations in a no-till soil that has more structure than a tilled soil



Troubleshooting

- Make sure the planter is level (at 3 pt hitch)
 - Tipped one way or another can change the performance of those operations.
- Adjust depth of different components so the compliment each other and work together.
 - Coulter: 3-5" Deep
 - Subsoiler: the same to slightly deeper
- Hold depth consistent when operating in field
 - Gauge wheels can be helpful

Weed Management

- Thick cover crop residue
- Reduce field “weed pressure” or weed seed bank
- Herbicides
 - especially PRE where available
- Mowing (mulching or rear discharge mowers)
- Shielded/Directed herbicide applications
- Hand pulling/hoeing
- Nutrient management and placement?!?

Nutrient Management

- Overall not necessarily a need for more fertility in no-till, but need to think about **timing** and **placement**.
- Timing:
 - In no-till there is a greater need for early/starter fertilizer.
 - Tillage naturally helps to mineralizes nutrients from the soil
- Placement:
 - Consider directed/sidedress applications especially for nitrogen

2020 Pepper Yields - Waterloo

Treatment	Marketable (per 20 plants)		Fruit size (lb)
	Fruit No.	Weight (lb)	
Bareground	175.5	77.13	0.44
Bareground, Cover	153.5	66.88	0.44
Plasticulture	141.3	58.23	0.41
Plasticulture, Cover	149.3	63.65	0.43
No-till	139.7	57.50	0.41
No-till, Cover, Herbicide	173.9	74.97	0.43
No-till, Cover, Rolled	107.9	46.24	0.43

No-till Transplanting



Illinois LocalFoods YouTube Channel – Making a No-till Transplanter Work for Vegetable Crops

<https://www.youtube.com/watch?v=3T2COr33xdE&t=5s>

Tips to Success with No-Till Production

- Start Small
- Make sure your equipment is “no-till ready”
 - Allow time to “adjust” your equipment for optimal planting
- Start & stay free of weeds
 - Cover crops, weed pressure management, burndown/residual herbicide program, etc.
- Understand your challenges and how to manage them



A man and a woman are standing in front of a green tractor in a field. The woman is on the left, wearing a white t-shirt with a graphic that says "BLOOD DONOR" and "on Repeat". The man is on the right, wearing a white sleeveless shirt, a baseball cap, and sunglasses. They are both smiling. The background shows a field of young plants and a line of trees under a blue sky.

Questions?

Thank You!

Nathan Johanning

Extension Educator, Commercial Agriculture

University of Illinois Extension

901 Illinois Ave.; PO Box 117

Waterloo, IL 62298

njohann@illinois.edu

(618)939-3434



Illinois Extension

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN