Perceptions About Conservation Practices On-Farm in Kansas





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Purpose of Research

- To understand farmers' perceptions of conservation practices on-farm to help inform research, extension and outreach.
- To differences between perceptions of conservation practice adopters and nonadopters to identify gaps in knowledge and barriers to adoption.

Focus

In-field conservation practices

Continuous No-Till

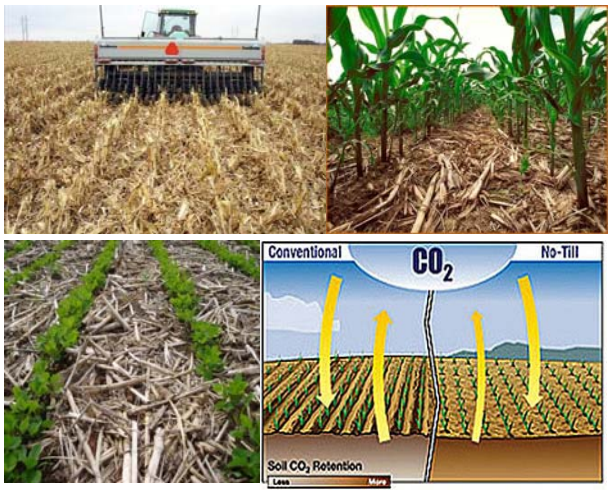
Conservation Crop Rotation

Cover Crops

Variable Rate Technology

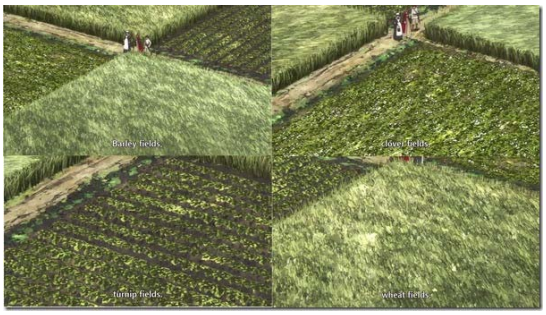
Continuous No-Till

- Consists in planting crops directly into the crop residue without disturbing the soil with tillage.
  - Disturbance is limited to nutrient injection.
- No-till across all the crops planted in a field.



Conservation Crop Rotation

- Implementation of a 3 or more year rotation with three or more crops types. (This could also include a 2 year rotation with double cropping.)
- The rotation includes a combination of high residue crops, grasses and/or legumes.

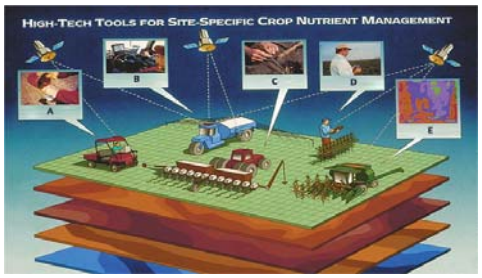


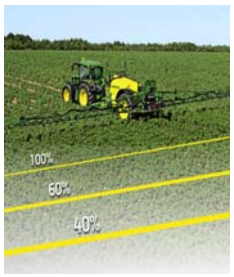
Cover Crops

- Single or multiple cover crop species planted between regular cash crops to protect the soil and improve soil organic matter.
- Cover crops species :
  - Legumes: winter peas, hairy vetch, cowpeas, crimson clover, sunn hemp, etc.
  - Cereal: rye, oats, millet, etc.
  - Grass: sorghum-sudangrass hybrid, etc.
- Variable costs of planting and managing cover crops in Kansas range from $40/acre to $100/acre.

Variable-Rate Application of Inputs

- Varying rates of inputs (e.g. fertilizer, lime, herbicides) within a field based on field requirements (e.g. changes in soil, high/low yielding areas).
  - Map-based
  - Sensor-based





Conservation Workshops

- Workshops were conducted in 2013/2014 in 12 locations around Kansas to talk with farmers about conservation practices on-farm and collect farm data.
- Farmers answered surveys about conservation practice adoption and their perceptions about these practices.
- Attendees were compensated for their time and travel.

Workshops

Table 1: Workshop locations and attendees

Workshop location		Attendees
1	Salina	39
2	Great Bend	32
3	Colby	19
4	Dodge City	14
5	Wellington	21
6	Hiawatha	13
7	Topeka	25
8	Manhattan	14
9	Parsons	31
10	Pratt	10
11	Garnett	16
12	Hays	14
	Total	**248**

- Sample was obtained from the Kansas Farm Management Association (KFMA)
- Timing: December 2013 to March 2014

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- Many participants are already involved with conservation on their farm.
- Recall, we are interested in the intensification of conservation on-farm. Looking at what it would take to do more conservation.

Farm Characteristics

Table 2. Average farm characteristics

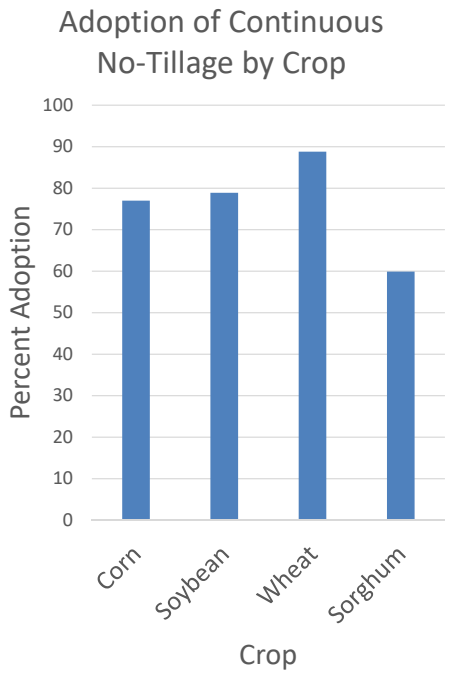
Variable	N	Mean	Min	Max	Census of Agriculture
Age	248	57.13	20	90	56.2 years
Average farm size	247	2,460	40	14,875	981 acres
Average sales value	242	6.2[b]	1	9	$ 438,020

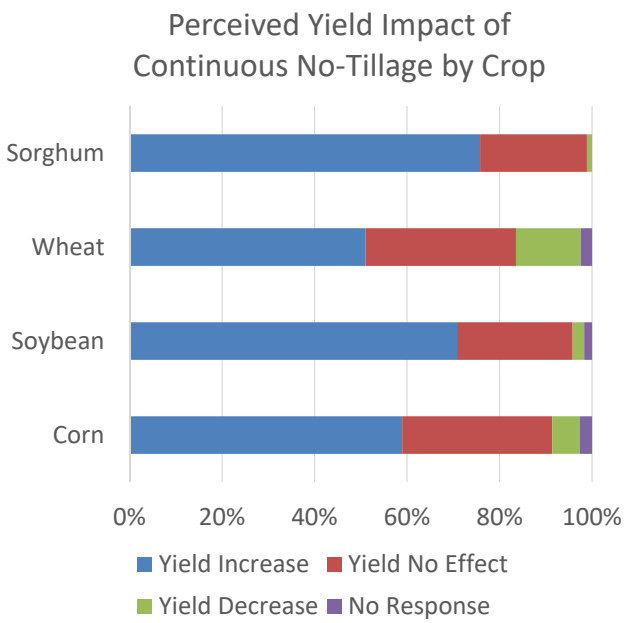
[a] Source: National Agricultural Statistics Service, USDA (2007) (> $50K in Sales)

[b] Mean sales of 6.20 corresponds to the sales category of **$400,000 to $599,999**

Continuous No-Till

Continuous No-Tillage – 63% Adoption





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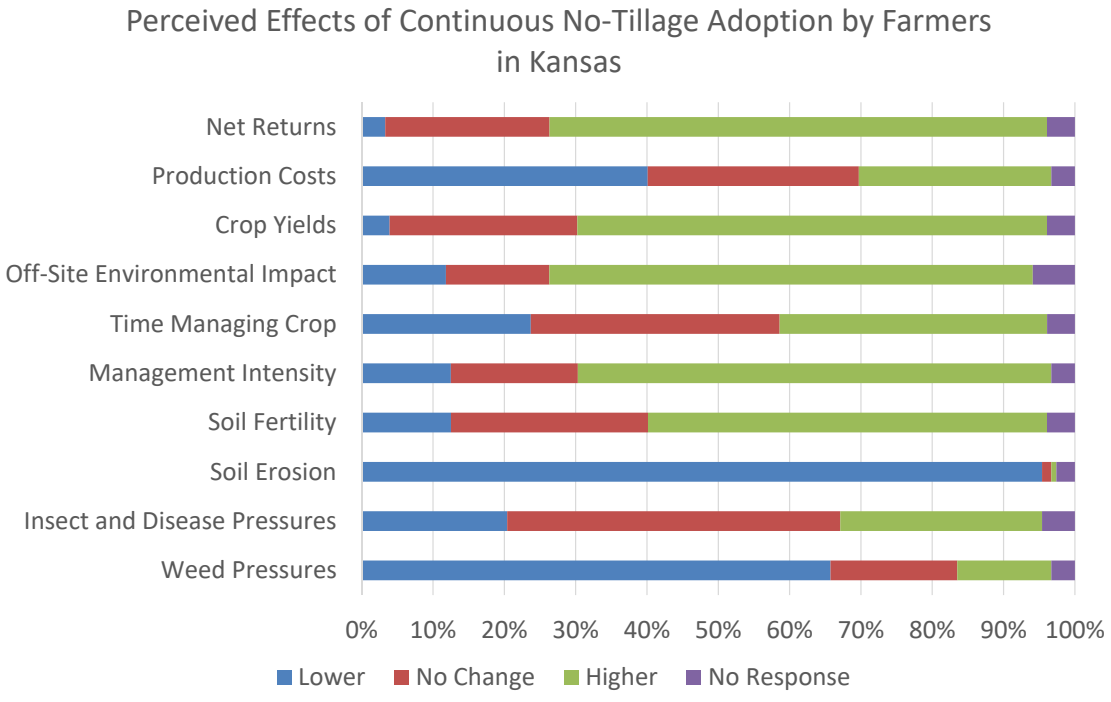

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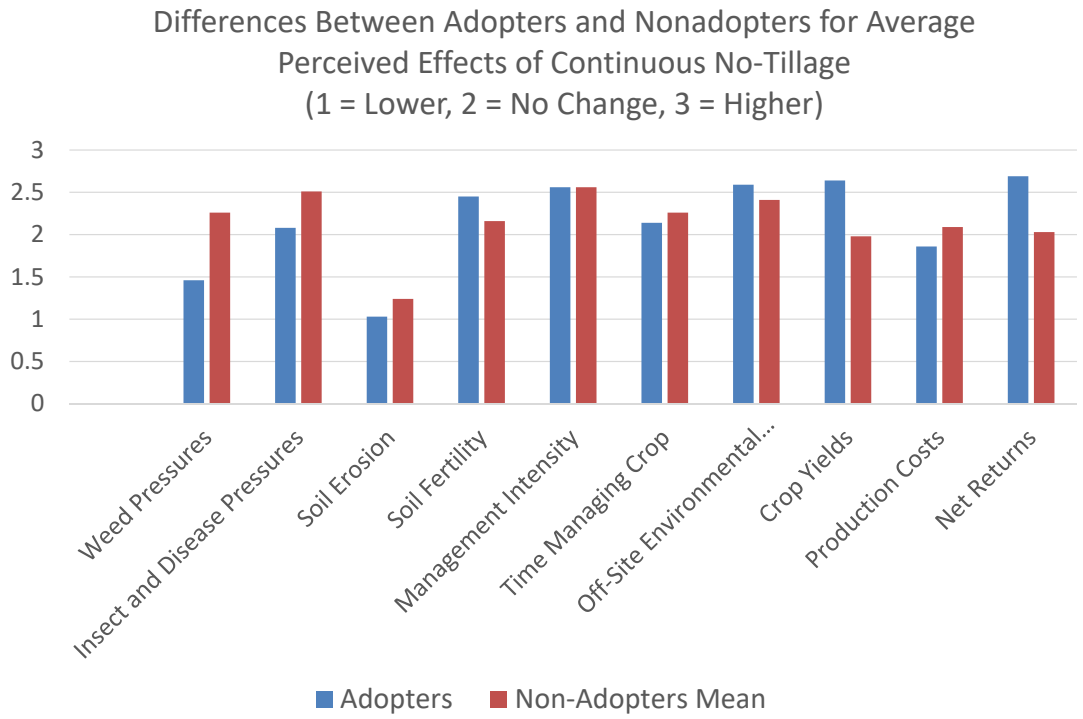


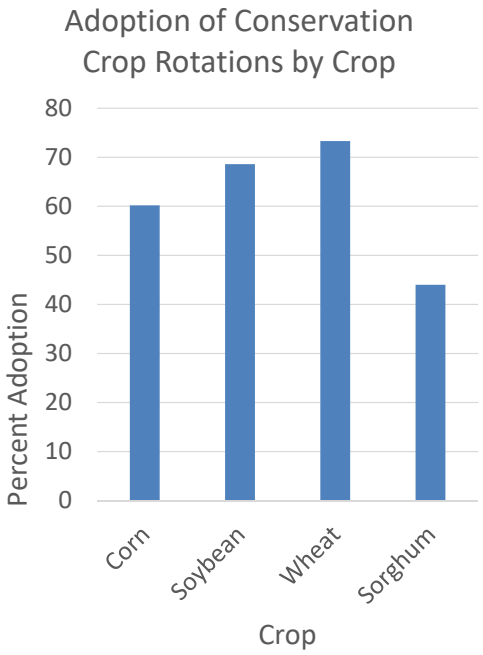
Continuous No-Tillage

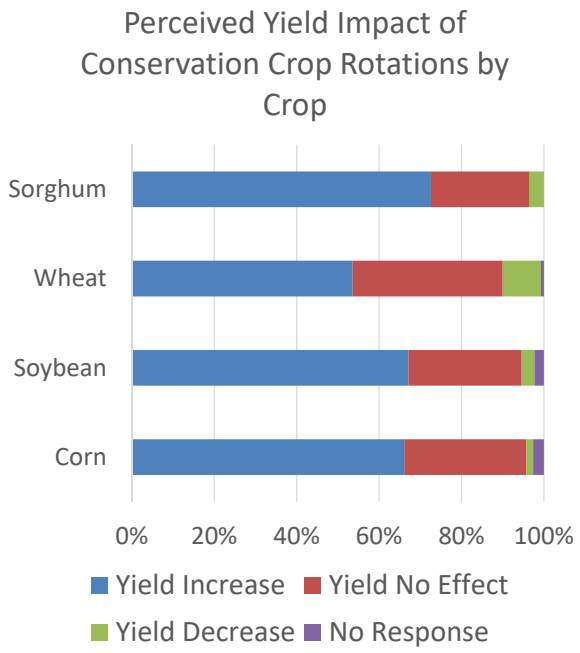
Statistically significant differences indicated:

- Nonadopters perceived higher weed, insect and disease pressures.
- Nonadopters perceived less soil fertility benefits.
- Nonadopters perceived less impact on crop yields
- Nonadopters perceived no changes in production costs and less of an impact on net returns.

Conservation Crop Rotation

Crop Rotation – 69% Adoption





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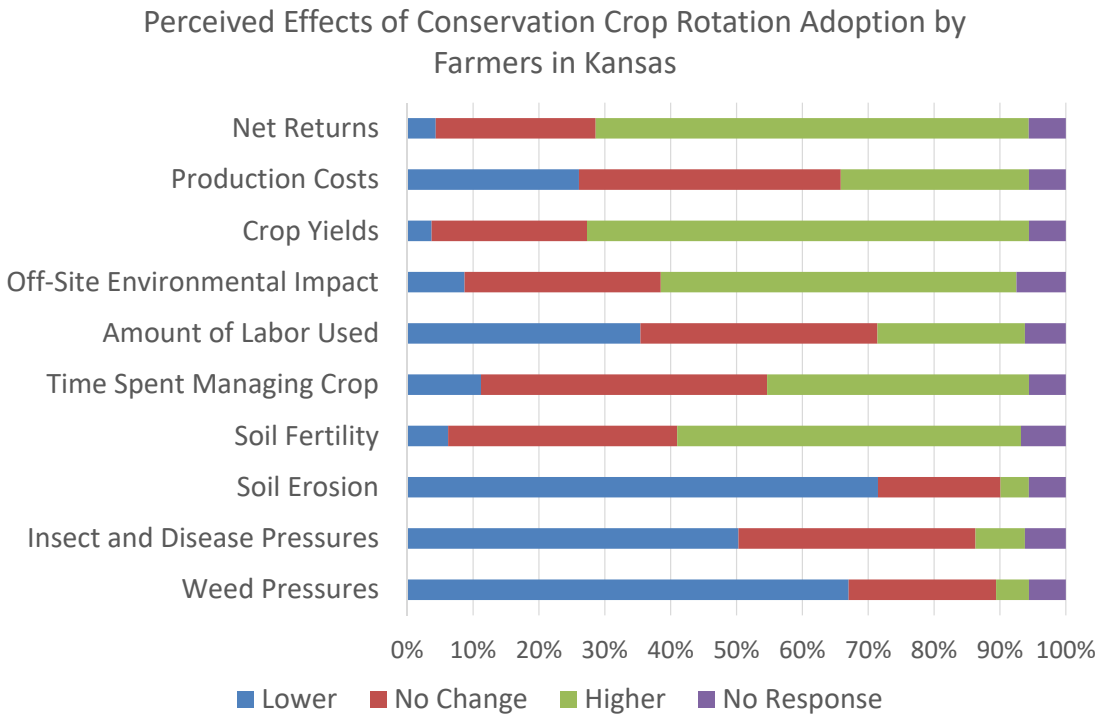

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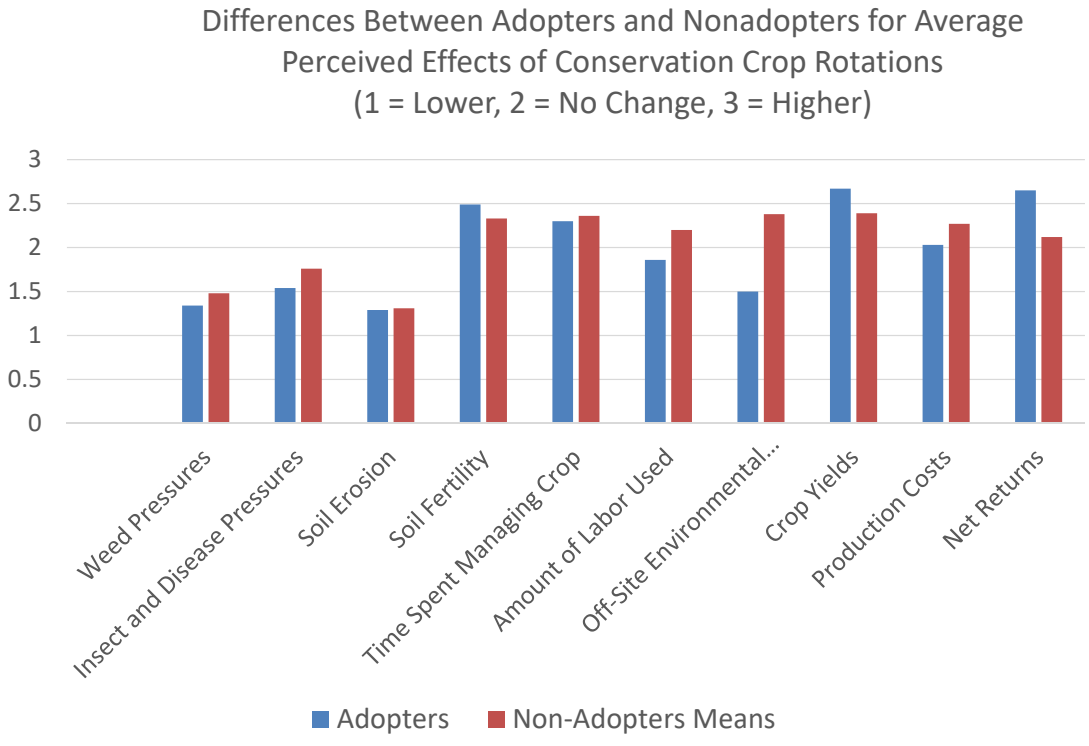


Conservation Crop Rotation

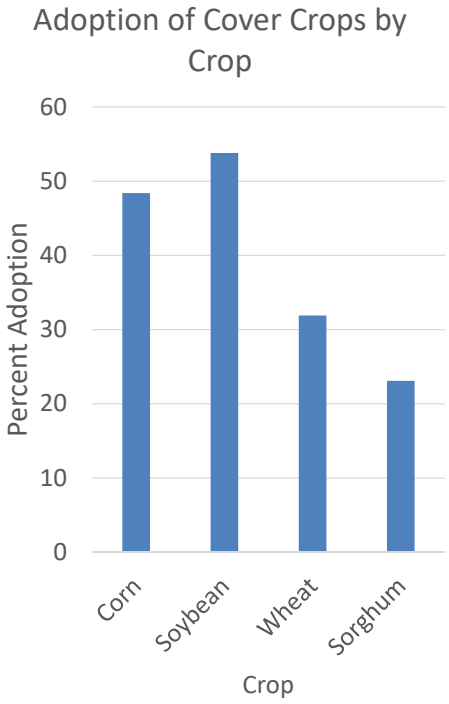
Statistically significant differences indicated:

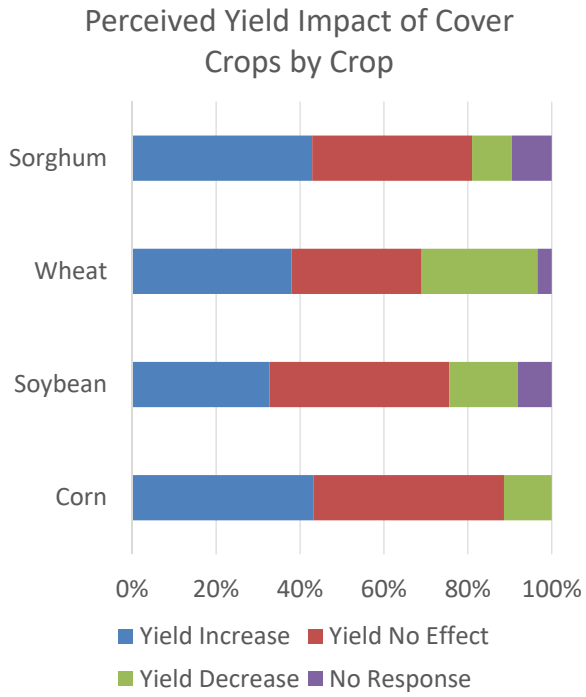
- Nonadopters perceived a higher labor requirement
- Nonadopters perceived less impact on crop yields
- Nonadopters perceived less of an impact on production costs and net returns.

Differences in perceptions between adopters and nonadopters is not necessarily as significant as many producers utilize crop rotations already, especially in dryland cropping systems.

Cover Crops

Cover Crops – 39% Adoption





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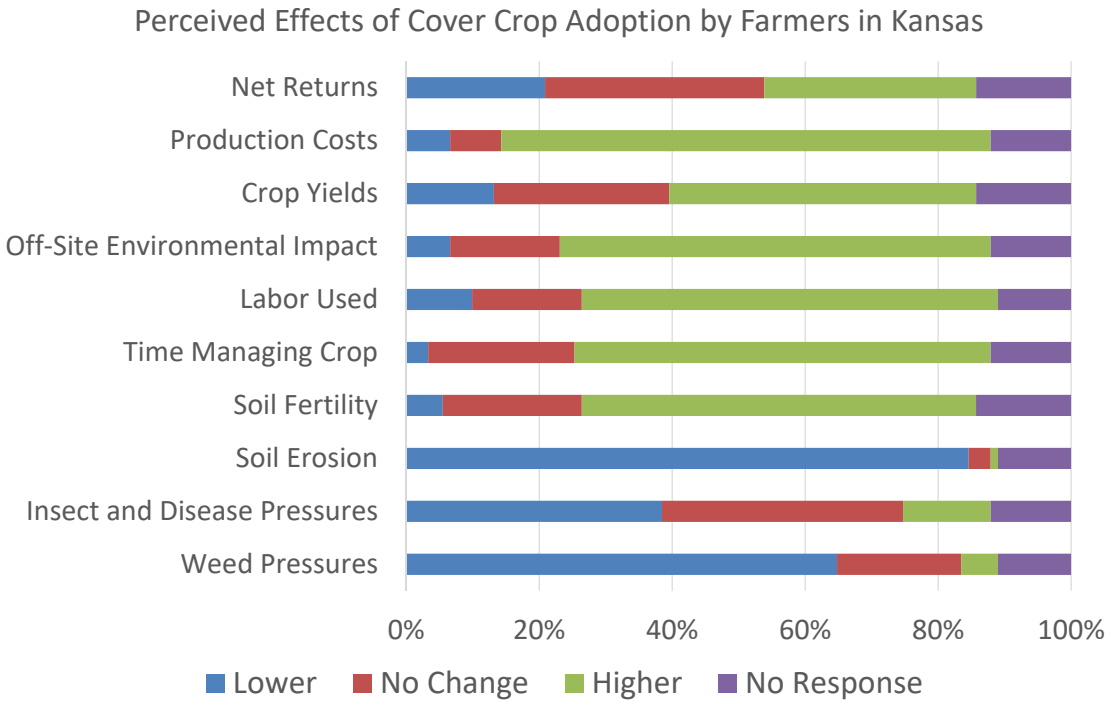

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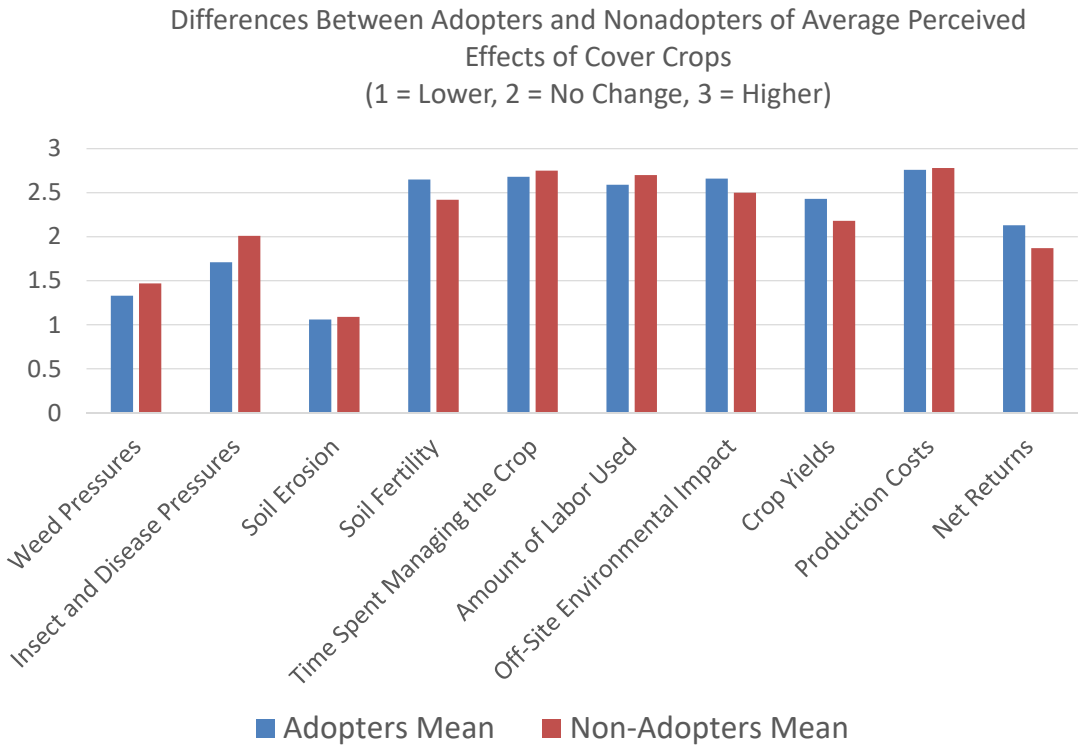


Cover Crops

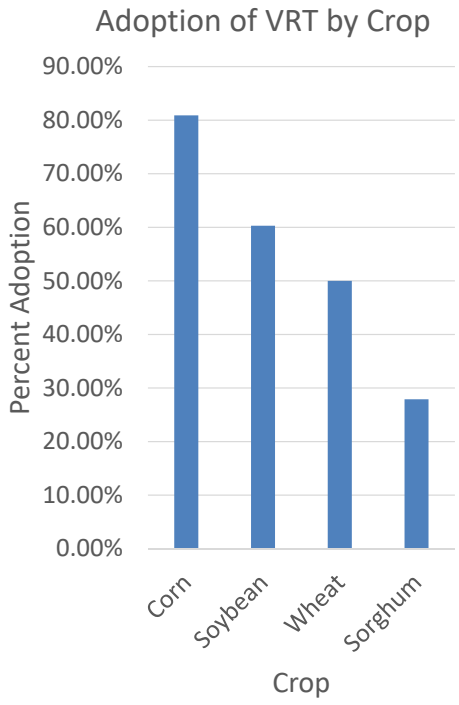
Statistically significant differences indicated:

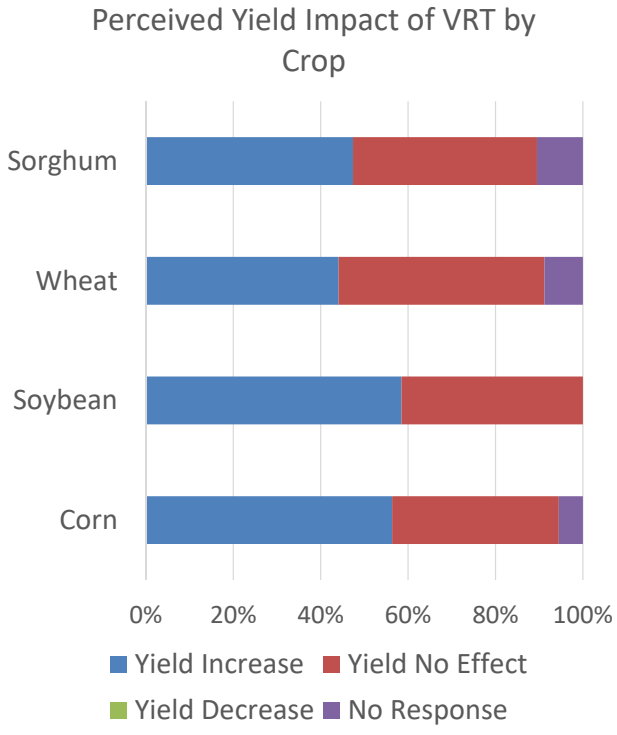
- Nonadopters perceived no impact on insect and disease pressures.
- Nonadopters perceived less soil fertility benefits.
- Nonadopters perceived less impact on crop yields
- Nonadopters perceived less of an impact on net returns.

Differences in perceptions between adopters and nonadopters is less pronounced than other conservation practice examined. This practice is still relatively “new” in Kansas.

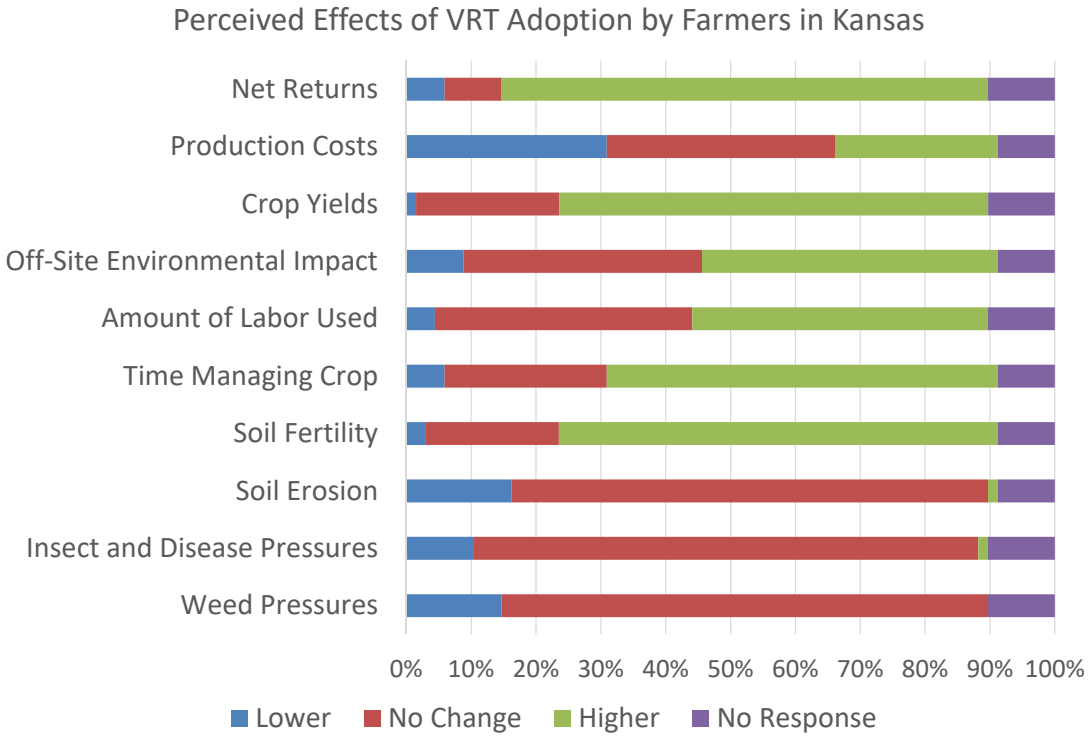
Variable Rate Technology (VRT)

VRT – 29% Adoption

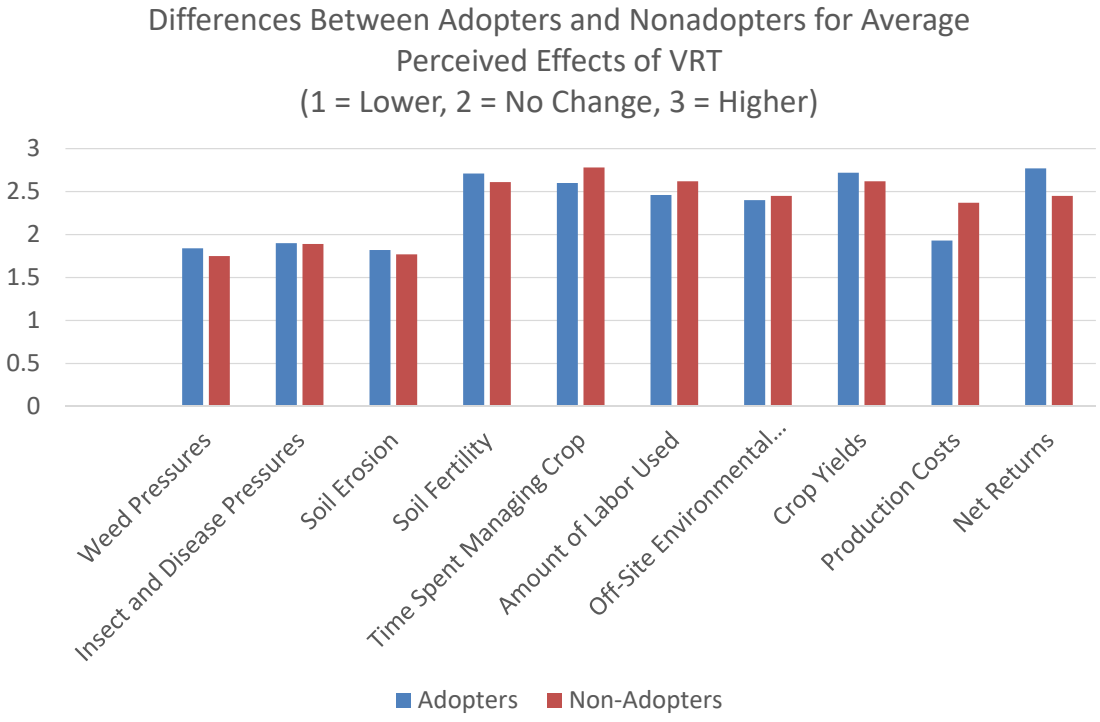




VRT


Perceived Effects of VRT Adoption by Farmers in Kansas
Net Returns
Production Costs
Crop Yields
Off-Site Environmental Impact
Amount of Labor Used
Time Managing Crop
Soil Fertility
Soil Erosion
Insect and Disease Pressures
Weed Pressures
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Lower
No Change
Higher
No Response

VRT


Differences Between Adopters and Nonadopters for Average Perceived Effects of VRT
(1 = Lower, 2 = No Change, 3 = Higher)
3
2.5
2
1.5
1
0.5
0
Weed Pressures
Insect and Disease Pressures
Soil Erosion
Soil Fertility
Time Spent Managing Crop
Amount of Labor Used
Off-Site Environmental...
Crop Yields
Production Costs
Net Returns
Adopters
Non-Adopters

VRT

Statistically significant differences indicated:

- Nonadopters perceived more time spent managing the crops than adopters.
- Nonadopters perceived higher production costs and less impact on net returns.

Differences in perceptions between adopters and nonadopters may be skewed somewhat due to availability of services and lower adoption rate.

Conclusions

- There exists significant differences in perceptions about conservation practices between adopters and nonadopters.
- On average, nonadopters perceived higher production costs and less of an impact on net returns from conservation practice adoption.
- Furthermore, nonadopters did not perceive as high a benefit from adoption of conservation practices.
- There exists a need for further dissemination of knowledge about conservation practice impacts at the farm level.
- Outreach may be better served through field days and demonstrations/research on-farm, as well as peer programs.

Questions or Comments?