



TUESDAY **TAILGATE TALKS** *JUNE 2, 2020*

Featuring: Scott Downey and Nathan DeLay

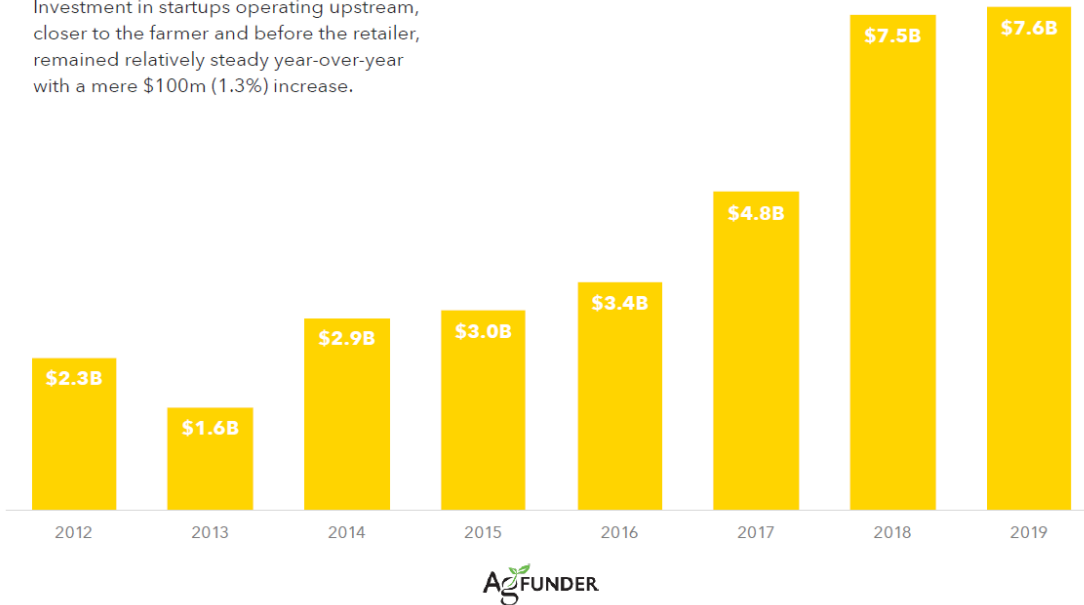
TRENDS IN DIGITAL AGRICULTURE

Upstream

YEAR IN REVIEW

Annual Financings | 2012-2019

Investment in startups operating upstream, closer to the farmer and before the retailer, remained relatively steady year-over-year with a mere \$100m (1.3%) increase.



AGRI-FOODTECH FUNDING REPORT: YEAR REVIEW 2019 | AGFUNDER.COM

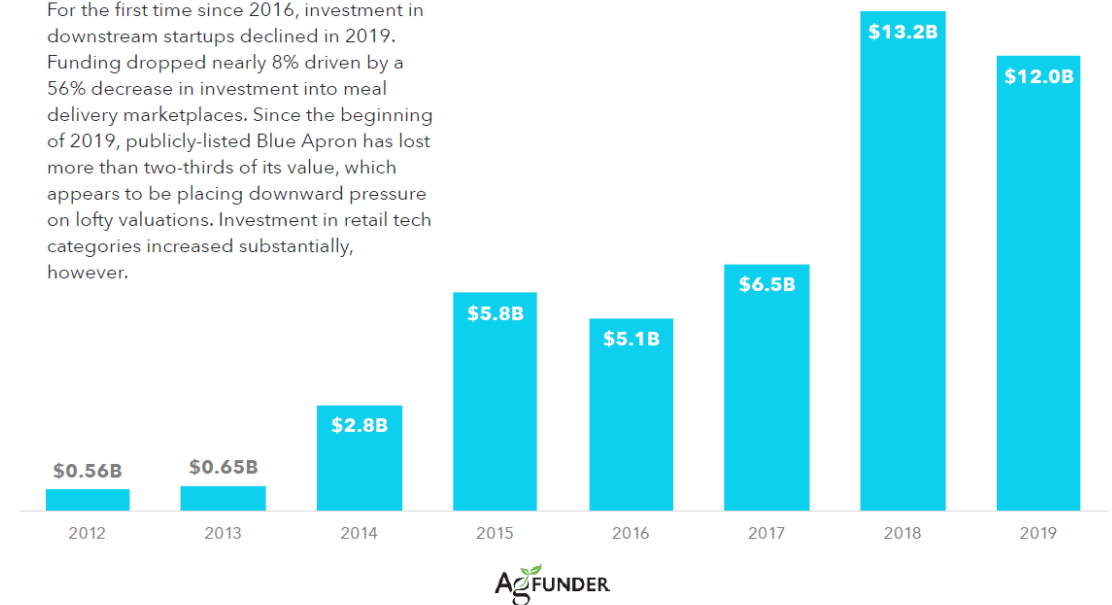
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Downstream

YEAR IN REVIEW

Annual Financings | 2012-2019

For the first time since 2016, investment in downstream startups declined in 2019. Funding dropped nearly 8% driven by a 56% decrease in investment into meal delivery marketplaces. Since the beginning of 2019, publicly-listed Blue Apron has lost more than two-thirds of its value, which appears to be placing downward pressure on lofty valuations. Investment in retail tech categories increased substantially, however.



AGRI-FOODTECH FUNDING REPORT: YEAR REVIEW 2019 | AGFUNDER.COM

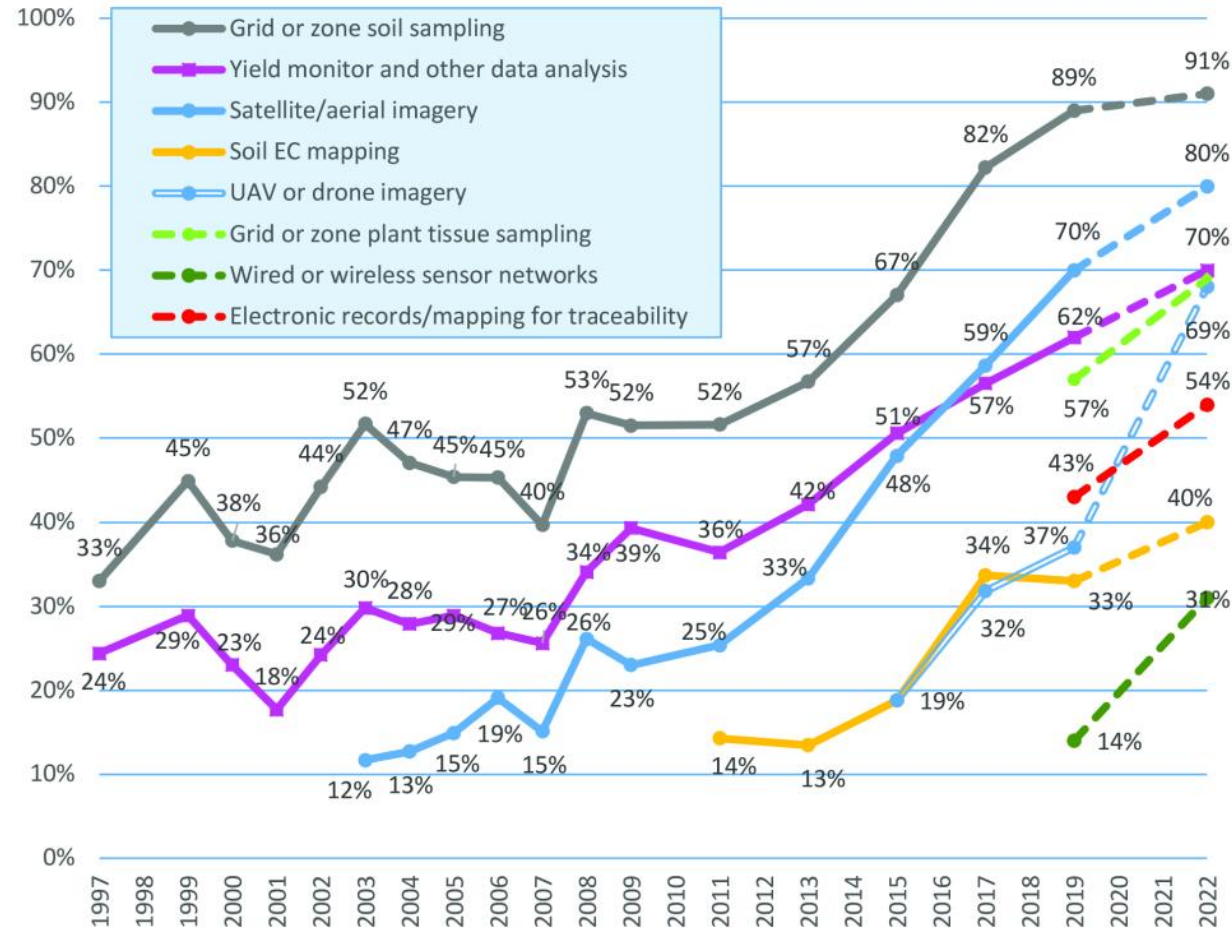
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Source: AgFunder Agri-Food Tech 2019 Year in Review



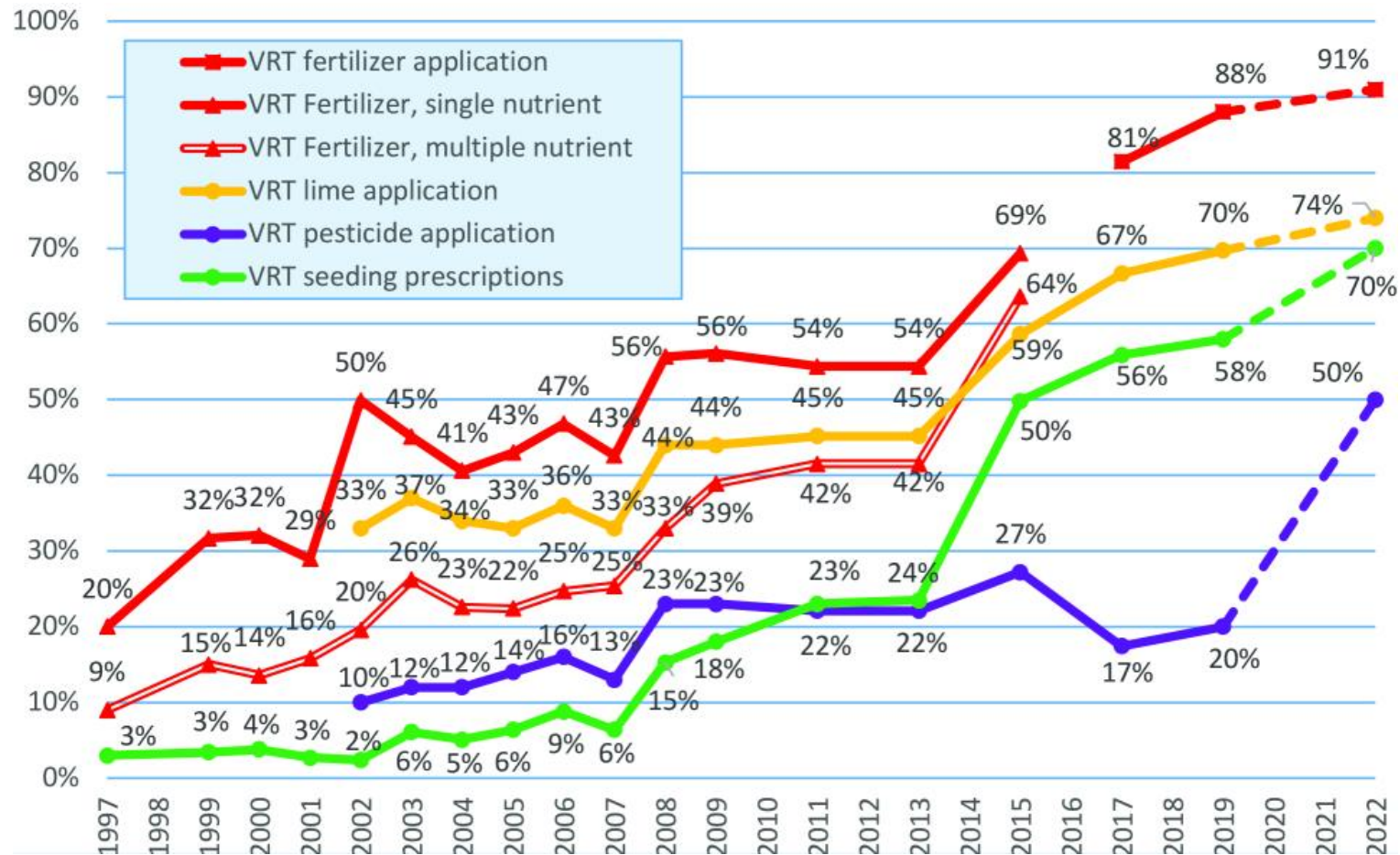
Center for Food and
Agricultural Business

TRENDS IN DIGITAL AGRICULTURE



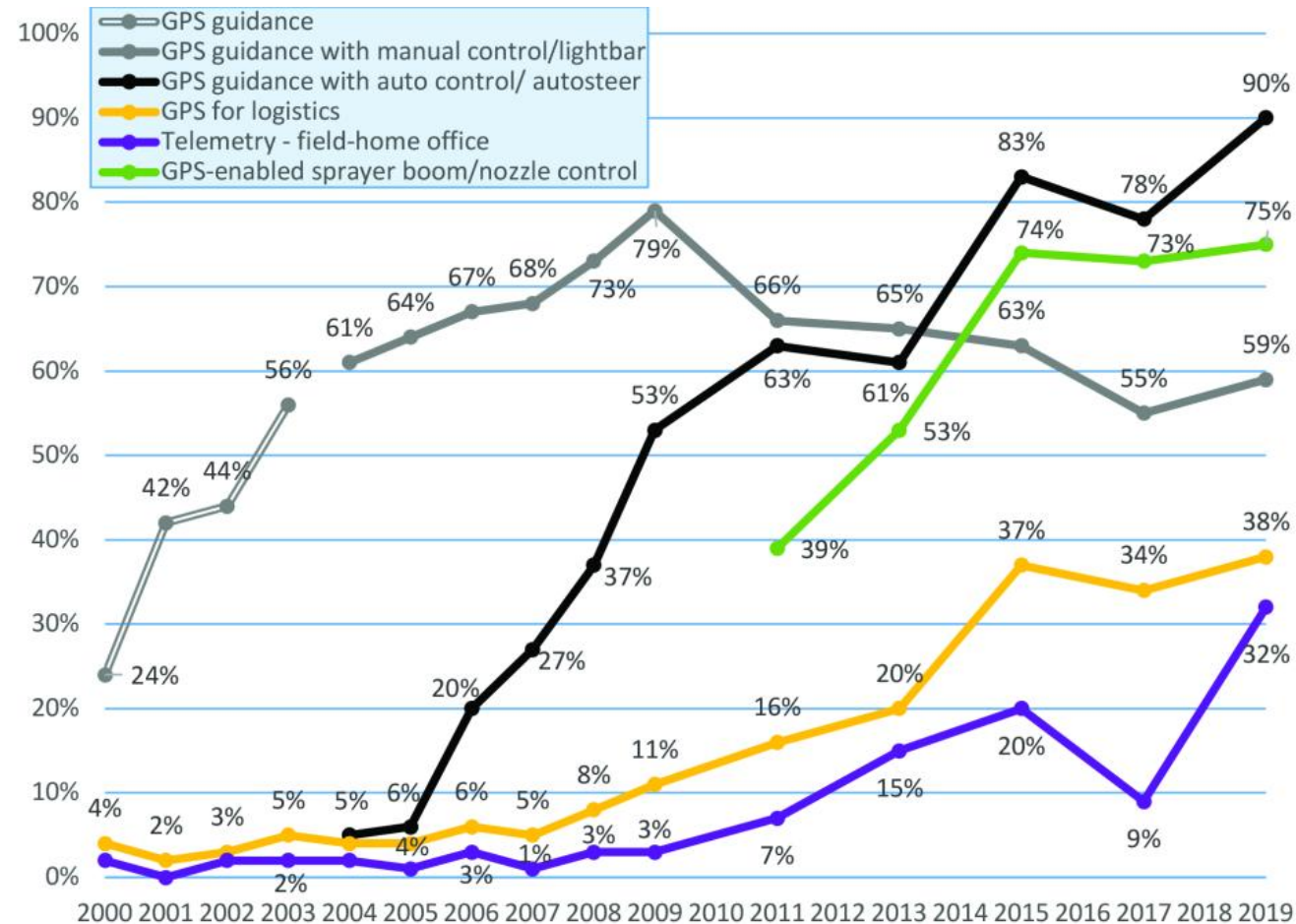
Source: Erickson & Lownberg-DeBoer 2020 - Purdue/CropLife 2019
Precision Agriculture Dealership Survey

TRENDS IN DIGITAL AGRICULTURE



Source: Erickson & Lownberg-DeBoer 2020 - Purdue/CropLife 2019 Precision Agriculture Dealership Survey

TRENDS IN DIGITAL AGRICULTURE

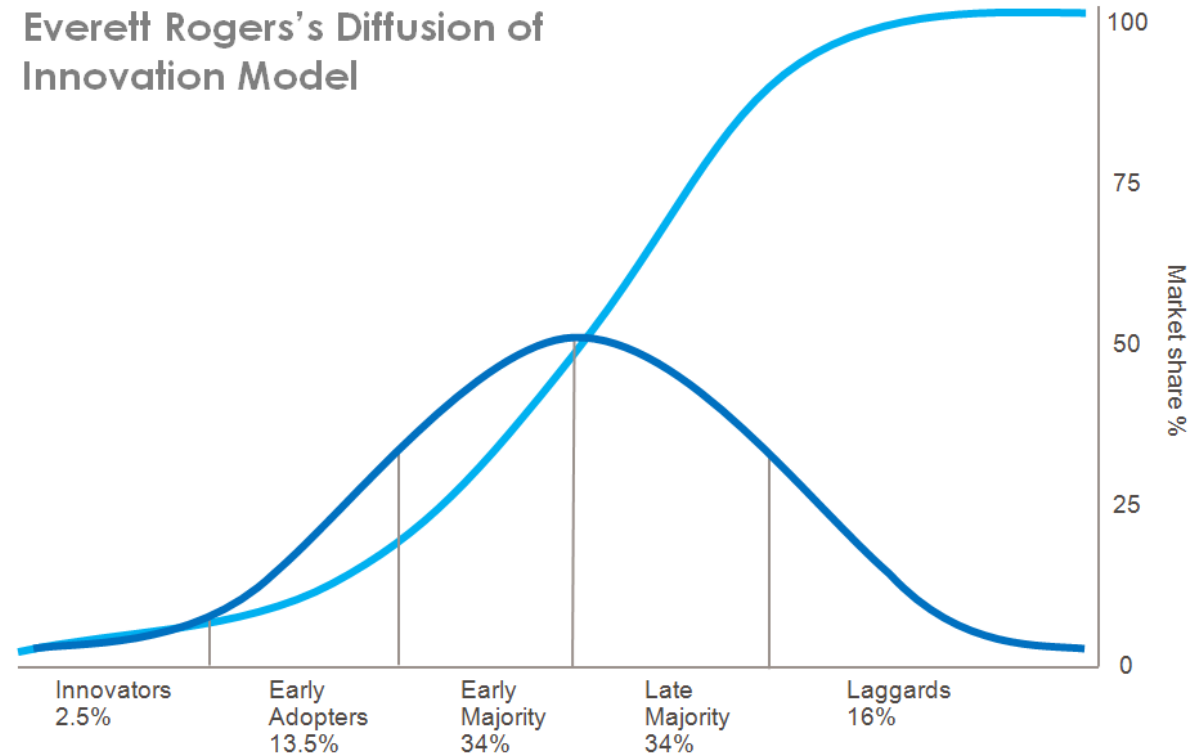


Source: Erickson & Lownberg-DeBoer 2020 - Purdue/CropLife 2019
Precision Agriculture Dealership Survey

TRENDS IN DIGITAL AGRICULTURE

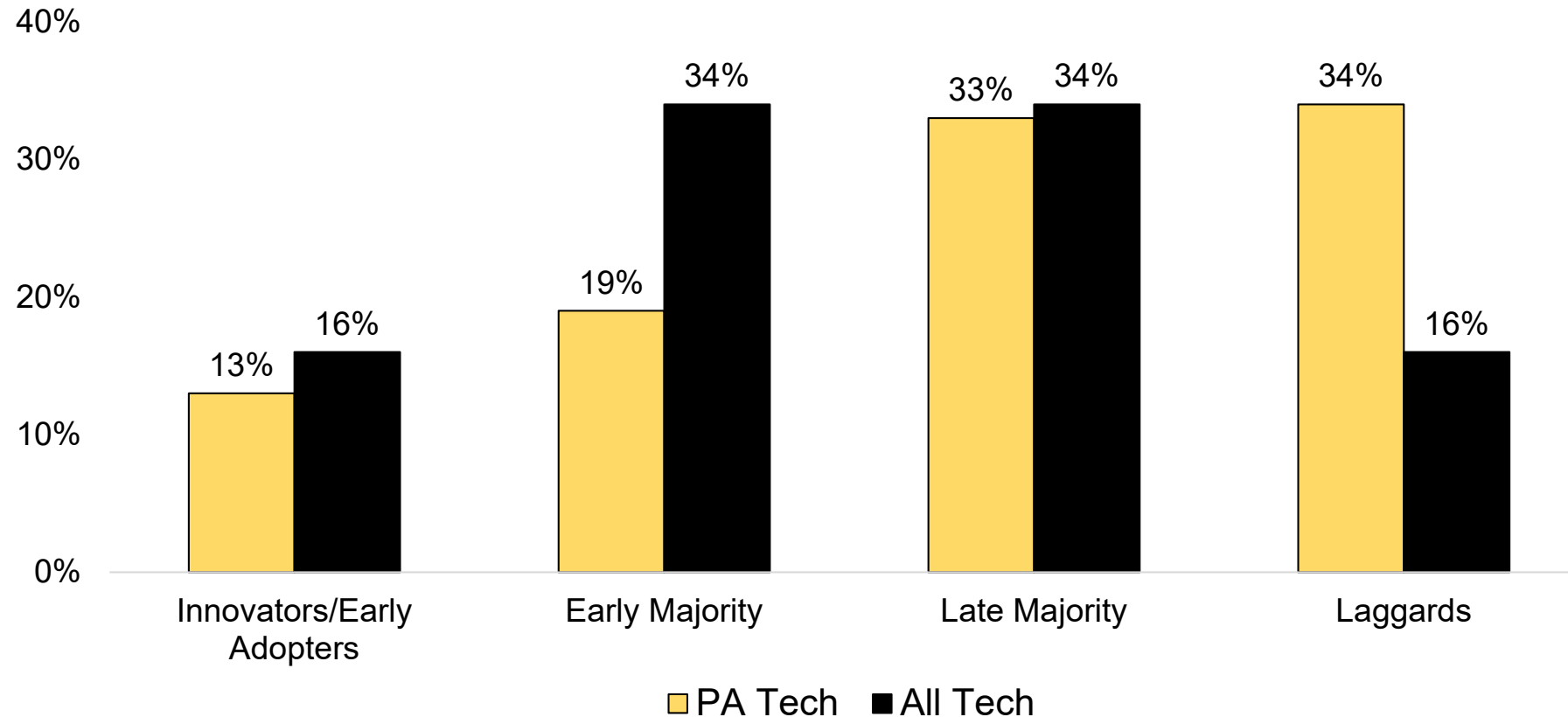
Figure 1

Everett Rogers's Diffusion of Innovation Model



TRENDS IN DIGITAL AGRICULTURE

Precision Technology Adopter Stages



Source: USDA Agricultural Resource Management Survey (ARMS) 2016 corn survey

TRENDS IN DIGITAL AGRICULTURE

	Full sample	Laggards (34%)	Late Majority (33%)	Early Majority (19%)	Innovators/Early Adopters (13%)
Collect data	66%	0%	100%	100%	100%
Yield monitor	55%	0%	68%	98%	99%
GPS Yield map	32%	0%	6%	90%	97%
Soil core test	20%	0%	19%	6%	98%
Soil sensors	2%	0%	0%	1%	9%
GPS soil map	15%	0%	6%	0%	94%
VR seeding	16%	0%	5%	35%	49%
VR fertilizer	20%	0%	11%	31%	73%
VR pesticides	7%	0%	8%	10%	24%
GPS guidance	42%	0%	40%	81%	94%
Drone/UAV/satellite	4%	0%	1%	7%	19%
Crop sensors	3%	0%	3%	6%	8%
Data computer	33%	0%	28%	63%	83%
Data mobile	14%	0%	8%	27%	43%
Ag-tech company	8%	0%	1%	19%	29%
Share farm data	31%	0%	41%	42%	69%
Corn yield (bu/acre)	176.81	169.60	172.26	189.77	194.15
Farm acres	654.26	277.88	549.80	931.04	1,484.66
Operator age	57.05	59.39	57.58	53.98	54.22
College	54%	41%	53%	69%	66%

FARM DATA VALUE

An Airbnb For Farmland Hits A Snag, As Farmers Raise Data Privacy Concerns

February 24, 2020 - 5:03 AM ET

Heard on [Morning Edition](#)



DAN CHARLES



New land intelligence platform aims to provide data on every U.S. parcel

Jan Shepel, Correspondent

Published 7:51 a.m. CT May 14, 2020 | Updated 1:41 p.m. CT May 15, 2020

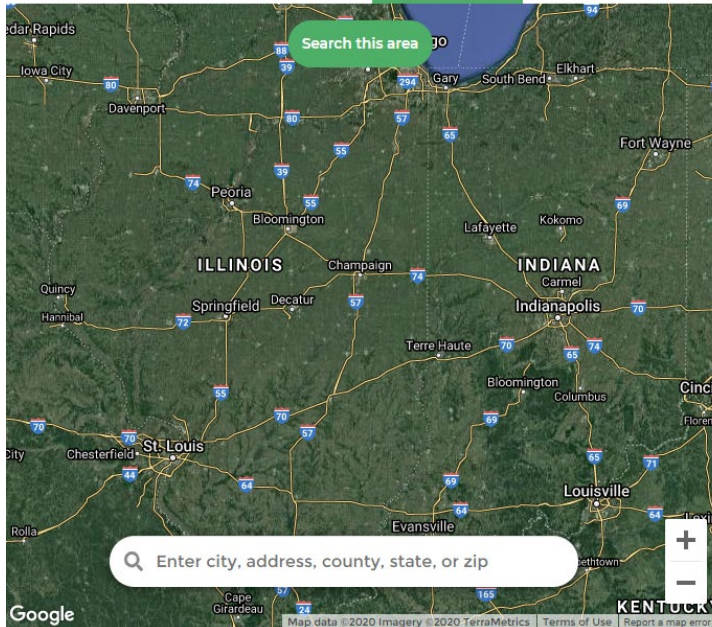


TILLABLE

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CIBO

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Enter a state, county, owner, STR location, etc.



Valuation

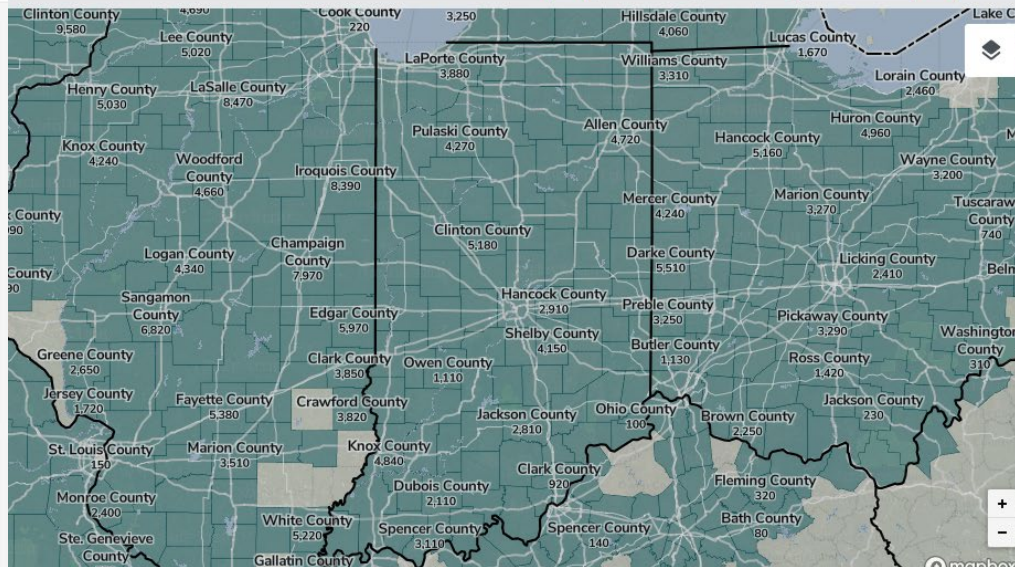
Acreage

More Filters

Reset All

779,925 Parcels Found

Est. Value



093020011, MOUNT PLEASANT TWP, WHITESIDE CO, IL	
EST. VALUE \$246,730 \$8,229/ac	EST. LEASE \$269/ac \$7,414 total
TOTAL ACRES 30	TILLABLE ACRES 28 (91%)
View Full Parcel Report	

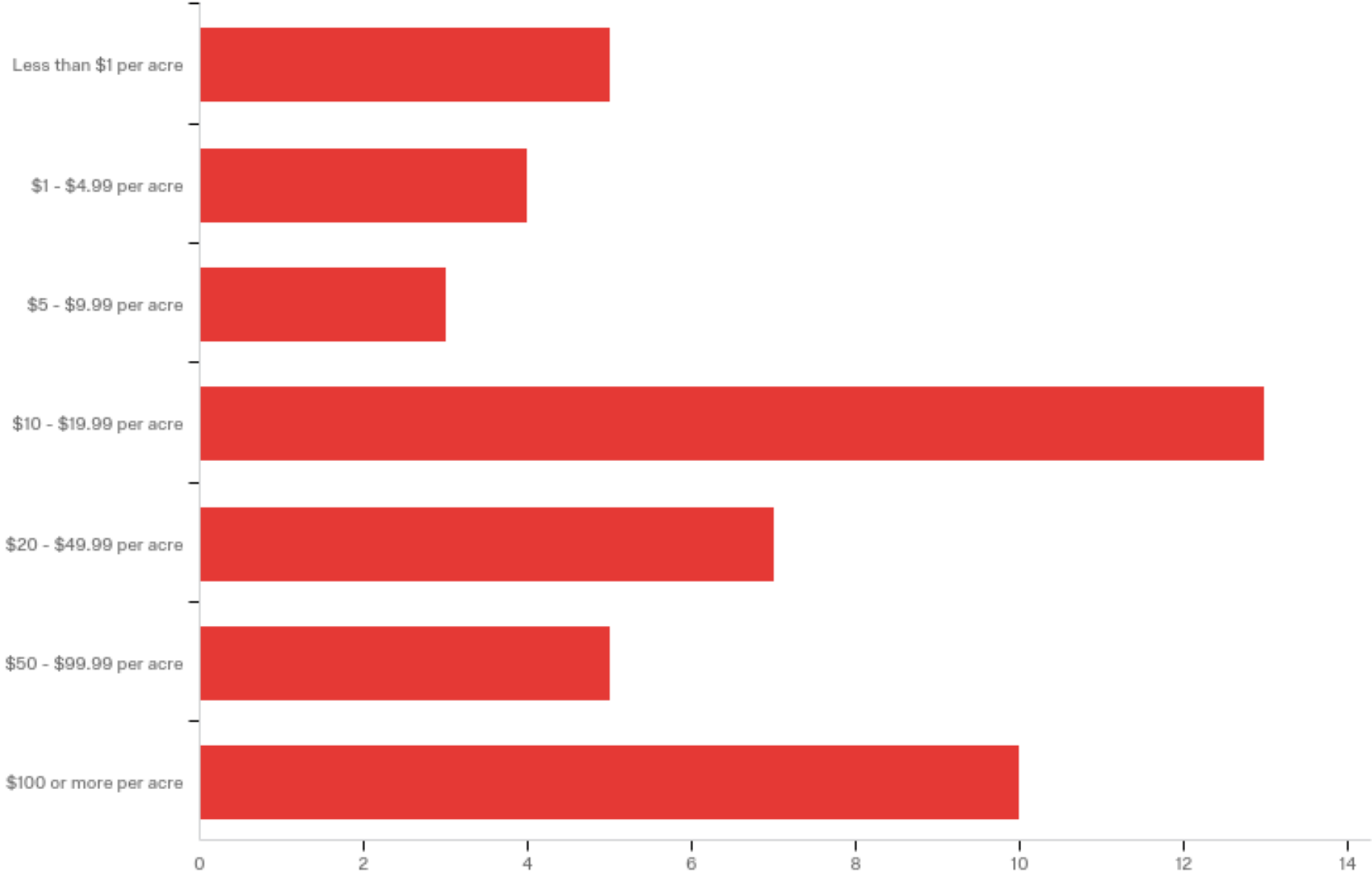
271007200002000016, MILL TWP, GRANT CO, IN	
EST. VALUE \$607,864 \$7,502/ac	EST. LEASE \$233/ac \$18,962 total
TOTAL ACRES 81	TILLABLE ACRES 81 (100%)
View Full Parcel Report	

Get more out of your CIBO account

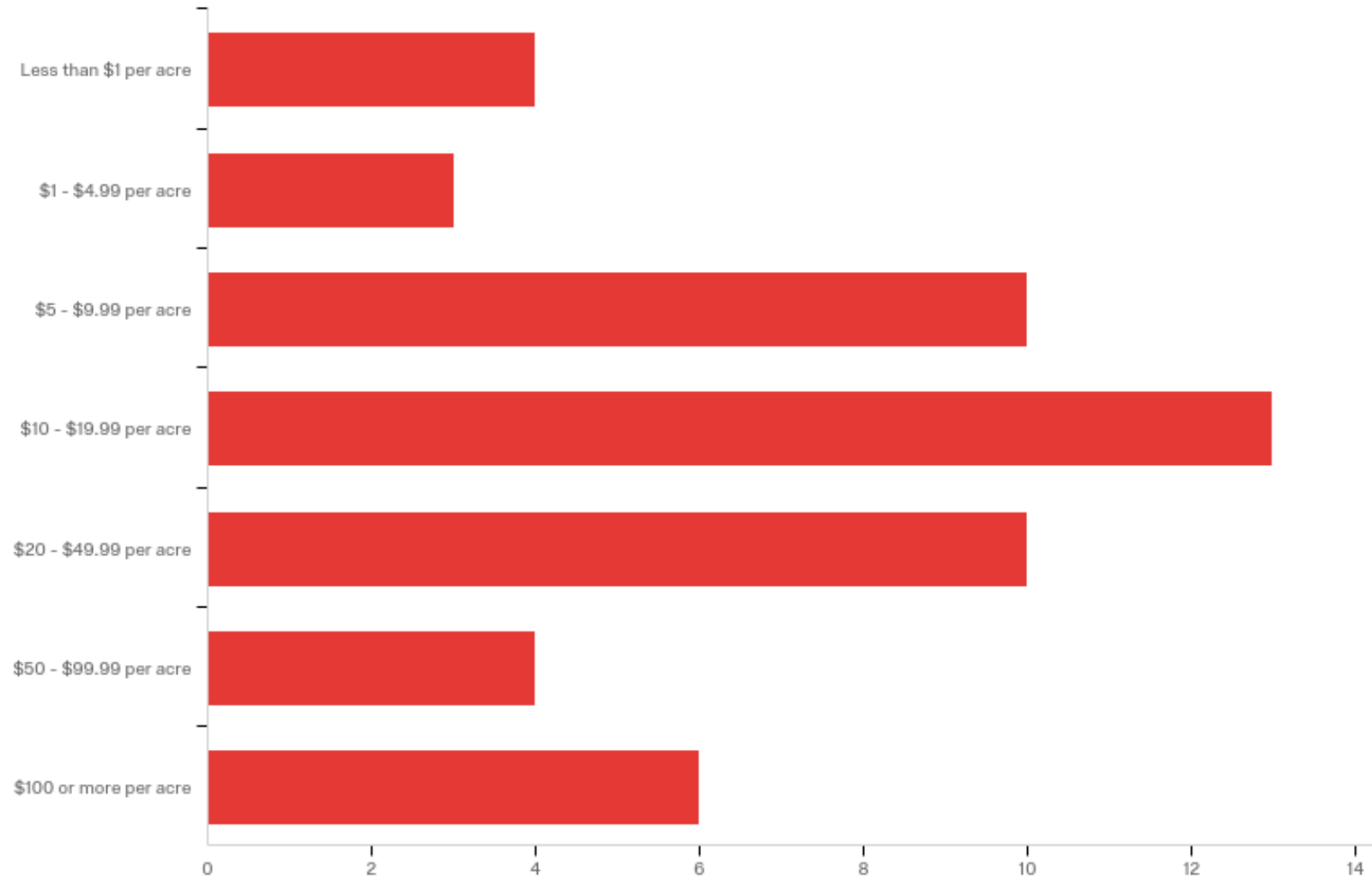
[Upgrade to CIBO Plus](#)

[What's included?](#)

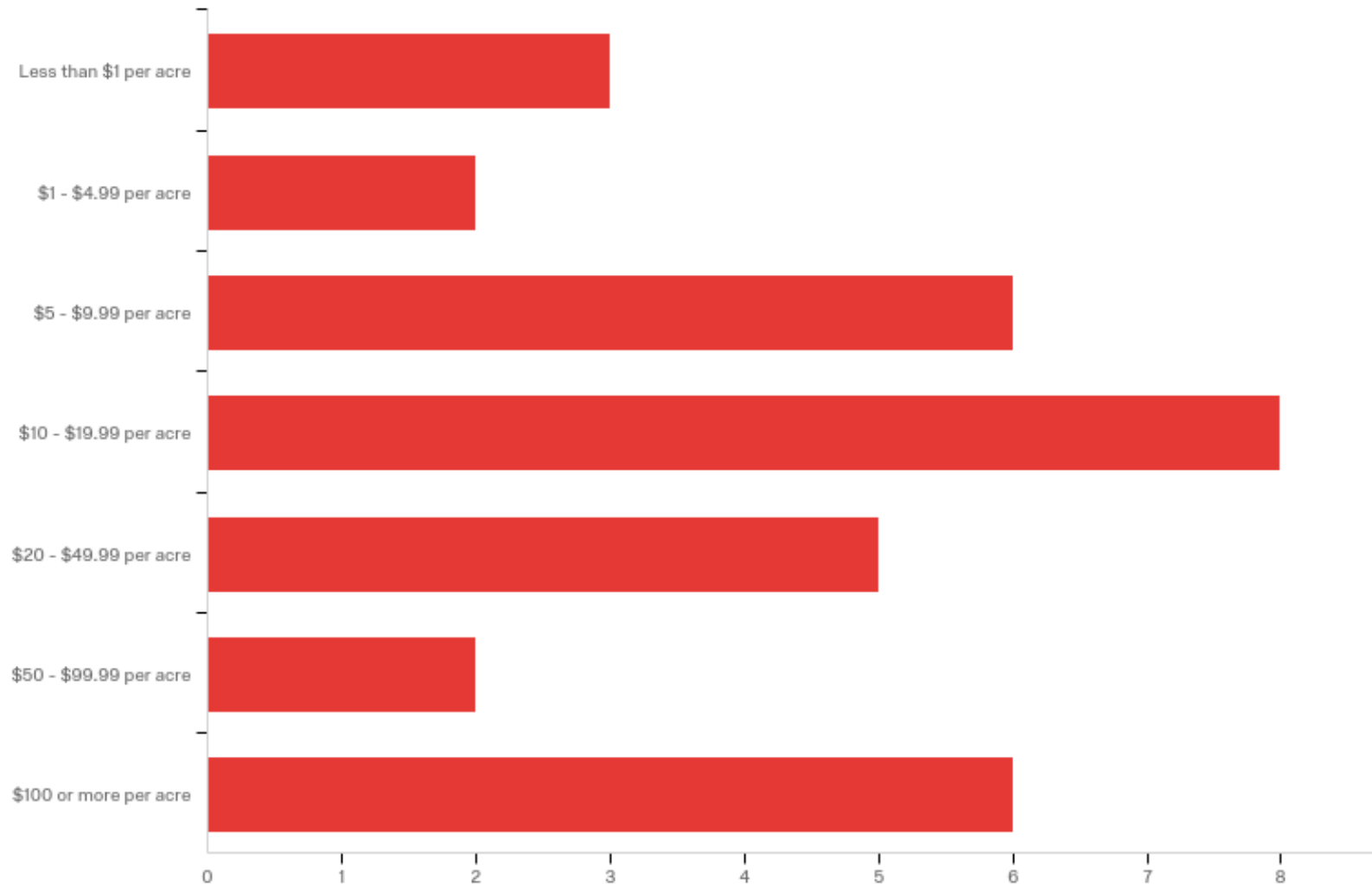
What is the minimum amount of money you would be willing to accept to give up complete ownership of your yield monitor data from last year's harvest (in dollars per acre of data)?



What is the minimum amount of money you would be willing to accept to give up complete ownership of your most recent soil sample data (in dollars per acre of data)?



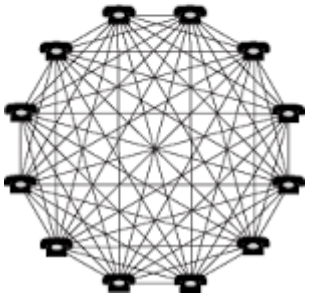
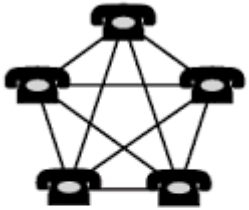
What is the minimum amount of money you would be willing to accept to give up complete ownership of your most recent drone or satellite imagery data (in dollars per acre of data)?



FARM DATA VALUE

Network Externalities in Farm Data

- The more people on a network, the more valuable the network (e.g. telephone, email, credit cards).
- Demand for the good rises if consumers believe a product is popular (“fad effect” or “bandwagon effect”).
- Is this true of farm data? The more farms contributing to a data network, the more valuable the network. But more valuable for who?
- Think Farmers Business Network (FBN).



Network Externalities

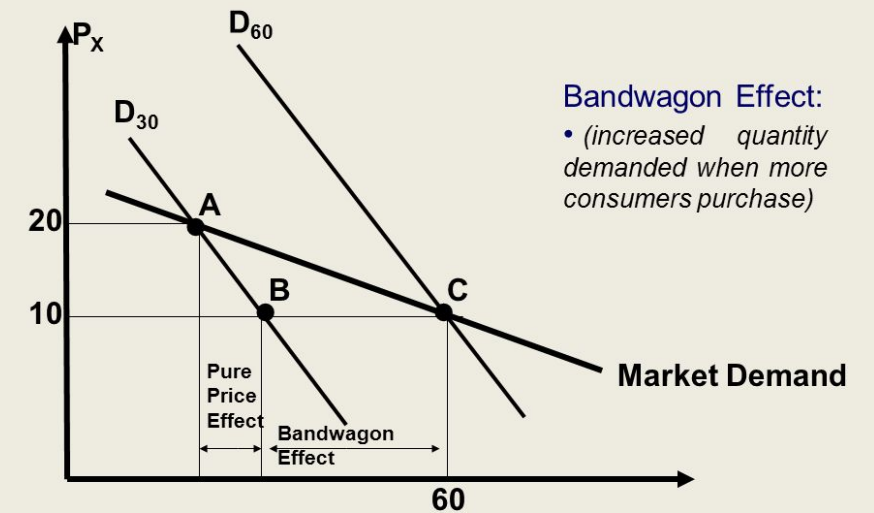
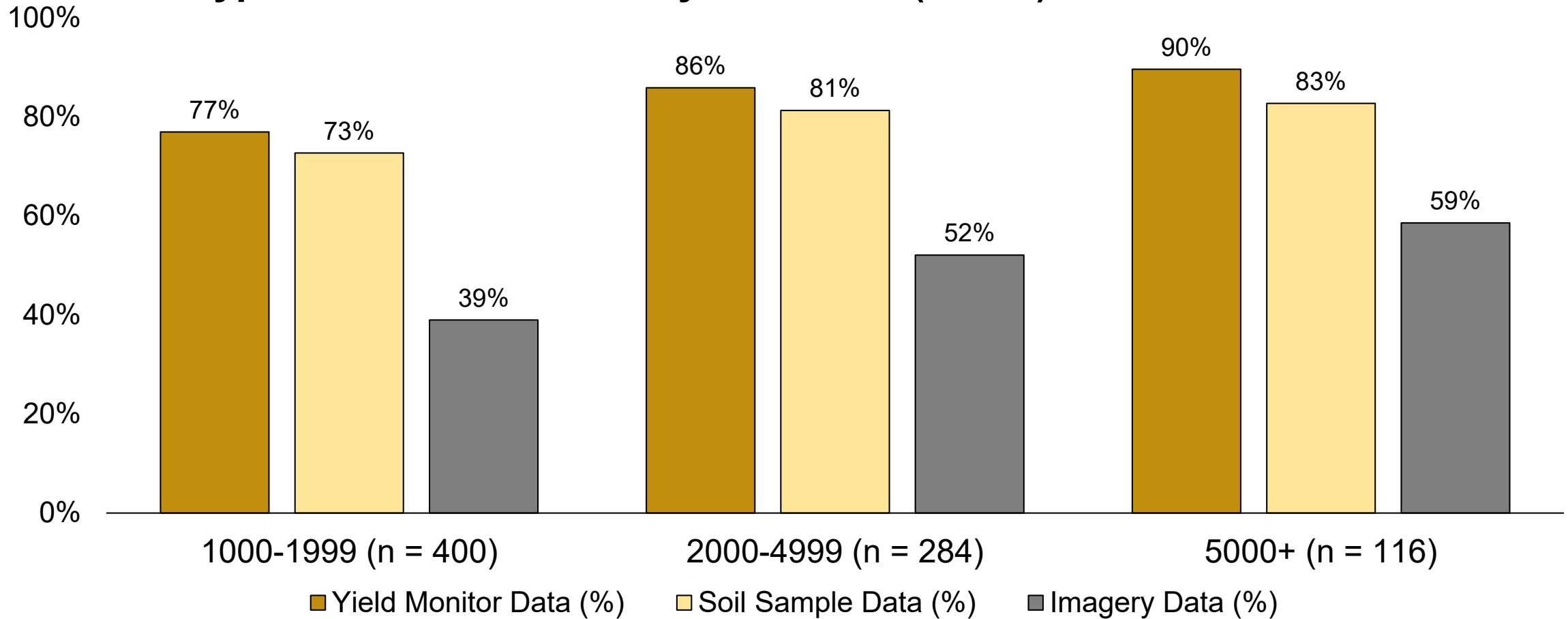


Image source: “Microeconomics” 4th edition by David Besanko and Ronald R. Braeutigam

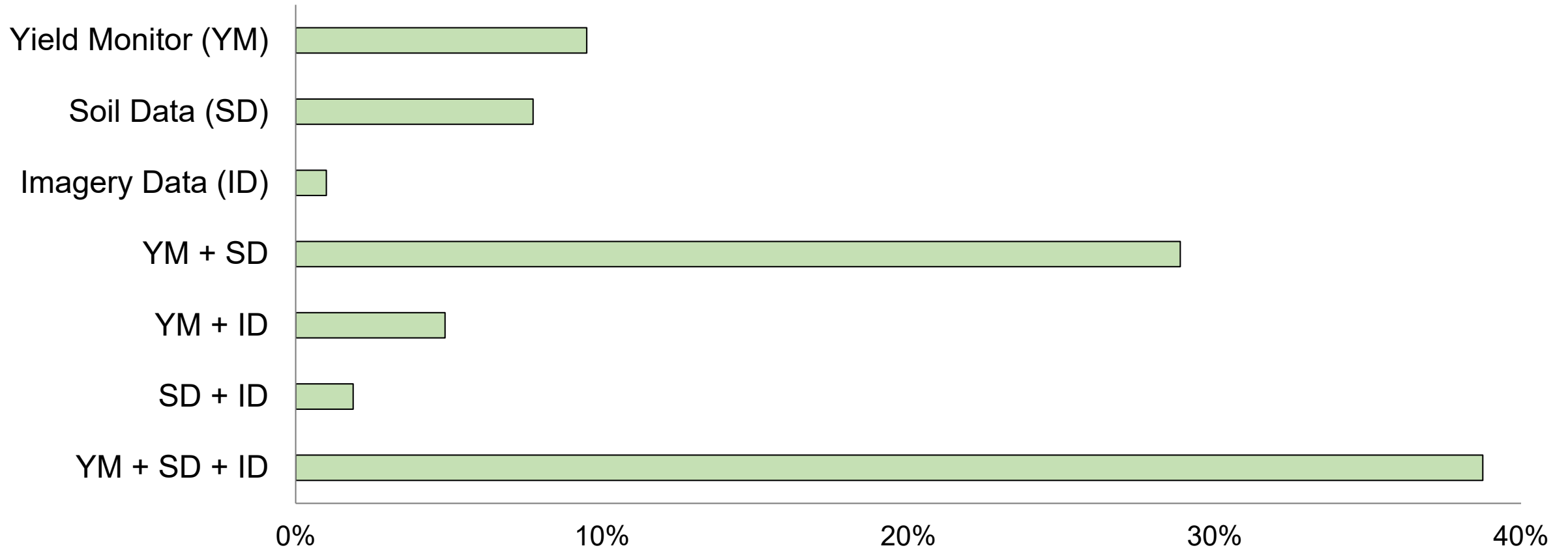
FARM DATA USAGE

Types of Data Collected by Farm Size (Acres)



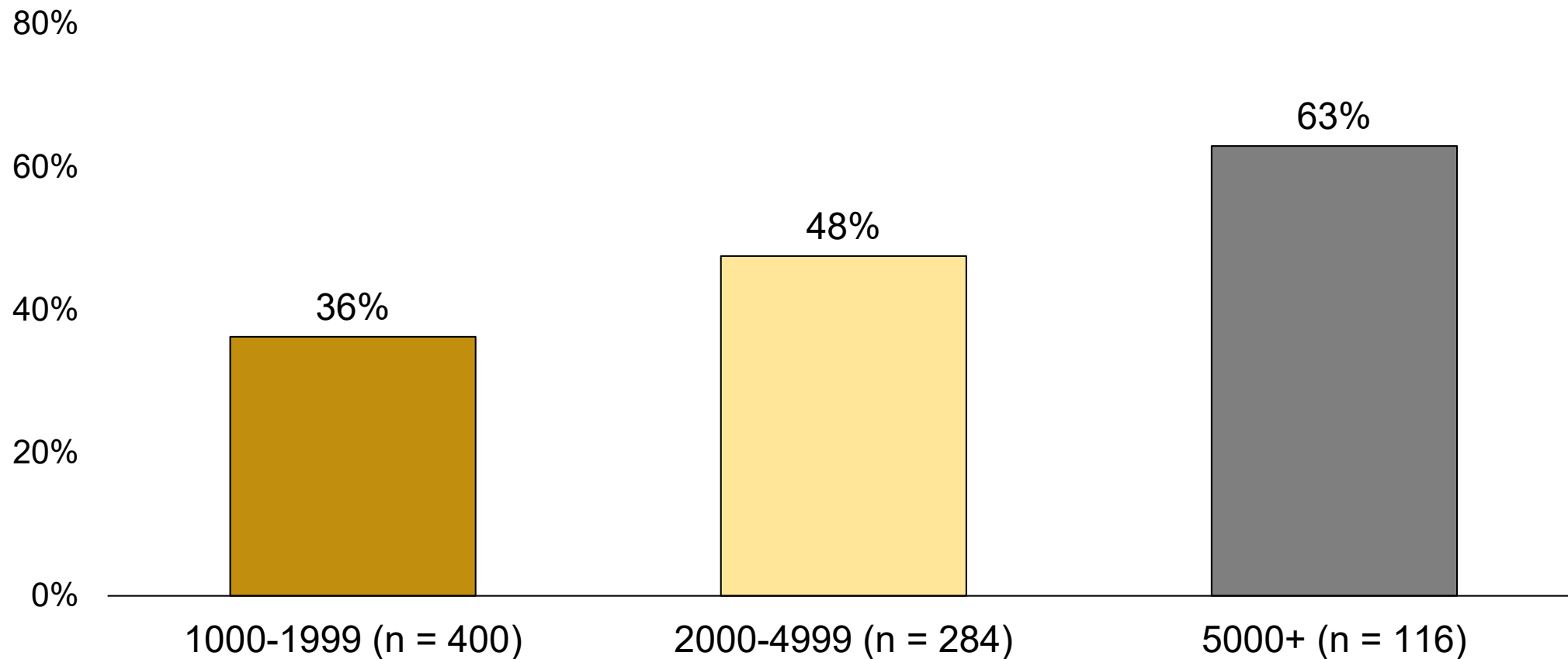
FARM DATA USAGE

Farms Tend to Bundle Data Sources



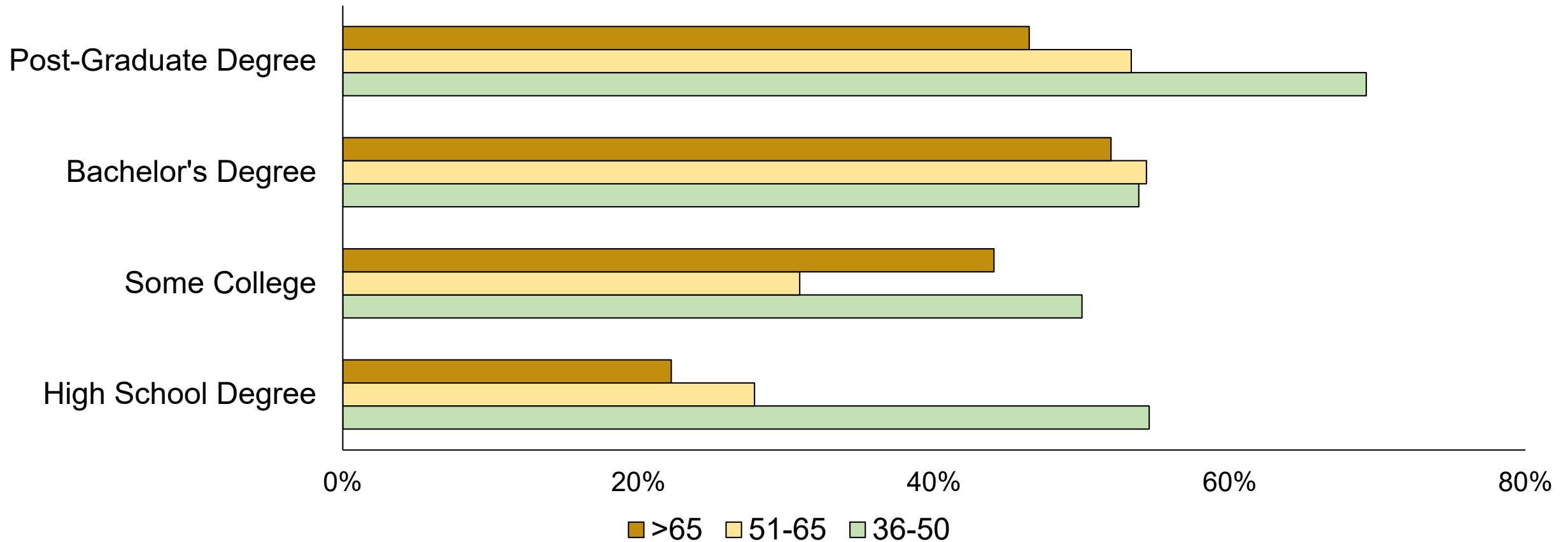
FARM DATA USAGE

Use of Farm Data Software by Farm Size (Acres)



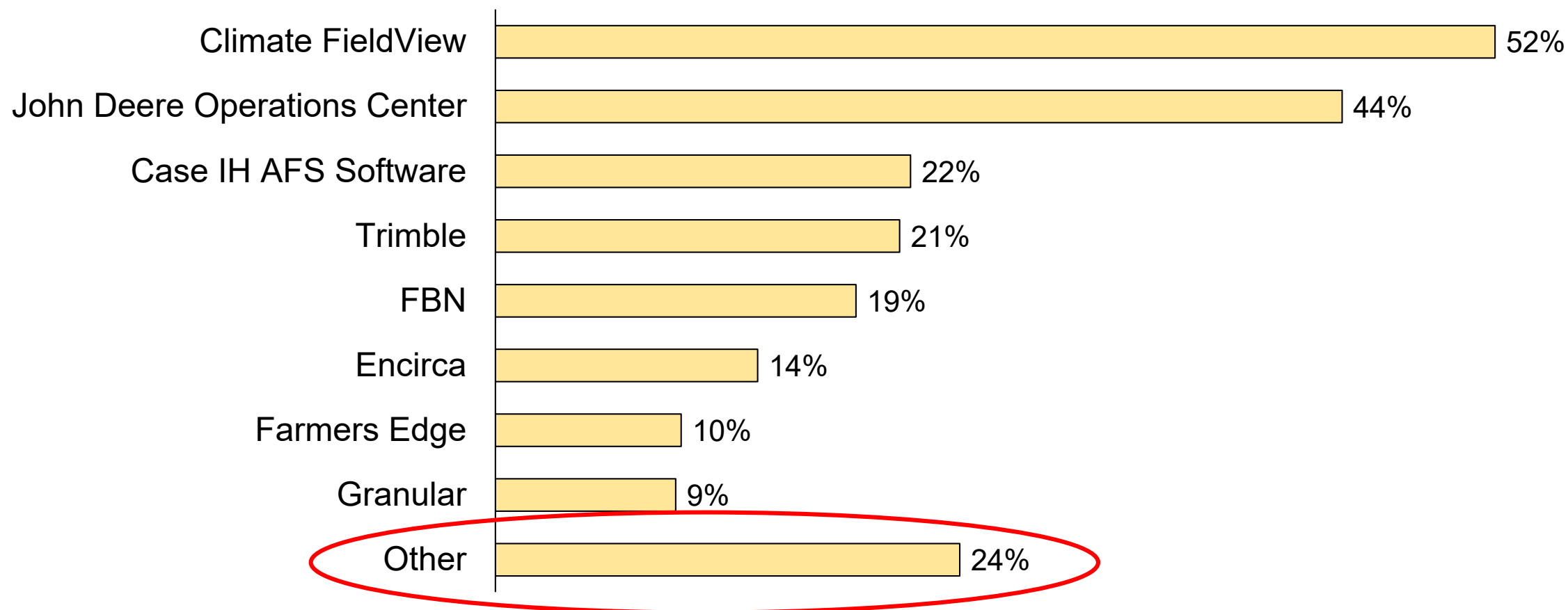
FARM DATA USAGE

Use of Farm Data Software by Education and Operator Age



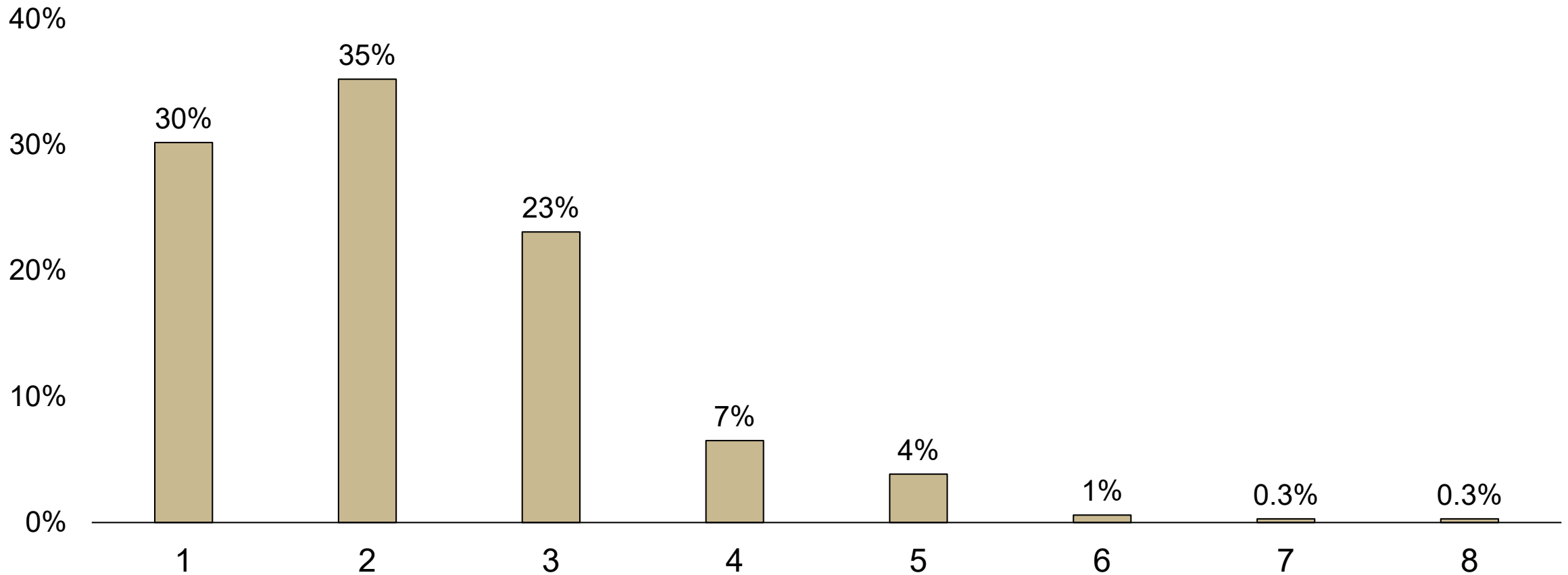
FARM DATA USAGE

Types of Software Used by Software Users (n = 353)

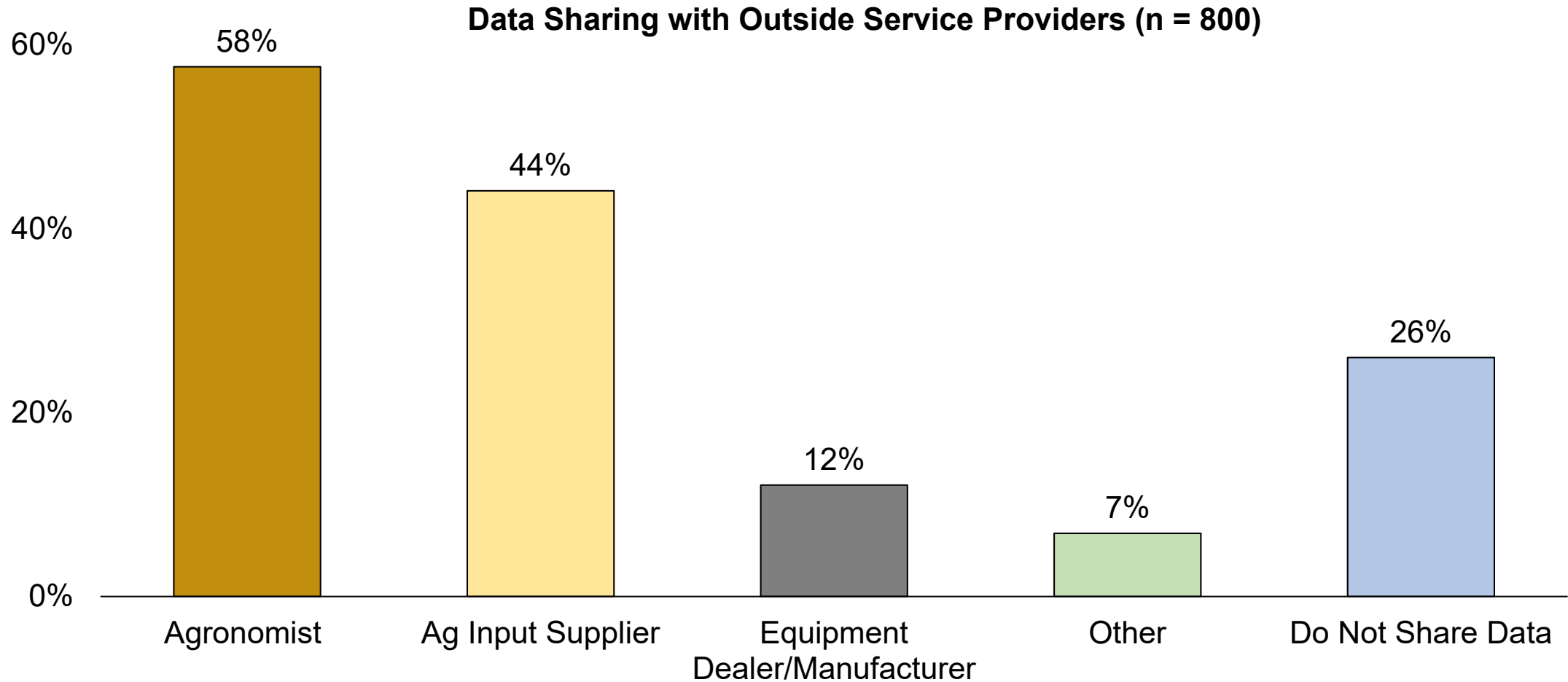


FARM DATA USAGE

Number of Farm Data Software Products Used



FARM DATA USAGE



FARM DATA USAGE

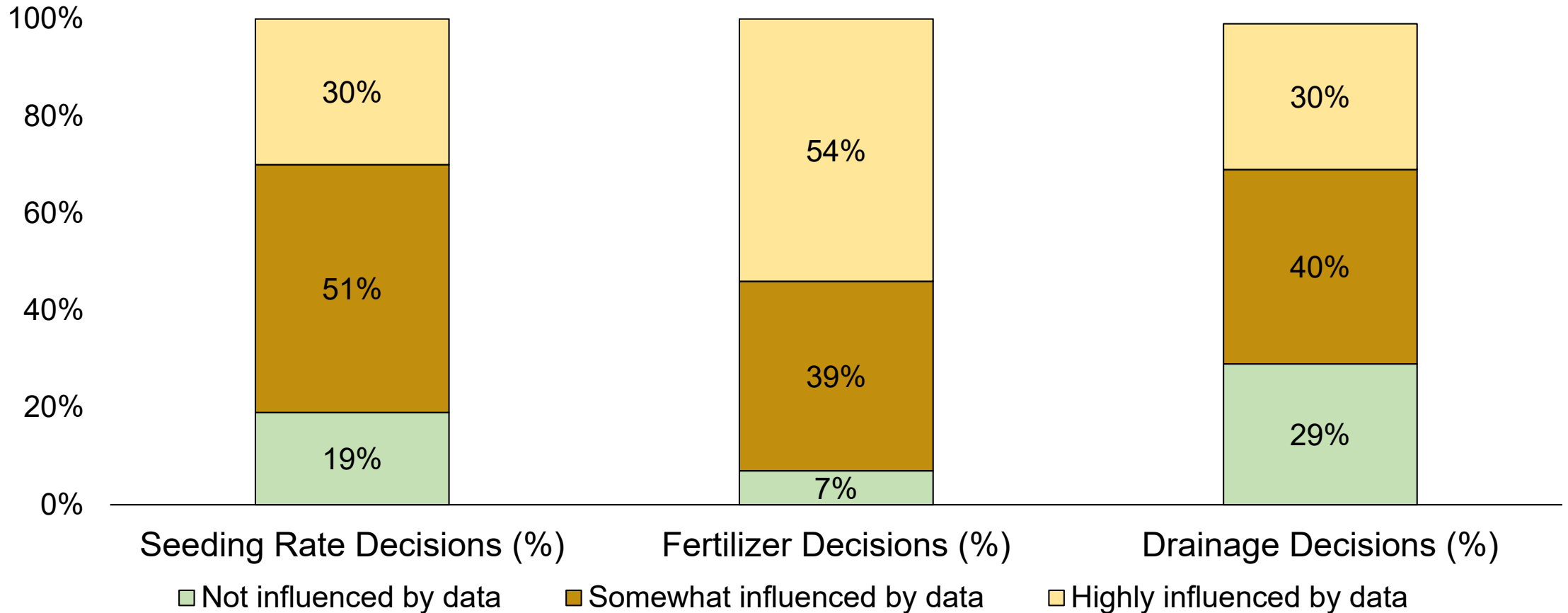
WHO DO PRODUCERS TRUST MORE WITH THEIR DATA?

	% of respondents that follow recommendations "very closely"
Farms that share data w/ a service provider (n=592)	31
Share w/ agronomist (n=461)	34
Share w/ input supplier (n=353)	29
Share w/ equipment dealer/manuf. (n=97)	34
Farm software users (n=223)*	44
* Farms that use a farm data software product that provides crop management recommendations/prescriptions.	

- Farmers have greater confidence in their software recommendations than those provided by consultants.
- Farmers are more likely to follow their software recommendations if they share data and visa versa.

FARM DATA USAGE

Management Decisions Influenced by Data



FARM DATA USAGE

“Farmer Perspectives on Data” survey by Trust in Food, a Farm Journal Initiative & The Sustainability Consortium

<https://www.sustainabilityconsortium.org/2020/05/new-research-highlights-farmer-perspectives-on-farm-level-data-collection-and-sharing/>

Sharing Data Barriers

Farmers were asked to rank the severity of barriers that prevent them from sharing more data than they already are today.

REGULATION – I feel that farm data will be used to enact more stringent government regulations.

Major Reason: 42%
Minor Reason: 33%
Not a Reason: 25%

EQUIPMENT – My operation does not own or have access to the right equipment.

Major Reason: 34%
Minor Reason: 40%
Not a Reason: 26%

PRIVACY – I am afraid that by sharing data I might make myself a target for malicious activity.

Major Reason: 36%
Minor Reason: 46%
Not a Reason: 27%

COST – The cost associated with collecting it is a problem.

Major Reason: 30%
Minor Reason: 45%
Not a Reason: 25%

TRAINING – My operation lacks the training or understanding necessary.

Major Reason: 27%
Minor Reason: 45%
Not a Reason: 28%

TIME – It is too time consuming.

Major Reason: 26%
Minor Reason: 46%
Not a Reason: 28%

DEMAND – There is no/low demand by anyone for more data; it is an unnecessary burden.

Major Reason: 23%
Minor Reason: 49%
Not a Reason: 28%

NO BENEFIT – My operation believes there would be no/limited benefits.

Major Reason: 27%
Minor Reason: 37%
Not a Reason: 35%

DATA NETWORK – My operation's connectivity to data networks (broadband, cellular) limits it.

Major Reason: 26%
Minor Reason: 38%
Not a Reason: 36%

PENALTY – I am afraid my bank, landowner or other will use my data to penalize my operation in some way.

Major Reason: 21%
Minor Reason: 29%
Not a Reason: 50%

Collecting and Sharing Data Trust and Privacy Barriers

Do you trust the following entities with the security and use of your farm's data?

> **Your lenders and bankers**

Agree: 39% Disagree: 40% Unsure: 21%

> **Federal, state and county level government offices**

Agree: 17% Disagree: 60% Unsure: 23%

> **Private companies**

Agree: 12% Disagree: 59% Unsure: 29%

Data about my farm's production and management practices should be as tightly secured as my family's health records.

Agree: 68% Disagree: 24% Unsure: 11%

I believe that my customers have a right to know how I manage my farm.

Agree: 27% Disagree: 49% Unsure: 24%

VISIT AGRIBUSINESS.PURDUE.EDU FOR INFO ON UPCOMING PROGRAMS & EVENTS!

Tuesday Tailgate Talks

Farm Finance and Economics

June 16, 2020 | 4:30p.m. EDT

Dr. Brady Brewer & Guest

Large Commercial Producer Survey

June 30, 2020 | 4:30p.m. EDT

Dr. Brady Brewer & Dr. Dave Downey

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Micro-Courses: Live, 2-hour sessions

(contact Aissa Good at aissa@purdue.edu to be notified when micro-course registration opens)



Scenario Planning: Creating Resilience in Uncertain Times

June 30, 2020 | 1:00p.m. EDT

Dr. Allan Gray



Organizational Resilience

July 15, 2020 | 1:00p.m. EDT

Dr. Pete Hammett



Financial Implications for Your Business

August 5, 2020 | 11:00a.m. EDT

Dr. Brady Brewer

**All summer open enrollment programs
Will be distance-delivered.*



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