Useful to Usable (U2U) End-of-Project Survey Results from a Survey of Agricultural Advisors

Prepared by U2U Project Evaluation Team
University of Wisconsin, Environmental Resources Center Evaluation Unit

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Methods

Data collection occurred between 11/7/16 and 12/14/16. In the 12-state region, surveys were sent to all relevant* Agricultural Extension employees, Local Conservation District employees (NACD), Technical Service Providers (TSP), and U2U project contact list members. All Certified Crop Advisors (CCAs) in the 12 states were included (85-90% CCAs were from private sector). Natural Resources Conservation Service (NRCS) participated in the survey in 10 of the 12 states. Sampling frame was collected from websites, in some cases checked by the U2U team (e.g., the Agricultural Extension and U2U project lists), and in some cases provided by NRCS. The survey was sent to about 10,760 individuals and 3,098 responses were received yielding a response rate of 29%. Of the 3,098 respondents, 2,719 advised farmers and/or other advisors (response rate= 25%).

*Relevant included: (1) Agricultural Extension- local educators and state specialists (crops, corn, nutrient/manure management, climate, irrigation, agricultural economics, farm management), did not include horticulture or animal sciences; LCDs- job titles with conservation, technician, water/watershed; (2) TSPs- certified conservation planner, nutrient management, irrigation; (3) U2U- signed up for project's e-newsletter, attended an event, or signed up for educational materials; and (4) NRCS- job titles with conservation, technician, state agronomists; a few states requested that we only send the survey to the District Conservationists to decrease the burden on their field staff; participating states included WI, IA, ND, NE, SD, IN, OH, MO, MN and KS.

Results

The data from advisors on the U2U contact list was analyzed separately and compared with the rest of the sample, as the advisors on U2U contact list were the people who attended the project outreach events and signed up for U2U newsletters. So, they were assumed to be more aware of the project and its tools, and a comparison with the rest of the sample was felt appropriate. However, the qualitative data from open-ended questions on the survey are from the entire sample. *The orange shaded part in the data tables represents rest of the sample and the green shaded part represents the U2U list*. [Orange = Rest of the Sample; Green = U2U List]

Q1. Advisor type.

Response	Frequency	Percentage
Agricultural Extension	369	14%
TSP	32	1%
NACD	441	16%
CCA	993	37%
NRCS	888	33%
Total:	2723	100%

Response	Frequency	Percentage
U2U	372	100%

Q2. In your job, do you currently provide advice to corn farmers, in either a formal or informal way?

	Rest of the Sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
No	441	16%	29	12%
Yes	2245	84%	220	88%
Total	2686	100%	249	100%

Asked of those who are not agricultural advisors or corn farmers:

Q3. What is your occupation?

There were a variety of occupations including faculty at universities, County Extension Educators and Directors, Program Managers, Range and Resource Conservationists, Watershed Coordinators etc.

Asked of those that provide advice to corn farmers, in either a formal or informal way:

Q4. Approximately how many corn farmers do you advise in a year?

	Measures of central tendency			Measures of variation			
	Mean	Median	Mode	SD	Range	Minimum	Maximum
Rest of the Sample	726	44	50	5489	100,000	0	100,000
U2U List	985	50	100	3979	29998	2	30,000

Asked of those that provide advice to corn farmers, in either a formal or informal way:

Q5. Approximately what is the average size of your clientele in acres?

	Measures of central tendency			Measures of variation			
	Mean	Median	Mode	SD	Range	Minimum	Maximum
Rest of the Sample	1193	900	1000	1736	47,000	0	47,000
U2U List	1191	800	500	1399	10,995	5	11,000

Q6. Is it part of your job to educate or train other agricultural advisors, for example Extension educators or Certified Crop Advisors?

	Rest of the Sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
No	1841	71%	144	60%
Yes	724	29%	97	40%
Total	2565	100%	241	100%

Q7. Approximately how many agricultural advisors do you educate or train in a year?

	Measures of central tendency			Measures of variation			
	Mean	Median	Mode	SD	Range	Minimum	Maximum
Rest of the Sample	66	15	10	231	4000	0	4000
U2U List	91	25	50	205	1500	0	1500

Q8. In which states do you advise your clients?

	Rest of the Sample		U2U list	
State	Frequency	Percentage	Frequency	Percentage
Illinois	249	11%	50	22%
Indiana	322	15%	38	17%
Iowa	388	18%	52	23%
Kansas	238	11%	18	8%
Michigan	109	5%	23	10%
Missouri	144	7%	26	7%
Minnesota	289	13%	32	14%
Nebraska	309	14%	27	12%
North Dakota	174	8%	17	8%
Ohio	226	10%	16	7%
South Dakota	223	10%	25	11%
Wisconsin	248	11%	101	45%
Other	81	4%	21	10%

Other states include: Colorado, Wyoming, Montana, Texas, North Carolina, New York, Pennsylvania, Tennessee, Kentucky, West Virginia, Oklahoma, Arizona, New Mexico, Vermont, Delaware, Maryland, Florida, Pacific Northwest (Washington, Oregon and Idaho), Connecticut, Arkansas, South Carolina and Canada, Mexico and New Zealand.

Q9. In which states do you work?

	Rest of the sample		U2U list	
State	Frequency	Percentage	Frequency	Percentage
Illinois	29	8%	2	14%
Indiana	45	12%	1	7%
Iowa	37	10%	2	14%
Kansas	55	15%	0	0%

Michigan	9	3%	1	7%
Missouri	24	7%	3	21%
Minnesota	43	12%	1	7%
Nebraska	45	12%	0	0%
North Dakota	35	10%	0	0%
Ohio	44	12%	0	0%
South Dakota	45	12%	1	7%
Wisconsin	44	12%	6	43%
Other	9	3%	2	14%

Other states include: Montana, Oklahoma, Illinois, Kentucky, Colorado, Wyoming.

Asked of those that provide advice to corn farmers, in either a formal or informal way **OR** Train the Trainers:

Q10. What types of advice do you provide to corn farmers or other advisors? (Check all that apply)

	Rest of the Sample		U2U list	
Type of advice	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Financial	378	17%	40	18%
Marketing	221	10%	24	11%
Agronomic (i.e. seed dealer, crop inputs, or other crop management services)	1394	64%	183	82%
Daily management (i.e. scouting for disease or insects)	908	42%	121	55%
Equipment	398	18%	53	24%
Full farm management	313	14%	43	19%
Conservation practices	1528	70%	120	54%
Government programs/farm bill	1049	48%	50	23%
Other:	134	6%	NA	NA

The most frequently mentioned types of advice fell into the categories of agronomic advice, daily management, conservation, and advice with government programs. From the written responses, most advisors who considered their advice to be agronomic or related to daily management advised on soil management, irrigation and fertilizer scheduling, crop varietal selection, disease and pest management, and food safety issues. Advising related to conservation included identifying wetlands and improving water quality issues, cover crop management, and pollinator habitat, while advising related to government programs covered education on regulations and compliance.

Q11. How concerned are you about weather or climate affecting farm management in your area?

	Rest of the Sample		U2U list	
Extent of concern	Frequency	Percentage	Frequency	Percentage
Not at all concerned	105	5%	8	4%
Slightly concerned	451	21%	30	14%
Moderately concerned	917	42%	89	40%
Very concerned	707	32%	93	42%
Total	2180	100%	220	100%

Q12. To what extent are you using weather or climate information in your advising?

	Rest of the Sample		U2U list	
Extent of use	Frequency	Percentage	Frequency	Percentage
Don't use it at all	74	3%	1	1%
Using it a little	348	16%	26	12%
Using it some	698	32%	66	29%
Using it quite a bit	753	35%	79	35%
Using it a great deal	302	14%	51	23%
Total	2175	100%	223	100%

Q13. Do you currently receive or access weather or climate information in any of the following ways?

	Rest of the Sample			U2U List		
Ways of receiving information	No	Yes	n	No	Yes	n
Weather/climate information app	623 (30%)	1433 (70%)	2056	50 (24%)	158 (76%)	208
Weather/climate related website	217 (10%)	1887 (90%)	2104	13 (6%)	198 (94%)	211
Weather/climate information texts or email alerts	1046 (54%)	883 (46%)	1929	78 (41%)	112 (59%)	190

Q14. Do you use any of the following sources of weather or climate information in your advising work? If yes, how much influence do they have on the advice you give?

[Orange = Rest of the Sample; Green = U2U List]

Weather or climate information source	Use		Extent of Influence		
	No	Yes	Not influential	Somewhat influential	Very influential
Subscription or purchased weather/climate tools (e.g. MyDTN™, FieldView Plus or Pro, etc.)	1682 (82%)	377 (18%)	239 (36%)	329 (49%)	100 (4%)
	157 (74%)	55 (26%)	23 (25%)	54 (58%)	16 (17%)
Free and publicly available weather/climate services provided by a company (e.g. FieldView Prime, Pioneer 360 Tools, etc.)	1083 (53%)	974 (47%)	171 (16%)	711 (67%)	183 (17%)
	83 (39%)	127 (61%)	14 (10%)	91 (67%)	31 (23%)
Proprietary weather/climate information provided to employees of the company I work for	1626 (81%)	392 (19%)	239 (38%)	299 (47%)	96 (15%)
	158 (76%)	49 (24%)	24 (30%)	41 (52%)	14 (18%)
Free weather/climate services provided by a university or government agency including Extension (e.g. UMissouri Nitrogen Watch, UNL CornSoyWater, etc.)	696 (34%)	1352 (66%)	156 (11%)	923 (67%)	309 (22%)
	51 (24%)	157 (76%)	18 (11%)	101 (64%)	40 (25%)

Q15. Indicate your level of agreement with the following statements about online decision support tools.

[Orange= Rest of the Sample; Green=U2U List]

Statements	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	*n*
When advisors use tools with weather or climate information to aid decisions, it can result in better farm outcomes (related to yield, profit, and/or the environment.)	13 (1%)	33 (2%)	445 (21%)	1357 (64%)	260 (12%)	2108
	1 (1%)	2 (1%)	41 (19%)	134 (62%)	38 (18%)	216
Other advisors like me are using decision support tools with weather or climate information in their advising work	14 (1%)	90 (4%)	774 (37%)	1099 (52%)	127 (6%)	2104
	1 (1%)	11 (5%)	66 (31%)	123 (57%)	15 (7%)	216
I want to meet my clients' expectations when it comes to using decision support tools with climate information	8 (1%)	33 (2%)	485 (23%)	1233 (59%)	342 (16%)	2101
	0	3	45	128	40	216

	(0%)	(1%)	(21%)	(59%)	(19%)	
Advisors should use decision support tools with weather or climate information to provide the best advice to farmers	13 (1%)	46 (2%)	538 (26%)	1201 (58%)	283 (14%)	2081
	0 (0%)	6 (3%)	55 (26%)	114 (53%)	40 (19%)	215
Most of my clients use weather or climate decision support tools for farm decision making	29 (1%)	285 (14%)	798 (38%)	858 (41%)	129 (6%)	2099
	0 (0%)	34 (16%)	81 (38%)	91 (43%)	8 (4%)	214
My clients expect me to use weather or climate decision support tools in my advising work	36 (2%)	335 (16%)	937 (45%)	673 (32%)	120 (6%)	2101
	0 (0%)	29 (13%)	86 (40%)	81 (38%)	20 (9%)	216
I have access to useful weather or climate decision support tools	15 (1%)	155 (8%)	547 (26%)	1222 (45%)	160 (8%)	2099
	0 (0%)	10 (5%)	43 (20%)	138 (65%)	23 (11%)	214
I have the technical skills and abilities needed to use decision support tools with weather or climate information	17 (1%)	179 (9%)	607 (29%)	1114 (53%)	188 (9%)	2105
	0 (0%)	9 (4%)	47 (22%)	134 (62%)	26 (12%)	216

Asked of those that provide advice to corn farmers, in either a formal or informal way **AND** Don't use any weather or climate information from the sources in Q15:

Q16. Are you willing to use an online decision support tool with weather or climate information to inform your work?

	Rest of the Sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
No	77	22%	1	8%
Yes, but don't currently use	265	75%	9	69%
Yes, and currently use	12	3%	3	23%
	354	100%	13	100%

Asked of those that provide advice to corn farmers, in either a formal or informal way **OR** Train the Trainers:

Q17. Do you have a choice in the weather or climate information source(s) that you use in your job?

	Rest of the Sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
No	435	21%	30	14%
Yes	1670	79%	187	86%
	2105	100%	217	100%

U2U Project Related Questions

Q18. Had you ever heard of Useful to Useful (U2U) project before receiving this survey, and, if so, from where?

Response	Rest of the Sample		U2U List	
	Frequency	**Percentage**	**Frequency**	**Percentage**
No	2074	85%	90	40%
Yes, at U2U sessions at outreach events/meetings/conferences	118	5%	66	29%
Yes, in U2U newsletter	50	2%	33	15%
Yes, received an advertisement in the mail	46	2%	12	5%
Yes, received an email advertisement	89	4%	36	16%
Yes, from peers/colleagues (other agricultural advisors, Extension Educator, etc.)	166	7%	35	16%
Yes, from an internet search	32	1%	14	6%
Yes, I don't remember	58	3%	11	5%
Yes, other	24	1%	11	5%

Yes, other: 10% of the 35 respondents in this category heard about U2U from social media (Twitter) and another 10% through webinar trainings. The remaining respondents in this category learned about U2U from colleagues (39%), or at meetings and conferences (29%), and in print or email advertisements (12%).

Q19. Before receiving this survey, had you ever visited the U2U website

Response	Rest of the Sample		U2U List	
	Frequency	**Percentage**	**Frequency**	**Percentage**
No	2153	90%	124	55%
Yes	233	10%	101	45%
	2386	100%	225	100%

AgClimate View (ACV)

Q20a. Had you ever heard of the AgClimate View tool before this survey?

Response	Rest of the Sample		U2U List	
	Frequency	**Percentage**	**Frequency**	**Percentage**
No	2162	88%	153	67%
Yes	298	12%	75	33%
	2460	100%	228	100%

Q20b. Have you ever used the AgClimate View tool in your advising?

	Rest of the Sample		U2U List	
Response	**Frequency**	**Percentage**	**Frequency**	**Percentage**
No, I don't plan to	53	18%	6	8%
No, but I'm thinking about it	197	67%	49	65%
Yes, but I do not plan to use again	2	1%	0	0%
Yes, and I will use again	41	14%	21	28%
	293	100%	76	100%

Q20c. Which of the following reasons make you hesitate to use the ACV tool in your advising? (n=199)

	Rest of the Sample		U2U List	
Reason	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Not relevant to the types of decisions I make	43	22%	9	18%
Another tool provides this information	29	15%	8	16%
I don't think it does a very good job	6	3%	1	2%
It is hard to use	6	3%	0	0%
I don't know enough about it	94	47%	22	44%
Other	40	20%	16	32%

Please elaborate on the reasons stated above.

Related to relevance, 45% of respondents said the application of the tool was outside their purview as advisors, that they either advising different cropping systems, regions, or not useful for the recommendations they needed to make. Of those who felt they didn't know enough about it (n= 116), 53% cited time constraints and need for experience for more experience, 29% desired more information about the origins and accuracy of the data, and training on how to use it with farmers in their programming. Of those that answered 'other' (n= 56), 37% cited agency, and workload constraints as barriers to learning about or implementing the tool. 15% had other sources for the information, 7% expressed doubts about the usefulness and applicability for farmers or the inaccuracy of the data.

Q20d. How did you use ACV in your advising decisions? (n=43)

	Rest of the Sample		U2U List	
Advising decision	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Crop choice	16	37%	6	30%
Seed purchase	10	23%	4	20%
Fertilizer purchase	8	19%	4	20%

Fertilizer application timing	22	51%	12	60%
Cash crop sale	2	5%	0	0%
Forward pricing	2	5%	0	0%
Market choices such as future, options, etc.	2	5%	4	20%
Crop insurance purchase/choice	6	14%	2	10%
Irrigation investment	10	23%	5	25%
Machinery investment	2	5%	0	0%
Conservation practice choice	13	30%	6	30%
Other	3	7%	3	15%
I didn't use this tool to make a decision	5	12%	3	15%

Q20e. How have you used the ACV tool and how helpful was it?

While respondents for the most part did not comment on how useful the ACV climate tool was, 44% of respondents mentioned that using it for advising on crop decision-making (selecting varieties and estimating planting and harvesting dates) while the other 56% used the tool to give context and additional background information for publications or presentations.

Q20f. Would you recommend ACV to others?

	Rest of the sample		U2U List	
Response	**Frequency**	**Percentage**	**Frequency**	**Percentage**
No	70	29%	8	12%
Yes	172	71%	61	88%
	242	100%	69	100%

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Corn GDD

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Q21a. Had you ever heard of the Corn GDD tool before this survey?

	Rest of the sample		U2U List	
Response	**Frequency**	**Percentage**	**Frequency**	**Percentage**
No	1707	70%	108	48%
Yes	732	30%	118	52%
	2439	100%	226	100%

Asked of those that had heard of Corn GDD:

Q21b. Have you ever used the Corn GDD tool in your advising?

	Rest of the sample		U2U List	
Response	**Frequency**	**Percentage**	**Frequency**	**Percentage**
No, I don't plan to	181	25%	16	13%
No, but I'm thinking about it	297	41%	54	46%
Yes, but I do not plan to use again	15	2%	1	1%
Yes, and I will use again	235	32%	48	40%

	728	100%	119	100%

Q21c. Which of the following reasons make you hesitate to use the Corn GDD tool in your advising?

	Rest of the sample		U2U List	
Reason	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Not relevant to the types of decisions I make	154	39%	15	26%
Another tool provides this information	65	16%	16	28%
I don't think it does a very good job	13	3%	2	3%
It is hard to use	7	2%	1	2%
I don't know enough about it	122	31%	18	31%
Other	76	19%	9	16%

Please elaborate on the reasons stated above.

Of respondents who considered the Corn GDD tool not relevant to the decisions they make (n= 169), 73% considered the tool to be outside their purview for advising, either because they advised specifically on conservation practices (28%) or because it was outside their cropping system, region, or advising decisions. 15% explained that they use other tools or think the information is not well presented in the Corn GDD tool. 45% of the 140 respondents who didn't know enough about the tool expressed doubts about the accuracy and origins of the data, and questions about how to interpret it. 34% wanted more resources or time to incorporate into their workflow, and 13% desired more information about the uses of the tool for farmers. Once again, of respondents who selected 'other' (n= 85), 21% referenced insufficient time and agency constraints to adopt the tool, and 29% considered the tool to be outside of their purview or advising specialties. 8% of those respondents already use the tool.

Q21d. How did you use Corn GDD in your advising decisions?

	Rest of the sample		U2U List	
Advising decision	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Crop choice	104	42%	16	33%
Seed purchase	119	48%	24	50%
Fertilizer purchase	23	9%	5	10%
Fertilizer application timing	103	42%	18	38%
Cash crop sale	17	7%	2	4%
Forward pricing	28	11%	6	13%
Market choices such as future, options, etc.	25	10%	3	6%
Crop insurance purchase/choice	28	11%	5	10%
Machinery investment	6	2%	0	0%
Other	46	19%	10	21%

I didn't use this tool to make a decision	32	13%	9	19%

Q21e. How have you used the Corn GDD tool and how helpful was it?

Of those who used the Corn GDD tool, 48% used it for advising related to crop decision-making, mainly selecting variety types and ordering seeds, choosing planting and harvesting dates, and estimating maturity). 19% of respondents used it for timing fertilizer, pesticide, and irrigation schedules, and 20% used it to generate supplementary data for presentations, publications, and as a teaching or research tool. 6% specifically had positive comments about the usefulness of the tool.

Q21f. Would you recommend Corn GDD to others?

	Rest of the sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
No	124	19%	11	10%
Yes	532	81%	100	90%
	656	100%	111	100%

Corn Split N

Q22a. Had you ever heard of the Corn Split N tool before this survey?

	Rest of the sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
No	2115	87%	167	75%
Yes	304	13%	57	25%
	2419	100%	224	100%

Asked of those that had heard of Corn Split N:

Q22b. Have you ever used the Corn Split N tool in your advising?

	Rest of the sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
No, I don't plan to	76	25%	14	25%
No, but I'm thinking about it	163	54%	28	49%
Yes, but I do not plan to use again	14	5%	2	3%
Yes, and I will use again	51	17%	13	23%
	304	100%	57	100

Q22c. Which of the following reasons make you hesitate to use the Corn Split N tool in your advising? (n=304)

Reason	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
Not relevant to the types of decisions I make	60	29%	8	21%
Another tool provides this information	30	15%	7	18%
I don't think it does a very good job	18	9%	3	8%
It is hard to use	10	5%	2	5%
I don't know enough about it	75	37%	18	46%
Other	39	19%	8	21%

Please elaborate on the reasons stated above.

Of those who said the Corn Split N tool was not relevant to their decisions (n= 68), 66% considered it to be unnecessary or outside the scope of their advising. 19% considered the tool to be not useful for farming decisions, limited by time and weather sensitivity of fertilizer applications. 41% of respondents who said that they didn't know enough (n= 93) wanted to know more about the use of the tool and the accuracy of the data. 17% wanted more training on using it with farmers or in their educational programming, and once again, 22% expressed the need for more time and training to adopt the tool effectively. For respondents who selected 'other' (n= 47), 12% noted that they were already using the tool regularly, and a few brought up concerns about the user-friendliness and questions about the cost or mobile options.

Q22d. How did you use Corn Split N in your advising decisions? (n = 62)

Advising decision	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
Fertilizer purchase	21	34%	6	43%
Fertilizer application timing	56	90%	9	64%
Machinery investment	52	16%	1	7%
Other	3	5%	3	21%
I didn't use this tool to make a decision	5	8%	1	7%

Q22e. How have you used the Corn Split N tool and how helpful was it?

38% of respondents cited using the Corn Split N tool for planning fertilizer and irrigation applications, while 23% of respondents who described their use of the tool used it for context or content for

publications and presentations. 19% of the respondents were unsure or included concerns about the inaccuracy of the tool.

Q22f. Would you recommend Corn Split N to others?

Response	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
No	72	27%	18	34%
Yes	191	73%	35	66%
	263	100%	53	100%

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Climate Patterns Viewer (CPV)

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Q23a. Had you ever heard of the CPV tool before this survey?

Response	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
No	2263	94%	181	82%
Yes	146	6%	39	18%
	2409	100%	220	100%

Asked of those that had heard of CPV:

Q23b. Have you ever used the CPV tool in your advising?

Response	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
No, I don't plan to	45	29%	6	15%
No, but I'm thinking about it	81	53%	19	46%
Yes, but I do not plan to use again	4	3%	0	0%
Yes, and I will use again	23	15%	16	39%
	153	100%	41	100%

Asked of those that have not used CPV until now **AND** have used it but do not plan to use again:

Q23c. Which of the following reasons make you hesitate to use the CPV tool in your advising?(n = 104)

Reason	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
Not relevant to the types of decisions I make	32	69%	6	27%
Another tool provides this information	10	10%	3	14%
I don't think it does a very good job	4	4%	0	0%
It is hard to use	3	3%	1	5%
I don't know enough about it	44	42%	10	45%
Other	23	22%	5	23%

Please elaborate on the reasons stated above.
Of the respondents who said the CPV tool was not relevant to their decisions (n= 38), 50% said that the tool's use was outside their purview (they did not advise on whole farm planning or crop production, or they were limited by their agency's position on climate change). 35% expressed concerns about the data the CPV tool provided, particularly whether it was local or time-sensitive for farm decision-making. Of those who wanted to know more (n= 51), 32% wanted more information on the accuracy of the data provided and 21% wanted more training on how to integrate it into their programming and consulting. Of those who chose 'other' (n= 25), 20% worried the data would be insufficient for on-farm use, while 24% again noted the time constraints of learning a new tool (though many expressed interest in learning how to use it in the future).

Asked of those that have used CPV in advising but do not plan to use it again **OR** have used it in advising and will use it again:

Q23d. How did you use CPV in your advising decisions?

Advising decision	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
Crop choice	10	39%	5	33%
Seed purchase	4	15%	5	33%
Fertilizer purchase	3	12%	3	20%
Fertilizer application timing	7	27%	6	40%
Cash crop sale	1	4%	0	0%
Forward pricing	4	15%	0	0%
Marketing choices such as future, options, etc.	3	12%	1	7%
Crop insurance purchase/choice	7	27%	2	13%
Irrigation investment	4	15%	1	7%
Machinery investment	1	4%	1	7%
Conservation practice choice	7	27%	3	20%
Other	3	12%	1	7%
I didn't use this tool to make a decision	3	12%	4	27%

Q23e. How have you used CPV and how helpful was it?

Though the fewest number of respondents provided written responses related to the CPV tool, 33% of the responses noted using it as a teaching or research tool, and an additional 33% used it for additional context in their publishing or advising, in combination with other tools. 17% used the tool for adivising on cropping and varietal selection.

Q23f. Would you recommend CPV to others?

Response	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
No	32	25%	6	16%
Yes	95	75%	31	84%
	127	100%	37	100%

Comparative Analysis of Tools: (These comparisons are made based on the entire dataset)

The written responses in the survey were coded for themes and their frequencies were matched for each, with one theme identified per written response.

Relevance. Why isn't the tool relevant?	Frequency of responses for each tool			
Themes in written responses	ACV	Corn GDD	Corn Split N	CPV
Use other tools for this information	2	15	4	1
Insufficient data provided by tools	2	7	1	1
Data are inaccurate because of scale & or timing issues	2	3	5	5
Not useful for conservation advising	4	29	2	0
Outside the scope or purview of advising	15	46	19	6
Insufficient time or resources to adopt new tools	3	3	1	1
Unsure about data use or interpretation from U2U tools	5	0	0	0
Total written responses:	33	103	32	14

The most common explanation for why the U2U tools were not relevant was the same across all tools, from advisors who considered the application to the tools to be outside the scope of their advising.

	Frequency of responses for each tool			
	ACV	Corn GDD	Corn Split N	CPV
Another tool provides this information?	37	81	37	13

Don't know enough: What would you like to know?	Frequency of responses for each tool			
Themes in written responses	ACV	Corn GDD	Corn Split N	CPV
More training about data use and accuracy	8	21	13	5
More training on educational programming	7	6	5	3
Need time, resources, or experience	27	16	7	2
No interest	2	4	5	4
Unsure or no further information given	8	0	0	4
Incorporating it with other tools	0	0	2	0
Total written responses:	52	47	32	18

There were some differences between the tools on what advisors were interested in learning more about before using the tools. Between the Corn GDD tool, Corn Split N tool, and the CPV tool, advisors expressed concerns with the data accuracy and interest in learning more about how to use it in their advising. For the ACV tool, advisors expressed a need for more time, resources, or experience to

incorporate the tool in their advising. A few respondents were simply unsure about the usefulness of the ACV and CPV tools.

Illustrative Quotes: "Both yield and climate can only be compared in/as deviation from trend" (AgClimate Viewer)
"Modeling is always just that; modeling." (Corn GDD)
"I don't believe it is calibrated well for my state, nor does it match local Extension recommendations about N management." (Corn Split N)
"I personally don't feel it is that accurate of a reading" (Climate Patterns Viewer)

It's hard to use, why?	Frequency of responses for each tool			
Themes in written responses	ACV	Corn GDD	Corn Split N	CPV
Don't know enough yet to decide	1	2	1	0
It is outside my expertise or cropping system	1	0	0	0
Insufficient data or inaccurate data	2	0	0	0
Variability is too great / models aren't useful	0	0	1	0
Logistics / user friendliness	2	2	3	0
Total:	6	4	5	0

Though few respondents overall found the tools hard to use, of those who provided written responses, most had questions about the user-friendliness of the tools because of their output or the lack of a mobile application. A few explained that they did not yet know enough about the tools to make a decision about whether they were hard to use.

Illustrative quotes:
"I don't need this level of detail, other reports are fine for the level I need." (AgClimate View)
"Numerical values hard to understand. Needs more description about what the numerical value you are placing means" (Corn Split N)
"needs to be very geospecific. Rainfall varies so greatly within 5 miles" (Corn Split N)

Other:	Frequency of responses for each tool			
Themes in written responses	ACV	Corn GDD	Corn Split N	CPV
Use other tools for this information	8	3	3	3
Insufficient data for farm decisions and practices	4	10	3	5
Don't know enough yet	12	14	5	5
Not useful for conservation advising	1	7	0	0
Outside the scope of advising	4	16	9	5
Insufficient time or resources to adopt	19	16	12	6
Unsure about data use or interpretation	1	4	3	0
Logistical issues	0	2	1	0

Already use it	3	6	5	1
Total written responses:	52	78	41	25

Of the written responses that listed 'other' reasons that they hesitated to adopt the tools, the majority of advisors across all tools cited insufficient time, resources, or constraints from their agencies about what they could adopt. The second most popular responses indicated that advisors felt the tools were not useful for the scope of their advising, or that they did not know enough about how to integrate them into their advising.

How did the advisors use the U2U tools. Also, how helpful was it?

Use and helpfulness of the tools:	**Frequency of responses for each tool**			
Themes in written responses	**ACV**	**Corn GDD**	**Corn Split N**	**CPV**
Advising on agronomic decision-making, including yield, varietal selection	8	60	2	2
Advising on crop insurance or financial planning	0	5	0	0
Fertilizer and pesticide timing	5	24	10	0
As additional general data or context for advising, publishing, in combination with other tools	10	17	6	4
Learning and teaching tool or for research	0	8	3	4
Somewhat helpful (unspecified)	0	1	0	0
Very helpful (unspecified)	0	7	0	0
I didn't use / didn't like /don't know	0	3	5	2
Total written responses:	23	125	26	12

The majority of advisors used the tools for advising on agronomic decisions, such as crop selection and yield predictions, or as background information in their publishing or presentations to support their advising in combination with other tools. The majority of respondents who elaborated on their use of the Corn Split N tool used it for fertilizer timing and applications.

Asked of tool users only:

Q24. Compared to the advice you were giving before using the U2U tools, how would you describe the quality of advice you've given after using the U2U tools?

	Rest of the sample		**U2U List**	
Quality of advice after using the U2U tools	**Frequency**	**Percentage**	**Frequency**	**Percentage**
A lot of worse	0	0%	0	0%
A little worse	0	0%	0	0%
Same	34	14%	16	31%
A little better	58	23%	13	25%
A lot better	19	8%	4	8%
Don't know	137	55%	19	36%
	248	100%	52	100%

Please elaborate on the reasons stated above.

Of respondents who provided explanation for their answer 'same,' (n=50) 35% stated that the tool provided good information and helped provide useful context for their advice, but 17% cited doubts about the accuracy of the data from U2U tools, and another 17% mentioned potential overlap and redundancy with other tools they used. Respondents who described their advice as 'a little better' (n=71), 28% mentioned the quality and accessibility of the data in the U2U tools, 21% noted it built their toolbox generally, and 25% mentioned its uses for advising, particularly around developing context for decision-making (9%) and for advising specific to varietal selection, planting dates, and pest management (16%).

Q25. How usable are the U2U tool(s) based on your experience?

	Rest of the sample		U2U List	
Extent of usability	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Not at all	14	6%	0	0%
Slightly	58	24%	8	14%
Moderately	131	53%	36	66%
Very	44	18%	11	20%
	247	100%	55	100%

Q26. Compared to other sources of weather or climate information that you have used, in general U2U tools:

	Rest of the sample		U2U List	
Response	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Provide useful information I am not getting from other sources	78	31%	25	45%
Provide the same information that I get from other sources	66	26%	14	25%
Provide less useful information than I get from other sources	6	2%	2	4%
I cannot compare because I have not used U2U tools AND other sources of weather/climate information	104	41%	14	26%
	254	100%	55	100%

Q27. How has your likelihood of using weather or climate information in your advising changed due to the U2U project or tools, if at all?

	Rest of the sample		U2U List	
Likelihood change	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Decreased my likelihood	2	1%	0	0%
Slightly decreased my likelihood	7	3%	3	5%
No change	113	45%	22	41%

Slightly increased my likelihood	114	45%	20	37%
Increased my likelihood	15	6%	9	17%
	251	100%	54	100%

Asked of those that provide advice to corn farmers, in either a formal or informal way **OR** Train the Trainers

Q28. Have you told anyone about U2U tools, or taught anyone how to use one or more U2U tools? Select all that apply.

	Rest of the sample		U2U List	
Response	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Yes, I have told clients about a tool/tools	77	4%	19	9%
Yes, I have told coworkers about a tool/tools	76	4%	34	16%
Yes, I have taught others how to use one or more tools	20	1%	10	5%
Yes, Other	12	1%	2	1%
No, I haven't told others about these tools, or taught anyone how to use them	1894	94%	160	77%

Q29. About how many people did you tell or teach about U2U tools?

	Measures of central tendency			Measures of variation			
	Mean	Median	Mode	SD	Range	Minimum	Maximum
Rest of the Sample	82	10	5	307	3000	0	3000
U2U List	39	5	5	124	669	1	670

Q30. Please tell us whether you believe each statement is more true for public sources, more true for private sources, equally true for both, or not true for either.

[Orange = Rest of the Sample; Green = U2U List]

Statement	Not true for either	More true for public	Equally true for both	More true for private	I don't know	*n*
The information is provided in time for me to provide advice on a decision	57 (3%)	130 (7%)	899 (48%)	206 (11%)	509 (31%)	1882
	6 (3%)	15 (8%)	91 (46%)	27 (14%)	57 (29%)	196
The information is specific to the fields of farmers I advise	163 (9%)	89 (5%)	514 (28%)	480 (26%)	613 (33%)	1859
	26 (13%)	12 (6%)	54 (28%)	50 (26%)	53 (27%)	195
The information is relevant to the advice I provide	74 (4%)	149 (8%)	931 (50%)	183 (10%)	528 (28%)	1865

	4 (2%)	15 (8%)	110 (57%)	19 (10%)	44 (23%)	192
The information is accurate	67 (4%)	144 (8%)	878 (48%)	103 (6%)	632 (35%)	1824
	10 (5%)	14 (7%)	102 (53%)	12 (6%)	54 (28%)	192
The information addresses the most important decisions/problems in corn production	139 (8%)	88 (4%)	691 (37%)	247 (13%)	687 (37%)	1852
	15 (8%)	4 (2%)	86 (45%)	26 (14%)	62 (32%)	193
The provider of the information is trustworthy	33 (2%)	266 (14%)	858 (46%)	82 (4%)	615 (33%)	1854
	4 (2%)	34 (18%)	105 (54%)	7 (4%)	44 (23%)	194
The information is used as a way to sell farmers something	232 (13%)	43 (2%)	373 (20%)	606 (33%)	584 (32%)	1838
	25 (13%)	2 (1%)	40 (21%)	71 (37%)	52 (27%)	190
The way the information is distributed to farmers and advisors is fair	29 (2%)	258 (14%)	793 (43%)	54 (3%)	719 (39%)	1853
	5 (3%)	33 (17%)	84 (44%)	5 (3%)	64 (34%)	191
The information helps farmers that I advise reduce financial risks	114 (6%)	103 (6%)	849 (46%)	108 (6%)	680 (37%)	1854
	13 (7%)	11 (6%)	90 (47%)	11 (6%)	67 (35%)	192
The information leads to better crop yields	119 (7%)	61 (3%)	785 (43%)	130 (7%)	748 (41%)	1843
	14 (8%)	6 (3%)	78 (42%)	13 (7%)	76 (41%)	187
The information gives me a competitive advantages over other farm advisors	296 (16%)	39 (2%)	514 (28%)	184 (10%)	820 (44%)	1853
	26 (14%)	6 (3%)	59 (31%)	21 (11%)	80 (42%)	192

Q31. Please indicate your level of agreement with each of the statements related to climate variability

[Orange = Rest of the Sample; Green = U2U List]

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	n
In the past 5 years, I have noticed more variable/unusual weather in my area	39 (2%)	140 8%	400 (22%)	872 (48%)	370 (20%)	1821
	5 (3%)	11 (6%)	41 (22%)	96 (52%)	32 (17%)	185
In the past 5 years, I have noticed more variable/unusual weather across the Corn Belt	34 (2%)	125 (7%)	547 (30%)	823 (45%)	287 (16%)	1816
	5 (3%)	9 (5%)	59 (32%)	88 (48%)	23 (13%)	184
I am willing to provide advice based on climate outlooks	94 (5%)	261 (14%)	783 (43%)	600 (33%)	78 (4%)	1816
	9 (5%)	18 (10%)	72 (39%)	73 (40%)	11 (6%)	183
Changes in weather patterns are hurting the operations of farmers I advise	69 (4%)	298 (16%)	869 (48%)	485 (27%)	98 (5%)	1819
	7 (4%)	44 (24%)	77 (42%)	50 (27%)	7 (4%)	185
I have the knowledge and technical skill to deal with any weather-related threats to my clients' farms	78 (4%)	298 (16%)	837 (46%)	532 (29%)	73 (4%)	1818
	6 (3%)	28 (8%)	64 (35%)	80 (43%)	7 (4%)	185

Q32. Please indicate your level of agreement with each of the statements related to sustained long-term changes to climate patterns.

[Orange = Rest of the Sample; Green = U2U List]

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	n
Earth's climate conditions occur at random with no cycles or trends	326 (18%)	937 (52%)	410 (23%)	102 (6%)	27 (2%)	1802
	40 (22%)	88 (49%)	34 (19%)	11 (6%)	7 (4%)	180
Earth's climate conditions occur in a cyclical pattern	11 (1%)	81 (5%)	501 (28%)	1044 (58%)	159 (9%)	1796
	2 (1%)	9 (5%)	43 (24%)	111 (61%)	16 (8%)	181
Even if climate changes, we can't predict what those changes will be in the future	47 (3%)	455 (25%)	598 (33%)	594 (33%)	101 (7%)	1795
	5	42	68	53	12	180

	(3%)	(23%)	(38%)	(29%)	(7%)	
Having more information about climate change will reduce uncertainties about future conditions for the farmers I advise	61 (3%)	158 (9%)	633 (35%)	826 (46%)	118 (7%)	1796
	9 (5%)	23 (13%)	51 (29%)	83 (46%)	13 (7%)	179
Climate models are accurate enough to predict long-term climate patterns in my area	156 (9%)	561 (31%)	796 (44%)	269 (15%)	17 (1%)	1799
	18 (10%)	61 (34%)	70 (39%)	29 (16%)	2 (1%)	180
Climate change is happening	49 (3%)	126 (7%0	520 (29%)	816 (45%)	289 (16%)	1800
	6 (3%)	14 (8%)	44 (25%)	84 (47%)	31 (17%)	179
Earth's climate always changes	4 (1%)	24 (1%)	265 (15%)	1097 (62%)	392 (22%)	1782
	2 (1%)	2 (1%)	26 (15%)	112 (63%)	37 (21%)	179
Human activities are contributing to climate change	90 (5%)	159 (9%)	603 (34%)	660 (37%)	285 (16%)	1797
	13 (7%)	19 (11%)	56 (31%)	61 (34%)	31 (17%)	180
A change to climate will not affect the farmers I advise	282 (16%)	982 (55%)	435 (24%)	85 (5%)	13 (1%)	1797
	23 (13%)	96 (53%)	48 (27%)	11 (6%)	3 (2%)	181
Climate change will cause more extreme weather events in my area	33 (2%)	107 (6%)	800 (45%)	657 (37%)	200 (11%)	1797
	6 (3%)	9 (5%)	77 (43%)	66 (37%)	23 (13%)	181
There is enough evidence that climate is changing	77 (4%)	172 (10%)	605 (34%)	717 (40%)	227 (13%)	1798
	9 (5%)	17 (9%)	51 (28%)	78 (43%)	26 (14%)	181
Climate change has affected my farm advising decisions	72 (4%)	286 (16%)	889 (50%)	487 (27%)	61 (3%)	1795
	13 (7%)	28 (15%)	74 (41%)	53 (29%)	13 (7%)	181

Q33. Given what you believe to be true about the potential impacts of climate change on agriculture in the Corn Belt, please indicate your level of agreement with the following statements.

[Orange = Rest of the Sample; Green = U2U List]

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	*n*
There's too much uncertainty about the impacts of climate change to justify advising others to change their agricultural practices and strategies	88 (5%)	450 (25%)	716 (39%)	507 (28%)	77 (4%)	1838
	17 (9%)	48 (25%)	66 (34%)	52 (27%)	9 (5%)	192
It is important for farmers to adapt to climate change to ensure the long-term success of U.S. agriculture	28 (2%)	92 (5%)	582 (32%)	896 (49%)	241 (13%)	1839
	5 (3%)	11 (6%)	47 (24%)	103 (53%)	27 (14%)	193
Changing practices to cope with increasing climate variability is important for the long-term success of the farmers I advise	30 (2%)	72 (4%)	548 (30%)	920 (50%)	264 (14%)	1834
	4 (2%)	13 (7%)	46 (24%)	99 (51%)	31 (16%)	193

Demographics

Asked of those that provide advice to corn farmers, in either a formal or informal way **OR** Train the Trainers

Q34. Is agricultural advising a fulltime or part time job for you?

	Rest of the sample		U2U List	
Response	Frequency	Percentage	Frequency	Percentage
Full-time	1399	76%	156	80%
Part-time	442	24%	38	20%
	1841	100%	194	100%

Q35. How many years have you worked as a formal or informal advisor on agricultural issues? (n= 2,027)

	Measures of central tendency			Measures of variation			
	Mean	Median	Mode	SD	Range	Minimum	Maximum
Rest of the Sample	18	17	30	12	55	0	55
U2U List	22	24	30	11	44	2	46

Q36. Do you or your employer charge a direct fee for the advice you provide to clients?

Response	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
Yes – Always	104	6%	32	16%
Yes – Sometimes	167	9%	32	17%
No – The advice is included as part of other products or services	442	24%	65	33%
No – Neither I nor my employer receive any direct payment from clients	1130	61%	66	34%
	1843	100%	195	100%

Q37. On a continuum of early adopter to late adopter, where "Early Adopter" is adopting a new technology along with the first set of advisors and "Late Adopter" is adopting the technology after most advisors adopt it, where would you place yourself?

Adopter category	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
1- Early adopter	231	13%	31	16%
2-	720	40%	86	44%
3-	677	37%	59	31%
4-	134	7%	11	6%
5- Late adopter	55	3%	6	3%
	1817	100%	193	100%

Q38. What is your gender?

Gender	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
Male	1377	79%	156	85%
Female	365	21%	27	15%
	1742	100%	183	100

Q39. What year were you born? (n= 1,849)

Mean= 47 years (This is for the entire sample)

Q40. Please indicate your highest level of education?

School level	Rest of the sample		U2U List	
	Frequency	Percentage	Frequency	Percentage
Some formal schooling	12	1%	1	1%
High school diploma/GED	51	3%	4	2%
Some college	104	6%	12	6%
2 year degree	115	6%	10	5%
4 year degree	1083	59%	97	50%

	472	26%	70	36%
Graduate degree	472	26%	70	36%
	1837	100%	194	100%

Q41. What is your race/ethnicity?

	Rest of the sample		U2U List	
School level	Frequency	Percentage	Frequency	Percentage
Asian/Asian American	12	1%	1	1%
Black/African American	22	1%	0	0%
Hispanic/ Latino/a	27	2%	0	0%
Native American/Alaskan native	32	2%	0	0%
White	1673	95%	174	94%
Other	50	3%	10	5%

Association Between Demographic and Outcome Variables

Purposively selected demographic variables such as gender, age, education level, technology adopter category, number of farmers advised in a year and the type of advisor were tested for any statistically significant associations with the medium term outcomes such as the use of U2U tools in advising and intention to recommend U2U tools to others. Association between reasons for hesitancy in using U2U tools in advising and the type of advisor was also tested. Further, associations between select climate change related beliefs and attitudes of advisors and the use of tools in advising and intention to recommend them to others were also tested.

The use of U2U tools was not associated with gender and age of advisors. The use of ACV tool in advising was associated with the education level of the advisors at 0.05 level of significance, with more advisors having graduate degrees using the tool than expected* (frequencies of advisors who used ACV in advising= 17% (n=7) with up to two-year college degree, 14% (n=18) with four year college degrees and 28% (n=32) with graduate degrees), however, Corn GDD, Corn Split N and CPV tool use were not associated with the education level of the advisors. [*_Expected= The frequency that would exist if there was no statistically significant association between the use of the tool and education level at 0.05 level of significance_].

Technology adopter category was associated with the use of ACV, Corn Split N and CPV tools, with higher number of advisors identifying as early adopters using the tools than expected (frequencies of advisors who used ACV in advising= 25% (n=43) early adopters, 15% (n=12) mid adopters and 7% (n=2) late adopters; Corn Split N= 27% (n=47) early adopters, 17% (n=16) mid adopters and 5% (n=1) late adopter; CPV= 32% (n=26) early adopters, 17% (n=9) mid adopters and 10% (n=2) late adopters). Similarly, the use of ACV tool in advising was significantly associated with the number of farmers advised in a year, with those advising >75 farmers in a year using the tool in higher numbers than expected (frequencies of advisors who used ACV in advising= 11% (n=22) who advise 1-75 farmers, 29% (n=12) who advise 76-150 famers and 25% (n=30) who advise more than 150 farmers in a year), however, no such associations were observed between the use of Corn GDD, Corn Split N and CPV tools and the number of farmers advised in a year.

The use of ACV, Corn GDD, Corn Split N and CPV tools were significantly associated with the type of advisor, with advisors from U2U list (U2U outeach event attendees and U2U newsletter recipients) and Agricultural Extension using the tools in higher numbers than expected (Table 1).

Table 1. Association Between the Use of Tools in Advising and Advisor Type

Use of Tool in Advising	Type of Advisor					
	Ag. Extension	TSP	NACD	U2U	CCA	NRCS
ACV	30% (n=24)	0% (n=0)	4% (n=1)	28% (n=21)	11% (n=14)	8% (n=4)
Corn GDD	37% (n=54)	17% (n=1)	27% (n=16)	41% (n=49)	43% (n=151)	17% (n=28)
Corn Split N	24% (n=19)	100% (n=1)	0% (n=0)	26% (n=15)	24% (n=34)	18% (n=11)
CPV	33% (n=16)	100% (n=1)	5% (n=1)	39% (n=16)	16% (n=8)	3% (n=1)

Note. TSP= Technical Service Provider, NACD= National Association of Conservation District, CCA= Certified Crop Advisor, NRCS= Natural Resources Conservation Service

Table 1 indicates that of the advisors who had heard of the tools, 30% percent of advisors from Agricultural Extension and 28% from the U2U lists used ACV compared to 11% and 8% of advisors from CCA and NRCS lists, respectively. Similarly, 43%, 41% and 37% of advisors from CCA, U2U and Agricultural Extension lists were using Corn GDD in advising compared to 17% each of TSP and NRCS advisors. A similar trend was observed with Corn Split N use, with 24% of U2U and 24% each of Agricultural Extension and CCA advisors advisors using the tool in advising compared to lesser numbers in other types of advisors.

Association between a tool not being relevant to advising decisions and the type of advisor was significant for NRCS advisors for ACV, Corn GDD and CPV tools, and for NACD advisors for Corn GDD tool, with higher numbers of these advisors than expected indicating the irrelevance of the tools as the reason for not using them (Table 2).

Table 2. Association between a Tool Not Being Relevant to Adivising and Advisor Type

Tool Not Being Relevant to Advising	Type of Advisor					
	Ag. Extension	TSP	NACD	U2U	CCA	NRCS
ACV	24% (n=12)	0% (n=0)	35% (n=17)	18% (n=9)	12% (n=11)	34% (n=13)
Corn GDD	29% (n=22)	80% (n=4)	66% (n=25)	26% (n=15)	21% (n=34)	60% (n=39)
CPV	31% (n=9)	0% (n=0)	47% (n=7)	27% (n=6)	6% (n=2)	52% (n=14)

Association between not knowing enough about Corn GDD tool to use in advising and the type of advisor was significant, with advisors from Agricultural Extension and CCA lists indicating this in higher numbers than expected. No such statistically significant associations were observed with ACV, Corn Split N and CPV tools.

The intention to recommend U2U tools to others was not associated with most of the selected demographic variables. The intention to recommend ACV tool to others was significantly associated with the number of farmers advised in a year (frequencies of advisors who recommended ACV to others= 71% (n=124) who advise 1-75 farmers in a year, 92% (n=36) and 75% (n=73)) with advisors advising 76-150 farmers in a year recommending the tool in higher numbers than expected. Further, the intention to recommend ACV and Corn GDD tools were significantly associated with advisors from U2U and Agricultural Extension lists compared to other types of advisors (Table 3). However, no such associations were observed with Corn Split N and CPV tools.

Table 3. Association Between the Intention to Recommend Tools and Advisor Type

Intention to Recommend Tool to Others	Type of Advisor					
	Ag. Extension	TSP	NACD	U2U	CCA	NRCS
ACV	84% (n=61)	0% (n=0)	62% (n=13)	88% (n=61)	64% (n=70)	74% (n=28)
Corn GDD	89% (n=113)	100% (n=5)	77% (n=44)	90% (n=100)	79% (n=251)	80% (n=119)

Note. TSP= Technical Service Provider, NACD= National Association of Conservation District, CCA= Certified Crop Advisor, NRCS= Natural Resources Conservation Service

The results from the associations tested between climate change beliefs and attitudes and the use of ACV, Corn GDD, Corn Split N and CPV tools in advising and the intention to recommend the tools to others are presented in Table 4.

Table 4. Association Between Select Climate Change Beliefs and Attitudes and The Use of Tools in Adivising and Intention to Recommend the Tools to Others

Climate Change Belief/Attitude	Use of Tools In Advising	Intention to Recommend the Tools to Others
When advisors use tools with weather or climate information to aid decisions, it can result in better farm outcomes (related to yield, profit, and/or the environment)	NS for all the tools.	Significant for ACV, Corn GDD and Corn Split N with advisors *agreeing to strongly agreeing* with this statement recommending the tools to others in higher numbers than expected.
Climate change is happening	NS for all the tools.	NS for ACV, Corn Split N and CPV. Significant for Corn GDD with advisors *agreeing* with the statement recommending the tool to others in higher numbers than expected*.
Human activities are contributing to climate change	NS for all the tools.	NS for all the tools.
Changes in weather patterns are hurting	NS for all the tools.	NS for Corn GDD, Corn Split N

the operations of farmers I advise		and CPV. Significant for ACV with advisors *slightly agreeing* with this statement recommending this tool in higher numbers than expected.
There's too much uncertainty to justify advising others to change agricultural practices and strategies	NS for all the tools.	NS for ACV, Corn GDD and CPV tools. Significant for Corn Split N tool with advisors *disagreeing* with this statement recommending the tool in higher numbers than expected.
I am willing to provide advice based on climate outlooks	NS for ACV and Corn GDD tools. Significant for Corn Split N nd CPV tools with advisors agreeing to strongly agreeing with this statement using the tools more than expected.	Significant for all four tools with advisors *agreeing to strongly agreeing* with this statement using the tools in higher numbers than expected.

NS= Not Significant at 0.05 level of significance.

Expected= The frequency that would exist if there was no statistically significant association between the two test variables at 0.05 level of significance.