



SCIENCE MATTERS

Bayer Facts of Science Education XIX (2019): Science Matters: U.S. Teachers, Parents and Teens Weigh in on Ag Science Literacy and Careers

Science Matters is an initiative set forth by Bayer and National 4-H Council to spark the interest of young people across the nation in agriscience and STEM-related fields, as well as instill a love for scientific discovery and provide students the tools they need to pursue STEM-related careers. To learn more about how Bayer and 4-H are supporting the next generation through Science Matters, visit 4-H.org/bayer.

To ensure our country's future success, it's more important than ever to expose students to agricultural science

- The majority of parents (83%) [Q5] and high school science teachers (95%) [Q9] agree – it's important for the country's future success to encourage more children to pursue careers in the agriculture industry.
- Perhaps that's why more than nine-in-ten (92%) teachers believe it's important to expose students to agricultural science content as part of their overall science education. [Q3] That's up 14 percent since 2018 (81%). And, parents of teenagers and teens themselves are in alignment, with 90 percent and 78 percent, respectively, saying the same. [Q3]
- Yet teachers and parents are most likely to say there is *less* of an emphasis placed on getting a good agricultural science education today than 15 years ago. Thirty-nine percent of parents [Q4] and 45 percent of teachers [Q7] agree, compared to 30 percent and 29 percent, respectively, who feel the emphasis is greater.

Parents and teachers want students to see agricultural science as exciting, but it's difficult to break through among teens

- Nearly all (96%) high school science teachers [Q9] and four-in-five (79%) parents of teens [Q5] believe it's important for students to see agricultural science as an exciting, creative and interesting subject.
- Yet, only 52 percent of teens actually do consider agricultural science to be exciting, creative and interesting. [Q7] In fact, more than three-fifths (62%) of parents wish their child had a greater interest in agricultural science. [Q5]
- The reality is, only 36 percent of teens say they are familiar with agricultural career fields that exist beyond working on a farm [Q4], and even fewer (19 percent) say they are likely to pursue a career in the agriculture industry. [Q5]
- The top reasons teens say they are prevented from pursuing an agricultural career include, not knowing anything about the careers (39%) and not liking the idea of working in agriculture (33%). [Q6]

Teachers want to see an increased emphasis on STEM in their schools, but parents and teens are less certain

- Despite two-thirds (67%) of high school science teachers rating the quality of their school's STEM education as excellent or good [Q1], 55 percent believe their schools should place more emphasis on STEM education. [Q2]
- Parents and teens don't necessarily agree as fervently with educators. Seven-in-10 (71%) parents of teenagers feel their child's schools offers excellent or good quality STEM education [Q1], and only 43 percent want to see schools place more emphasis on STEM education. [Q2]
- Teens are more optimistic than their teachers about the quality of their schools' STEM education – a full 70 percent rate their schools' STEM education as excellent or good [Q1] – but are less likely to feel schools need to increase their emphasis on STEM education. Only 30 percent wants to see added STEM emphasis, compared to 50 percent who feel schools are doing enough already. [Q2]

Teachers feel more qualified today to teach agricultural science but are still likely to take advantage of opportunities for additional training

- More than three-in-five (62%) high school science teachers say they feel somewhat or very qualified to teach agricultural science content, up 35 percent from 2018 when fewer than half (46%) of teachers reported feeling qualified. [Q4]
- Even with this increased confidence in their qualifications, 82 percent of teachers say they would be likely to take advantage of the opportunity to increase their level of qualification/training to teach agricultural science. [Q5]
- The most desired resources include additional professional development/training resources (79%), better resources to show proof of concept (53%) and enhanced STEM curriculum (50%). [Q6]

PARENT FACT SHEET

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Q1: How would you rate the overall quality of STEM (science, technology, engineering, math) education at your child's school? (Very/Somewhat NET)			
	Total	Male	Female
Excellent	24%	25%	22%
Good	47%	49%	45%
Fair	21%	20%	23%
Poor	5%	4%	6%
I don't know	3%	2%	5%

Q2: Which one of the following best describes your feelings about the current emphasis your child's school places on STEM (science, technology, engineering and math) education?			
	Total	Male	Female
The school should place more emphasis on STEM education	43%	45%	41%
The school places the right amount of emphasis on STEM education	45%	45%	46%
The school should place less emphasis on STEM education	4%	4%	4%
I don't know	8%	7%	9%

Q3: Now we would like to ask you a few questions about agricultural science education. When we say "agricultural science," we mean the application of scientific principles and advanced technology to impact the management of land and other natural resources for the purpose of producing food. How important do you think it is that your child is exposed to agricultural science content as part of their overall science education?				
	2019	Male	Female	2018
Extremely important	40%	36%	43%	35%
Somewhat important	50%	54%	46%	54%
Not too important	8%	8%	8%	7%
Not important at all	1%	1%	1%	1%
I don't know	2%	1%	2%	2%

Q4: Would you say the emphasis placed on getting a good agricultural science education today is greater, the same or less than 15 years ago?				
	2019	Male	Female	2018
Greater	30%	33%	28%	33%
Same	19%	20%	19%	21%
Less	39%	38%	39%	35%
I don't know	12%	9%	14%	11%

Q5: How much do you agree or disagree with the following statements? (Agree strongly/somewhat NET)				
	2019	Male	Female	2018
I believe local, state and federal governments should help fund solutions to agricultural problems	84%	84%	84%	-
It is important for our country's future success to encourage more children to pursue careers in the agricultural industry	83%	83%	83%	86%
It is important that my child sees agricultural science as an exciting, creative and interesting subject	79%	78%	80%	81%
I wish my child had a greater interest in agricultural science	62%	61%	62%	64%
I believe a career in agricultural science will provide job security for my child	59%	62%	56%	-

About the Research

The 2019 Bayer/4-H Science Matters PARENT Survey presents the findings of an online survey conducted April 16-21, 2019, among a random sample of 1,004 American parents of children ages 13-17 years old. The margin of error for a sample of this size is ± 3% at a 95% confidence level.

TEACHER FACT SHEET

Bayer Facts of Science Education XIX (2019): Science Matters: U.S. Teachers, Parents and Teens Weigh in on Ag Science Literacy and Careers

Q1: How would you rate the overall quality of STEM (science, technology, engineering, math) education at your child's school? (Very/Somewhat NET)	
	Total
Excellent	16%
Good	51%
Fair	27%
Poor	6%
I don't know	1%

Q2: Which one of the following best describes your feelings about the current emphasis your child's school places on STEM (science, technology, engineering and math) education?	
	Total
The school should place more emphasis on STEM education	55%
The school places the right amount of emphasis on STEM education	38%
The school should place less emphasis on STEM education	4%
I don't know	3%

Q3: Now we would like to ask you a few questions about agricultural science education. When we say "agricultural science," we mean the application of scientific principles and advanced technology to impact the management of land and other natural resources for the purpose of producing food. How important is it to expose your students to agricultural science content as part of their overall science education?		
	2019	2018
Extremely important	55%	26%
Somewhat important	37%	55%
Not too important	5%	15%
Not important at all	1%	3%
I don't know	1%	1%

Q4: How qualified do you feel you are to teach agricultural science content?		
	2019	2018
Very qualified	24%	13%
Somewhat qualified	38%	33%
A little qualified	26%	32%
Not at all qualified	12%	22%
I don't know	1%	1%

Q5: How likely would you be to take advantage of the opportunity to increase your level of qualification/training to teach agricultural science?	
	Total
Extremely likely	44%
Somewhat likely	38%
Not too likely	11%
Not likely at all	5%

I don't know	2%
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Q6: Which of the following resources, if any, would you need to increase your level of qualification/training?	
	Total
Additional professional development/training resources	79%
Better resources to show proof of concept	53%
Enhanced STEM curriculum	50%
Increased buy-in from local and regional education communities	45%
Other	5%

Q7: Would you say the emphasis placed on getting a good agricultural science education today is greater, the same or less than 15 years ago?		
	2019	2018
Greater	29%	17%
Same	14%	19%
Less	45%	48%
I don't know	12%	17%

Q8: Which of the following STEM topics do you integrate into your overall lesson plan?	
	Total
Environmental science	79%
Biology	79%
Chemistry	72%
Mathematics	59%
Agricultural science	43%
Engineering	43%
Physics	42%
Computer science	18%

Q9: How much do you agree or disagree with the following statements? (Agree strongly/somewhat NET)	
	Total
It is important that my students see agricultural science as an exciting, creative and interesting subject	96%
It is important for our country's future success to encourage more children to pursue careers in the agricultural industry	95%
I believe local, state and federal governments should help fund solutions to agricultural problems	93%

About the Research

The 2019 Bayer/4-H Science Matters TEACHER Survey presents the findings of an online survey conducted April 18-30, 2019, among 1,138 National Science Teachers Association members who teach high school science. The margin of error for a sample of this size is $\pm 3\%$ at a 95% confidence level.

TEEN FACT SHEET

Bayer Facts of Science Education XIX (2019): Science Matters: U.S. Teachers, Parents and Teens Weigh in on Ag Science Literacy and Careers

Q1: How would you rate the overall quality of STEM (science, technology, engineering, math) education at your school? (Very/Somewhat NET)			
	Total	Male	Female
Excellent	19%	21%	18%
Good	51%	49%	52%
Fair	21%	21%	20%
Poor	5%	3%	7%
I don't know	5%	6%	3%

Q2: Which one of the following best describes your feelings about the current emphasis your school places on STEM (science, technology, engineering and math) education?			
	Total	Male	Female
The school should place more emphasis on STEM education	30%	29%	30%
The school places the right amount of emphasis on STEM education	52%	51%	52%
The school should place less emphasis on STEM education	7%	8%	6%
I don't know	11%	11%	12%

Q3: Now we would like to ask you a few questions about agricultural science education. When we say "agricultural science," we mean the application of scientific principles and advanced technology to impact the management of land and other natural resources for the purpose of producing food. How important do you think it is for you to be exposed to agricultural science content as part of your overall science education?			
	Total	Male	Female
Extremely important	24%	22%	26%
Somewhat important	54%	53%	55%
Not too important	16%	17%	14%
Not important at all	3%	3%	2%
I don't know	4%	4%	3%

Q4: How familiar are you with the various agricultural career fields that exist beyond working on a farm?			
	Total	Male	Female
Extremely familiar	6%	6%	7%
Somewhat familiar	30%	30%	30%
Not too familiar	39%	40%	37%
Not familiar at all	22%	19%	24%
I don't know	4%	4%	3%

Q5: How likely would you say you are to pursue a career in the agricultural industry?			
	Total	Male	Female
Extremely likely	4%	5%	4%
Somewhat likely	15%	16%	15%
Not too likely	36%	35%	37%
Not likely at all	38%	38%	38%

I don't know	6%	6%	6%
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Q6: Which of the following, if any, would prevent you from pursuing a career in agriculture?			
	Total	Male	Female
I don't know anything about agricultural careers	39%	37%	40%
I don't like the idea of working in an agricultural career field	33%	33%	33%
I want to live in an urban environment, not on a farm	31%	32%	30%
Agricultural careers don't pay enough	18%	17%	19%
Agricultural careers require too much education to pursue	6%	5%	6%
Other	5%	5%	5%
Nothing would prevent me from pursuing a career in agriculture	12%	14%	10%

Q7: How much do you agree or disagree with the following statements? (Agree strongly/somewhat NET)			
	Total	Male	Female
I believe local, state and federal governments should help fund solutions to agricultural problems	80%	79%	81%
I consider agricultural science an exciting, creative and interesting subject	52%	52%	52%

About the Research

The 2019 Bayer/4-H Science Matters TEEN Survey presents the findings of an online survey conducted April 16-21, 2019, among a random sample of 1,004 teenagers ages 13-17 years old. The margin of error for a sample of this size is $\pm 3\%$ at a 95% confidence level.