Before we begin to ask you questions about agriculture and gene drive, we would like to learn a little about your background. This information will help us refine the results of our study and will only be reported in aggregate.

Q1) About how many years have you worked in your current field? [number box]

Q2) Which type of organization best describes where you work?
- a) Government or the public sector
- b) Private sector or business
- c) Industry or business association
- d) Nonprofit or NGO sector (other than industry or business association)
- e) University research or education

Q3) What is the Zip Code of the main location where you work? [number box]

Q4) What was the last level of education you completed?
- a) Some high school without graduation
- b) High school diploma or equivalent
- c) Trade School / Apprenticeship
- d) Some college, no degree
- e) Associate degree
- f) Bachelor's degree
- g) Master's degree
- h) Professional, medical, or doctorate degree

Q5) What is your racial/ethnic background? Select all categories that apply.
- a) Black or African American
- b) Asian
- c) American Indian or Alaska Native
- d) Native Hawaiian or Other Pacific Islander
- e) Hispanic or Latino
- f) White
- g) Prefer not to answer [exclusive selection]

Q6) In what year were you born? [number box]

Q7) With which gender do you identify?
- a) Male
- b) Female
- c) Other
- d) Prefer not to answer

Q8) Which of the following categories best describes your political views?
- a) Extremely liberal
- b) Liberal
- c) Slightly liberal
- d) Moderate, middle of the road
- e) Slightly conservative
- f) Conservative
- g) Extremely conservative

Q9) How informed would you say you are about the following topics?

	Not Informed At All	Not So Informed	Somewhat Informed	Very Informed
a) Genetic engineering of agricultural crops				
b) Genetic engineering of insects				
c) Current agricultural integrated pest management practices				
d) Ecological risk assessments used in agricultural pest management				

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Q10) Are the following statements true or false? You may view the correct answers after you submit your completed survey.

	True	False	Don't Know
a) Genes are a basic driver of heredity.			
b) Genetic engineering of crops has not yet been used to manage agricultural pests.			
c) People receive all of their genes from only one of their parents.			
d) Some species have key roles that influence other organisms in an ecosystem.			
e) U.S. regulations have always required labels to identify any food that contains genetically modified ingredients.			
f) The purpose of mass release of sterile insects is to reduce the number of offspring produced by the wild population.			

Please click on one of the links below to view a short video about gene drive and why it might, or might not, be used to manage agricultural pests. You can click either the link to watch a video with captions of what is said or the link to watch a video with no captions of what is said. Be sure that your audio is on and the volume turned up. After the video, you will be asked some additional questions.

<insert link to video with captions> <insert link to video with no captions>

Based on your professional expertise, please answer the following questions related to agriculture in the U.S.

Q11) How essential is it that new methods for managing agricultural pests such as insects and weeds become available in the near future?

a) Not essential at all
b) Not so essential
c) Somewhat essential
d) Very essential

Q12) When deciding whether a gene drive should be developed to manage a specific agricultural pest, how important should each of the following economic factors be?

	Not Important At All	Not So Important	Somewhat Important	Very Important
a) Agricultural yield				
b) Agricultural product quality				
c) Prices for consumers				
d) Profits for producers				
e) Job displacement of agricultural workers				
f) Competitiveness of U.S. agricultural products in international trade				

Q13) When deciding whether a gene drive should be developed to manage a specific agricultural pest, how important should each of the following environmental and health factors be?

	Not Important At All	Not So Important	Somewhat Important	Very Important
a) Biodiversity				
b) Public health				
c) Agricultural worker health				
d) Pesticide usage				

Q14) When deciding whether a gene drive should be developed to manage a specific agricultural pest, how important should each of the following technological factors be?

	Not Important At All	Not So Important	Somewhat Important	Very Important
a) Ability to shut it down after release				
b) Ability to limit it to a target area				
c) Scientific certainty that it will not result in something unexpected				
d) Scientific certainty that it will work as expected				
e) U.S. world leadership in new agricultural technologies				

Q15) To what extent do you disagree or agree with each of the following statements concerning the potential use of gene drive technology to manage agricultural pests?

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
a) Gene drive should be used when existing pest management methods are unaffordable.					
b) Gene drive should be used only if the target pest is an invasive species.					
c) Gene drive should be used even if the engineered traits could remain in the target species for a long time.					
d) Gene drive should be used even if the target pest is a native species.					
e) Gene drive should only be used to reduce the target pest population, not to eliminate it.					
f) Gene drive should only be considered when existing pest management methods are no longer effective.					

Q16) To what extent do you disagree or agree with each of the following statements concerning the potential use of gene drive technology to manage agricultural pests?

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
a) Gene drive is okay to use even if species other than the target pest could be affected.					
b) Gene drive is okay to use even if locations beyond the target area could be affected.					
c) If a gene drive organism might spread to international cross-border populations of the same or related species, the neighboring country must agree to its release.					
d) Gene drive should be used even if reducing the target pest population could result in another species becoming a significant pest.					
e) Gene drive must never be used.					

Base: Show Q16e.i if select "Agree" or "Strongly Agree" for Q16e.

Q16e.i) Which of the following statements most closely matches your primary reason for agreeing that gene drive must never be used?

a) People should not play God.
b) This is just not natural.
c) Don't mess with Mother Nature.
d) This could get into the wrong hands.
e) This should not be commercialized.
f) The potential for unforeseen ecological risks is too high.
g) The potential for unforeseen human health risks is too high.
h) Other (Please specify: _____)

Q17) Based on your current understanding about how gene drive might be used to manage agricultural pests, do you think gene drive research in the following settings should or should not be pursued in the near future?

	Should Be Pursued	Should Not Be Pursued	Not Sure
a) Controlled laboratory settings			
b) Field-based research			

Q18) To what extent do you disagree or agree with the following statements?

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
a) Some pests are so harmful to agriculture that the pest should be eliminated across an entire agricultural region.					
b) Genetic engineering of plants and animals is nothing new; it is just a more precise form of breeding.					
c) A gene drive must be able to be undone and the effects reversed in case harmful, unintended consequences occur.					
d) An acceptable use of gene drive would be to prevent mosquitoes from infecting people with serious or life-threatening viruses such as West Nile Virus, even if that means causing the extinction of a mosquito species.					
e) Instead of gene drive technology, research should focus on improving current genetic engineering methods to manage agricultural pests.					
f) For U.S. agriculture to prosper, it is necessary to accept some risks in innovations for managing agricultural pests.					
g) Instead of gene drive applications, scientists should prioritize improving current selective breeding methods to improve the genes of crops and livestock so that pests cause them less harm.					

Q19) How much would you oppose or support federal policy proposals on gene drive that would increase research funds to:

	Strongly Oppose	Oppose	Neither Oppose Nor Support	Support	Strongly Support
a) Develop gene drive technology					
b) Understand possible **ecological** outcomes of gene drive technology					
c) Understand possible **economic** outcomes of gene drive technology					
d) Understand possible **social** outcomes of gene drive technology					

Q20) How much would you oppose or support federal policy proposals on gene drive that would:

	Strongly Oppose	Oppose	Neither Oppose Nor Support	Support	Strongly Support
a) Create a government agency to oversee and regulate all aspects of genetic engineering, including gene drive					
b) Establish programs to educate people about gene drive technology					
c) Establish programs to involve people in deciding which types of gene drive technology should be developed, if any					

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d)	Permit use of gene drive technology only for pests that can transmit diseases to people					
e)	Work with international groups such as the United Nations to establish guidelines for gene drive technology					
f)	Prohibit all research and use of gene drive technology					
g)	Do nothing: No policy is needed now					

Q21) How familiar would you say you are with the operations of the following agencies of the federal government? These three (3) agencies are expected to be the lead agencies that would regulate gene drive use in agriculture.

	Not So Familiar	Somewhat Familiar	Very Familiar
a) USDA (U.S. Department of Agriculture)			
b) FDA (U.S. Food and Drug Administration)			
c) EPA (U.S. Environmental Protection Agency)			

If Q21a= "somewhat familiar" or "very familiar" (USDA) then show Q22a.
If Q21b= "somewhat familiar" or "very familiar" (FDA) then show Q22b.
If Q21c= "somewhat familiar" or "very familiar" (EPA) then show Q22c.

Q22) Listed below are the agencies with which you are at least somewhat familiar. How competent do you think each agency is to develop guidelines and regulations for different stages of gene drive research and use in agricultural pest management?

Q22a) USDA (U.S. Department of Agriculture)	Not Competent At All	Not So Competent	Somewhat Competent	Very Competent	Not Sure
i. Field-based research prior to approved use					
ii. Broad-scale market applications					
iii. Health of laboratory and field researchers, and of industry and agricultural workers					
iv. Food safety					
v. International spread of gene drive engineered agricultural pests					
Q22b) FDA (U.S. Food and Drug Administration)	**Not Competent At All**	**Not So Competent**	**Somewhat Competent**	**Very Competent**	**Not Sure**
i. Field-based research prior to approved use					
ii. Broad-scale market applications					
iii. Health of laboratory and field researchers, and of industry and agricultural workers					
iv. Food safety					
v. International spread of gene drive engineered agricultural pests					
Q22c) EPA (U.S. Environmental Protection Agency)	**Not Competent At All**	**Not So Competent**	**Somewhat Competent**	**Very Competent**	**Not Sure**
i. Field-based research prior to approved use					
ii. Broad-scale market applications					
iii. Health of laboratory and field researchers, and of industry and agricultural workers					
iv. Food safety					
v. International spread of gene drive engineered agricultural pests					

Q23) Other federal agencies may also have some role in overseeing gene drive research and applications. How important do you think it is that the following federal agencies be actively involved in working with the USDA, FDA, and EPA during the early stages of developing guidelines and regulations for gene drive?

	Not Important At All	Not So Important	Somewhat Important	Very Important	Not sure
a) U.S. Occupational Safety and Health Administration					
b) U.S. Fish and Wildlife Service					
c) U.S. Bureau of Land Management					
d) U.S. Department of the Interior					
e) U.S. Customs and Border Protection					

f)	U.S. Department of Transportation					
g)	U.S. Department of Commerce					
h)	U.S. Department of State					
i)	U.S. Department of Justice					
j)	U.S. Department of Defense					
k)	U.S. Department of Homeland Security					

Q24) To what extent do you think the following groups should be actively involved in informing policies for gene drive?

	Not Involved At All	Not So Involved	Somewhat Involved	Very Involved
a) Statewide agricultural extension services				
b) Biotechnology companies				
c) University scientists				
d) Small farmers				
e) Environmental groups				
f) Big commercial farms				
g) Religious leaders				
h) Farming associations				
i) Animal rights groups				
j) General public				

Q25) Everything considered, do you think that using gene drive to manage agricultural pests is a good idea or a bad idea?

a) A good idea
b) A bad idea
c) Not sure

Q26) Should the government develop or not develop additional regulations for implementing gene drive?

a) Develop
b) Not develop
c) Not sure

Q27) We live in a time when there are many emerging challenges such as responding to strong storms and hurricanes and the COVID-19 virus that ask us to make decisions based on complex science. For many people, trust plays a part in their decision-making. How much do you distrust or trust scientists' statements about COVID-19 risks?

a) Strongly distrust
b) Distrust
c) Neither distrust nor trust
d) Trust
e) Strongly trust

Provide link to show correct answers to Q4) true/false questions after submission of completed survey.

Correct answers to true/false questions.		False	True
a)	Genes are a basic driver of heredity.		(T)
b)	Genetic engineering of crops has not yet been used to manage agricultural pests.	(F)	
c)	People receive all of their genes from only one of their parents.	(F)	
d)	Some species have key roles that influence other organisms in an ecosystem.		(T)
e)	U.S. regulations have always required labels to identify any food that contains genetically modified ingredients.	(F)	
f)	The purpose of mass release of sterile insects is to reduce the number of offspring produced by the wild population.		(T)