

Appendix A. Question Bank

The following two tables (Table A-1 and Table A-2) encompass questions intended for this information collection. Questions from Table A-1 are demographic in nature and will be included on all information collections; questions in Table A-2 will vary across collections, depending on information needs. Response options cannot be identified prior to collection as they will vary for reasons such as differing cropping situations and pesticide types. No more than ten questions from Table A-2 will be included on any given information collection. All proposed questions will be supplied to OIRA prior to an information collection for their review.

Given unique production needs of different use sites, bracketed terms are used in the question bank to allow for flexibility in question design while still offering a structured bank from which questions may potentially be asked. The following provides an overview of these bracketed terms.

Explanation of Bracketed Terms Used in Question Banks

Treatment: The pesticide active ingredient of interest (might rarely include a biological, biochemical, non-microbial, or behavioral-altering based material, such as pheromone mating disruption in some cases, hence a broad term)

Alternative option(s), Alternative(s): Same as ‘treatment,’ but generally couched in a question about what producers would use in the absence of the treatment under consideration for mitigation.

Number of applications or Specific number of applications: the number of times a treatment is applied usually during a specified time period such as a crop season or year.

Agricultural System(s): In general, this will mostly be an indicator of the crop of interest. But because use patterns can entail non-crop or other outdoor agricultural sites, the ‘agricultural system’ designation allows for broader flexibility to address EPA questions about non-typical use sites. Some examples of non-crop agricultural systems could include:

- Greenhouses or other non-outdoor systems: examples include hoop houses, slat houses, greenhouses, shade houses, high tunnels, hydroponic arrays, etc.
- Fields or other agricultural units (plots, strips, grids)
- ‘Horticultural-related area’ most often associated with ornamental production systems, for example outdoor arrays of pots that are treated by ground or chemigation
- Livestock feeding and/or housing premises, or other outdoor agricultural structures
- Aquaculture ponds or lakes
- Indoor growth media, including hydroponic systems and/or growth chambers
- Turf/golf courses
- Forests, tree nurseries, and tree plantations

Pest: Generally this will be a species that is targeted by a pesticide treatment, and can include weeds, parasitic plants, fungi, insects, vertebrates, nematodes, bacteria, viruses, or other micro-organisms. A pest is a species of organism that negatively impacts the goals of agricultural producers via direct or indirect damage, quality impacts, competition, contamination, etc.

- Periodic/invasive pests of concern: a more limited suite of pests often associated with sporadic occurrence or unexpected infestation of pests not normally found in a given location.
- Pest 1, Pest 2, etc.: used when there is a need for a question to contrast two or more pest species.
- Target pest pressures: This term is generally used to discuss the severity of a pest infestation or potential pest infestation. High pest pressure means that the need for pest management intervention is severe, while low pressure generally means that the situation is less acute, with the relative differences depending on the economic impact of the infestation or potential infestation.

Use site/specific use site: Similar and sometimes synonymous with agricultural system, but open-ended enough to include other use patterns that might not be directly related to agriculture. For example, if a termite bait is used to treat an infestation of a barn, the structure and perimeter would be a 'use site.'

Agricultural Practice/Task: This can refer to a broad variety of agricultural tasks that are not directly related to a pesticide application, but can be *impacted* by the requirements around a pesticide application. Some broad examples of agricultural practices include tilling land, moving irrigation pipe, training vines, pruning trees, scouting fields, harvesting fruits or vegetables, hand-thinning fruit, de-flowering crops, etc. There are often restrictions on pesticide usage (for example, do not conduct x task within 48 hours of application) that can impact farm operations by limiting the ability to conduct other necessary agricultural practices, and this question allows us to ask those sorts of specific questions that relate to impacts of pesticide mitigation.

User(s): Anyone making use of a treatment, including applicators, mixers/loaders, handlers, etc. Essentially anyone who would make use of a pesticide label. Sometimes, we would want to ask questions specific to only one group, other times the questions may be more general to 'all uses' of a given treatment.

Rotated and/or tank mixed: These are common practices by users to manage pest resistance (similar to how drug resistance is managed in medicine by either rotating or combining active ingredients of different modes of action). These are typically in questions specific to resistance management practices.

Application method(s)/Particular application method(s): This includes a long list of varied ways treatments are applied to crops or agricultural system. Some examples include ground broadcast sprays, aerial sprays, chemigation, granular applications to soil, granular incorporation in the furrow, side dressing of crops, banding, ultra-low-volume fogging, individual plant dips/drenches, trunk/vine drenches, spot treatments, etc. This could also refer to specific types of application equipment or mixing/loading/delivery equipment such as SmartBox technology, lock and load systems, closed mixing/loading systems, etc.

Alternative application method(s): Same as above but couched as an alternative, similar to how ‘treatment vs. alternative treatment’ would be used. It would generally be couched in a question about what producers would use in the absence of some application method under consideration for mitigation

Application equipment/Technology: Related to specific apparatus for delivery of treatment, and can be couched in either general or specific terms. This encompasses a wide variety of available technology. While some terms overlap with ‘application methods,’ the questions are generally going to be about specific technological questions. Some examples include airblast sprayers, mechanically pressurized hand wands, backpack sprayers, sprayers with laser technology, groundboom rigs, aerial rigs, etc.

Spraying practice: Related more to methodology, this refers to a long list of potential parameters around how treatments are applied. Some examples include the release height for spray or chemigation applications, the air-speed of an airblast sprayer, the ground speed of an application rig, or the use of some crop specific method to deliver treatments such as alternate-row-middle spraying, strip spraying, altered spray volume per acre as just some examples.

Specific location in a production area: Wide variety of possibilities, as EPA often needs specific information on where a particular use is located. Some examples include field margin treatments, spot treatments, livestock house treatments around specific areas or apparatus, targeted spraying of particular production units, etc.

Variable that prohibits application: These most often apply to outdoor applications and include weather variables such as wind speeds, temperatures, precipitation (or lack of precipitation), atmospheric temperature inversions, or some combination of those. Non-weather variables can include things like soil type, topography, crop stage, presence of a non-target species, physical/agronomic obstacles, field setup, or other conditions/events we don’t know about and are querying growers to describe.

Specific pest management program: Describes a variety of approaches to applying treatments to manage target pests. Some examples include a preventative program, avoidance program, monitoring program, suppression program, integrated program, a threshold-based program, a reactive program, a curative program, or others.

Time/Particular Time/Unit of Time/Time Period: Day, week, month, year, season, etc. are the most common examples. Any designation that limits the scope of a particular question based upon when a treatment would be applied, etc.

Crop Stage/Crop or Growth stage term: Refers to a timing based upon a developmental point in the life of a crop. Some examples include emergence, tillering, leaf development, bud break, pre-bloom, bloom, post-bloom, vegetative stages (in agronomic crops, terms like V-1, V-2, V-3, etc.), reproductive stages (in agronomic crops, terms like R-1, R-2, R-3, etc.), pre-harvest, at-harvest, post-harvest, etc. These terms and delineations vary widely by crop.

Droplet size(s): For spray applications, the size of the spray particle can be a point of interest for both applicators and regulators. These can sometimes be defined by the average diameter of spray particles, or by terms such as ultra-fine, super-fine, fine, medium, coarse, ultra-coarse, etc.

Certain formulations: Refers to the formulation of a pesticide being used and can include myriad terms. The term formulation means a pesticide preparation supplied by the manufacturer for practical use and includes the active ingredient and inert ingredients which are included to provide a product in a form that is convenient to handle and can be mixed with water and applied accurately and safely. Some examples include liquids, emulsifiable concentrates, soluble concentrates, flowables, dry flowables, granulars, wettable powders, soluble powders, fumigants, etc.

Unit of measure: Generally used here to refer to field level or crop production area parameters such as acres, hectares, square meters, square feet, or volumetric measures for an indoor space treatment, such as cubic feet, cubic meters, etc.

Delineated Geographic Regions/Areas: Most commonly States, Counties, crop reporting districts (CRDs), regions, watersheds, or other political or physically bounded areas, etc.

Rate measurement unit/Specified application rate: Referring to the rate at which a treatment is applied, and most commonly expressed in units such as grams per acre, pounds per acre, ounces per acre, fluid ounces per acre, (or hectare, or other area unit as described above).

Impact: Generally associated with pesticide restrictions or proposed mitigations, these are the consequences to users that are of interest. Some common examples include: chemical costs, labor costs, convenience, yield, processing quality, nutritional quality, market quality, need for additional field passes, differential equipment costs, lost time/down time, reduced efficacy, enhanced efficacy, etc.

Seed characteristic: Referring to biological, physical or chemical traits of seeds commonly used in agriculture, that might be related to pest management considerations. Some examples for seeds include pelleted, coated, dyed, anti-feedant, growth additive, enhanced, certified, etc.

Soil amendment(s): This can refer to a variety of non-pesticidal treatments added to soil. Some examples include fertilizers, nutrient enhancers, inoculants, additives, bio-stimulants, composts, compost extracts, biological blends, residue, etc.

Conservation Practices: Refers to a number of tactics employed by growers (and often endorsed by government programs) to prevent loss of soil or crop material from land by erosion, runoff, etc. or to provide habitat for beneficial species. Some common examples include conservation tillage, reduced/no tillage, vegetative filter strips, strip cropping, terracing, terrace farming, cropped/grassed terraces, grassed waterways contour tillage/farming, crop residue management, water/sediment control basins, in-field vegetative filter strips, riparian buffers, flowering refuges, habitat enhancement, etc.

Statistics/Stats: Common measurement parameters around questions related to numerical

responses. These can include terms like median, mean, average, typical, minimum, maximum, etc.

Term/Insert Term/Other Term: Often included in questions seeking specific info about a grower’s understanding of label verbiage or other commonly used technical language—informative as to whether EPA’s proposed verbiage will be understood.

Type of trap or other monitoring mechanism: Used for questions about pest monitoring and can include various types of traps or monitoring devices. Examples include wing traps, spore traps, delta traps, pitfall traps, pheromone traps, fly strips, pane traps, passive interception, kairomone traps,

Table A-1. Demographic Questions

1. Regarding your specialization in [use site], please select all that apply:	
	a. I work for an academic institution (e.g., professor, researcher, Extension Agent)
	b. I am a Certified Crop Advisor (CCA)
	c. I am a member of the National Alliance of Independent Crop Consultants (NAICC)
	d. I am currently an agricultural producer of [use site]
	e. I was previously an agricultural producer of [use site]
	f. Other (please specify):
	g. None of the above
<i>[if yes to 1a-1f, continue to #2; otherwise skip to question #5]</i>	
2. Approximately how many years have you been involved with [use site]?	
	<1 year
	1 - <5 years
	5- <10 years
	10 or more years
3. Approximately how many [unit of measure, such as acres] of [use site] are you current involved with?	
	<i>Response options will depend on use site</i>
4. In what state(s) are you currently involved with [use site]? Check all that apply	
	<i>Checklist of U.S. states will be listed</i>
5. What other [use sites] are you currently involved with? Check all that apply	
	<i>Checklist of use sites will be provided</i>

Table A-2. Question Bank

ID	Question Category	Question
1	Alternatives	What are the most likely alternatives to [treatment] for use [on/in] [agricultural system(s)]?
2	Alternatives	What are the most likely alternatives to [treatment] where [users] currently use this [treatment] at the [highest/average] rate?

ID	Question Category	Question
3	Alternatives	What alternatives are available for [the pest(s)] targeted by [treatment] [on/in] [agricultural system(s)]?
4	Alternatives	What are the most likely alternatives for [pest(s)] targeted by [treatment] [on/in] [agricultural system(s)]?
5	Alternatives	What alternatives does [entity, such as operation] currently use for [pest(s)] targeted by [treatment] [on/in] [agricultural system(s)]?
6	Alternatives	What other management options are available if [treatment] was not available?
7	Alternatives	When using an alternative to [treatment], how [do/does] [this/these] [alternative option(s)] compare to [treatment] in terms of product performance?
8	Alternatives	When using [alternative(s)] to [treatment], how [do/does] [this/these] [alternative option(s)] compare to [treatment] in terms of their compatibility with current season-long pest management considerations, including resistance management?
9	Alternatives	If [treatment] could not be used during [time, such as crop stage or bloom stage], what strategies would [the user(s)] likely adopt to control [the pest(s)]?
10	Alternatives	What are the advantages of [treatment] relative to [other alternative(s)]?
11	Alternatives	What are the disadvantages of [treatment] relative to [other alternative(s)]?
12	Alternatives	Besides potential yield or quality losses, what other expected costs would be incurred if [treatment] were no longer available and alternatives had to be adopted?
13	Alternatives	What are the estimated yield impacts and/or quality losses if [treatment] was not available and there are no other efficacious alternatives?
14	Alternatives	What are the estimated yield impacts and/or quality losses if [treatment] was not available and the next best alternative(s) [was/were] used? [Please list by [treatment, such as each active ingredient] alternative].
15	Alternatives	If [treatment] was not available, how would the chemical costs per acre change? Please list by [treatment, such as each active ingredient] alternative.
16	Alternatives	What are the additional costs when using the next best alternative to [treatment], such as [the need for additional field passes, different equipment needs, or additional labor needs]?
17	Alternatives	When using [alternative(s)] to [treatment], how would the cost per [unit of space, such as acre] change?
18	Alternatives	In [unit of time], what is the cost per application of [major alternative(s) to treatment at hand] in dollars per [unit of measure, such as acres] on [agricultural system(s)]?
19	Alternatives	Why is [formulation] [used/not used] relative to [another formulation (e.g., not compatible with application equipment, cost, phytotoxicity concerns)]?
20	Application Method	How is [treatment] applied [on/in] [agricultural system(s)]?
21	Application Method	What is the primary method of application used when applying [treatment] [on/in] [agricultural system(s)]?

ID	Question Category	Question
22	Application Method	Do applicators apply the [formulation type(s)] of [treatment] [on/in] [agricultural system(s)]?
23	Application Method	Do [user(s)] apply [treatment] [on/in] [agricultural system(s)] using [application method(s)]?
24	Application Method	Why [is/are] [type(s) of application method(s)] when using [treatment] important for use [in/on] [agricultural system(s)]?
25	Application Method	Are [type(s) of application method(s)] important across the entire [time, such as season] or only in [particular times, such as season(s)]?
26	Application Method	What [is/are] the primary [time, such as season(s)] for the application of [treatment] [in/on] [agricultural system(s)]?
27	Application Method	Could [application method(s)] of [treatment?] [in/on] [agricultural system(s)] be replaced by [alternative application method(s)]?
28	Application Method	Could [formulation(s)] of [treatment] [in/on] [agricultural system(s)] be replaced by [alternative formulation(s)]?
29	Application Method	Could [a change in application conditions or application directions] affect [application method(s)] of [treatment] [in/on] [agricultural system(s)]?
30	Application Method	[Is/Are] [droplet size(s)] feasible for [application method(s)] of [treatment?] [in/on] [agricultural system(s)]?
31	Application Method	What are reasons that [certain application method(s)] are preferred over others when using [treatment] [in/on] [agricultural system(s)]?
32	Application Method	What are reasons that [certain formulations(s)] are preferred over others when using [treatment] [in/on] [agricultural system(s)]?
33	Application Method	What type of aircraft is used when making aerial applications of [treatment] [in/on] [agricultural system(s)]?
34	Application Method	How many [unit of measure, e.g., acres] can be treated with [treatment] using [application method(s)] in [unit of time, e.g., one day] [in/on] [agricultural system(s)]?
35	Application Method	How frequently are application(s) of [treatment] made to [specific site, e.g., a tree] [in/on] [agricultural system(s)]?
36	Application Method	When doing a tree drench, is [treatment] more likely to be used as a trunk or soil application under the tree?
37	Application Method	What type of [application equipment] is primarily used when applying [treatment][on/in] [agricultural system(s)]?
38	Application Method	Why [is/are] the [formulation type(s)] of [treatment] important for use [in/on] [agricultural system(s)]?
39	Application Method	Do you use [application equipment type(s)] when applying [treatment] [in/on] [agricultural system(s)]?
40	Application Method	How often [is/are] [application equipment] used to apply all types of pesticides [in/on] [agricultural system(s)]?
41	Application Method	If chemigation applications of [treatment] are typically watered in for efficacy, what was the target depth?
42	Application Method	If [treatment] is typically [type of incorporation, such as mechanically incorporated or buried in the crop furrow], what was the target depth?
43	Application	For [type of application(s)], do you routinely use [application

ID	Question Category	Question
	Method	method(s)/tools for application]?
44	Application Methods and Practices	In [unit of time], what was the cost per application of [treatment] in dollars per [unit of measure, such as acres] on [agricultural system(s)]?
45	Application Methods and Practices	Were any of the following pesticide spraying practices or activities used on this operation [in/during] [unit of time]?
46	Application Methods and Practices	Were any of the following pesticide spraying practices or activities used keep [treatment(s)] application(s) on-target (i.e., reduce pesticide drift)?
47	Application Methods and Practices	If any of the following pesticide spraying practices or activities used in [unit of time], how easy or difficult was it to implement this practice or activity in terms of labor, training, capital expenditures, and other costs?
48	Application Methods and Practices	If any of the following pesticide spraying practices or activities used in [unit of time], why was this practice or activity NOT used?
49	Application Methods and Practices	Which of the following spraying practices resulted in a sprayer re-calibration in [unit of time]?
50	Application Methods and Practices	Which of the following methods of spraying did this operation use to make [treatment] applications in [unit of time]?
51	Application Methods and Practices	What [treatment(s)] were used in this [insert tank system type] in [unit of time]?
52	Application Methods and Practices	What is the typical spray volume, in Gallons per Acre (GPA), for [treatment(s)] application(s) in [unit of time]?
53	Application Methods and Practices	What is the typical operating pressure, in PSI, for [treatment(s)] in [unit of time]?
54	Application Methods and Practices	What is the typical nozzle used when spraying [treatment(s)] application(s) in [unit of time]?
55	Application Methods and Practices	What is the typical ground speed when spraying [treatment(s)] application(s) in [unit of time]?
56	Application Methods and Practices	What is the typical [spraying practice, such as boom height above the ground or plant canopy] when [utilizing treatment(s)] in [unit of time]?
57	Application Methods and Practices	What is the typical target droplet size spectrum for [treatment(s)] applications in [unit of time]?
58	Application Methods and Practices	Which of the following drift reducing practices were used in [year]?
59	Application Methods and Practices	In which direction is the majority of spray material from this operation's air blast sprayer(s) directed?

ID	Question Category	Question
	Practices	
60	Application Methods and Practices	How often did [entity, such as operation] clean the [application equipment] in [time period]?
61	Application Methods and Practices	For each time that the [application equipment] was cleaned, how often was a tank cleaner used?
62	Application Methods and Practices	What were the most common reasons for replacing the nozzles on the sprayers in [unit of time]?
63	Application Methods and Practices	In an effort to reduce off-target impacts to [plants, pollinators, and/or beneficial insects], did this operation communicate with or consult any of the following sources in [unit of time]?
64	Application Methods and Practices	What nozzles were typically used most often for any [specific time period for application, such as pre-emergence] [treatment(s)] applications?
65	Application Methods and Practices	Did this operation use separate spray rigs for [treatment(s)] applications?
66	Application Methods and Practices	For [specific area, such as a field], what material were a majority of the nozzles made of that were used across [treatment(s)] in [unit of time]?
67	Application Methods and Practices	For the selected field, what were the most common reasons for replacing the nozzles on the [type of] sprayers in [time period]?
68	Application Methods and Practices	Were the spraying practices for [field or other agricultural unit] for this [entity, such as an operation] similar to the spraying practices for this [area, such as a field] during [unit of time]?
69	Application Rate	What is the lowest effective application rate of [treatment] that could be used to control for [pest(s)] [in/on] [agricultural system(s)]? [specify rate measurement unit]
70	Application Rate	What is the lowest effective rate of [treatment] that could be used during [time, such as crop stage] [in/on] [agricultural system(s)]? [specify rate measurement unit]
71	Application Rate	What is the lowest effective application rate of [treatment] when used in tank mixes with other harvest aids that could be used [in/on] [agricultural system(s)]? [specify rate measurement unit]
72	Application Rate	What is the lowest effective application rate of [treatment] when used in tank mixes with other harvest aids that could be used to control for [pest(s)] [in/on] [agricultural system(s)]? [specify rate measurement unit]
73	Application Rate	What are the typical application rate(s) for [treatment] when used [in/on] [agricultural system(s)]? [specify rate measurement unit]
74	Application Rate	What are the typical application rate(s) for [treatment] when used to treat for [pest(s)] [in/on] [agricultural system(s)]? [specify rate measurement unit]
75	Application Rate	What is the maximum application rate of [treatment] that is used for [pest(s)] [in/on] [agricultural system(s)]? [specify rate measurement unit]

ID	Question Category	Question
76	Application Rate	What is the maximum application rate of [treatment] that is used to treat for [pest(s)] [in/on] [agricultural system(s)]? [specify rate measurement unit]
77	Application Rate	For what purposes are higher application rates of [treatment] used [in/on] [agricultural system(s)]?
78	Application Rate	For what purposes are maximum rates of [treatment] used [in/on] [agricultural system(s)]?
79	Application Rate	For what purposes are maximum rates of [treatment] used [during crop stage/time] [in/on] [agricultural system(s)]?
80	Application Rate	What is a range of typical rates for application of [soil amendment] to fields [(specify rate measurement unit)] [in/on] [agricultural system(s)]?
81	Application Rate	What is your [time period, such as annual] application rate for [treatment] [in/on] [agricultural system(s)]? [specify rate measurement unit]
82	Application Rate	Under what circumstances [provide examples, as needed] would [treatment] [time, such as annual] application rates be above [specify rate] [in/on] [agricultural system(s)]?
83	Application Rate	How frequently is [specify rate] used [in/on] [agricultural system(s)]?
84	Application Rate	How would [treatment] application rates differ when used alone versus in combination with other [treatment(s)] [in/on] [agricultural system(s)]?
85	Application Rate	What is the lowest effective application rate of [treatment] when used in tank mixes with other harvest aids that could be used during [crops stage/time] [in/on] [agricultural system(s)]? [specify rate measurement unit]
86	Application Rate	What are the typical application rate(s) for [treatment] when used during [crop stage/time] [in/on] [agricultural system(s)]? [specify rate measurement unit]
87	Application Rate	What are the typical application rate(s) for [treatment] when used to treat for [pest(s)] during [crop stage/time] [in/on] [agricultural system(s)]? [specify rate measurement unit]
88	Application Rate	What is the maximum application rate of [treatment] that was used [in/on] [agricultural system(s)]? [specify rate measurement unit]
89	Application Rate	What is the maximum application rate of [treatment] that was used during [crop stage/time] [in/on] [agricultural system(s)]? [specify rate measurement unit]
90	Application Rate	What is the maximum application rate of [treatment] that was used to treat for [pest(s)] during [crop stage/time] [in/on] [agricultural system(s)]? [specify rate measurement unit]
91	Application Rate	For what purposes are higher application rates of [treatment] used during [crop stage/time] [in/on] [agricultural system(s)]?
92	Application Rate	What application rates of [treatment] per seed are typically used [in/on] [agricultural system(s)]?
93	Application Rate	What are the maximum application rates of [treatment] per seed typically used [in/on] [agricultural system(s)]?
94	Application Rate	For what purposes would different application rates of [treatment] per seed be used [in/on] [agricultural system(s)]?
95	Application Rate	Under what conditions is [treatment] used at [specified application rate] [in/on] [agricultural system(s)]?

ID	Question Category	Question
96	Application Rate	If so, how many [unit of measure, such as acres] can [one or more individual(s)] treat during a [time period, such as a single day] with [a specific application method or tool, such as a mechanically pressurized handgun]?
97	Application Timing	When is [treatment] typically applied [in/on] [agricultural system(s)]?
98	Application Timing	Please explain why [treatment] is typically applied at [this time] [in/on] [agricultural system(s)]?
99	Application Timing	How often does [variable that prohibits application, such as wind speed] impede applications of [treatment] for control of [pest]?
100	Benefits	[Is/Are] [treatment(s)] a component of [specific pest management program] [in/on] [agricultural system(s)]?
101	Benefits	What are your primary [target pest(s)] pressure(s) [in/on] [agricultural system(s)]?
102	Conservation Practices	Do you manage runoff from [agricultural system(s)] areas treated with [treatment]?
103	Conservation Practices	What methods do you use to manage runoff from [agricultural system(s)] areas treated with [treatment]?
104	Conservation Practices	How widespread are runoff management systems in different [delineated geographic areas]?
105	Conservation Practices	What methods do you manage runoff from [agricultural system(s)] areas?
106	Conservation Practices	Do you manage runoff from [agricultural system(s)] areas?
107	Conservation Practices	What application methods(s) are used to enhance [conservation practices (conservation tillage, conventional tillage, etc.)]?
108	Conservation Practices	What conservation practices are used in [field or other agricultural unit]?
109	Conservation Practices	On what proportion did this operation use hedge rows or other wind-breaking structures (that are at least one and a half times the height of the crop canopy) for drift reduction in [unit of time]?
110	Conservation Practices	How often were the following Best Management Practice (BMPs) used during the season in [unit of time]?
111	Educational Resources	[In/during] [unit of time], was [resource or data source(s)] used to assist in determining [either the need or when to make] applications of [treatment]?
112	Educational Resources	How often were the following sources of information used to inform [pest management decisions] in [unit of time]?
113	Educational Resources	Which of the following types of services offered by the University and/or Agricultural Cooperative Extension were most often used as sources of pest management decisions in [unit of time]?
114	End Products	What are the end products that are produced using [agricultural system(s)] after [agricultural system(s)] are treated with [treatment]?

ID	Question Category	Question
115	End Products	What is the end product distribution [for example, locally or distributed for national consumption] for end products produced from [agricultural system(s)] after [agricultural system(s)] are treated with [treatment]?
116	Geographic Considerations	Where does the use of [treatment] occur [in/on] [agricultural system(s)]?
117	Geographic Considerations	Are there any [delineated geographic areas, such as states or regions] where [treatment] is an important control measure for [target pests]?
118	Geographic Considerations	Are there any [delineated geographic areas, such as states or regions] where [treatment] is an important control measure for pests other than [target pest(s)]?
119	Geographic Considerations	Where in [geographically delineated areas, such as the U.S. or a county] is [treatment] typically used?
120	Geographic Considerations	Do use patterns for [treatment] [in/on][agricultural system] vary by [geographically delineated area, such as region]?
121	Geographic Considerations	What are the differences in application rates of [treatment] across [geographically delineated area, such as region]?
122	Geographic Considerations	What are the differences in the frequency of applications of [treatment] across [geographically delineated area, such as region]?
123	Geographic Considerations	To what [delineated geographic areas, such as states or regions] do your answers pertain?
124	Geographic Considerations	What are the [geographically delineated area, such as regional] differences in importance of [treatment]?
125	Geographic Considerations	In what [geographically delineated area, such as regional] is the use of [treatment] most important?
126	Geographic Considerations	What are the [geographically delineated area, such as regional] differences in the use of [treatment]?
127	Geographic Considerations	What are the [geographically delineated area, such as regional] differences in the importance of [treatment]?
128	Geographic Considerations	What niche uses exist for the use of [treatment] in [geographically delineated area, such as state]?
129	Geographic Considerations	What factors are unique to [treatment] or the areas treated with [treatment] that limit the area that can be treated?
130	Geographic Considerations	Where in the [geographically delineated area, such as U.S. or state] is [treatment] typically used?
131	Geographic Considerations	Does the [treatment] use pattern vary by [geographically delineated area, such as region]?
132	IPM	Why was [pest] scouting conducted?
133	IPM	Was [pest] scouting done after a [pest control application] to evaluate degree of control?
134	IPM	Was [pest] scouting data compared to published information on [infestation thresholds] to determine when to take measures to manage [pests] in this [field or other agricultural unit]?
135	IPM	Did you conduct any of the following activities for the [agricultural system(s)] grown specifically for the purposes of [pest] control or reducing the spread of [pests]
136	IPM	Do you monitor [pest(s)] by [type of trap or other monitoring mechanism]

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		in [agricultural system(s)]?
137	IPM	Did you do any of the following other types of pest management practices for the specific purpose of managing or reducing the spread of pests in [field or other agricultural unit]?
138	Niche Use	What are the niche uses of [treatment] on [agricultural system(s)]?
139	Number of Applications	Why are multiple applications of [treatment] needed [in/on] [agricultural system(s)]?
140	Number of Applications	How likely is it that multiple applications of [treatment] will be made [in/on] [agricultural systems] within a [time period, such as a season]?
141	Number of Applications	What is a reasonable estimate of the [minimum, average, typical, median, or maximum] number of [time period, such as days] a [agricultural system(s)] applicator might be expected to apply [treatment] in a given [season/year]?
142	Number of Applications	For [application types(s)] applications, what is the typical number of applications per [time period, such as a year]?
143	Number of Applications	Under what circumstances [provide examples, as needed] would the number of applications of [treatment] exceed [unit of measurement] [in/on] [agricultural system(s)]?
144	Number of applications	Is [treatment] typically applied more than [number of applications in a given time period] in agricultural system(s)]?
145	Number of applications	What are the typical application intervals used when applying [treatment] to control for [target pest(s)] [in/on] [agricultural system(s)]?
146	Number of applications	What are the drivers for [specific number of applications] of [treatment] [in/on] [agricultural system(s)]?
147	Organic	Would loss of availability of [treatment] affect the feasibility of organic production?
148	Organic	How important is [treatment] for organic production of [agricultural system(s)]?
149	Pesticide Use & Usage	How much [treatment] is used annually [in/on] [agricultural system(s)]?
150	Pesticide Use & Usage	What is the maximum number of [unit of measure, such as acres] that are treated with [treatment] in a [time period, such as in a day]?
151	Pesticide Use & Usage	What is the typical number of [unit of measure, such as acres] that are treated with [treatment] in a [time period, such as in a day]?
152	Production Practices	Are [crop] seeds pelleted?
153	Production Practices	What percent of [crop] acres are planted with pelleted seeds?
154	Production Practices	What size are pelleted [crop] seeds?
155	Production Practices	Could [crop] seeds be pelleted to [specific size for size range]
156	Production Practices	What is typical seeding rate per acre for [crop]?
157	Production Practices	Why do you use this seeding rate for [crop]?

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158	Production Practices	What is the maximum seeding rate per acre for [crop]?
159	Production Practices	If a [specific mitigation] were required to use [treatment], what are your resource considerations would arise for you? [examples may be provided, such as cost, difficulty in installation, maintenance].
160	Production Practices	Do you implement [specific agricultural practice, such as girdling and/or turning] in your [agricultural system(s)]?
161	Production Practices	On what percent of your acres do you implement [specific agricultural practice, such as girdling and/or turning] in your [agricultural system(s)]?
162	Production Practices	[Is/Are] [specific agricultural practice, such as girdling and/or turning] implemented in [delineated geographical area, such as a region]?
163	Production Practices	Why [is/are] [specific agricultural practice, such as girdling and/or turning] implemented?
164	Production Practices	What method(s) are used to plant [crop]?
165	Production Practices	How deep are [crop] seeds typically planted?
166	Production Practices	Are bittering agents available to prevent [pests] from consuming [crop] seed?
167	Production Practices	For [crop], in a high end scenario, what would be the likely proportion of nutrient input that is provided by [soil amendment(s)]?
168	Production Practices	How likely is it that [soil amendment] would be spread on [crop(s)]?
169	Production Practices	What are the most typical [soil amendment(s)] practices on [crop(s)] in [delineated geographical area(s)]?
170	Production Practices	Are nursery pots typically placed on bare ground or over a fabric/polymer ground cover?
171	Production Practices	What percentage of your nursery pots that are treated with [treatment] are typically placed on bare ground or over a fabric/polymer ground cover?
172	Production Practices	What is the typical area/size of a [horticulture-related] block?
173	Production Practices	What proportion of the [horticulture-related area] would likely be treated simultaneously with [treatment]?
174	Production Practices	What are the advantages of [application method(s)] methods of application for [treatment]]?
175	Production Practices	What are the disadvantages of [application method(s)] methods of application for [treatment]]?
176	Production Practices	How deep in the soil (in inches) is a [treatment] typically integrated for [method(s) of application] (i.e., at the same depth as the seed, below the seed, or above the seed)?
177	Production Practices	If a [treatment] label requires soil incorporation but does not specify a depth, what depth would most farmers typically use for [crop]?
178	Production Practices	What proportion of the planted [crop] seed remains on top of the soil for [each application method(s)]?
179	Production Practices	Which of the following auditing systems, if any, did this operation participate in in [unit of time]?

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180	Resistance Management	Were [treatment(s)] different Modes of Action (MOA) [rotated and/or tank mixed] for the purpose of keeping [pest(s)] from becoming resistant?
181	Resistance Management	Do you [rotate and/or tank mix] [treatment(s)] for the purpose of [specific goal, such as resistance management]
182	Resistance Management	Was [treatment] tank mixed with [a treatment(s)] from different mechanisms of action?
183	Resistance Management	How often were the following practices used during the season to manage [treatment(s)] resistance in [unit of time]?
184	Seeds	What is the cost of [treatment] treated [crop] seed?
185	Seeds	What is the cost of [seed characteristic, such as pelleted seed]?
186	Seeds	What are the advantages of [seed characteristic] seeds?
187	Seeds	What type of [impact] would be observed if [seed characteristic] is mandatory?
188	Seeds	What percentage of your acres were planted with [specific variety/trait(s)] seeds in [time period]?
189	Tank Mixing	Is [treatment] primarily used alone or in combination with other [treatments]?
190	Tank Mixing	Is [treatment] used outside of tank mixes [in/on] [agricultural system(s)]?
191	Tank Mixing	If [treatment] is used outside of tank mixes [in/on] [agricultural system(s)], what percentage of total acres treated with [treatment] to these account for?
192	Tank Size	What is the standard size of tanks for [technology] used for [application method] for [treatments] [in/on] [agricultural system(s)]?
193	Target Pests	What are the target pest(s) that drive the use of higher rates of [treatment] [in/on] [agricultural system(s)]?
194	Target Pests	What are the target pest(s) that drive the use of higher rates of [treatment] [in/on] [agricultural system(s)]?
195	Target Pests	What are the target pest(s) that drive the use of maximum rates of [treatment] [in/on] [agricultural system(s)]?
196	Target Pests	What are the target pest(s) that drive the use of higher rates of [treatment] during [crop stage/time] [in/on] [agricultural system(s)]?
197	Target Pests	What are the target pest(s) that drive the use of maximum rates of [treatment] during [crop stage/time] [in/on] [agricultural system(s)]?
198	Target Pests	What pest(s) are targeted when applying [treatment] at [specified application rate] [in/on] [agricultural system(s)]?
199	Target Pests	What are the target pests of [treatment] [in/on] [agricultural system(s)]?
200	Target Pests	What are the major target pests of [treatment] [in/on] [agricultural system(s)]?
201	Target Pests	What are the [periodic or invasive pests of concern] for which [treatment] is a control option?
202	Target Pests	For which [agricultural system(s)] is [treatment] a control option for [periodic or invasive pests of concern] for which [treatment]?
203	Target Pests	Is [treatment] used to control [pest(s)] [in/on] [agricultural system(s)]?
204	Target Pests	What application rate of [treatment] is used to control [target pest(s)] [in/on] [agricultural system(s)]?

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205	Target Pests	What is the minimum rate of [treatment] needed to control [target pest(s)] [in/on] [agricultural system(s)]?
206	Target Pests	How much [treatment] is used [time period] [target pest(s)] [in/on] [agricultural system(s)]?
207	Target Pests	How many applications of [treatment] are needed [time period, typically annually] to control [target pest(s)] [in/on] [agricultural system(s)]?
208	Target Pests	What are important target pests when using [treatment] [in/on] [agricultural system(s)]?
209	Target Pests	What are potential alternatives to [treatment] for target pests [in/on] [agricultural system(s)]?
210	Target Pests	Are applications of [treatment] that target more than one pest common [in/on] [agricultural system(s)]? [likely an example will provided, such as explaining the treatment may be used both for target insects and nematodes, either purposefully or incidentally]
211	Target Pests	Is [treatment] used to control [pest #1], [pest #2], or both?
212	Terminology	What is the [term, such as a physiological signal or crop stage name (familiar to growers)] that indicates [crop stage/timing]?
213	Terminology	What does the term "[insert term]" mean to you?
214	Terminology	How does the term "[insert term]" differ from "[other term(s)]"?
215	Use and Usage	Are [type of application(s)] made in [greenhouses or other non-outdoor system] or outdoors?
216	Use and Usage	What is the [typical, average, maximum, minimum] [area, such as number of acres] treated per [time period, such as a day] using [application equipment] [in/on] [agricultural system(s)]?
217	Use and Usage	What is the [typical, average, maximum, minimum] [area, such as number of acres] that are treated with [active ingredient] using [application method] in a [time period, such as a day]?
218	Use and Usage	What percent of direct seeded [crop(s)] are treated with [treatment(s)]?
219	Use and Usage	Is [a specific treatment(s)] used more than [other treatments]?
220	Use and Usage	Is [a specific treatment(s)] used more than [other treatments] at [timing/crop stage]?
221	Use and Usage	What percent of [agricultural system(s)] are typically treated with [treatment(s)] at [timing/crop stage]?
222	Use and Usage	Is [treatment] used more often as a [application method] or as a [alternative application method]?
223	Use and Usage	What percentage of acres is [treatment] used on as a [application method] or as a [alternative application method]?
224	Use and Usage	Is it appropriate to extrapolate [treatment] use patterns from other [agricultural system(s)] to reflect the use of [treatment] on [agricultural system(s)], such as [example(s)]?
225	Use and Usage	Do [agricultural system(s)] producers who utilize [specific practice] use [treatment(s)]?
226	Use and Usage	Would rotating chemistries in [agricultural system(s)] reduce the likelihood that [number of applications] are needed [unit of time]?
227	Use and Usage	When treating with [treatment], how much of the [production area(s)] are treated?

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228	Use and Usage	When treating with [treatment], what percentage of applications only occur [at a specific location in the production area, such as around drippers]?
229	Use and Usage	What is the estimated proportion of [soil amendment] applied [in/on] [production area(s) that would be treated with [treatment]]?
230	Use and Usage	What [agricultural systems(s)] is [treatment] used in?
231	Use and Usage	What minor crops have important niche uses of [treatment]?
232	Use and Usage	[Is/Are] the [formulation(s)] of [treatment] used in [agricultural system(s)]?
233	Use and Usage	What is the importance of [formulation(s)] of [treatment] used in [agricultural system(s)]?
234	Use and Usage	[Is/are] the [application method(s)] of [treatment] used in [agricultural system(s)]?
235	Use and Usage	What is the importance of [application method(s)] of [treatment] used in [agricultural system(s)]?
236	Use and Usage	What problems [do/does] [application method(s)] of [treatment] pose for [agricultural system(s)]?
237	Use and Usage	What problems [do/does] [formulation(s)] of [treatment] pose for [agricultural system(s)]?
238	Use and Usage	What [application equipment] changes would be required if [formulation(s)] of [treatment] where switched to [formulation(s)] in [agricultural system(s)]?
239	Use and Usage	What [application equipment] changes would be required if [application method(s)] of [treatment] where switched to [application methods(s)] in [agricultural system(s)]?
240	Use and Usage	Do [producer(s)] typically buy, share, rent, and/or lease the equipment and/or have the planting done by a custom applicator?
241	Use and Usage	What is the preferred [formulation(s)] of [treatment] in [agricultural system(s)]?
242	Use and Usage	Why is [formulation] of [treatment] preferred in [agricultural system(s)]?
243	Use and Usage	What [is/are] the preferred [application methods(s)] of [treatment] in [agricultural system(s)]?
244	Use and Usage	Why [is/are] [a particular application method(s)] of [treatment] preferred in [agricultural system(s)]?
245	Use and Usage	In [unit of time], how many [unit of measure, such as acres] did this operation treat with [treatment] in [agricultural system(s)]?
246	Worker Considerations	What [is/are] the number of refill events of [treatment] per [time period, such a s day], per applicator?
247	Worker Considerations	What are the specific worker activities [examples provided, such as setting irrigation equipment, hand weeding, harvesting, etc.] that might be impacted or changed if the re-entry Interval (REI) is greater than [time period, usually number of days]?
248	Worker Considerations	What is the maximum re-entry interval (REI) that would be acceptable for [task(s)] [in/on] [agricultural system(s)]? The current REI for [task(s)] is [time period, such as days or hours].
249	Worker Considerations	How soon after [treatment] is applied do [users (or their workers)] for [task(s)] need to enter the [agricultural system]?

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250	Worker Considerations	When [users (or their workers)] re-enter the [field or other agricultural system unit], what activities are done [examples provided]?
251	Worker Considerations	How often is [treatment] applied by an applicator [explanatory examples or clarification may be provided]?
252	Worker Considerations	Will a requirement to use a respirator when [conducting task(s)for treatment] [in/on] [agricultural system(s)] impact the use of [treatment]?
253	Worker Considerations	What would be the expected impacts from a requirement to use a respirator when [conducting task(s)for treatment] [in/on] [agricultural system(s)]?