SQF INSTITUTE

SQF Integrated Pest Management Sustainability Addendum

a division of FMI THE FOOD INDUSTRY ASSOCIATION

SQF IPM Sustainability Addendum. Version 1.1

Clause	Requirement	Interpretation
1.1	**Prevention**	
1.1.1	The producer implements at least two preventative IPM practices from the list below. •Producer sources and plants pest resistant varieties •Producer implements crop rotation •Producer manages fertilizers to promote plant health but limit pest development •Producer manages irrigation to promote plant health and limit pest development •Producer uses physical barriers to limit pest entry or establishment •Producer sanitizes equipment •Producer sources and starts with clean plant material •Producer preps fields to reduce pest pressures •Producer implements field sanitation techniques •Producer plants at certain times to avoid key pests •Producer harvests at certain times to avoid key pests Rationale: IPM promotes preventative practices that create a favorable environment for healthy crops, which in turn increases their resistance to pest pressure. Producers may implement IPM preventative measures to mitigate pest-related issues.	Records: The following records can be used to determine if the producer meets the requirements •IPM management plan- outlines preventive IPM practices •Scouting reports- documents pest presence and pest pressures to inform preventative measures •Journal entries- documents preventative practices, includes field history, and pest history •Pathology, tissue, or soil testing results- determines field suitability and plant material suitability •Planting schedule and crop rotation records- documents crop rotations as a preventive practice •Field prep and cultivation records- shows preventative cultural practices in the field •Variety, rootstock, clone history- demonstrates proactive prevention through selection of pest resistant plant material •Fertilizer records- demonstrates proper plant nutrition management •Irrigation records- records irrigation events applied for plant health
		Interviews: The following questions can be asked of the producer, farm manager, PCA, CCA, Agronomist, or Crop Consultant: •Does the producer implement preventative IPM measures to prevent key pests from damaging crops? •Does the producer implement regional IPM and preventative farming practices? •Is the producer aware of the key pests in the region? •Is the producer aware of cultural farming practices that prevent key regional pests? •What sanitation practices are implemented on equipment or in fields? •Is crop rotation included in the planting schedule? •Are pests controlled mechanically through cultivation, tillage, or physical barriers? •Are planting and harvest schedules planned to help prevent specific pests? •Are pests managed through fertilizer or irrigation management techniques?
		Observations: The following may be observed: •Regional crops are planted in conditions suitable for its growing requirements •Fields are properly prepped before planting to mitigate pest pressure •Physical barriers are erected or in place to mitigate pest pressure •Planting schedule includes crop rotations •Management plans document preventive practices and are accessible •Records documenting preventive practices are accessible

1.2.	Monitoring	
1.2.1	The producer inspects, monitors/scouts for pests, and uses those results to inform pesticide application decisions. Rationale: IPM promotes regular scouting and monitoring of pests and diseases. Regular monitoring and scouting involve observing and recording information about pest: •Activities •Populations •Distribution •Growth stages •Crop damage •Feeding habits Informed management decisions regarding pest control are based on scouting and monitoring reports. Producers, agronomists, pest control advisors, crop advisors, or professionals routinely inspect fields and document their findings in journal entries or scouting reports. Technology and models may be used to predict and monitor pest presence and populations. Producers may also utilize traps, degree day models, or indicator crops to detect pests, inform pest management strategies, and implement pesticide application decisions.	Records: The following records can be used to determine if the producer meets the requirements •IPM management plan- outlines monitoring activities and treatment decisions •Scouting reports- determine pest presence, populations, distribution, lifecycles, and damage •Pesticide recommendations- recommendations based on routine scouting or routine monitoring •Annual pesticide reports- provides an overview of the crop pesticide applications and can be correlated with scouting reports •Pest monitoring technology reports- used to determine pest presence or pest pressure •Journal entries- document routine scouting, monitoring, and application decisions •Pathology, tissue, or soil testing results- demonstrates proactive monitoring and scouting •Degree-Day Model reports- can be used to monitor and make scouting or pest treatment decisions •Pest forecast models- can be used to monitor and make scouting or treatment decisions •Insect traps- can be used to monitor and make scouting or treatment decisions
		Interviews: The following questions can be asked of the producer, farm manager, PCA, CCA, Agronomist, or Crop Consultant: •Are fields scouted/monitored routinely for pests and diseases? •Are pest reports created after scouting or monitoring? •Are pest reports used to inform pesticide recommendations? •Do pesticide recommendations target pests identified in scouting or monitoring reports? •Are treatment decisions based on scouting or monitoring reports and recommendations?
		Observations: The following may be observed: •Scouting or monitoring records are accessible •Pest reports are documented •Pests are present or predicted •Pesticide recommendations are based on scouting or monitoring reports •Pesticide applications are based on scouting or monitoring reports and recommendations

1.3.	Identification	
1.3.1	The producer correctly identifies key pest organisms including weeds, insects, and diseases within the cropping system. The producer identifies key pest organisms and can identify key pests biology and lifecyles. Rationale: Accurately identifying key pest organisms and understanding pest's lifecycles and biology underpins the rationale behind IPM programs and strategies ot control pest organisms. Producers, or their hired/contracted Pest Control Advisor (PCA), CCA, Agronomist, or Advisor, have intimate knowledge of key pests and their biology. Producers use resources to accurately identify pests and their biology, such as guidebooks, flashcards, websites, lab tests, and pathology reports. Producers scout or monitor for key pests regularly, and document findings in scouting or monitoring reports. The reports identify key pests and track their presence, distribution, lifecycle stages, feeding habits, biology, and crop damage.	Records: The following records can be used to determine if producer meets the requirements •IPM management plan- outlines key pests and farm activities intended to manage pests based on pest biology •Scouting reports- identifies key pests, monitors pest populations, distribution of pests across fields, pest lifecycles, biology, and feeding habits •Pesticide recommendations- identifies key pest and consider pest biology when choosing a management strategy •Pest monitoring technology reports- identifies pests and pests' lifecycles •Journal entries- documents and identifies pests and pests' lifecycle stages •Pathology, tissue, or soil testing results- identifies key pests, populations, and lifecycles •Insect or mite traps- identify key pests and demonstrate an understanding of pest biology •Guidebooks- help identify pests and pest biology •Flashcards- identify key crop pests, identify lifecycle and biological traits, and suggest management strategies identify pests and pest biology •IPM website resources- such as UC IPM or Extension guides help identify pest and pest biology •Apps downloaded- specific to helping identify pests and biology
		Interviews: The following questions can be asked of the producer, farm manager, PCA, CCA, agronomist, or a crop consultant: •How are key pests identified? •How are key pests' biology and lifecycles determined? •Do scouting reports monitor pest presence, pest populations, pests life stages, and crop damage? •Are traps or lures specific to a pest's feeding habit or biology? •What are the key pests? •Are pests present and populations monitored? •Do annual farming practices consider key pest lifecycles? •Do annual farming practices consider pest biology? •Do pesticide treatments consider pest biology?
		Observations: The following may be observed: •Scouting reports identify key pest •Key pests and pests' biology/lifecycles are documented •Resources for identifying key pests, pests' biology, and pests' lifecycles are available •Scouting and monitoring revolve around pests' lifecycles and biology •Scouting and monitoring document pest populations and distribution •Scouting and monitoring document pest lifecycle stages and damage to crops

1.4.	Decision Making	
1.4.1	The producer will use economic injury thresholds to inform pest management decisions. Rationale: Pest management treatment decisions are informed by producers identifying crop economic thresholds (ET). Producers may reference published economic thresholds such as Extension resources or identify their own economic thresholds. Producers determine ET by identifying pest densities at which management action should be taken to prevent an increasing pest population from reaching the economic injury level (EIL). Because economic conditions (e.g. commodity market value, management costs) fluctuate, the EIL can fluctuate. ET is the practical rule used to determine when to take management action. Producers assume that once the ET is reached, there is a high probability that the pest population will reach the EIL if no management action is taken.	Records: The following records can be used to determine if the producer meets the requirements: •IPM Management Plan - documents ET and action levels •Scouting reports- identifies pests and determines pest densities •Treatment Threshold Tables- includes model calculations for ET and EIL •Sales contracts- determines market value, pest tolerance levels, and quality standards of crop •Pesticide recommendations- suggests when to treat pests to avoid economic injury •Pesticide Use Reports (PUR)- show pesticides applied - already in the SQF Code •Pest monitoring technology/reports- determines pest presence •Journal entries- documents management or decision-making process •Pathology, tissue, or soil testing results- determines pest presence and pest populations •Degree-Day Model Reports- predicts pest pressure •Pest Forecast Models- predicts pest pressure Note: These examples are addition to the Agriculture Chemicals requirements the SQF Food Safety Code.
		Interviews: The following questions can be asked of the producer, farm manager, a certified PCA, certified CCA, agronomist, or crop consultant: •Does the producer employ, hire, contract, or consult professional pest managers to help make pest management treatment decisions that consider ET? •How does the producer determine ET? •Which resources does the producer use to identify their ET? •Does the producer scout fields regularly, identify pests accurately, and clearly understand the pest's ability to cause economic injury? •Do pest populations have the potential to cause economic injury to the crop? •Does the producer and/or hired professional make pest management decisions based on ET?
		Observations: The following may be observed: •Pests are present •Models predict pest pressures and guide treatment decisions •Pests present could cause economic injury to crop •Market value of commodity factors ET and guides pest management decisions •Regional predictive pest models use ET and guide treatment decisions •Regional IPM resources are used to determine ET and best IPM practices

1.5.	Intervention	
1.5.1	The producer uses at least one non-chemical intervention method, for example: •Promotes natural enemies •Releases beneficial insects •Erects barriers (fences, nets, screens,) •Uses traps, alarms, or physical repellents •Physically or mechanically removes pest organisms from the field or crop Rationale: Non-chemical intervention is an essential element of IPM that utilizes cultural, biological, and physical control methods. By modifying practices and manipulating habitats, producers aim to make the cropping environment less suitable for pests' establishment, reproduction, dispersal, and survival. Biological control is typically defined as promoting natural enemies to manage pest populations. Physical control can kill pests directly, block pests from entering, or make the environment unsuitable for pest establishment. Cultural control can include physical or mechanical removal of pest as well as various means of manipulating the crop of system to be inhospitable to pest organisms	Records: The following records can be used to determine if producer meets the requirements •IPM management plan- documents non-chemical control methods •Scouting reports- determine pest presence or natural enemies •Tillage records- show cultural control of pests •Irrigation plans- details strategies to promote plant health and limit pest •Fertilizer plans- details strategies to promote plant health and limit pest •Equipment sanitation records- cultural practice to control pests •Biological releases- biological control method •Journal entries- documents non-chemical practices and pest control methods •Habitat maintenance- promotes biological control •Habitat establishment- promotes natural enemies or trap pest species
		Interviews: The following questions can be asked of the producer, farm manager, PCA, CCA, Agronomist, or Crop Consultant: •What biological control methods are used to control pests? •Does the producer release beneficial insects, and/or natural enemies? •Does the producer establish or maintain habitat for natural enemies? •What physical control methods are used to control pests? •Does the producer erect barriers, such as fences, nets, screens, or traps to limit pest entry? •Does the producer use hand tools or tractor implements to control pests? •Does the producer phsically remove or physically terminate pests in the field? •What are some non-chemical pest management techniques implemented by the producer? •Does the producer use mechanical means to control pests? •Does the producer manipulate the plant or field environment to control pests?
		Observations: The following may be observed: •Physical barriers are erected •Mulch is applied •Screens are present •Walls are present •Fences are present •Cannons are present (to scare off pests) •Traps are present (gopher, squirrel, skunk, racoon, rabbit, etc.) •Hedgerows are planted •Native habitat is maintained •Habitat for natural enemies are present •Bird nets are available •Perches are present •Bird boxes are present •Mechanical tools are present

1.5.2	The producer assesses pesticide risk by examining the pesticides' effects on humans, environment, and non-target organisms and prioritizes the use of lower-risk options. Risks assessed will include a pesticide's toxicity to humans, organisms in the environment, and the potential for pesticide exposure to natural enemies and pollinators. Rationale: Pesticides are selected, analyzed, and applied strategically to minimize potential harm to humans, non-target organisms, and the environment. Producers evaluate risks by examining the pesticide's toxicity level, potential effects on non-target organisms, environmental risks, and specificity (whether it is broad-spectrum or selective). Selective pesticides, which target specific pests while sparing non-target species, are preferred for their lower overall risk. In choosing a pesticide, its effectiveness against the intended pest and associated risks are carefully considered. Adherence to the guidelines on pesticide labels and recommendations is essential for safeguarding human, non-target species, and environmental health. These guidelines aid in assessing and reducing risks associated with pesticide use. Producers are encouraged to prioritize lower-risk pesticides, demonstrated by trials or shifts to safer alternatives, as part of their commitment to responsible pesticide management.	Records: The following records can be used to determine if the producer meets the requirements •IPM management plan- documents pesticide treatments options and alternative chemical materials •Scouting report- records pest presence, pest populations, pest lifecycles, and damage to the crop •Pesticide labels- outlines safe and effective use of the product •Pesticide recommendations- includes an assessment for pesticide risks and prioritize low risk products •Spray programs- consider risks to the environment, non target organisms, and human health •Pesticide use reports (PUR)- document what pesticides were applied, application rates, and to which acres •Journal entries- record treatment decisions and management processes for pesticide applications
		Interviews: The following question(s) can be asked of the producer, farm manager, PCA, CCA, Agronomist, or Crop Consultant: •How does the producer assess the pesticide risk and prioritize the use of lower-risk products? •Do pesticide recommendations describe risks associated with the product? •Does the producer have copies of pesticide or product labels? •Does the producer follow a recommendation when applying pesticides? •Are product labels followed in the recommendations? •Are pesticides selective to target organisms? •Are non-target organisms considered when applying pesticides? •Are soft materials or low-risk pesticides used? •Are biological pesticides used? •Have you switched to or trailed low-risk pesticides? •Are non-target organisms considered when selecting pesticides? •Are applications timed to limit risk to human and environmental health? •Does the producer use resources that assess pesticide risk?
		Observations: The following may be observed: •The timing of pesticide applications is considered to limit risk •Pesticide labels are followed to mitigate environmental and human risks •Producer uses lower-risk or biological pesticides •Producer applies selective pesticides to target specific pest species •Non-target organisms are considered and protected when applying pesticides

1.6.	Resistance Management	
1.6.1	The producer implements at least one practice to manage the risk of pesticide resistance from the list below. •The producer rotates Modes of Action (MOA) and/or chemistry among different Fungicide (FRAC), Herbicide (HRAC), and Insectide (IRAC) groups of pesticides. •Producer selects pesticides with little or no residual activity Rationale: IPM offers a range of methods to manage pesticide resistance. Efficacy of pesticide applications can be monitored and documented in scouting reports to observe resistance in pest populations. Rotating modes of action (MOA) between different pesticide groups, delaying pesticide application to reverse resistant organisms, avoiding tank mixes of the same MOA, spraying on an as needed basis are some techiniques to manage resistance.	Records: The following records can be used to determine if producer meets the requirements •IPM management plan- outlines pest resistance management techniques •Scouting reports- identify pests and monitor populations •Pesticide labels- recommend application rates and frequency to limit pest resistance •Pesticide recommendations- follow labels and application guidelines •Spray programs- outline spray rotations and pest resistance management •Equipment calibration records- ensures accuracy, efficiency and safety in pesticide applications. •Pesticide use reports (PUR)- document the rotation of chemical treatments •Journal entries- document additional IPM practices that limit pesticide resistance
		Interviews: The following questions can be asked of the producer, farm manager, PCA, CCA, Agronomist, or Crop Consultant: •How does the producer manage pesticide resistance? •Does the producer implement a range of IPM practices to limit pesticide resistance? •Is chemistry rotated between different MOA and different FRAC pesticide groups? •Is spray and application equipment calibrated on a regular basis? •Are pesticide label recommendations followed? •Are pesticides applied only as needed after other control methods have been implemented and failed? •Are cultural operations timed to limit pesticide applications? • Does producer select products with low residual activity?
		Observations: The following may be observed: •Chemistry is rotated •Labels are followed •Equipment is calibrated •FRAC HRAC IRAC numbers are used to identify pesticides •Efficacy of sprays is documented •Pest populations are monitored for resistance •Cultural and non-chemical controls are implemented

1.7.	Record Keeping	
1.7.1	The producer keeps at least 3 of the following records: •Nutrient/fertilizer application records •Scouting/monitoring records •Equipment calibration records •Pesticide application records Rationale: Producers and applicators are required to keep IPM and pesticide application records; however, each producer will have a unique record-keeping system and formats are not standardized. As part of an IPM program, producers will observe and record pest activities. Producers will document these observations and pest activities in a scouting and/or monitoring report. Producers will have fertilizer and nutrient management records showing application rates and application timing. Producers will also keep pesticide application records and or Pesticide Use Reports (PUR) detailing pesticides applied, rates applied, and acres treated. In addition, producers will have a record of spray equipment calibrations which may include dates of calibrations, calibration rates, operator, and/or equipment numbers.	Records: The following records can be used to determine if producer meets the requirements. In addition to formal documentation, records may be presented in the form of photos, notepads, notebooks, text messages, and/or emails. •IPM management plan- includes record keeping protocols and procedures •Farm management plan- documents specific IPM practices and contains required farm records •Fertilizer management plan- documents nutrition applications •Scouting records- documents monitoring of fields includes frequency and what was observed •Scouting reports- documents monitoring of fields •Pesticide use reports (PUR)- documents spray applications •Pesticide application records- records pesticide application events, name of product, date, and time applied •Journal entries- record-keeping system is maintained and accessible •Nutrient management plan- documents detailed information about fertilizer applications •Fertilizer application records- documents details of fertilizer applications •Equipment calibration records-details calibration events and protocols
		Interviews: The following questions can be asked of the producer, farm manager, PCA, CCA, Agronomist, or Crop Consultant: •How are IPM and pest management records maintained •Are nutrient management/ fertilizer application records accessible •Is equipment calibrated on a regular basis •Are equipment calibration records available •Are pesticide use reports available •Are pesticide applications recorded and accessible
		Observations: The following may be observed: •Notes, records, reports and/or documentation of IPM activities available •A record-keeping system is in place •Digital records are accessible •IPM resources are present

SQF Integrated Pest Management Sustainability Addendum

First Printed July 2024