



Metrics Committee March 2020 Meeting



Field to Market™

The Alliance for Sustainable Agriculture





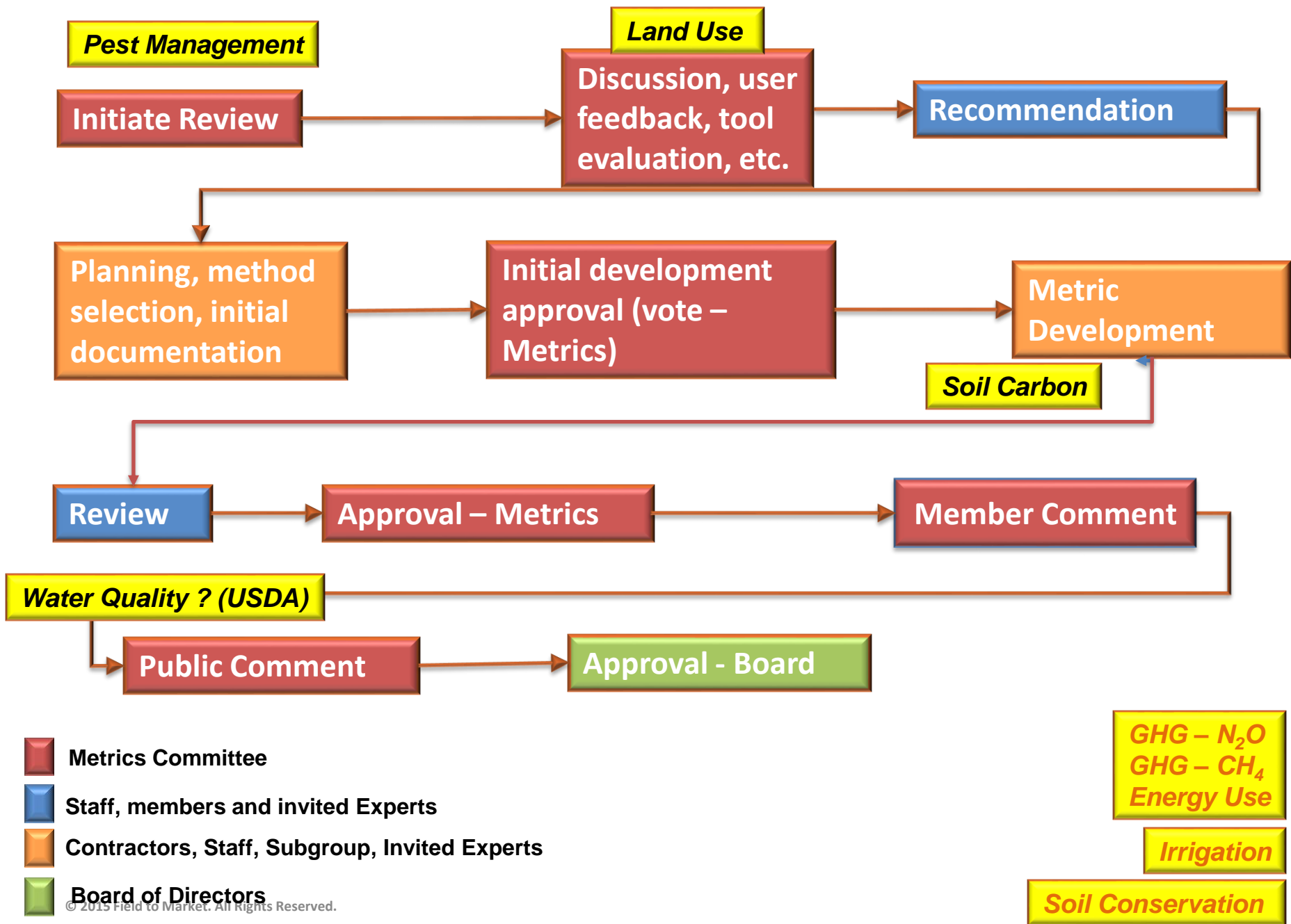
Agenda – Tuesday March 17th

- 1:00 pm **Welcome, overview of agenda, 2020 work plan (co-chairs)**
- 1:15 pm **Land Use Metric (Eric Coronel)**
- 1:45 pm **Pest Management Metric (Eric Coronel)**
- 2:15 pm **Break**
- 2:30 pm **Fieldprint Platform: Update on Metric Implementation, New Features and plans for 2020 (Paul Hishmeh)**
- 3:30 pm **Water Quality Update (co-chairs and Allison Thomson)**
- 4:00 pm **Adjourn**

Committee Members 2019-2020

Name	Organization	Sector	Term ends
Steve Linscombe	USA Rice Federation	Grower	2021
Joe McMahan	Innovation Center for US Dairy	Grower	2021
Buzz Mattelin	Natl Barley Growers Assn	Grower	2020
Jesse Daystar	Cotton Inc	Grower	2020
Jeff Seale	Bayer	Agribusiness	2021
Adam Herges	The Mosaic Company	Agribusiness	2021
Lara Moody	The Fertilizer Institute	Agribusiness	2020
Andy Greenlee	John Deere	Agribusiness	2020
Jay Watson	General Mills	Brands & Retail	2021
George Galloway	Riceland Foods	Brands & Retail	2021
Todd Stabenow	Land O' Lakes	Brands & Retail	2020
PJ Newcomb	Coca-Cola	Brands & Retail	2020
Amy Hughes	Environmental Defense Fund	Civil Society	2021
Michelle Perez	American Farmland Trust	Civil Society	2021
Amy Jacobs	The Nature Conservancy	Civil Society	2020
Monica McBride	World Wildlife Fund	Civil Society	2020
Eric Cummings	University of Arkansas	Affiliate	2021
Sarah Sexton-Bowser	Kansas State University	Affiliate	2021
Evelyn Steglich	USDA-NRCS	Affiliate	2020
Nothabo Dube	Texas A&M Agrilife Research	Affiliate	2020

Metric Revision Process – Status Check





Field to Market 2020 Work Plan



Task	Oversight	Deadline	Level of effort	Notes
Finalize beta version of a tool for calculating nitrous oxide emissions reductions from use of 4R fertilizer management practices.	Tech team	March	Medium	Finalize
Submit water quality metric for Board approval (pending release of technical documentation from NRCS).	Allison	May	High	Ongoing
Develop plan and secure funding for soil carbon metric development, including participation in partner organizations' soil carbon metric development workstreams (e.g. ESMC, WRI, USFRA).	Allison	end of year	high	Ongoing
Explore options for a new pest management metric, including ongoing participation in The Sustainability Consortium's responsible pest management task force.	Eric	end of year	high	New
<i>Initiate review of Biodiversity Metric.</i>	<i>Metrics</i>	<i>end of year</i>	<i>Low</i>	<i>June 2021</i>



Land Use Metric – Examples and Discussion





Agenda

- History and current methodology of the Land Use metric in the Fieldprint Platform
- Potential options for improvements



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Land Use Metric

- An efficiency metric that uses the inverse of yield to determine productivity by accounting for the area planted needed to produce a crop unit
- Adopted in 2009, the Land Use metric went through its first programmatic review in mid-2015 with no changes


- $$\text{Land Use} = \frac{1}{\text{crop output unit}}$$

- Sorghum yield of $68 \frac{\text{bu}}{\text{acre}} = \frac{1}{68} = 0.1471 \frac{\text{acre}}{\text{bushel}}$

Double-cropping in the Platform

Amaretto on Double-cropping material




 Modify Field Location

 View Quick Facts

 Move Field





 Delete Field

Crop Years

Your Fieldprint Analysis is calculated at the Crop Year level (e.g. 2017 Corn, 2016 Soybeans). Use this page to add Crop Years and then click the edit icon () to enter your Fieldprint Data. When Fieldprint data entry is complete, you can click the analysis icon () to calculate and view your Fieldprint Results. Click the delete icon () to delete a Crop year. Note that deleting a crop year permanently deletes all data associated with the crop year and removes any associations to Fieldprint Projects. Where double cropping is in use, data entered for a Crop Year should be based on the primary cropping system. Production from the secondary crop is not included in the Fieldprint Analysis at this time.

Please read the [data migration guide](#) for information on crop year data records migrated from Version 2.5

 Add New Crop Year

Options	Year ↓	Crop	In Project?	Last Update	Data Entry Progress	Data Status?
  	2018	Wheat (winter)	No	3/9/2020	100% 	Provisional


Double-cropping in the Platform

- Currently not supported. Only one crop per year allowed.

Amaretto on Double-cropping material

Modify Field Location

Crop Years

Your Fieldprint Analysis is calculated at the time you click the analysis icon () to calculate. This removes any associations to Fieldprint Project Analysis at this time.

Add New Crop Year

Year

2018

Duplicate year

Enter Primary Crop Grown in That Year

Soybeans

Would you like to default inputs from another crop year?

No Yes

Enter Managed Acres [?]

Enter the total **non-irrigated** acres of Soybeans grown in 2018 on Double-cropping material

0

acres


Enter the total **irrigated** acres of Soybeans grown in 2018 on Double-cropping material

500

acres

Add and Proceed to Edit

Move Field Delete Field

Click the edit icon () to enter your Fieldprint Data. When Fieldprint data entry is complete, that deleting a crop year permanently deletes all data associated with the crop year and primary cropping system. Production from the secondary crop is not included in the Fieldprint

Data records migrated from Version 2.5

Data Entry Progress

Data Status?

100%

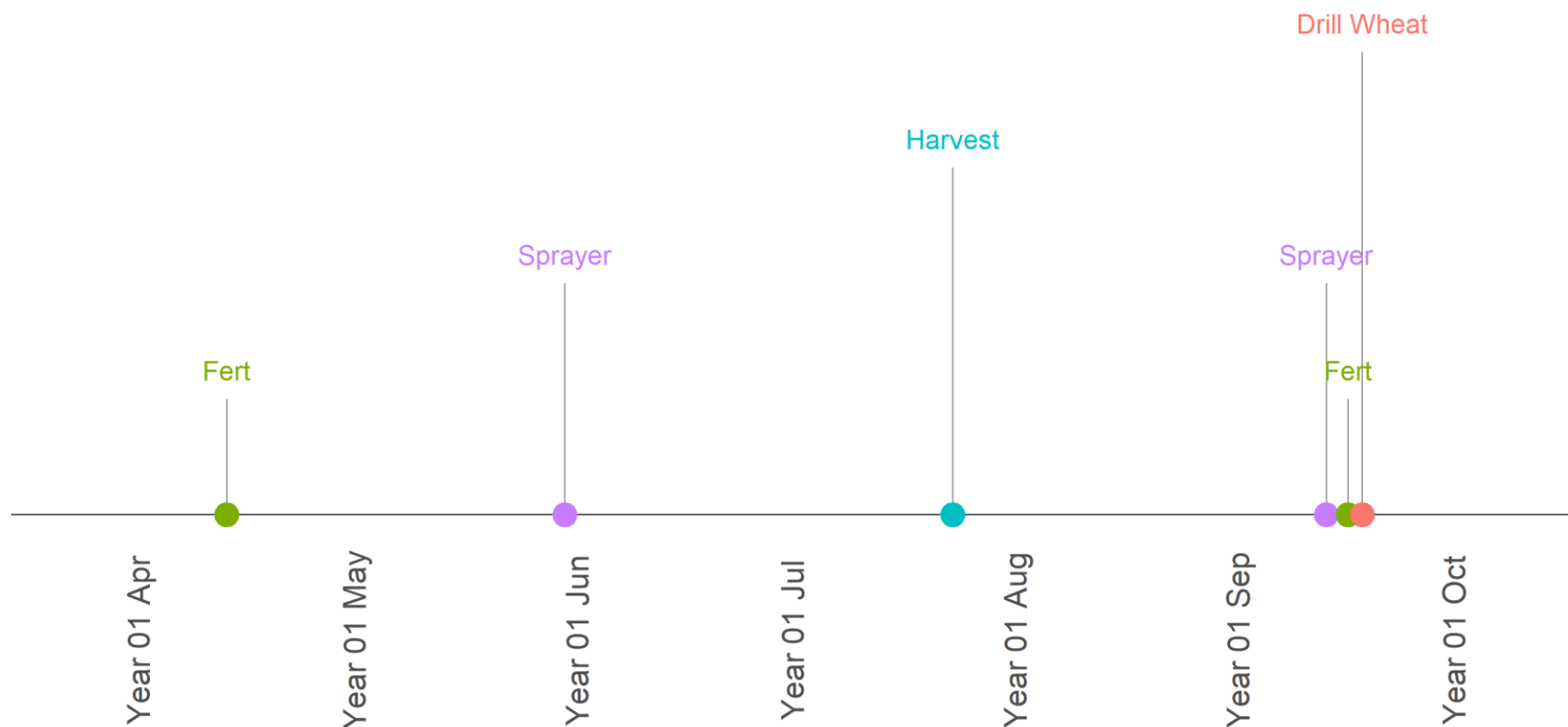
Provisional



Crop Rotation Templates

One-year rotation: winter wheat only

Crop Rotation Template: Winter Wheat Only

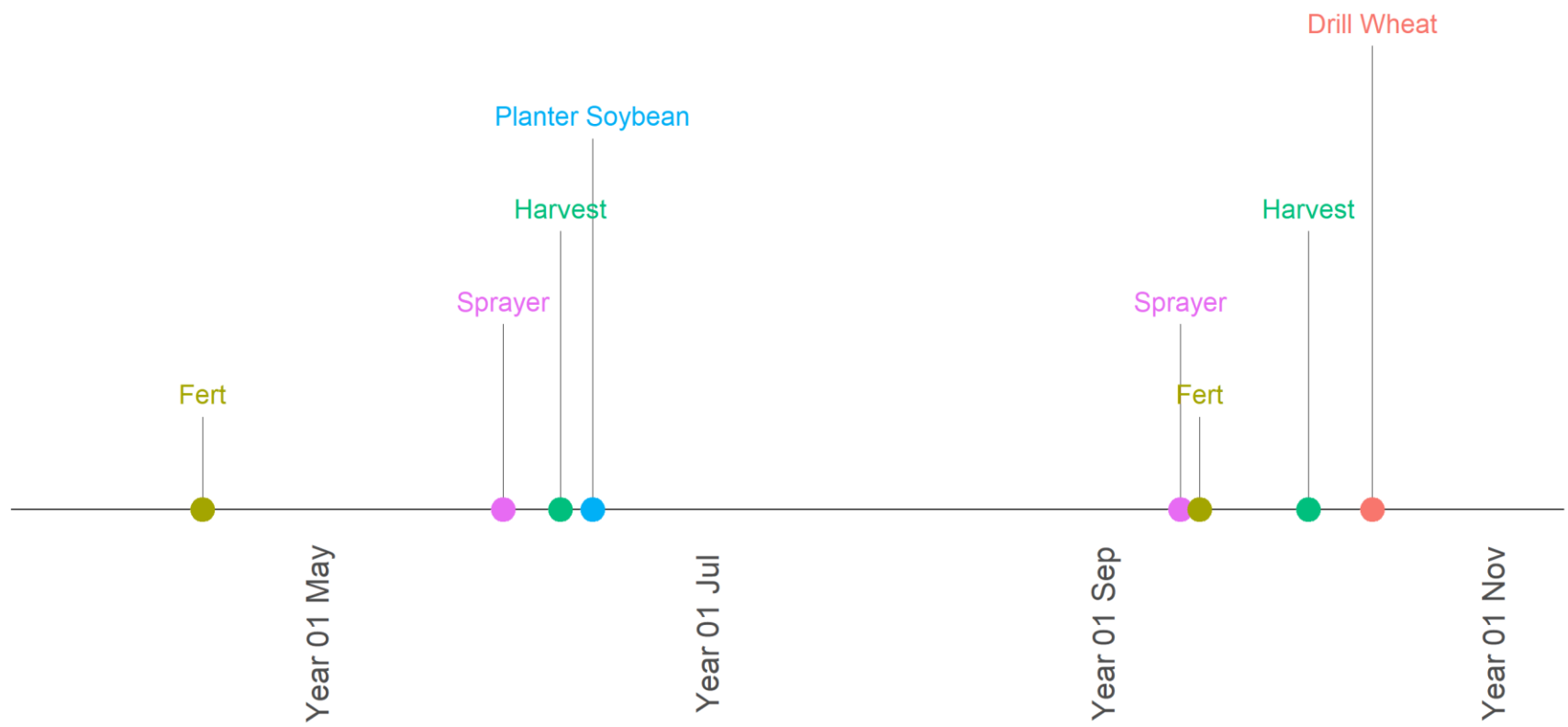




Crop Rotation Templates

One-year rotation: winter wheat with double-crop soybeans

Crop Rotation Template: Winter Wheat with Double-Crop Soybeans

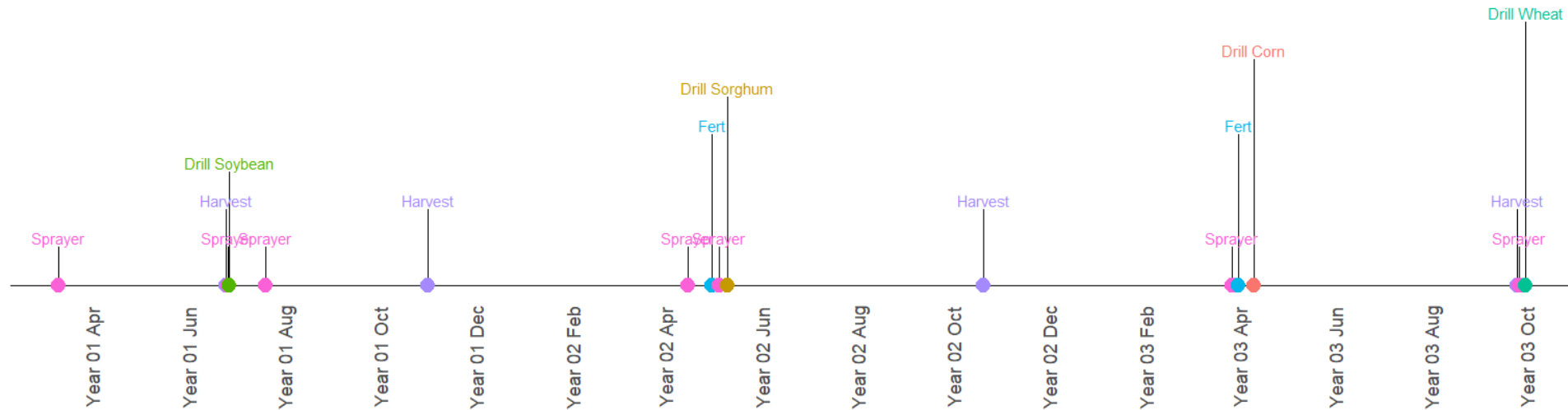




Crop Rotation Templates

Three-year rotation: winter wheat, soybeans, sorghum, corn

Crop Rotation Template: 3-yr with Double-Crop Soybeans





Fieldprint Scores

**Winter
Wheat
Only**

**Winter
Wheat &
Soybean**

**Winter
Wheat &
Soybean,
Sorghum,
and Corn**

Metric	● Your Result	● Your Result	● Your Result
Land Use (acre / bushel)	0.0154	0.0154	0.0154
Soil Conservation (ton / acre / year)	0.7	0.7	0.9
Soil Carbon	0.75	0.61	1.00
Energy Use (btu / bushel)	47938	47320	47256
Greenhouse Gas (lbs_co2e / bushel)	24.2	24.1	24.1
Water Quality	8.30	8.35	8.33
Biodiversity	86%	86%	86%



Double Cropping Concepts from 2015

- Developed during last review cycle (2015) but not implemented
- The Land Use metric currently can account for one crop per season. A revision could be made to consider double crop production, cover crops, complexity of rotation, etc.



Some of the suggestions from 2015

- **Mass balance approach**

- $$LU = \frac{1}{\text{Yield 1} + \text{Yield 2}}$$

- Yield would need to be converted to common units (e.g. lb/acre)
- Double crop LU metrics could be compared with single crop metrics if the same yield unit of measures are used.
- A reservation is that the mass of crops varies, and results could be skewed.



Some of the suggestions from 2015

- Temporally weighted rate of production

- $$LU = \frac{1}{\frac{\text{Yield 1}}{\text{FY 1}} + \frac{\text{Yield 2}}{\text{FY 2}}}$$

- This gives more weight to the crop yield that produces a harvestable yield at the quickest rate
- Faster maturing crops would improve the LU score. This favors factors outside the control of the grower, as they are determined by plant biology and regional climate zone



Some of the suggestions from 2015

- **Temporally weighted calendar year approach**

- $$LU = \frac{1}{\left[\left(\frac{FY\ 1}{FY\ 1 + FY\ 2} \times \text{Yield 1} \right) + \left(\frac{FY\ 2}{FY\ 1 + FY\ 2} \times \text{Yield 2} \right) \right]} \times NC$$

- It considers the sum of weighted yields where weights are proportional to the fraction of the production season allocated for each crop
- A higher weight is given to the yield of crop that has a longer growing season
- Advantage of considering a straightforward time component that could be applicable to other rotations



Scenario

Scenario:

Winter wheat: 75 bu/ac (4,500 lb/ac), 225 days

Double-crop soybean: 35 bu/ac (2,100 lb/ac), 140 days

Mass balance approach

$$\frac{1}{\text{Yield 1} + \text{Yield 2}} = \frac{1}{4,500 + 2,100} = 0.0001515 \text{ acre/lb}$$

Temporally weighted rate of production

$$\frac{\frac{1}{\text{FY 1}} \times \text{Yield 1} + \frac{1}{\text{FY 2}} \times \text{Yield 2}}{\frac{1}{225 \text{ day}} + \frac{1}{140 \text{ day}}} = 0.02857$$

Temporally weighted calendar year approach

$$\frac{1}{\left[\left(\frac{\text{FY 1}}{\text{FY 1} + \text{FY 2}} \times \text{Yield 1} \right) + \left(\frac{\text{FY 2}}{\text{FY 1} + \text{FY 2}} \times \text{Yield 2} \right) \right] \times \text{NC}} = 0.0001396$$
$$\frac{1}{\left[\left(\frac{225}{225 + 140} \times 4,500 \right) + \left(\frac{140}{225 + 140} \times 2,100 \right) \right] \times 2} = 0.0001396$$

FY = Fraction of the year, NC = Number of crops grown in 1 year



Questions for members

- Is there interest in a Land Use metric that incorporates additional factors, such as:
 - Crop rotation complexity (e.g. continuous crop, 2-year rotation, 3-year rotation)
 - Crop rotation diversity
 - Cover crops
 - Double-crops
 - Land use transition timing
- Should we use common units for all crops (lb/acre, short ton/acre, kg/ha, metric ton/ha)?
- Are you aware of any tools that the Metrics Committee should consider for the Land Use metric?



Exploring a Pest Management Metric





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Trends in Pest Management in U.S. Agriculture

Pest Management Task Force

- In 2018, Field to Market board established a **Pest Management Task Force** to respond to the following questions from the Brands and Retail Sector
 - Clarity on pesticides within Field to Market's current metrics and programs
 - Insight into IPM, what it is, how it is implemented on US farms, and how to communicate IPM to the general public
 - Ability to respond to inquiries about whether pesticides are in supply chains and the amounts that are being used
 - Other information on biodiversity, water quality, worker protection, etc.

Pest Management Task Force

- Summary of recommendations
 - Create a **pesticide-focused report for U.S. row crop agriculture** for Field to Market crops modeled after the National Indicators Report.
 - The Field to Market Metrics Committee should explore an **IPM-focused metric** that can be used to show measurable improvement over time.
 - **Catalogue communications information on product registration, labeling and enforcement** for use by companies.
 - **Catalogue existing consumer research** that may assist with communication efforts.
 - Establish **supply chain pilot projects** focused on increased adoption of IPM and improved outcomes with learnings shared across the membership.

Report Overview

Key Insights and Messages

- **Spring 2019:** Field to Market staff engaged with the IPM Institute of North America to provide data analysis and assist in interpretation.
- **Summer 2019:** Staff held briefings with each commodity organization represented in the report to present the initial data analysis and gather feedback and insights into crop-specific trends.
- **October 2019:** Five expert peer reviewers and the IPM Institute co-authors provided scientific feedback on the report contents and findings; feedback was used in a comprehensive revision.
- **December 2019:** Commodity groups provided a final review of their individual sections.
- **February 2020:** Public launch of report.

Report Overview: Key Messages

- Many opportunities for the commodity crop value chain to support farmers in adopting responsible pest management practices to **reduce harmful impacts on biodiversity, water quality and human health.**
- Many responsible pest management practices are also essential to address the farming challenges associated with increasing incidence of **pesticide resistance.**
- **Building healthy soils can support healthy, resilient plants;** therefore, a broad range of sustainable agriculture practices - including diverse crop rotations, cover crops and reduced tillage - can help to protect against crop damage from pests.
- Farmers must use a systems lens to evaluate trade-offs from pest management decisions. For example, **chemical weed control can be used by farmers to facilitate adoption of conservation practices** such as reduced tillage or cover crops, which in turn can improve soil conservation, soil carbon, energy use and greenhouse gas emissions.
- The **data on chemical use and pest management practices from USDA** for 1990-2018 are valuable to illustrate the specific pest management challenges facing different crops, but **do not illustrate clear overall trends.**
- There is extensive scientific literature on specific chemicals and management practices, and on how farm management has changed with the introduction of new pesticides. We draw from a fraction of that literature to understand **how environmental impact has changed over time.**
- All sectors of the value chain can work together to advance responsible pest management through collective action. **Pest management must become a collaborative effort.**

- The first section of the report establishes a common basis for understanding of how farmers manage for pest control, the history, regulations, impacts and challenges.
- Objective is to provide members with key background and common language to discuss pest management
 - Why and how farmers use chemical pesticides
 - How chemical safety is evaluated
 - How pesticides are regulated in the United States
 - How has agricultural chemical use changed over time
 - How have risks from agricultural chemical use changed over time
 - The growing challenge of pesticide resistance
 - Biopesticides
 - Integrated Pest Management (IPM)
 - Community strategies for responsible pest management

Understanding the Data

USDA Data Availability

Chemical Use - Years of Data Collection by USDA

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Barley																												
Corn																												
Cotton																												
Peanuts																												
Potato																												
Rice																												
Sorghum																												
Soybean																												
Spring Wheat																												
Winter Wheat																												

IPM Practices Years of Data Collection by USDA

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Barley												
Corn												
Cotton												
Peanuts												
Potato												
Rice												
Sorghum												
Soybean												
Spring Wheat												
Winter Wheat												

- Data are not collected every year, and were not available for alfalfa or sugar beets.
- Data reflect amounts of total chemical applied, but not the environmental impact.
- Changes in which chemicals are used over time drives the story.
- IPM practice data provides some insights, but not trends over time.

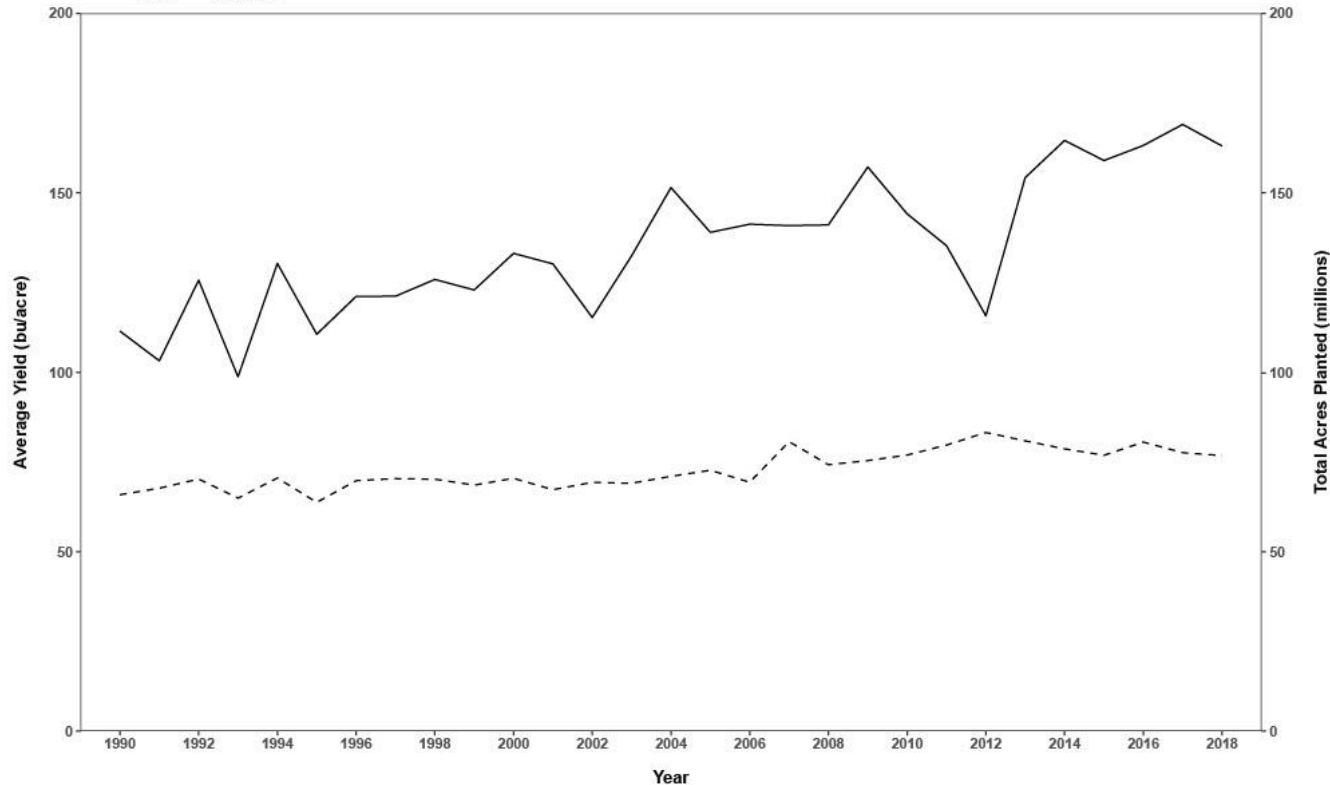
We use the USDA data to illustrate the story of pest management challenges and changes over time for each crop

Results Example: How to interpret the figures

Crop Overview: Trends in crop yield and acreage over time

Figure 2a: Corn

— Yield -- Acreage



- Crop yield and planted area graphs provide context to the pest management story

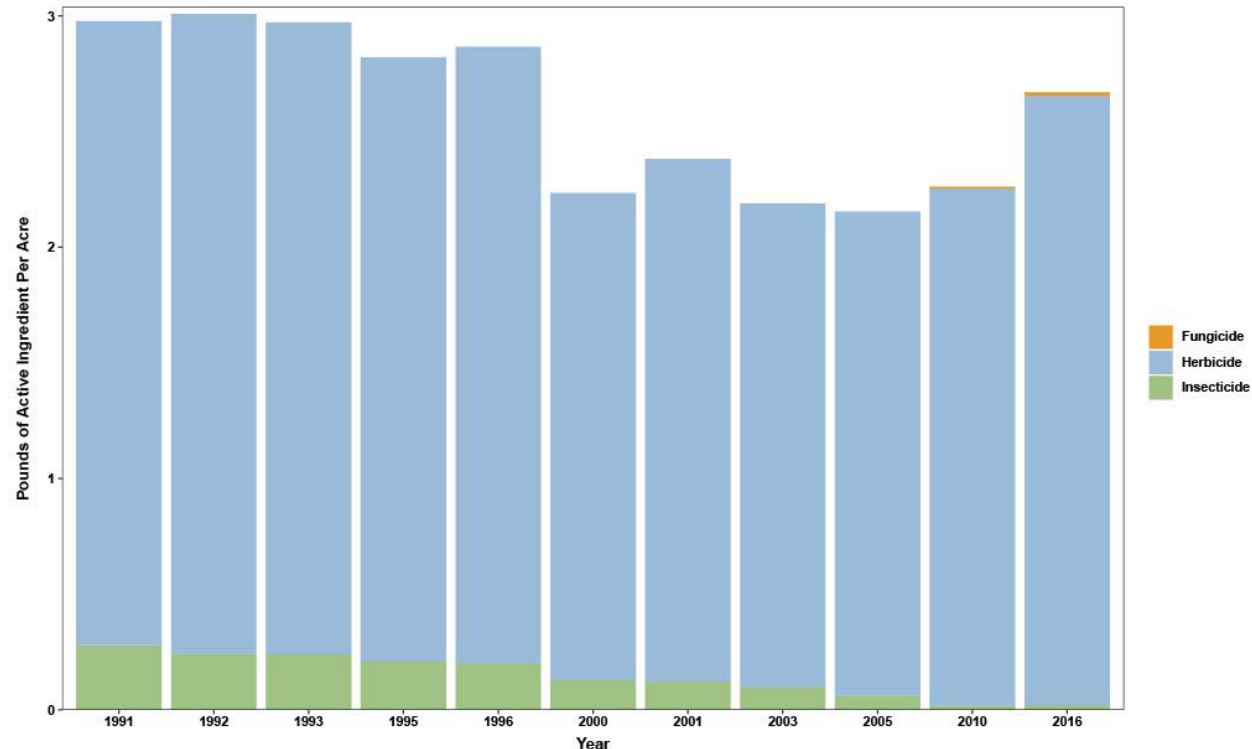
Trends for average yield (solid line) and total planted area (dotted line) for corn for 1990–2018. Data from United States Department of Agriculture, National Agricultural Statistics Service, Quick Stats.



Results Example: How to interpret the figures

Chemical Use: Amounts of pesticide active ingredient applied annually per acre, by category.

Figure 2b: Corn



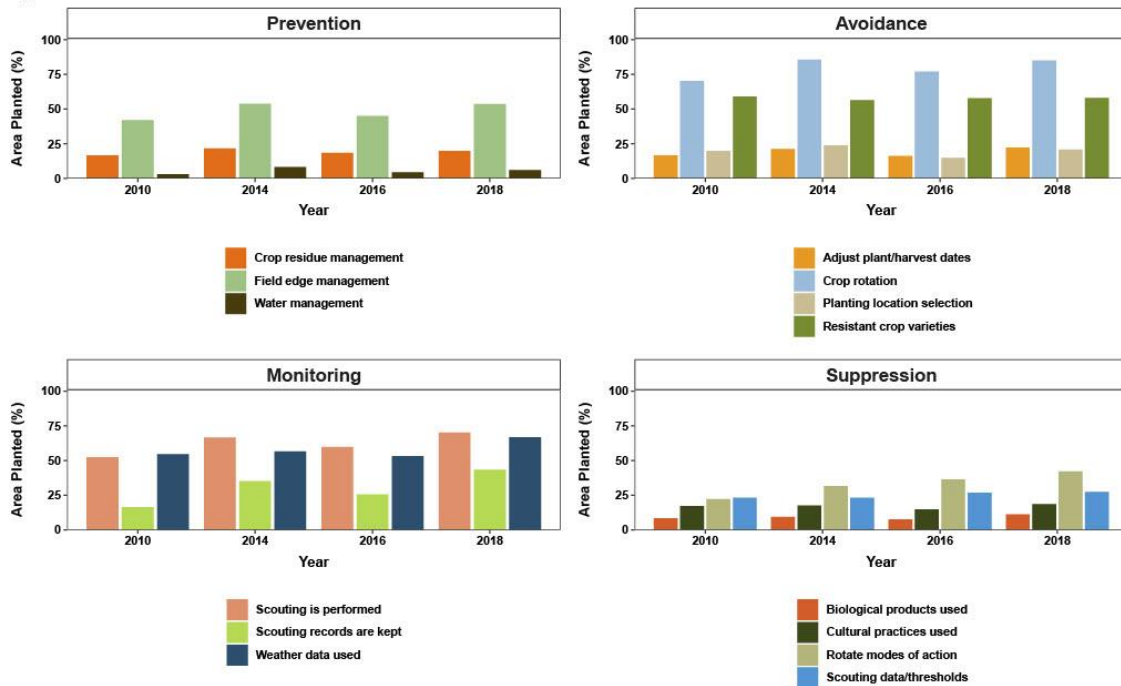
Chemical use quantities of herbicides, insecticides, fungicides, and other crop protectants for corn adjusted for planted area. Seed-applied pesticides are not captured by USDA surveys and thus not included in the chemical use quantities. Data from United States Department of Agriculture, National Agricultural Statistics Service, Quick Stats.

- Herbicide volumes declined in the early 2000s as new technology (GE herbicide tolerant varieties) was adopted and new herbicides introduced
- Herbicide volumes have recently increased in response to resistant weeds
- Insecticide use declined with the introduction of Bt traits and seed treatments (not included in the data).

Results Example: How to interpret the figures

IPM Practices: Levels of adoption

Figure 2c: Corn



Integrated Pest Management practice adoption for corn in percent of area planted and separated by strategy under the Prevention, Avoidance, Monitoring, and Suppression (PAMS) framework. Not all available IPM strategies were included. Data from United States Department of Agriculture, National Agricultural Statistics Service, Quick Stats.

- Adoption of specific practices has not changed notably over time
- There is relatively high adoption of certain Avoidance and Monitoring practices such as crop rotation and scouting for pest problems
- There are opportunities to increase adoption of certain practices such as using scouting data to determine thresholds where chemical intervention is needed to prevent economic damage

High Adoption (>40%)

- Crop rotation (Avoidance)
- Scouting is performed (Monitoring)
- Resistant crop varieties (Avoidance)
- Weather data used (Monitoring)
- Field edge management (Prevention)

Priorities for Adoption

- Rotate modes of action (Suppression)
- Planting location selection (Avoidance)
- Scouting data/thresholds (Suppression)



Key Findings and Recommendations

Key Findings from Crop Specific Analysis

- **Diverse crop rotations are key** for responsible pest management to break the cycle for pests, reduce the incidence of damaging outbreaks that require chemical treatment and support improved soil health.
- **Rotating chemical modes of action** is critical for combating pesticide resistance. Coordination across grower organizations to devise strategies for rotations is needed.
- Crop varieties bred or engineered to have resistance to pest species and diseases can play an important role and **research for resistant crop varieties should remain a priority.**
- Providing farmers with choice in the characteristics of seed to purchase is important. **Farmers benefit from having multiple options for productive seeds adapted to their environmental conditions**, including untreated and untraited options.
- Examples of successful community and region wide successes in advanced pest detection networks and reporting tools highlight the **important role that Land-Grant Universities play in helping farmers manage pest, weed and disease outbreaks.**

Opportunities for Agribusiness

- Diversification of pest management practices has become essential for successful farming but can remain challenging to adopt for many farmers. By **evolving and expanding their business models to sell differently**, agribusiness companies can provide agronomic advice, tools, technologies and services to support their customers in implementing responsible pest management.
- **New technologies are critical** to better enable targeted control strategies and identify efficiencies that can be gained by not using chemical treatments in some areas, which can help ensure IPM is an affordable choice.
- **Providing biopesticide options** that have demonstrated effectiveness in field trials is an important need to help manage pesticide resistance threats.
- **Providing a diversity of seed options** for farmers in terms of the incorporated pest management traits and treatments to enable farmers to adopt IPM strategies that rotate the modes of action of pesticides.
- Agribusinesses can help to incentivize IPM by **promoting solutions that work by targeting specific outbreaks as they occur** rather than prophylactic treatments.

Opportunities for Brands & Retail

- **Providing a demand signal for a more diverse array of crops** would create more rotation options for farmers and enable greater IPM adoption. Companies can work with their supply chains to determine what rotational crops would be most beneficial for IPM adoption and offer assistance in finding and creating markets to support farmers in growing diversified crops.
- Companies can also **partner with their suppliers** to ensure that farmers have adequate access to and opportunities for education and technical assistance on IPM practice adoption.
- Consumer-facing companies have an important role to play in educating consumers. **Helping consumers understand the challenges farmers face and the stewardship efforts they undertake** to protect biodiversity and minimize environmental risk would help in creating a more informed public on the risks and benefits of chemical use in agriculture.
- **Share in the agronomic and financial risk** that farmers face to adopt regenerative agriculture practices.

Opportunities for Civil Society

- Environmental organizations can play an important role in communication, as a voice trusted by the general public, to **highlight environmental impacts and document progress towards protecting biodiversity**.
- Civil society can **underscore the importance of working lands** as a critical partner in biodiversity conservation and help educate their constituents on the complexities facing farmers.
- Civil society can **provide valuable scientific and agronomic input** to supply chain efforts to adopt IPM practices and can also encourage and support supply chain efforts on transparency.
- Civil society should **continue to advocate for reducing the environmental risks of pesticide use** by devising and supporting mitigation strategies such as expanding pollinator habitat and increasing the amount of refuge land in agricultural landscapes.

Opportunities for Grower Organizations

- By **establishing community efforts to identify and combat pesticide resistance problems**, grower organizations can help preserve the efficacy of and social license to utilize the chemical pesticides that their members rely on.
- Grower organizations can **lead the way in working with agribusiness and brand and retail companies** to ensure farmers have choice in terms of seeds, chemicals and market opportunities.
- By helping to **develop and identify cost-effective IPM alternatives** to current prevailing chemical control programs, grower organizations can also support development of resources that will protect biodiversity, while also improving water quality and human health.



Opportunities for University and Government Scientists

- Scientists from Land-Grant universities and government agencies like the Natural Resources Conservation Service can play an important role by **providing clear science-based guidance to farmers** on how to integrate IPM practices for their specific situation and pest challenges.
- They can **form collaborations and communities across regions** to share scouting information and assist farmers in early pest identification.
- **Continued research in agricultural economics, entomology, weed science, rural sociology, and plant pathology** is also critical for adapting management practices for effective pest control. All of these should be complemented by robust economic analyses.

Provide input to the Metrics Committee

- The Metrics Committee will begin exploring options for a responsible pest management Metric.
- All members are invited to provide input for consideration as we start this process
- *Suggestions for technology tools and models to consider*
- *Recommendations for experts to consult*
- *Recommendations of literature or other resources to inform the discussion*
- **By the end of March 2020**, submit any input to comments@fieldtomarket.org

- **2020 timeline**
- Initial member input period – Closes March 20th
- Staff compile inputs, seek additional resources and report to the Committee (April)
 - *Committee decision: proceed with full Committee or appoint a sub-Committee*
- Explore available tools and resources
 - Webinars or meetings with experts
 - Demonstrations of tools
 - Discussions with stakeholder groups
- Develop recommendation:
 - Should we adopt a 9th metric for pest management?
 - If so, do we recommend adapting an existing tool or developing a new tool?
 - *Aim for a Committee decision on these points by end of 2020.*

- **Comments and Input so far**
- Resources
 - Task Force report to the Board
 - Pest Management Trends report



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FIELDPRINT PLATFORM

Fieldprint Platform

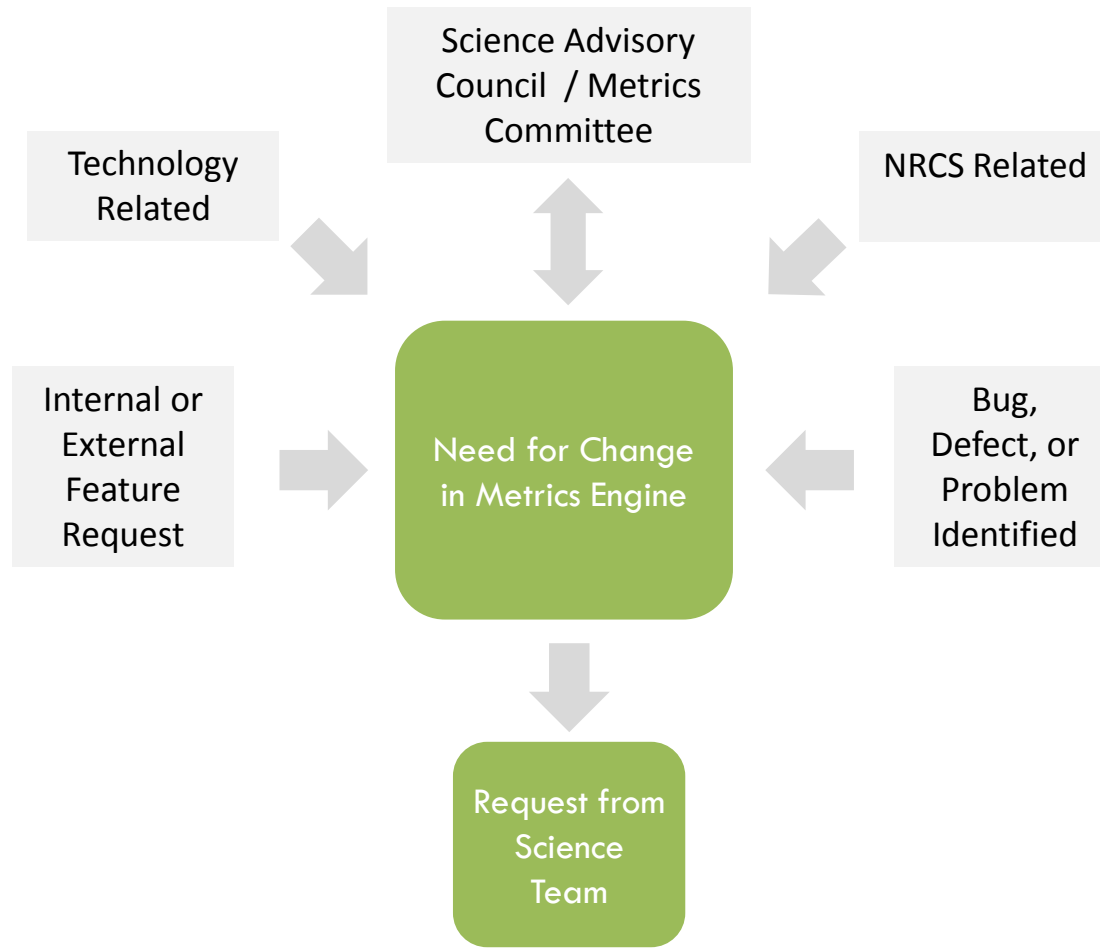
Overview of Change Implementation Steps,

QA Monitoring

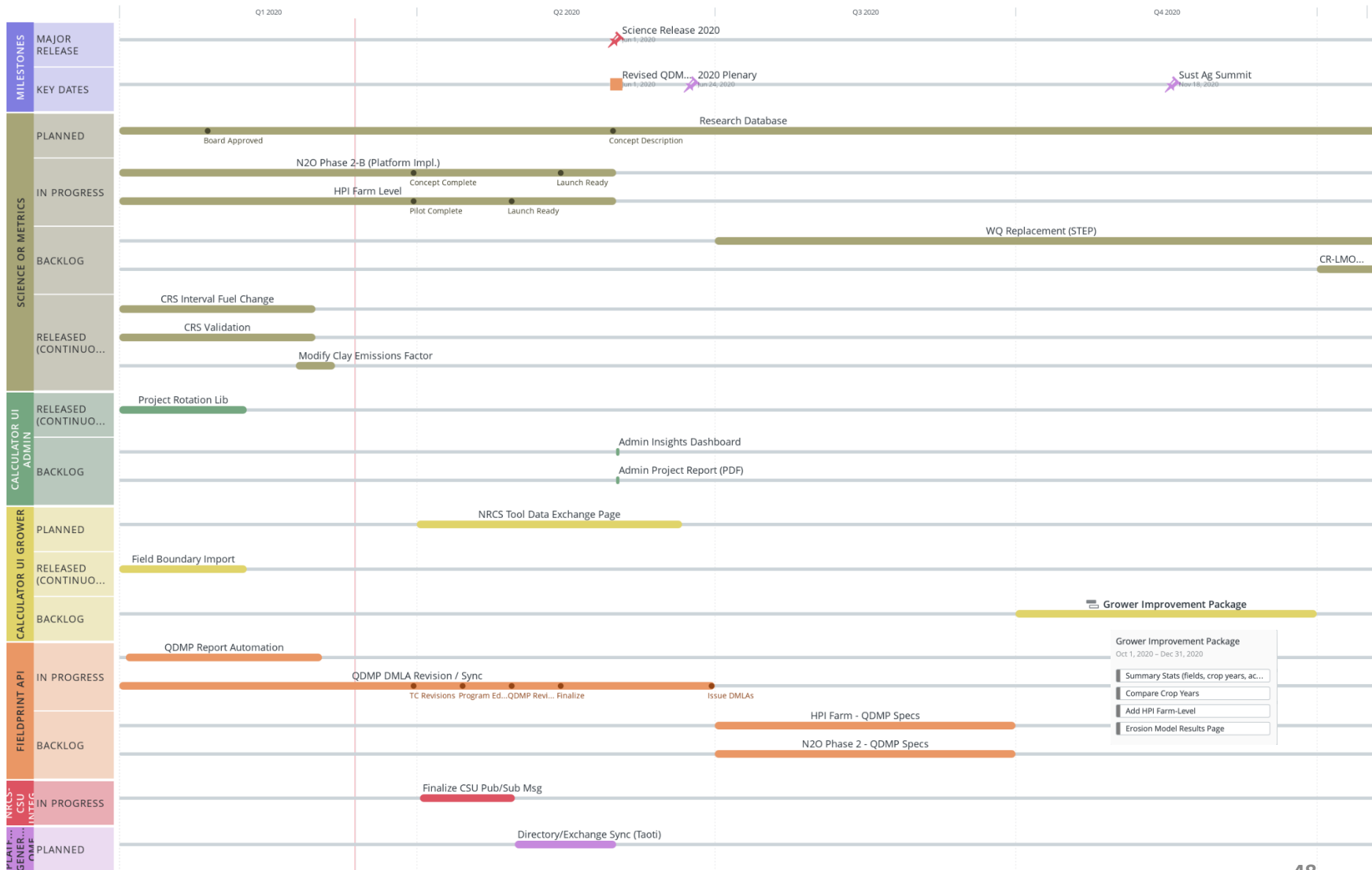
March 17, 2020

Source of Science Team Requests

The need for changes to the Platform or Metrics Engine can originate from several sources.

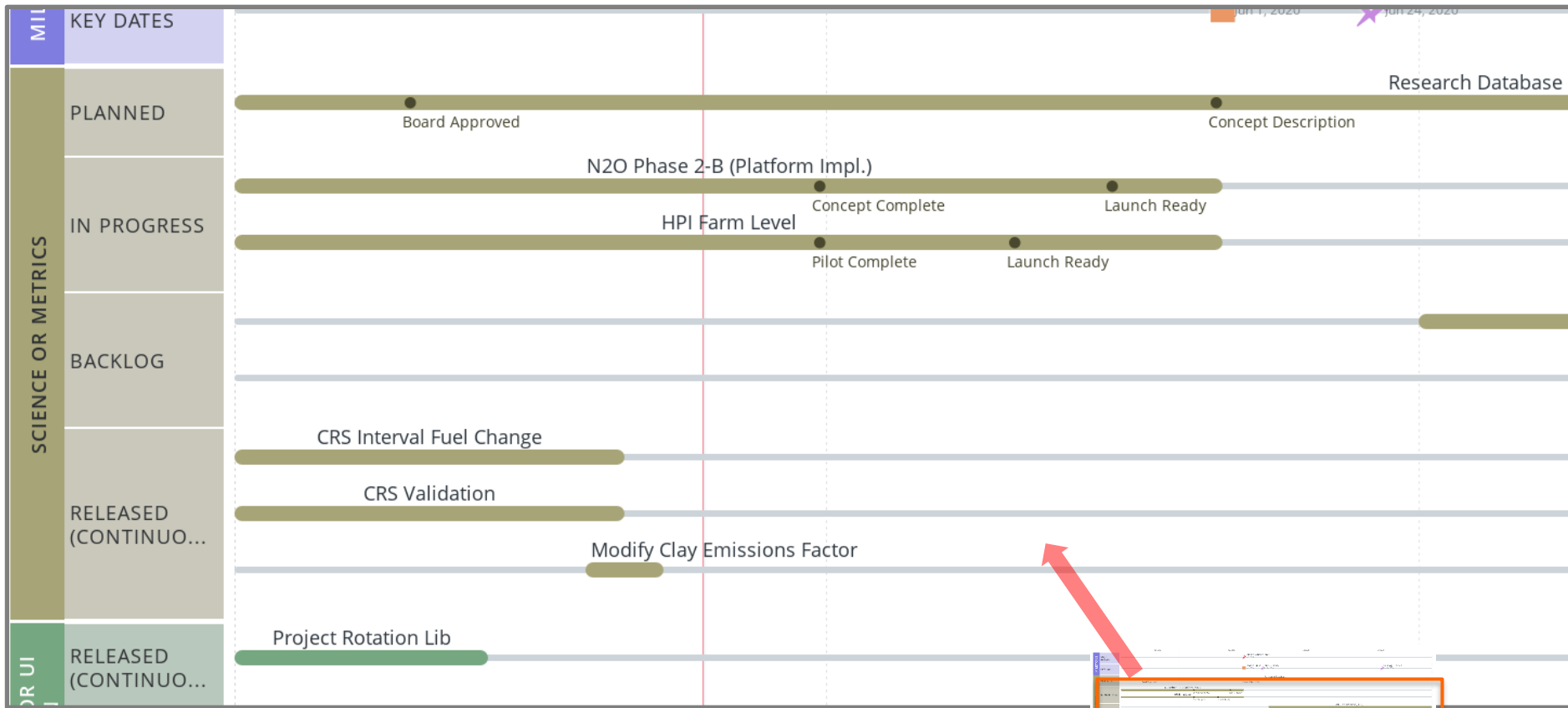


Platform Roadmap Summary



Platform Roadmap Summary

Zoom in on Science / Metrics related items on the roadmap.



Ticket Management

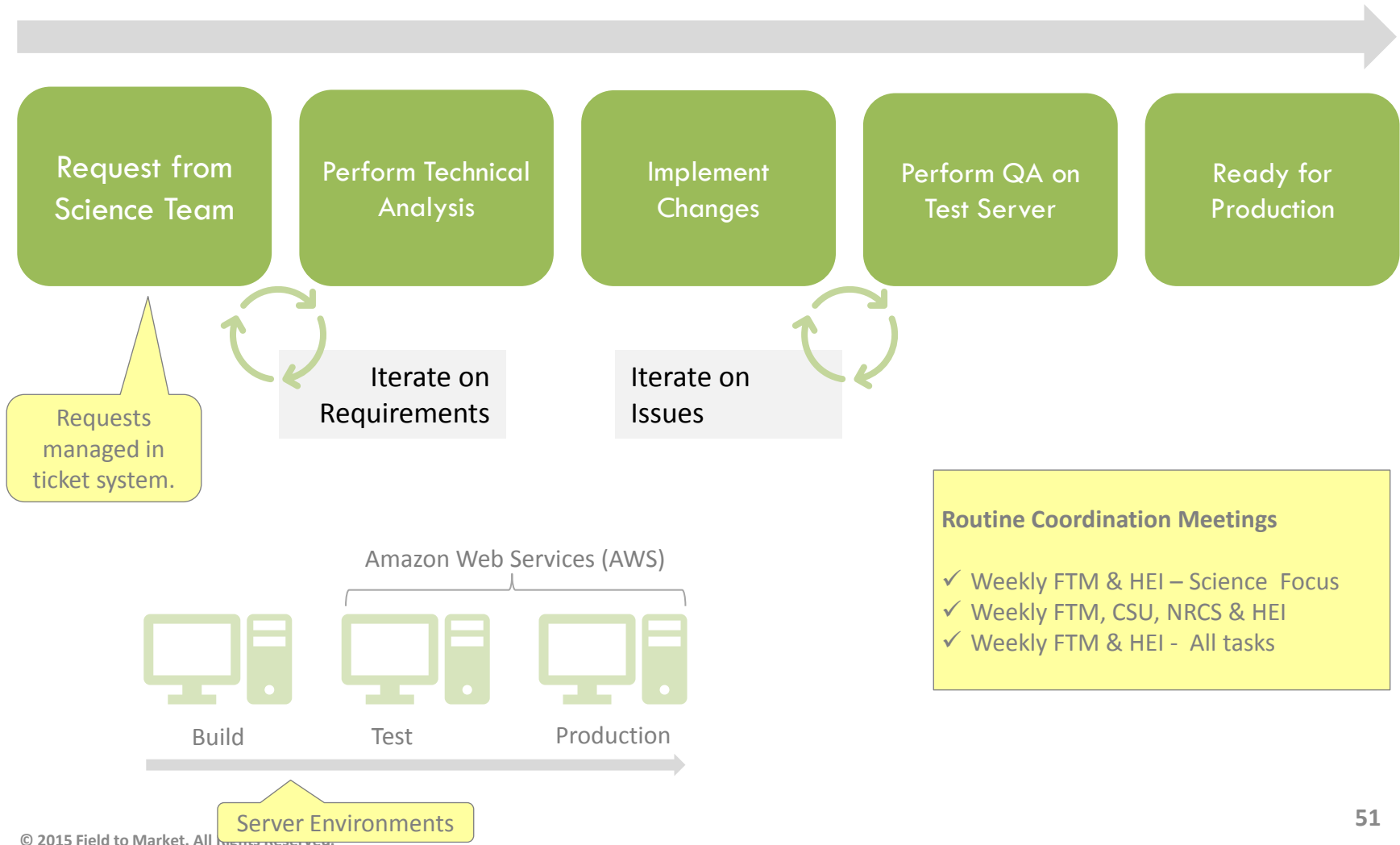
At a more granular level, all requests are added to the ticketing system or “backlog” for categorization and prioritization. Then organized by release.

The screenshot shows a Jira interface for ticket management. At the top, there is a navigation bar with 'My Home', 'FieldPrint Platform', and 'Tickets' tabs. A search bar is on the right with a '51' notification badge. Below the navigation bar, there is a list of tickets. The first ticket is for 'clean up fplib.apps.user.models' with status 'Completed'. Below it is a section for 'FPP API Version 3.0.23' containing three tickets. The second ticket in this section, '#922 QDMP PDF Report Link - Access Denied? QDMP Can't Access Report', is highlighted in yellow. Below that is a section for 'FPP API Version 3.0.24' containing three tickets. The last ticket in this section, '#872 Create an API endpoint for project overview stats', is highlighted in orange. Each ticket row includes a checkbox, a star, a ticket ID, a summary, a milestone, an assigned user, a status, and a 'select' link for tags.

	#	Summary	Milestone	Assigned To	Ticket Status	Tag Names
<input type="checkbox"/> ★	#905	clean up fplib.apps.user.models	FPP API Version 3.0.21	Brian Fischer	Completed	select
+ Add new ticket						
▼ FPP API Version 3.0.23						
<input type="checkbox"/> +	#	Summary	Milestone	Assigned To	Ticket Status	Tag Names
<input type="checkbox"/> ★	#910	Confirming on Plantable Acres in QDMP API Calculations	FPP API Version 3.0.23	S. Andrew Sheppard	Completed	select
<input type="checkbox"/> ★	#922	QDMP PDF Report Link - Access Denied? QDMP Can't Access Report	FPP API Version 3.0.23	me (phishmeh)	Completed	select
<input type="checkbox"/> ★	#923	Adjustment to GHG Methan Emission Factor	FPP API Version 3.0.23	me (phishmeh)	Completed	select
+ Add new ticket						
▼ FPP API Version 3.0.24						
<input type="checkbox"/> +	#	Summary	Milestone	Assigned To	Ticket Status	Tag Names
<input type="checkbox"/> ★	#919	allow "Wheat (winter)" to be a cover crop	FPP API Version 3.0.24	S. Andrew Sheppard	Needs Clarification	select
<input type="checkbox"/> ★	#880	Create Webhook URL for project data updates	FPP API Version 3.0.24	me (phishmeh)	On Hold, Waiting for Something	select
<input type="checkbox"/> ★	#872	Create an API endpoint for project overview stats	FPP API Version 3.0.24	Brian Fischer	On Hold, Waiting for Something	select
+ Add new ticket						

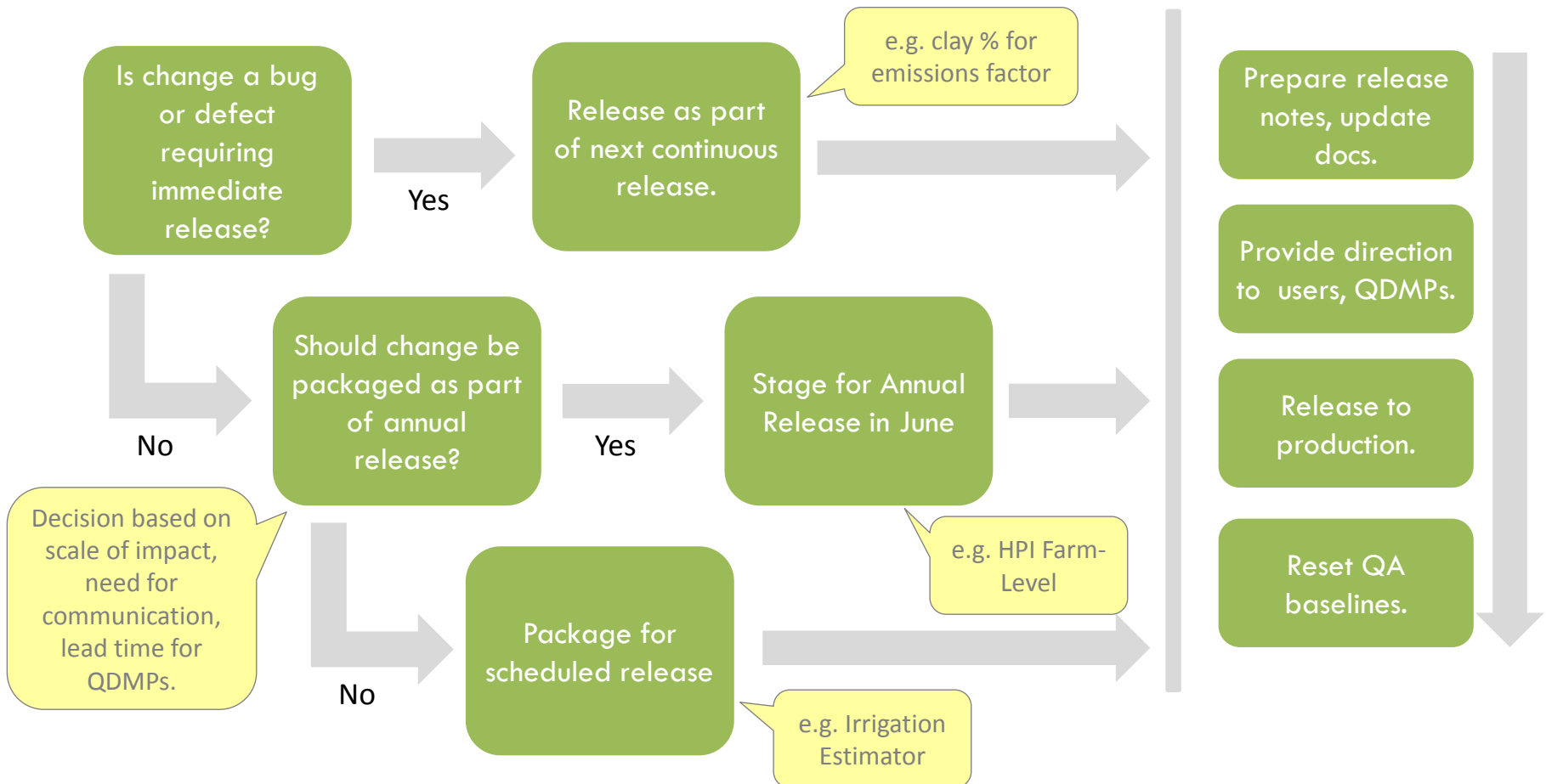
Change Implementation Flow

The following is a simplified view of the implementation flow from origination of request through to production-ready status of change.



Release Pathways

The decision to release the production ready change immediately (continuous release) versus holding to annual science release (June) depends on nature of change.



Daily Data Monitoring

We run a daily data monitoring service using 19 crop year test scenarios. Tests are run against both the Platform metrics engine and CSU CSIP.

API Tests

FPP Calculator Output on 2020-03-17		18/19
CSIP Debug on 2020-03-17	QA Monitoring service runs daily.	19/19
FPP Calculator Output on 2020-03-16		19/19
CSIP Debug on 2020-03-16	QA Variance found in one or more runs.	19/19
FPP Calculator Output on 2020-03-15		19/19
CSIP Debug on 2020-03-15		19/19
FPP Calculator Output on 2020-03-14	Successful run – no variance against baseline.	19/19
CSIP Debug on 2020-03-14		19/19
FPP Calculator Output on 2020-03-13		19/19
CSIP Debug on 2020-03-13		19/19
FPP Calculator Output on 2020-03-12	QA baselines updated due to metric engine change.	19/19
CSIP Debug on 2020-03-12		19/19
FPP Calculator Output on 2020-03-11		19/19
CSIP Debug on 2020-03-11		19/19
FPP Calculator Output (Baseline) on 2020-03-11		Baseline

Daily Data Monitoring

Example of March 17, 2020 QA Report showing metric engine results.

Status

18/19

Baseline FPP Version

3.0.23

Current FPP Version

3.0.23

Report tracks baseline and platform version.

Metric Results

Test cases - crop / location.

Test Case	Status	HPI	Energy Use	Greenhouse Gas	SCI	WQI	
Alfalfa (CA) v2	Success	0.6429	653168.1035 btu/ton	1970.0077 lbs_co2e/ton	-0.429	7.8469	Details
Alfalfa (WI)* v2	Success	0.6919	964641.8475 btu/ton	20782.1227 lbs_co2e/ton	0.338	4.8292	Details
Barley (MT)**	Success	0.4582	46979.1765 btu/bushel	17.5056 lbs_co2e/bushel	0.057	4.082	Details
Corn (IA)*	Success	0.5757	15111.8288 btu/bushel	16.6779 lbs_co2e/bushel	0.581	8.0215	Details
Corn (Tim S, IA)*	Success	0.8794	33550.8217 btu/bushel	15.6341 lbs_co2e/bushel	1.0	8.7242	Details
Corn (crlmod_id, NE)	Error	None	None	None	None	None	Details
Corn (tillage_id, NE)	Success			4.7774 lbs_co2e/bushel	0.683	8.7682	Details
Cotton (LA)**	Success	0.5		0.6384 lbs_co2e/lb	0.368	7.1719	Details
Cotton (Glenn S, TX)*	Success	0.6376	6382.9632 btu/lb	2.5297 lbs_co2e/lb	0.358	6.6141	Details
Peanuts (Adam R, GA)* v2	Success	0.6772	901.3854 btu/lb	0.1369 lbs_co2e/lb	0.436	8.7528	Details
Potatoes (ID)**	Success	0.5243	23004.5691 btu/cwt	5.4992 lbs_co2e/cwt	-0.682	3.2203	Details
Rice (Ratoon, LA) v2	Success	0.7583	18631.4266 btu/cwt	42.9604 lbs_co2e/cwt	-0.085	6.5496	Details

Success / Fail Status

Daily Data Monitoring

Example of March 17, 2020 QA Report showing detail for Corn (Tim S, IA); Platform Results.

Date

2020-03-17

Baseline FPP Version

3.0.23

Current FPP Version

3.0.23

Status

Success

Baseline and Current Platform Versions

Baseline Value

March 17th Value

Name	Baseline Value	Current Value
HPI	0.8794	✓ 0.8794
Energy Use	33550.8217 btu/bushel	✓ 33550.8217 btu/bushel
Greenhouse Gas	15.6341 lbs_co2e/bushel	✓ 15.6341 lbs_co2e/bushel
SCI	1.0	✓ 1.0
WQI	8.7242	✓ 8.7242
Run Time	43	42

Daily Data Monitoring

Example of March 17, 2020 QA Report showing detail for Corn (Tim S, IA); CSIP Results.

Date

2020-03-17

Baseline FPP Version

[3.0.23](#)

Current FPP Version

3.0.23

Status

Success

Name	Baseline Value	Current Value
Soils: Soil Name	Nicollet_2800483_85_CL	✓ Nicollet_2800483_85_CL
WEPP: Water Erosion	0.7851 t/ac/yr	✓ 0.7851 t/ac/yr
WEPS: Diesel Use	3.5247 gal/ac	✓ 3.5247 gal/ac
WEPS: SCI	1.095	✓ 1.095
WEPS: Wind Erosion	0.0022 t/ac/yr	✓ 0.0022 t/ac/yr

Daily Data Monitoring

Example of March 17, 2020 QA Report showing detail for Corn (crlmod_id, NE)

Date

2020-03-17

Baseline FPP Version

3.0.23

Current FPP Version

3.0.23

Status

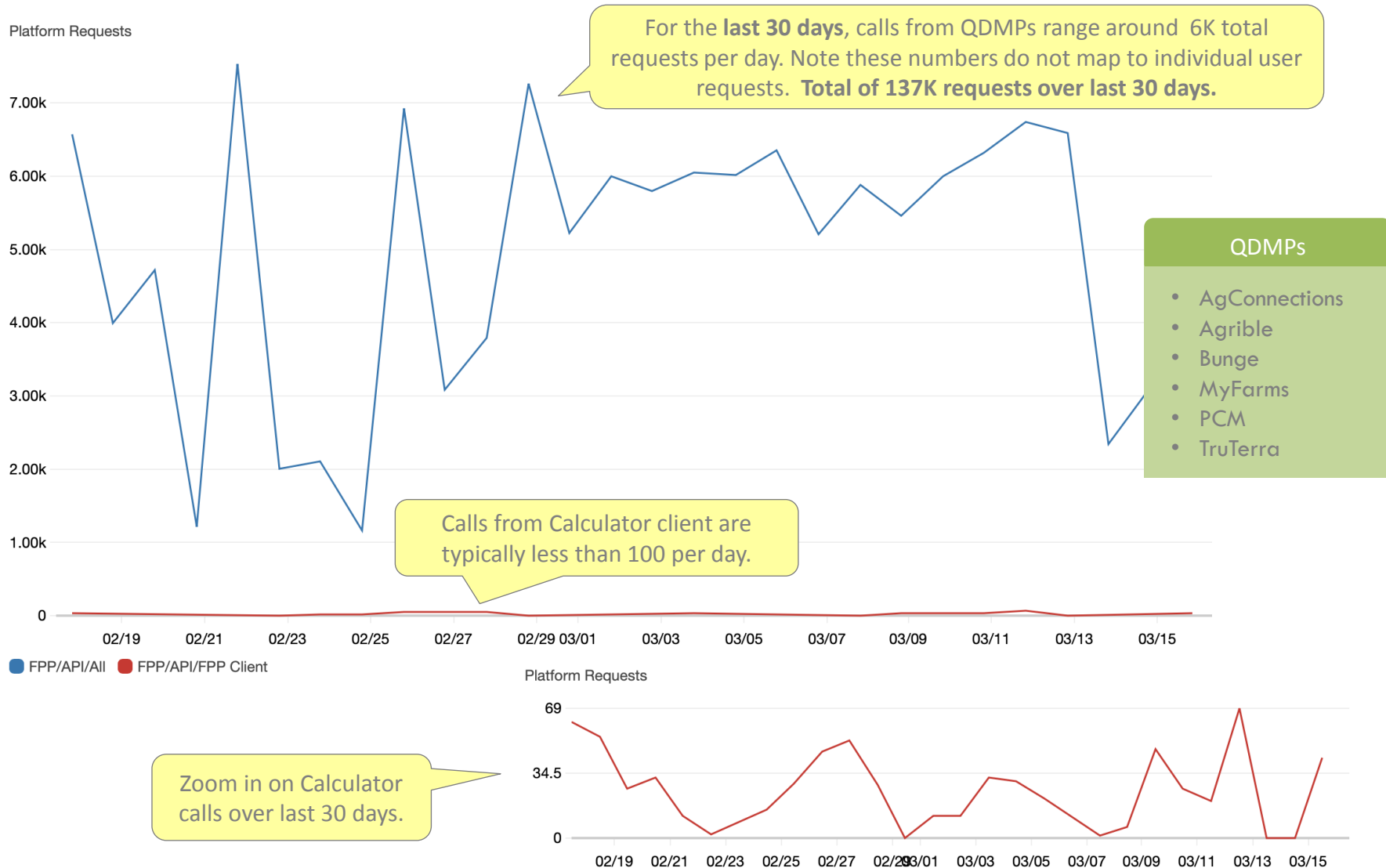
Error ('Connection broken: IncompleteRead(6785 bytes read, 1407 more expected)', IncompleteRead(6785 bytes read, 1407 more expected))

This test case was not successful.

Name	Baseline Value	Current Value
HPI	0.6101	× None
Energy Use	22813.5717 btu/bushel	× None
Greenhouse Gas	6.413 lbs_co2e/bushel	× None
SCI	0.345	× None
WQI	8.7721	× None

Platform Usage

A look at the last 30 days of API usage for both QDMPs and Calculator users.



- Questions



Water Quality Metric – Updated NRCS Documentation





Discussion

- Next steps:
 - Questions for NRCS?
 - Revising FTM documentation?
 - Member comment period?
 - Public comment period?
 - Other?



Field to Market[®]



Agenda – Wednesday March 18th

- 9:00 am Alignment: Field to Market relationships with other agricultural sustainability efforts (Rod Snyder)
- 9:45 am ESMC metric development process and plans (Caroline Wade)
- 10:30 am Break
- 10:45 am Soil Carbon Metric Discussion (Allison Thomson)
- 11:00 am Other Field to Market Activities & Updates
 - New member portal overview (Lexi Clark)
 - Upcoming events and meetings
 - Committee Updates
- 11:30 am Adjourn



Harmonization & Alignment Updates





Harmonization & Alignment Updates

- Field to Market partners with a number of other sustainability programs and standards to achieve the following:
 - More streamlined approach to ag sustainability for growers and supply chain companies
 - Added recognition and value for growers and companies utilizing Field to Market's metrics and process-based standard
- At the request of members, introductory conversations are held between the organizations to explore mutual interests
- Organizations often pursue a Memorandum of Understanding with approval from the FTM Board of Directors
- Staffs of the two organizations work together to implement specific aspects of the MOU, which may include:
 - Technical metric evaluation and comparisons
 - Program structure and requirements
 - Claims and verification protocols

Harmonization & Alignment Opportunities





Ecosystem Services Market Consortium

- MOU signed in October 2018
 - Mutual commitment to science-based quantification of environmental outcomes and an effort to pursue alignment in methodologies where possible
 - Intent to partner in pilot projects to explore how supply chain sustainability efforts could create a runway for engagement in voluntary ecosystem service markets
- FTM staff is participating in three of the ESMC workgroups
 - Water Asset Quantification
 - GHG Asset Quantification
 - MRV Technology
- ESMC staff is observing the FTM Metrics Committee
 - Clear mutual interest in water quality and soil carbon research and metric development



SAI Platform

- SAI Platform Farm Self Assessment (FSA) is a detailed questionnaire used by many multi-national brands for global sustainable sourcing goals.
 - Several Field to Market members requested an equivalency program to align internal sustainability reporting but continue to use the Fieldprint Platform in US sourcing projects
- MOU between FTM and SAI was signed in 2017
 - Agreement established bronze level equivalency for Fieldprint Platform participation with 14 supplemental questions needed to achieve FSA Silver or Gold
- In 2019, additional guidelines and audit control points were finalized, and supplemental questionnaire was built into the Fieldprint Platform
 - Successful verification audit achieved for two pilot projects (sugar beets and wheat)



The Sustainability Consortium

- MOU signed between FTM and TSC in November 2014
 - Commitment to Content Harmonization in Overlapping Product Category Areas
 - Commitment to Data Platform Interoperability
 - Collaboration on Innovation Projects
- In 2017-2018, Field to Market developed parameters for using Fieldprint Platform project results to report into 21 of TSC's Key Performance Indicators for 33 product categories
- In 2019, Field to Market launched functionality within the Fieldprint Platform enabling projects to automatically calculate the aggregate project level information for TSC reporting
 - Guidance is available on the Field to Market member portal
- TSC and Field to Market continue share information about metric development and revision



Field to Market Canada

- Canadian Field Print Initiative (CFPI) transitioned to Field to Market Canada with official announcement in October 2019
- Field to Market has created a “Country Partner Toolkit” for branding, website design, brochures and other materials that may be developed
- FTM-Canada is not required to have identical metrics but must adopt all other FTM governance, protocols and standards
- License arrangements will be reviewed on an annual basis to ensure compliance with requirements



Innovation Center for U.S. Dairy

- MOU signed between Field to Market and the Innovation Center for U.S. Dairy in May 2015
 - Metric Alignment
 - Tool Integration
- Feed sustainability pilot projects now underway
 - 3 participating cooperatives across the country with approximately 5 producers in each co-op
 - FARM-ES is an existing platform developed for dairy farms to evaluate energy and greenhouse gas footprint
 - The Fieldprint Platform provides environmental metrics for feed crops (e.g. corn silage and alfalfa)
 - Pilot projects will establish benchmarks for each co-op and compare learnings across participating producers



U.S. Roundtable for Sustainable Beef

- Letter of Agreement between FTM and USRSB signed in December 2017
 - Recognizing Field to Market’s Indicators, Metrics and Benchmarks within USRSB documents discussing sustainable feed;
 - Recognizing USRSB’s Indicators and Metrics within Field to Market documents discussing sustainable beef production;
 - Encouraging USRSB and Field to Market members, where applicable, to utilize the resources of the other in pilot projects, potential supply chain agreements and appropriate public facing communication.
- Feed sustainability pilot project is in the planning stages in Nebraska with joint FTM and USRSB members
 - Identifying location to focus on with feed producers and beef producers
 - Align with USRSB sustainability metrics across the supply chain
 - Fieldprint Platform will be used for the grain feed production sustainability assessments



U.S. Cotton Trust Protocol

- U.S. Cotton Trust Protocol is a new certification scheme developed by National Cotton Council and Cotton Inc. for growers and supply chains in the U.S.
 - Helps meet demand for third-party verified cotton while collecting data to support broader industry improvement targets
- Field to Market metrics are a required component for enrollment along with grower self-assessment questionnaire
- The protocol is currently being piloted with 300 growers and a more public launch is scheduled for 2020
 - The Seam built the Protocol's digital platform and is now working with Field to Market on Fielprint Platform integration
 - Other Field to Market QDMPs will be engaged over time



NRCS Conservation Application Ranking Tool (CART)

- Effort is to enable users of either Platform to export/import data between the Fieldprint Platform and NRCS CART
- Initial assessments of data inputs and data privacy considerations underway
- Field to Market recently implemented farm management template sharing in Fieldprint Platform v.3.0
- New funding agreement signed in fall 2019 detailing a 2-year collaboration



Gold Standard

- Field to Market staff has participated in recent Gold Standard meetings and workgroups as we pursue tool alignment
- Exploring how Field to Market's tools and projects can assist companies in meeting Gold Standard Requirements for Scope 3 emissions reporting
 - Fieldprint Platform (GHG and Soil Carbon Metrics)
 - Continuous Improvement Accelerator – Innovation Project/Impact Claims Protocol
- Opportunity for FTM member company to pilot Gold Standard's Value Chain Intervention Guidance alongside their FTM Continuous Improvement Plan



Mississippi River Cities & Towns Initiative

- MOU signed between Field to Market and MRCTI in November 2018
 - Provide a model for how cities can support farmers in improving water quality
 - Provide proof of concept to engage food service companies with the potential development of a responsible food procurement directive
- Two pilot cities have been announced in 2020
 - Dubuque, Iowa
 - Baton Rouge, Louisiana



Preliminary Discussions

- **Sustainable Rice Platform (SRP)** – USA Rice has requested alignment discussions with this global initiative
- **Potato Sustainability Alliance (PSA)** – discussions regarding potential use of FTM metrics in PSA
- **US Roundtable for Sustainability Poultry and Eggs (USRSPE)** – discussions regarding feed sustainability alignment
- **Leading Harvest** (formerly known as Sustainable Ag Working Group) – new standard developed primarily by farmland investor community; initial discussions about possible alignment



Ecosystem Service Market Consortium – Metrics





Soil Carbon metric development update





Funding opportunities update

- NRCS Collaboration Grant – pending
 - FTM metric development is a component of a larger project to expand the OpTIS/DNDC work to all the states in ESMC protocol areas.
 - This would match FTM funds and support Dagan to develop the metric for the Corn Belt
 - Expansion of underlying data would facilitate expansion of our metric also
- Pre-proposal submitted to TNC Natural Climate Solutions opportunity
 - Would fill the gap of FTM staff time and Houston Engineering development
 - Also would provide us some flexibility if NRCS grant is funded to build additional practices/functions into the metric
- Additional opportunities?



Field to Market Program Updates





New Member Portal has launched!





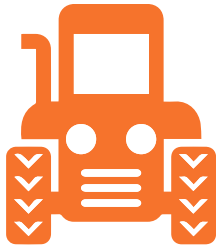
Awards & Recognition Committee





New Spotlight Opportunities for Members in 2020

- Expanding monthly sustainability storytelling series to celebrate outstanding:



Farmers



**Continuous
Improvement
Projects**



Trusted Advisers

- Nominations for Sustainability Leadership Awards will open in summer 2020



Education & Outreach Committee



- **Cross-Sector Dialogues**
 - Banking on Solutions: The Emerging Role of Ag Finance and Crop Insurance in Agricultural Sustainability (March 18, 2020 | Washington, D.C.)
 - The Human Element: What Social Science Can Teach Us About Building Effective Sustainability Strategies for U.S. Agriculture (June 25, 2020 | North Carolina State University, Raleigh, N.C.)
 - Climate Action 2.0: The Next Decade of Greenhouse Gas Reduction and Climate Resilience Efforts in U.S. Agriculture (September 10, 2020 | Hall of States, Washington, D.C.)
- **Continuous Improvement Accelerator Academy (April 20-21 | New Orleans, L.A.)**
 - interactive, immersive experience will explore how Field to Market's Continuous Improvement Accelerator can help advance an organization's sustainability goals and objectives
- **In-Focus Webinars**
 - Explain different aspects of FTM's programs, based on FAQs and member requests
 - Recorded and available in Member Portal, along with relevant print resources

Upcoming Field to Market | In Focus Webinars

Understanding Claims and Sampling

March 24 | 1PM EST

[Register Now](#)

Sustainability Metrics 101

April 13 | 1PM EST

[Register Now](#)

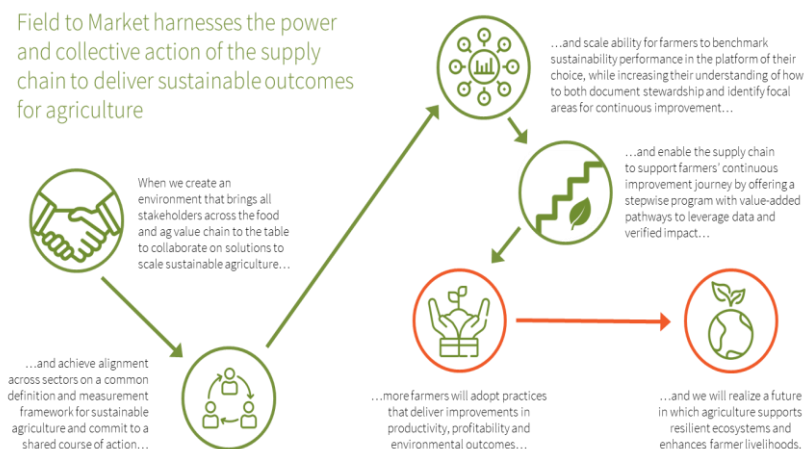
Thank You!



Verification Committee



- Developing a Monitoring and Evaluation System for Continuous Improvement Accelerator Projects based on Field to Market's Theory of Change to help us learn more about our program's effectiveness in creating positive impact



- Updating protocol documents in line with the new Process-Based Standard and in line with more flexible approaches to impact data analysis:
 - Impact Claims Verification Protocol and Guidebook
 - Measurement Claims Protocol
 - Assurance Principles
 - Sampling Framework

Continuous Improvement Accelerator Academy





- Field to Market 101
 - Field to Market orientation
 - Guiding principles
 - Overview of program offerings
- Process-Based Standard: Understanding the intent and requirements within Field to Market's new standard
 - Introduction to Field to Market's process-based standard and theory of change
 - Brief overview of requirements for each phase of the continuous improvement process
- Farmer Engagement: Best practices for recruiting and retaining growers in sustainability projects
 - Understanding farmer motivation and earning trust
 - Using the Partnership Portal to identify natural resource concerns and the implementation partners and farmers' trusted advisers in project areas
- Project Pathways: Lessons from current project administrators on how to create a compelling project vision for each distinct pathway
 - Incubation Insight Innovation



- Sustainability Metrics: Understanding outcomes-based measurement and reporting
 - Overview of the eight environmental indicators measured by Field to Market's program
- Fieldprint Platform: A closer look at U.S. agriculture's leading sustainability assessment framework
- Platform features and functionality
 - Introducing Field to Market's Qualified Data Management Partners
 - Farmer user and project administrator demonstrations
- Data Analysis: Preparing accurate and robust project reports
 - Conducting quality control for project data sets
 - Creating meaningful reports and contextualizing results for growers and project partners
 - How data can help identifying opportunities for continuous improvement
- Shared Value: Best practices for how to motivate and reward growers for advancing continuous improvement
 - Exploring successful examples of value-added incentives from sustainability projects including technical assistance, financial support, market access, and recognition programs



- Claims and Verification: Exploring opportunities to credibly communicate about project outcomes
 - Understanding Field to Market claims categories and how to design projects based on communication needs
 - Participation, Measurement, Adoption and Impact Claims
 - Accounting systems enabled by Field to Market
 - Mass Balance and Volume Proxy
 - Metrics revisions and how they impact data analysis and project reporting
 - Harmonization - Understanding how Field to Market's metrics and process-based standard align with and support other sustainability programs and standards
- Sustainability Storytelling: Crafting messages that resonate with key stakeholders across the value chain
 - Identifying and communicating sustainability stories at each phase of a project's lifecycle
 - Recognizing success - Field to Market's Sustainability Leadership Awards program and monthly spotlight series
- Online Resources: Finding what you need on Field to Market's website and member portal
- Exploring key features and functionality of the Member Portal, Project Directory, Partnership Exchange, and Learning Center



Metrics – Action Items

- **Member portal** – will begin posting items there
- **Land Use** – Staff will discuss options for what scenarios to explore and potential Platform opportunities
- **Pest Management** – Committee assignment to read task force report and science report; staff to compile list of potential tools and experts; discuss on April 15th call
- **Water Quality** – Staff will work with TFI and CSU on some nutrient management examples; revisit on a call (tentatively April 1)