FFAR Indicator Handbook

This handbook serves as a guide to the Foundation for Food & Agriculture Research (FFAR) project reporting process. It contains definitions and qualifying criteria for each of FFAR's standard indicators, on which grantees are required to report annually and at completion of the project. FFAR's Indicator Spreadsheet can be used to track indicators during reporting periods to aid reporting at the end of the period.

Contents

Indicator 1: Number of peer-reviewed publications *published* by researchers affiliated with the project, disaggregated by type of publication

Disaggregates:
- Peer-reviewed research (e.g., research article in peer-reviewed journal)
- Peer-reviewed literature review
- Peer-reviewed correspondence (e.g., letter to the editor, short communications)
- Other:

Additional information required: N/A

What counts as published?
- Manuscript describing research results that have been reviewed by experts in the field, accepted by the journal or similar outlet, and is now available to read.

What counts as "peer-reviewed research"?
- Original research that has been evaluated by other experts in the same field or adjacent fields.

What counts as "peer-reviewed literature review"?
- A comprehensive analysis of existing research on a topic, where the sources used are primarily articles published in peer-reviewed journals and that has been evaluated by other experts in the same field or adjacent fields.

What counts as "peer-reviewed correspondence"?
- A type of academic publication, usually in the form of a short letter or comment, that is subject to the same peer review process as a standard research article, where experts in the field evaluate its accuracy and relevance before it is published.

What is a DOI and where is it found?
- A Digital Object Identifier (DOI) is a unique string of numbers and letters that identifies a digital object, such as a journal article or book. DOIs are used to link to the object on the web and are often included in citations.
- Style guides offer different formats for citing DOIs. Knowing these can help you find your publication's DOI.
- Often, DOIs are links cited like this: https://doi.org/10.3390/plants14040626. When submitting a DOI for this indicator please only submit the number portion, for example, 10.3390/plants14040626 *not https://doi.org/10.3390/plants14040626*

Who are researchers affiliated with the project?
- Any research personnel such as faculty, technicians, postdocs, doctoral trainees, master's trainees or undergraduates including those at institutions receiving subawards for the project being reported on that are involved in the project's research or analysis activities.

Indicator 2: Number of end-user focused articles *published* by researchers affiliated with the project, disaggregated by type

Indicator 3: Number of times researchers affiliated with the project were *referenced* in end-user focused publications

Disaggregates:
- Trade journal
- Extension publication
- Policy brief
- Other

Additional information required: Please provide the article title, publication/outlet title and associated web address if appropriate, for each publication or reference. If you do not have all those details, we will accept partial submissions without the web address.

Who is an "end-user"?
- An end-user is someone who uses innovations or knowledge products generated by the research project. For example, end-users of food and agriculture innovation include farmers, consumers and other stakeholders involved in the value chain that would "use" the innovation.

What counts as a trade journal?
- A trade journal is a publication (often presented like a magazine) that focuses on news, trends and issues within a specific industry or trade group, targeting articles and information specifically towards professionals working in that field.

What counts as an extension publication?
- An extension publication is a document or informational piece—including booklets, manuals or curricula—published for general distribution or for specific audiences within the food and agriculture value chain.

What counts as a policy brief?
- A policy brief is a concise document that summarizes a specific issue, presents available policy options to address it and recommends the best course of action, typically aimed at policymakers and other individuals involved in shaping policy decisions.

What does it mean to be referenced?
- Being referenced refers to being mentioned. In some cases that means being quoted, in others that means the research was cited. Quoted denotes that a person's direct words were used and credited to them. Cited denotes that knowledge, findings or concepts from the research were highlighted by an author other than the researcher to illustrate a point. The research connected to the information shared was credited so that readers can look at the source of the information if they choose.

Who are researchers affiliated with the project?
- Any research personnel such as faculty, technicians, postdocs, doctoral trainees, master's trainees or undergraduates including those at institutions receiving subawards for the project being reported on that are involved in the project's research or analysis activities.

Indicator 4: Number of intellectual property (IP) rights *filed* for research connected to this project, disaggregated by type of IP

Indicator 5: Number of intellectual property (IP) rights *granted* for research connected to this project, disaggregated by type of IP

Disaggregates:
- Provisional patent application
- Formal patent application
- Copyright
- Trademark

Additional information required: For each IP right filed or granted, if an identifier or number was provided, please provide the number issued.

What is the difference between filed and granted?
- Filing an IP right involves the submission of all required documents to the appropriate authorizing agency.
- Granted refers to the official granting of an IP right from the authorizing body.

What does it mean to be connected to the research project?
- An IP right is "connected to the research project" if the conducted research and/or findings from the conducted research are a major component of the IP right being filed or granted.

What counts as a provisional patent application?
- A provisional patent application is submitted to secure an early priority date while refining the final invention.

What counts as a formal patent application?
- A formal patent application is one submitted to the United States Patent and Trademark Office, or similar foreign patent office, for the protection of inventions (e.g., processes, machines, compositions).

What counts as a copyright?
- A copyright safeguards creative, original works of authorship including literary, artistic and software.

What counts as a trademark?

- Trademarks protect brand identifiers to prevent consumer confusion in the marketplace (e.g., names, logos or slogans). They are registered at a trademark office.

Indicator 6: Number of licensing strategies *drafted* as a result of this research project, disaggregated by type of strategy

Indicator 7: Number of licensing strategies *executed* as a result of this research project, disaggregated by type of strategy

Disaggregates:
- License Agreement (i.e., licensing to third party)
- Partnership Agreement (i.e., joint venture or co-commercialization)
- Direct Commercialization (i.e., retaining exclusive commercial rights)

Additional information required: For each licensing strategy resulting from this research project, please provide, if allowed, name of invention, name of partner(s) or third party (or parties, if applicable) and amount of licensing income.

What counts as drafted?
- Drafted refers to any discussions, written correspondence or formal negotiation of any licensing strategy. It includes everything up to the signing of agreements or direct commercialization.

What counts as executed?
- Executed refers to any licensing strategy that was signed into an agreement or directly commercialized.

What does "as a result of this research project" mean?
- A licensing strategy is "a result of this research project" if the conducted research and/or findings from the conducted research are a major component of the IP right that is being licensed.

What is a licensing agreement?
- A licensing agreement is where the IP owner licenses the use of the innovation to a third-party.

What is a partnership agreement?
- A partnership agreement is where the IP owner enters into a joint venture with another entity leading to co-commercialization of the innovation.

What is direct commercialization?

- Direct commercialization is a licensing strategy where the IP owner retains exclusive commercial rights for the innovation.

Indicator 8: Number of *practice or product-related* events designed to share the research activities or findings from this project with *next-level users*, for which a researcher affiliated with the project was an organizer or speaker

Indicator 9: Number of *scientific-focused* events designed to share the research activities or findings from this project with others in the *scientific community*, for which a researcher affiliated with the project was an organizer or a speaker

Disaggregates:
- In-person
- Hybrid
- Virtual

Additional information required: For each event, please provide the name of the event, geographic location (country and state, if U.S.) and an estimated number of attendees. If all details are not available, please provide as much information as possible.

What is a product-related event?
- A product-related event is any presentation sharing knowledge about the value or use of a product with an audience that is primarily made up of next-level users of the product being presented, such as farmers, commodity groups, industry groups, community organizations or other end-users. For example, presenting vaccine storage, administration and efficacy details to livestock producers.

What is a practice-related event?
- A practice event is any presentation in which knowledge is shared about the value or use of a practice with an audience that is primarily made up of next-level users of the practice being presented. For example, presenting planting times and seed mixes that benefit pollinators to master gardeners or row croppers.

What is a scientific-focused event?
- A scientific-focused event is any event with an audience that is primarily made up of researchers and scientists. These events often take the form of scientific association conferences where research findings regarding new or improved methods as well as new or improved innovations are shared with others in the scientific community.

They can include events at conferences that are focused on skills workshops targeting technical audiences.

Who are researchers affiliated with the project?

- Any research personnel such as faculty, technicians, postdocs, doctoral trainees, master's trainees or undergraduates including those at institutions receiving subawards for the project being reported on that are involved in the project's research or analysis activities.

What counts as being an organizer or speaker?

- An organizer is anyone who played a role in designing an event, a session within the event, a panel in the event or some aspect of the event.
- A speaker is anyone formally sharing information related to the project. Formal speaking includes poster sessions, panel presentations, full presentations, etc. The speaking engagement does not have to be part of the FFAR grant proposal or paid for by FFAR funds.

How should hybrid events be reported?

- Please provide the geographic location where the in-person event was held even if the researcher attended as a hybrid participant.

How should virtual events be reported?

- Please provide the name of the event and the estimated number of attendees. Additionally, include a link to the event webpage, if available.

Indicator 10: Number of co-funders funding this research project, disaggregated by new or repeat co-funders

Disaggregates:
- New co-funders
- Repeat co-funders

Additional information required: N/A

What is a co-funder?

- A co-funder is an entity that provides part of or all the non-federal match funds for FFAR awards. Match funds can be cash, in-kind or both.

What counts as new?

- New denotes that the PI has never received funding from the entity prior to the project being reported on.

What counts as repeat?

- Repeat denotes that the PI has received funding from the entity prior to the project being reported on.

Indicator 11: Amount of follow-on funding received to extend or complement the work or the findings of the FFAR-funded research, disaggregated by source of funding

Disaggregates:
- Industry
- Individual
- Foundation
- Federal government
- Non-federal government
- Commodity group
- Academic
- Nonprofit

Additional information required: For each grant, please provide the funder name(s), program name (if applicable), awardee name, awardee designation (prime or subawardee), project name, total award amount (USD) and length of award (in months).

What counts as industry funds?
- Industry grant funds are those coming from a private sector entity like a company.

What counts as individual funds?
- Individual grant funds are those coming from a person, but not a named and tax-exempt personal foundation.

What counts as foundation funds?
- Foundation grant funds are those coming from a private foundation, usually operating under 501(c)(3) tax exemption.

What counts as federal government funds?
- Federal grant funds are those coming from the public sector, specifically a federal agency. They are the redistribution of taxpayer dollars by the federal government.

What counts as non-federal government funds?
- Non-federal government grant funds are those coming from the public sector, other than a federal agency. They are the redistribution of taxpayer dollars by state, territories or municipal government.

What counts as commodity group funds?

- Commodity group grant funds are those coming from trade organizations usually operating under 501(c)(5) tax exemption.

What counts as academic funds?

- Academic grant funds are those coming from some part of an academic institution (e.g., a university or college) usually operating under 501(c)(3) tax exemption.

What counts as nonprofit funds?

- Nonprofit grant funds are those coming from all nonprofit organizations other than tax exempt commodity groups and academic institutions.

Who are researchers affiliated with the project?

- Any research personnel such as faculty, technicians, postdocs, doctoral trainees, master's trainees or undergraduates including those at institutions receiving subawards for the project being reported on that are involved in the project's research or analysis activities.

Who are prime awardees and subawardees?

- A prime awardee is the principal investigator and applicant for a research grant. A subawardee is an investigator on a research grant that can be part of the key personnel or a subcontract but is not the principal investigator or applicant on the grant.

Indicator 12: Number of research trainees involved in project research, disaggregated by type of trainee

Disaggregates:

- Undergraduate trainees
- Master's trainees
- Doctoral trainees
- Postdoctoral trainees
- Other:

Additional information required: N/A

Who is an undergraduate trainee?

- An undergraduate trainee is an undergraduate student enrolled in a bachelor's program who is involved in the project's research or analysis activities under the supervision of a senior researcher including a master's trainee, doctoral trainee, university professors and/or industry researchers.

Who is a Master's trainee?

- A Master's trainee is a graduate student enrolled in a master's program who is involved in the project's research or analysis activities under the supervision of a senior researcher including university professors and/or industry researcher.

Who is a Doctoral trainee?

- A Doctoral trainee is a graduate student enrolled in a doctoral program, or candidate who completed their qualifying/preliminary exams, who is involved in the project's research or analysis activities under the supervision of a senior researcher including university professors and/or industry researchers.

Who is a Postdoctoral trainee?

- A Postdoctoral trainee is a person who has earned a terminal degree (e.g., PhD or DVM/VMD) and is participating as a researcher involved in the project's research or analysis activities.

How do I count the number of trainees?

- Trainee numbers are to be counted within each type of trainee for this specific reporting period. Reporting periods cut across typical university semesters or trimesters and summer sessions. For this reason, count the number of individuals not the number of semesters. For example, if the same Master's trainee participates in this research project across two semesters they count as one Master's trainee. However, if across two semesters two different Master's trainees work on this research project, one during each semester, they count as two Master's trainees.

What counts as involvement in research project?

- Involvement in the project's research, analysis or outreach activities should be at a level that adds to the advancement of the FFAR-funded project's objectives. Additionally, involvement in activities related to the FFAR-funded project should be substantial enough that the trainee has gained skills and knowledge.

Indicator 13: Number of graduate research trainees connected to the FFAR project who successfully defended their research thesis or dissertation, disaggregated by type of trainee

Disaggregates:
- Master's trainee
- Doctoral trainee

Additional information required: N/A

What counts as defended?

- A trainee has defended their thesis or dissertation after all edits were submitted, signatures were collected, documents were filed and approved by the appropriate institution office of the trainee.

Who counts as connected to the FFAR project?

- Any Master's or Doctoral research trainee whose thesis or dissertation research contributed to the findings of the FFAR-funded project even if no funding was provided during this reporting period.

Indicator 14: Number of innovation and knowledge products advanced within the project, disaggregated by stage of research, development & deployment

Disaggregates: stages of research, development & deployment, see below
Additional information required: N/A

This indicator tracks the progression of new or significantly improved innovations and knowledge products through various stages of research, development and deployment at scale to demonstrate use by public or private sector stakeholders.

New or significantly improved innovations or knowledge products should be reported under the appropriate stage of Research, Development & Deployment, as of the end of the reporting period.

FFAR's Stages of Research, Development & Deployment at Scale:

1) **Potential solution pathways identified**—New or significantly improved innovations are in Stage 1 when the challenge the industry is facing is clearly stated and potential solution pathways are identified.
2) **Solution hypothesis confirmed**—New or significantly improved innovations are in Stage 2 when the solution is defined, including who the beneficiaries are (e.g., where it fits in the value chain) and what estimated value it might bring to a potential industry or user.

3) **Undergoing lab/controlled research**—New or significantly improved innovations are in Stage 3 when under experimental testing of the technology to demonstrate its potential. Development of the small-scale, limited prototype is conducted under ideal or controlled conditions (e.g., lab, greenhouse or controlled livestock environment).

4) **Undergoing research in a relevant environment**—New or significantly improved innovations are in Stage 4 when testing a prototype in a relevant environment (e.g., a small scale and under limited variable conditions compared to the intended operational environment).

5) **Undergoing research in an operational environment**—New or significantly improved innovations are in Stage 5 when testing a prototype system in the operational environment (e.g., a crop innovation is replicated across multiple locations and larger acreage).

6) **Value proposition development and commercial validation trials**—New or significantly improved innovations are in Stage 6 when validating commercial acceptance by conducting on-site assessments, comparing results to field trials, adjusting actual cost/time/resource usage, learning actual industry or user limitations and determining next steps & adjustments.

7) **Product/solution fully validated and ready for market/user introduction**—New or significantly improved innovations are in Stage 7 when product or solution can be scaled, can be sold and/or is accessible to customers/clients/users, and enables value. Product or solution has passed all required regulatory approvals (e.g., variety registration, certification, biosafety approvals) so that intermediaries and end users are able to use and disseminate it.

8) **Market/user validation test secured and being executed**—New or significantly improved innovations are in Stage 8 when undergoing market size or user validation to test sales or uptake in different regions/markets. Business model tweaks were made to solve tech-to-market barriers.

9) **Regional launch with multiple distributors successful**—New or significantly improved innovations are in Stage 9 when demonstrated working solution/product that is executed in multiple markets.

10) **Proven & sustainable product/solution with multiple executions in the market or public domain**—New or significantly improved innovations are in Stage 10 when product/solution is being used at scale.

Illustrative examples of new or significantly improved innovations & knowledge products:
- trait, marker and gene discovery for agriculturally important characteristics

- application of conventional breeding and/or advanced biotechnological approaches for the genetic improvement of plant and animal species
- improved germplasm (varieties, breeds, etc.) that is higher-yielding, more resilient to biotic and abiotic stresses or higher in nutritional content (e.g. biofortified crops such as vitamin A-rich sweet potatoes, high-protein maize or improved livestock breeds)
- processes that improved market or processing traits
- mechanization, small-scale irrigation, planting schedules, soil management
- post-harvest and food safety technologies
- management practices for feed or food
- vaccines and animal health services
- new land preparation, harvesting, processing and product-handling and food safety technologies and practices
- packaging and storage methods
- water and land management practices
- aquaculture and fisheries practices
- research concerning the effectiveness of policy options (policy research)
- research on the socio-behavioral, socioeconomic or sociopolitical factors that influence decision-making
- economic research on products or approaches that overcome barriers to farmer investment in or adoption of improved technology and management practice, etc. (economic research)
- research or creation of new/improved tools for market access including financial and insurance products (market access research)
- new risk management approaches and approaches to effectively and sustainably change nutrition behaviors or the adoption of improved seeds

For additional information and examples of how to count individual technologies, please see Annex 1 of the Feed the Future Indicator Handbook.