# CRP-GLDC 2020 FP-level REPORTING Template

The 2020 Flagship Annual Report provides a synthesis of main progress and achievements in implementing the annual Plan of Work. When populating the narratives and tables sections, please carefully consider the [2020 POWB](https://hdl.handle.net/20.500.11766/11540), and where relevant, highlight key progress around FP to FP collaboration, gender & youth, capacity development, markets and partnerships in agribusiness, and climate change.

## **Part A: NARRATIVE SECTION**

The narrative section should tell a clear story for a non-specialist reader with no prior knowledge of the CRP. Please avoid long lists of diverse achievements – instead, make reference to the Tables, and if possible, complete the Tables first, before compiling the narrative.

We recognize that there is potential repetition of some information between the general sections at the front and specific sections such as gender, efficiency, capacity development etc.

The reason for having the specific sections is the way the System Organization uses this information: it is much easier for us to pull out relevant information and specific examples for a table from a specific section (e.g. on CapDev).

Please review all the sections first and allocate your narrative information accordingly. Please spell out all acronyms in the tables, and the first time in the narrative section. A “GUIDANCE” word flanks section titles (where avalabe), which is hyperlinked to the guide in the annex of this template. A link is provided below each guide to loop you back to the template section.

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### **1.** Key Results *\*header, no text required*

### **1.1.** Executive Summary (max. 100 words)

FP3 focused on pathogenic variability among pearl millet blast isolates, bio-control agents of pests and diseases scaling up in West Africa, plant growth promoting microorganisms (PGP). Besides, sustainable intensification and diversification of cropping systems have been developed while identifying high-yielding and early maturing soybean and cowpea genotypes for these integrated systems. Finally, sustainability of the farming systems both at farm and household levels, modeling and development of decision support tools, the resilience of the household, diversity of the diet and capacity strengthening of the key stakeholders constitute other areas which have covered during the year by the flagship.

### **1.2.** Progress (spheres of control and influence) *\*header, no text required*

### **1.2.1.** Highlight Global Progress and Achievements (max. 100 words). [**GUIDANCE**](#_Guidance_for_Section)

A total of 18,000 adult parasitoids *Therophilus javanus* have been released in Burkina Faso, Niger and Nigeria. This technology is validated for deployment of larger number of agents in West Africa. In Southern Africa, our team was able to reach 115,206 households, 309,558 farmers including 112,675 women applying improved technologies on 440,743 ha. Our team has developed and piloted a comprehensive framework for farming systems sustainability assessment and the stakeholders have been capacitated to use it. Target Population of Environments (TPE) approach has been developed laying the ground for modern geography-specific crop improvement methodologies across CGIAR and partnering institutions.

### **1.2.2.** Flagship progress towards Outputs and Outcomes (max. 1000 words) [**GUIDANCE**](#_Guidance_for_Section_1)

FP3 attempted to collaborate with CRP WLE (a meeting held) but this never materialized because of the pandemic situation. Our flagship is heavily involved in evidencing impacts with FP1 through participating to the workshop about the same and conducting a review on GLDC on natural resources management. A 3-day gender mainstreaming workshop was conducted with cross-cutting theme on gender for better reporting. A legacy paper will be produced.

In the area of biotic, pathogenic variation was studied among 80 isolates of *Magnaporthe grisea* collected from seven states in India. Fourteen pathogenic groups/pathotypes were observed based on reaction of 80 isolates on 10 pearl millet genotypes. Pathotype-isolates Pg 138, Pg 186, Pg 204, and Pg 232 were selected for use in greenhouse screening of pearl millet lines, towards improving protocols for developing resistant lines. To control pests and diseases, a total of 18,000 adult parasitoids have been released in Burkina Faso, Niger and Nigeria in 2020. A larger number can be deployed in West Africa region. Also, five strains of Streptomyces and another 5 strains of Bacillus were evaluated under both greenhouse and wilt sick field conditions. The selected isolates reduced disease incidence and delayed expression of symptoms of disease, over the non-inoculated. For abiotic stresses, sweet sorghum bagasse compost prepared with microbes (PGP) enhanced plant growth and yields in sorghum.

High-yielding drought tolerant legume varieties with farmer preferred traits together with appropriate input combinations have been identified through participatory cropping system management trials across various agro-ecologies for increased productivity. Sustainable intensification systems with diversified crop mixes, cropping patterns and sequences which capitalize on the synergies between and among crops and systems have been developed. The technologies which provide increased resilience and enhanced resource use efficiency to the systems are being promoted to increase productivity on smallholder farms. Simple hand push legume seeder was promoted for planting cowpea and soybean which allowed farmers, particularly women to cut down on time spent on planting and labor cost, reduced drudgery and increased yields. To create awareness, promote and scale up the adoption of technologies, 500 demonstration plots were established on farmers’ fields in partnerships with farmers association, community seed producers and agro-dealers and but only limited farmer field days were conducted due to COVID-19 restrictions. Similarly, extension materials were disseminated and broadcast of radio messages across communities were expanded as a measure to adapt to the COVID-19 restrictions to reach more farmers. The activities in Malawi and Mozambique cumulatively, benefitted 476,591 individuals. In terms of adoption, 309,558 farmers, 36% women applied improved technologies on 440,743 ha of land across activity domain in Mozambique in the last five years. Forty-one percent of this area was under improved varieties, whereas 59% was under improved crop management practices. Datasets on livelihood typologies, innovation adoptions and impacts of legume technology interventions in Burkina Faso and Ethiopia are being used to develop decision support systems. RandomForest and sentinel imagery were used to improve maps generated by nutrient flow models for soil organic carbon (SOC) and NPK at farm level. Crop models were calibrated and validated to simulate the performance of soybean and cowpea varieties from 30 years’ seasonal analysis in northeast Nigeria which provided specific recommendations for the region.

In collaboration with CCAFS, we developed a methodology as framework for quantifying vulnerability and resilience by accounting for a smallholder household’s ability to adapt and respond to climatic risk. A suite of systems modelling tools/framework for co-designing resilient farming systems such farm household typologies, whole farm system model as decision support, farming systems sustainability assessment framework were tested and validated. We’ve strengthened the capacity of extension systems and NARS partners of India and Niger in using these tools. We’ve used systems tools and modelling across WCA (Northern Nigeria), ESA (Malawi and Tanzania) and SA (India) to develop agronomic packages and targeted recommendations for crop traits. Multi-locational datasets and model runs supported product profile development: optimum sowing for millet and groundnut early to medium maturing varieties in semi-arid Nigeria. The crop modelling tools developed to identify the G×E×M options for enhancing resilience and productivity of sorghum in India enabled the target stakeholders to understand the spatial variability. We developed a method for mapping croplands using Sentinel-2 NDVI time-series and exploiting the SMT approach along with ground survey data to assess the impact of abiotic stresses, such as droughts and heat stress on cropping systems. In Zimbabwe, a training on rainwater harvesting (RWH) was run with 30 AGRITEX officers and department of mechanization and irrigation development. ICRISAT in partnership with department of animal science Ahmadu Bello University Zaria, Bayero University Kano build capacity of various farmer groups, youth and women on crop residues harvesting and processing using stover crushers. During 2020, we worked with 38 communities directly benefitting 4,323 farmers and entrepreneurs, with 1,277 male adults, 301 female adults, 2,103 male youth and 642 female youth in three states of Nigeria: Bauchi, Jigawa and Kano. We supported 40 youths as service providers. ICRISAT along with ICRAF created high resolution remote sensing imagery at 20 m at country level for Niger to scale up biological reclamation of degraded lands and USAID is using these resources for their scaling interventions. Based on a holistic package, nutrition education sessions have reached 1,227 Pregnant, lactating and young mothers; 876 Adolescent boys and girls in India. For enhancing household diet diversity and nutrition security participatory on-farm demonstrations of 14 improved bio-fortified cultivars of GLDC crops were piloted with 160 households and women led nutritional gardens of vegetables and trees including *Ziziphus mauritiana* (jujube), *Tamarindus indica* (tamarin), *Adansonia digitata* (baobab) with households in Mali and Burkina. The deployed GLDC varieties have been recommended by ICRISAT breeding team of West Africa (FP4).

### **1.2.2.a.** Relevance to Covid-19 by flagship (max. 300 words) [**GUIDANCE**](#_Guidance_for_Section_2)

Due to COVID-19 pandemic some activities were delayed and will be accomplish by mid of this year. Some activities had to be cancelled/postponed due to travel restrictions/lockdown (e.g., collection of new isolates of pearl millet downy mildew and blast pathogens from farmers’ fields, exchange visits for researchers/technicians). Similarly, the restrictions on travel and gatherings limited our ability to conduct training sessions and field days. However, we explored the use of radio messages that were broadcast to support farmers across project locations on pertinent extension advisories. Extension agents in the farming communities as well as lead farmers were provided important information through phone calls and messages to convey to farmers. Where possible online meetings were conducted to discuss issues and disseminate information.

We also produced quick assessments to understand the effects of COVID19 induced lockdowns on agricultural systems and rural livelihoods in South Asia. These analyses suggested context specific policy responses at different scales from household to region. Few of the suggested strategies like promoting local agri-food systems, mapping skills and identifying alternative deployment of returnee migrants to rural areas, cautiously easing out of restrictions to enable farm harvest and movement food commodities were useful in building government responses to mitigate the effects on COVID19 in India. In Mali, we found that farmers had to reduce the net sown area under maize and cotton due to non-availability of market because of COVID19 restrictions.

### **1.2.3.** Variance from Planned Program for this year *\*header, no text required, please address this section in the following subsections: 1.2.3.a, 1.2.3.b, 1.2.3.c*

### **1.2.3.a.** Have any promising research areas been significantly **expanded**? (max 50 words) [**GUIDANCE**](#_Guidance_for_Section_3)

The development of phenotyping facility was instrumental for screening sorghum lines for fall armyworm and helps in strengthening collaboration with CIMMYT and other firms. Furthermore, our household and farming systems level studies for agricultural sustainable intensification were extended to make quick assessments to understand the effects of COVID19 in India.

### **1.2.3.b.** Have any research lines been dropped or significantly **cut back**? (max 50 words) [**GUIDANCE**](#_Guidance_for_Section_3)

Collection of new isolates of pearl millet downy mildew and blast pathogens from farmers’ fields, exchange visits, field work on assessment of whole farm model decision support could not be done at village/farm levels. GIS-based work for quantifying landscape-scale indicators was also carried over to 2021.

### **1.2.3.c.** Has the flagship or specific research areas **changed direction**? (max 50 words) [**GUIDANCE**](#_Guidance_for_Section_3)

No

### 2.2. Partnerships *\*header, no text required*

### **2.2.1.** Highlights of **External** Partnerships (max. 60 words) [**GUIDANCE**](#_Guidance_for_Section_4)

Collaboration with INRAN-Niger, INERA-Burkina Faso, KSU-Nigeria, UDD-Niger, MSU-USA, Wageningen University-Netherlands and University of Strathclyde-Scotland, Texas Tech University-USA, Soybean Innovation Lab (SIL)- USA, Makerere University-Uganda, University of Nazi BONI-Burkina Faso, Center for Development Research (ZEF)-Germany, Zurich University of Applied Science-Switzerland, Massachusetts Institute of Technology (MIT)-USA, CSIRO Indian Council of Agricultural Research (ICAR).

### **2.2.2.** **Cross-CGIAR** Partnerships (max. 60 words) [**GUIDANCE**](#_Guidance_for_Section_5)

There are been some cross-learning for the control of the Fall Armyworm and supply of Drought Tolerant Maize varieties with Maize CRP. In addition, ICRISAT and ICARDA collaboratively worked with CCAFS on developing and validating the framework for measuring sustainability and resilience. Finally, ICRISAT, ICRAF, IITA, ICARDA collaborated on mainstreaming gender into R for D for improving GLDC farming systems.

### **2.7.** Use of W1-2 Funding (max. 50 words) [**GUIDANCE**](#_Guidance_for_Section_6)

W1-2 funding was critical to support our work in FP3 a significant part of which is of strategic nature to support enabling adoption of innovation at farming systems level.

Note: Please ensure that all 2020 published journal articles within your flagship are reported to MEL Platform. It is reported to MEL towards a deliverable and can be done following this [guide](https://cgiarmel.atlassian.net/wiki/spaces/MEL/pages/10780674/CRP%2BDeliverable%2BReporting). Journal articles are to be reported in MEL with a DOI for ISI/SCOPUS Journal Articles and with a Handle link for Grey Literature.

## **PART B: TABLES SECTION**

### Table 1. Evidence on Progress towards SLO targets (Sphere of interest) [**GUIDANCE**](#_Guidance_for_Table_1)

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| **SLO Target (2022)** | **Brief summary of new evidence of CGIAR contribution**Put N/A if the specific SRF target is not applicable to your CRP.Put “No new evidence in 2020” if the target is potentially relevant, but there is no new evidence available**.**Spell out all acronyms.*Max. 150 words per entry.* | **Expected additional contribution before end of 2022**(if not already fully covered)**Optional narrative. Evidence not required.***Max. 100 words* | **Geographical scope (with location)**Global, Regional (e.g. West Africa), Multi-national, National (e.g. Philippines), Sub-national**Required**. |
| **SLO1 : Reduce Poverty** |
| **1.1. ADOPTION** : 100 million more farm households have adopted improved varieties, breeds, trees, and/or management practices | Activities reached 115,206 households, 309,558 farmers including 112,675 women applied improved technologies (including good quality seed of improved legume varieties and improved management practices) on 440,743 ha of land |  | Malawi and Mozambique |
| **1.2. EXIT POVERTY** : 30 million people, of which 50% are women, assisted to exit poverty |  |  |  |
| **SLO2 : Improve Food and Nutrition Security for Health** |
| **2.1. YIELD INCREASE :** Improve the rate of yield increase for major food staples from current <1% to 1.2-1.5% per year |  |  |  |
| **2.2. MINIMUM DIETARY REQUIREMENTS** : 30 million more people, of which 50% are women, meeting minimum dietary energy requirements |  |  |  |
| **2.3. MICRONUTRIENT DEFICIENCIES** : 150 million more people, of which 50% are women, without deficiencies in one or more essential micronutrients |  |  |  |
| **SLO3 : Improve Natural Resources and Ecosystem Services** |
| **3.1. WATER AND NUTRIENT EFFICIENCY :** 5% increase in water and nutrient efficiency in agroecosystems |  |  |  |
| **3.2. REDUCED GREENHOUSE GAS EMISSION** : Reduction in ‘agriculturally’- related greenhouse gas emissions by 5% |  |  |  |
| **3.3. ECOSYSTEM RESTORED** : 55 M ha degraded land area restored |  |  |  |
| **3.4. PREVENTION OF DEFORESTATION** :2.5 M ha forest saved from deforestation |  |  |  |

### Table 2. Condensed list of policy contributions in this reporting year (Sphere of Influence)

Please list policy contributions in Table 2, for example any contributions to national breeding or data policies. Full supporting information should be submitted to [MEL Platform](https://mel.cgiar.org/blog/add/policy_case/1), following this [guide](https://cgiarmel.atlassian.net/wiki/spaces/MEL/pages/964657158/Policy%2Bcontribution). There is no need to fill Columns 2 to 9 when the policy contribution is already recorded in MEL. It is mandatory for Policies with **maturity Levels 2** and **3**, to be linked to an Outcome/Impact Case Report (OICR), and strongly recommended for Level 1. OICR can be added to [MEL Platform](https://mel.cgiar.org/blog/add/outcomestory/1).

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| **Col 1** | **Col 2** | **Col 3** | **Col 4** | **Col 5 to 8** | **Col 9** |
| **Title** of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words)*Spell out acronyms in every row* | **Description** of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words).See guidance for what to cover. | **Level of Maturity** | Link to **sub-IDOs**(max. 2) | CGIAR **cross-cutting marker** score | Link to **OICR** (obligatory if Level of Maturity is 2 or3) or link to **evidence** (e.g. PDF generated fromMIS) |
| Gender | Youth | Capdev | Climate Change |  |
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### Table 3. List of Outcome/ Impact Case Reports from this reporting year (Sphere of Influence)

Please list any Outcome/ Impact Case Reports (OICR) generated in this reporting year2. The report can be for (a) a new Outcome/ Impact Case, (b) one that has progressed to a new level of maturity, and (c) one that has been updated but has the same level of maturity. Please ensure that all OICRs already **linked to your reported Policies and/or Innovations are indeed part of this list.** OICR may be recorded to [MEL Platform](https://mel.cgiar.org/blog/add/outcomestory/1), following this [guide](https://cgiarmel.atlassian.net/wiki/spaces/MEL/pages/17183739/Outcome%2BStories%2BGuidelines?search_id=c4b67f0b-0d6d-4115-b0f1-65ef6ecb4edb). There is no need to fill Column 3 when the OICR is already recorded in MEL.

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| **Title of Outcome/ Impact Case Report (OICR)** | **Link** to full OICR. | **Maturity level** drop down for: 1, 2, or 3 |
| Development and piloting of a comprehensive framework for farming systems sustainability assessment | <https://mel.cgiar.org/innovation/addinnovation/id/314/new/1> <http://oar.icrisat.org/11246/> | 2 |
| TPE and beyond: laying the base for modern geography-specific crop improvement methodologies across CGIAR and partnering institutions (incorporated as an integral part of crop improvement programs in ICRISAT) | <https://hdl.handle.net/20.500.11766.1/d5b1a5><https://www.icrisat.org/simulating-postrainy-sorghum-yield-response-to-on-station-n-management-in-india/> | 2 |
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### Table 4. Condensed list of innovations by stage for this reporting year

Please complete the table below and **report the supporting evidence** required in the [MEL Platform](https://mel.cgiar.org/innovation/addinnovation), following this [guide](https://cgiarmel.atlassian.net/wiki/spaces/MEL/pages/689864906/Innovation%2BReporting?search_id=c4b67f0b-0d6d-4115-b0f1-65ef6ecb4edb). Note that only CoA, FP leaders, and CRP Admin can create an innovation record in MEL. Please request the record to be opened to be populated by the innovation focal person. There is no need to fill Columns 2 to 4 when the innovation is already recorded in MEL.

|  |  |  |  |
| --- | --- | --- | --- |
| **Title of innovation with link** (e.g. to CLARISA dashboard, MARLO). | **Innovation Type** | **Stage of innovation** | **Geographic scope (with location)** |
| Please see indicator guidance for details Max. 30 words.Do not use acronyms. | e.g. Production systems and management practices, Social science, Genetic, Research and communication methodologies and tools, Other, Biophysical Research | e.g. Stage 1 (end of research), Stage 2 (end of piloting), Stage 3 (available for uptake), Stage 4 (uptake by next users) | e.g. Global, Regional (West Africa), Multi-national, National (Philippines), Sub-national |
| Bio-control agents of pests and diseases in Benin and Burkina Faso<https://mel.cgiar.org/innovation/addinnovation/id/461>  | Production systems and management practices | 2 | Benin and Burkina Faso |
| Plant growth promoting microorganisms (PGP) for sweet sorghum <https://mel.cgiar.org/innovation/addinnovation/id/462> | Production systems and management practices | 3 | India |
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### Table 8. Key external partnerships

Please list up **to five important partnerships** for 2020, using the table below.

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| **Lead FP** | **Brief description of partnership aims**(max. 30 words) | **List of key partners in partnership.****Do not use acronyms.** | **Main area of partnership (may choose multiple)**Dropdown: Research/Delivery/Policy/Capacity Development/Other, please specify  |
| 3.1 | Biological control and Bio-pesticides in cowpea | 1) Institut National de Reserches Agronomiques du Niger, Niger, 2) Institut de l'Environnement et de Reserchers Agricoles, Burkina Faso, 3) Kwara State University, Ilorin, Nigeria, 4) Universite Dan Diko de Maradi, Niger, 5) Michigan State University, USA | Research, Cap Dev |
| 3.1 | Development and delivery of plant growth-promoting micro-organisms | Department of Chemistry, Norwegian University of Science and Technology, Trondheim, Norway | Research |
| 3.1 | Provide tolerant chickpea pod borer material for testing at different centers | Indian Institute of Pulse Research, Kanpur, India | Research |
| 3.1 | Soil fertility, organic matter management | University of Ouagadougou 1 Pr Joseph Ki Zerbo | Research |
| 3.1 | Climate change research on plant protection | Indian Institute of Rice Research, Hyderabad | Research |
| 3.1 | Groundnut aflatoxins management; capacity building of Chinese young scientists | Oil Crops Research Institute (OCRI)-Chinese Academy of Agricultural Sciences | Research, Cap Dev |
| 3.2 | Co-supervise and collaborate doctoral research | Center for Development Research (ZEF), University of Bonn, Prof. Christian Borgemeister  | Research, Capacity Development |
| 3.2 | Research in Circular agriculture for sustainable intensification | Zurich University of Applied Science, Dr. Meylan Grégoire | Research |
| 3.2 | Big data analytics | SCIO Systems, Dr. Pythagoras Karampiperis | Big data analytics |
| 3.2 | Soybean variety evaluation | Soybean Innovation Lab, University of Illinois, Prof. Peter Goldsmith | Research and delivery |
| 3.2 | Capacity and curriculum development | Makerere University, Uganda | Research and capacity development |
| 3.3 | Collaborative work on criteria and indicators and framework for sustainable intensification and sustainability assessment:  | ICRISAT, ICARDA, Wageningen University & Research (WUR), Swedish University of Agricultural Sciences (SLU) | Research |
| 3.3 | Systems modelling to co-design sustainable farming systems  | ICRISAT, Indian Council of Agricultural Research and Commonwealth Scientific and Industrial Research Organization (CSIRO) | Research/Delivery/Capacity Development |
| 3.3 | Innovation in the application of integrative data analysis for crop-soil-climate models to integrate these data sources with spatial and temporal variation being simulated to produce maps of crop performance | Michigan state university (MSU) and Africa Rising; WCA - ATSAP and TAAT; India meteorology department (IMD); Indian Council of Agricultural Research (ICAR), Mahalanobis National Crop Forecast Centre (MNCFC), India and the communities of practice (AGMIP, Big Data for Agriculture) | Research/Delivery/Capacity Development |
| 3.3 | Contextualizing research, capacity building, linking with farmer communities | National agricultural research institutes (NARS) in Burkina Faso (INERA), Mali (IER), Niger (INRAN), India (ICAR), Tunisia, Syria, Sudan | Research/Delivery/Capacity Development |
| 3.3 | System dynamics modelling for value chain analysis to identify entry points and support enabling policies | ICRISAT and Massachusetts Institute of Technology (MIT) | Research |
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### Table 9. Internal Cross-CGIAR Collaborations

Please include collaborations with one or more CRPs or Platforms – or in some cases with other Centers, if these are not already core partners for your CRP.

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| --- | --- | --- |
| **Brief description of the collaboration** | **Name(s) of collaborating CRP(s), Platform(s) or Center(s)** | **Optional: Value added, in a few words**e.g. scientific or efficiency benefits |
| Fall Armyworm control | MAIZE | Cross learning from maize and sorghum systems |
| Collaboration with CIMMYT - Zimbabwe for the supply of Drought Tolerant Maize in the cropping system work | CRP Maize with CIMMYT |  |
| ICRISAT and ILRI partnered to enable synergy by integrating GLDC work on whole farm modelling and fodder production potential into PIM activity of Cattle value chain competitive assessment in West Africa. | GLDC and PIM |  It provided opportunity to synergistically use the results from farming systems analysis (GLDC) into cattle value chain modelling (PIM) to generate more robust strategies for improving crop-livestock systems and rural livelihoods in west Africa  |
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### Table 12. Examples of W1/2 Use in this reporting period (2020) [**GUIDANCE**](#_Guidance_for_Table)

At the moment it is not possible to fully track W1/2 expenditure on activities and deliverables throughout the CGIAR, something that is of immense interest to Funders. We are working on long-term solutions to this, but in the meantime, the objective of this table is to provide an intermediate solution in self- reporting key activities and deliverables that were funded through W1/2 in the past year.

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| **Col. 1** | **Col. 2** |
| **Please give specific examples, one per row****(including through set aside strategic research funds or partner funds)**Max 50 words/example, but please aim for 30 | **Select broad area of use of W1/2 from the categories below - (drop down)****Select only one category in the** [**GUIDANCE**](#_Guidance_for_Table)**.** |
| Characterizing virulence spectrum of DM and blast pathogens of pearl millet  | **Research** |
| Integrated management of pearl millet blast through fungicides and host plant resistance | **Research** |
| Monitoring of Fall army worm by using pheromone traps, and evaluation of newer molecules and biopesticdes against FAW in sorghum | **Research** |
| Assessing the potential of atoxigenic *Aspergillus flavus* strains in controlling the pre-harvest aflatoxin contamination of groundnut | **Research** |
| Development of early detection systems for Groundnut soilborne diseases | **Research** |
| On-farm testing of the egg parasitoid, *Trichogrammatoidea armigera* against the millet head miner in Niger and Burkina Faso | **Research** |
| Screening of sorghum mini-core for resistance to fall armyworm | **Research** |
| Identify critical weather factors and crop growth stage for disease and insect-pests outbreaks in chickpea and Pigeonpea to develop prediction models | **Research** |
| Improve the farm productivity of pigeonpea through integrated management of phytophthora blight (an emerging disease of pigeonpea)  | **Research** |
| Study of the mechanism of resistance to *Aphis craccivora* in some selected cowpea Mini core lines in screen house and screen cage  | **Research** |
| Screening of the best cowpea accessions (from previous study) for the study of mechanism of resistance to the flower bud thrips *Megalurothrips sjostedti* | **Research** |
| Releasing of biocontrol agents against *Maruca vitrata* in Mali and Niger, and monitoring establishment | **Research** |
| Adaptive organic resource management targeting soil aggradation and agroecosystems’ resilience | **Research** |
| Improving productivity, resilience and sustainability of millet based cropping systems through diversification (Senegal) | **Research** |
| Optimizing cereal/legume rotation (Senegal) | **Research** |
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## ANNEX: Guidance for each narrative and table sections above:

### Guidance for Section 1.2.1

Progress towards SDGs and SLOs (sphere of interest, with research results frequently predating the CRP).

Please provide a short narrative on:

1. overall contribution of the CGIAR towards the SRF targets in the relevant area of work for the CRP, based on rigorous adoption and/or impact data. Please complete Table 1: Evidence on Progress towards SRF targets (Sphere of interest) and make reference to this in the text.
2. any areas of learning from impact assessments which have influenced the direction of the program. (if relevant)

[go back to template](#_1.2.1._Highlight_Global)

### Guidance for Section 1.2.2

Please provide brief summary narratives about how this flagship progressed towards the agreed ‘Program outcomes’, introducing Table 5 (Milestones) to the reader, highlighting (1) major pieces of work and innovations, and (2) any major course corrections. Where relevant, indicate cross-flagship linkages and how one flagship built on or worked with another to get results.

Please complete the following tables/submit the following data to MIS and refer to them in the text, as appropriate:

* Table 2: Condensed list of policy contributions
* Table 3: List of Outcome/ Impact Case Reports from this reporting year (Sphere of Influence)
* Table 4: Condensed list of innovations by stage for this reporting
* Table 5: Summary of status of Planned Outcomes and Milestones (Sphere of Influence-Control)

[go back to template](#_1.2.2._Flagship_progress)

### Guidance for Section 1.2.2.a

Please provide a brief summary about how this flagship has adapted their research owing to Covid-19, highlighting:

* major incorporation of Covid-19 analyses into existing studies or
* new Covid-19 studies.

Please do not report on research funded by the new CGIAR Covid-19 Hub. The Hub will report separately to the CGIAR System Organization.

[go back to template](#_1.2.2.a._Relevance_to)

### Guidance for Section 1.2.3

Please provide a brief summary under the following headings.

Please answer all sub-questions: (put “N/A” if not applicable) :

**1.2.3.a:** Have any promising research areas been significantly expanded? If so, for each example, please explain clearly where the demand came from (promising research results, demand from partners etc.). Where has the money for expansion come from? (max. 150 words)

**1.2.3.b:** Have any research lines been dropped or significantly cut back? (Please note that cutting research lines which do not seem to be delivering is seen by Funders and System Organization as a sign of good management, not of failure.) If so, please give specific examples and brief reasons. If funding was reallocated to other work, where did the money go? (max. 150 words)

**1.2.3.c:** Has this flagship or specific research areas changed direction? If so, please describe how, and the reason. (max. 150 words)

[go back to template](#_1.2.3._Variance_from)

### Guidance for Section 2.2.1

Please summarize any interesting highlights, value added and points to improve/ learning points from this year (**e.g. on private sector partnerships**) and make reference where appropriate to Table 8: Key external partnerships.

[go back to template](#_2.2.1._Highlights_of)

### Guidance for Section 2.2.2

Please summarize general points on highlights, value added and points to improve/ learning points from this year and make reference where appropriate to Table 9: Internal Cross-CGIAR Collaborations. Any points you can include on added value of new structures (e.g. Platforms, integrating CRPs) would be very useful.

[go back to template](#_2.2.2._Cross-CGIAR_Partnerships)

### Guidance for Section 2.7

Please complete Table 12: Examples of W1/2 Use in this reporting period. In a short narrative or bullet points if the table is not used, briefly elaborate on any particularly interesting points on your use of W1/2: e.g. any important achievements and/or cross-cutting work made possible. This information will be used to contribute to an overall system level narrative on the benefits and value added of W1/2. There is no need to repeat general information from previous sections, but please give any particularly telling examples you may have of the value added of pooled funding.

[go back to template](#_2.7._Use_of)

### Guidance for Table 1: Evidence on Progress towards SLO targets (Sphere of interest)

Instructions: Please complete this table with any available high-quality evidence on progress that was published or made available in 2020. Be aware: if you want to report several contributions to one specific SLO, please disaggregate the contributions into different rows (please see and follow the example in the sample Table 1 in the template).

Please provide information on all relevant SRF targets for a single study or innovation, to the extent possible.

If the adoption or impact data comes from a relevant innovation or contribution of the CGIAR prior to the CRP start-up (e.g. varieties released before the CRP start-up, which for most CRPs would be approximately 2012), then please support statements with published references, as shown in the 2017 Annual Report Annex Table A above.

Nearly all adoption or impact studies fall into the above category. There are (as yet) a few cases in which the estimated figures for at-scale adoption or impact result from an innovation released within the CRP period, for example some biofortification numbers in 2017. If this is the case, then the statement must be supported by a link to an Outcome/ Impact Case Report Maturity Level 3 (preferably in the Results Dashboard or if not, with unique identifier from any appropriate repository, e.g. CGSpace).

For any help or further clarification, please contact CRP-GLDC MEL team, and/or PMU

[go back to template](#_Table_1._Evidence)

### Guidance for Table 12: Examples of W1/2 Use in this reporting period (2020)

**Note on Column 2:** Explanation and some examples to help with categorization of the categories offered:

While understanding that some activities fall into several categories, it is still convenient for system-level presentation to divide the results by main category.

If a choice must be made, it is usually preferable to select a more specific category (towards the top of the list) in preference to a phase of research (bottom of list).

* **Policy:** sole or partial funding source for dissemination of findings, learning from evidence etc. For example, policy workshops, contracts with partners working on policy etc.
* **Partnerships:** start-up and maintenance of partnerships.
* **Capacity development:** Any activities reported under capdev indicator.
* **Other cross-cutting issues:** gender, youth, climate change; e.g. funding research projects tagged as ‘principal’ for one of these; funding cross-cutting work by the Program Management Unit; funding specific gender/youth/Climate Action ‘add ons’ to other projects. In every case, it should be obvious from the title of the activity what the cross-cutting issue is.
* **Other Monitoring, learning, evaluation and impact assessment (MELIA):** Activities covered under the MELIA section of this reporting template.
* **Contingency/ emergency:** e.g. immediate unplanned response to a new virulent disease, or moving germplasm collections as a result of conflict.
* **Pre-start up:** Conceptualization, design, ex-ante analysis before research start-up; For example: foresight, ex-ante studies, building theories of change, proof of concept studies for novel areas of work. However, start-up meetings with partners should normally be tagged as ‘partnerships’.
* **Research:** sole or partial funding source for a research line or significant research activity.
* **Delivery:** funding for any activities connected with scale-up and delivery.
* **Other, specify** \_\_\_\_\_\_\_\_\_\_\_

[go back to template](#_Table_12._Examples)