



Breeding Program Assessment Tool

maximizing genetic gain

<http://plantbreedingassessment.org>

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BPAT Phase 1 2015-2019



THE UNIVERSITY
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BPAT objectives

- Independent review of CG and NARES plant breeding programs
 - apply private sector perspectives
 - better return on investments
 - focus on continual improvement
 - clear targets
 - understanding customers and market
- Assessment to drive improvements in genetic gain
- Assessment outcomes provided to **Institutions and EiB** to develop and implement Program Improvement Plans (PIP)
- Refine and improve BPAT tool



BPAT questions (155) – eleven components

Breeding Program Components

1 Breeding Objectives and Product Profiles

2 Breeding Organization

3 Infrastructure

4 Breeding Methodology

5 Product development and release

6 Program impact

7 Innovation

8 Engagement with NARES

Enabling Components

9 Alignment

10 Budget & finance

11 Organizational Effectiveness



EiB and BPAT have a shared vision

| | EiB Theme | EiB Vision (Outcome) | Issues | BPAT component |
|----|---|---|--|---------------------------------|
| a. | Defining breeding targets and objectives | All breeding is oriented to development of products for maximum impact | rate of genetic gain, products that will be adopted by growers, understanding of for whom and what you're breeding, high quality product profiles, distinct germplasm pools and breeding schemes | C1, C4 |
| b. | Strategy for breeding scheme | Breeding scheme is optimized for rate of genetic gain and likelihood of developing products for impact | variety development, parent development, identification and validation of novel genetic diversity, short breeding cycle, stage gate system, | C2, C4 |
| c. | Strategy for breeding operations | Breeding strategy is executed in such a way as to optimize data accuracy, cost and throughput | technology, data collection, good data management, quality control, parent and product selections, breeding program costs, | C2, C3, C4 |
| d. | Crossing | Best parental selection decisions are made and genetic diversity managed according to the breeding strategy | elite by elite, genetic diversity is measured | C4 |
| e. | Evaluation | Germplasm is tested in a way to maximize accuracy | genetic diversity is measured, trial designs, reliable data, phenotyping technologies | C4 |
| f. | Selection | Parents and products are selected on the basis of accurate data and aligned with the product profile | annual advancement meeting, accurate selection index, trial analyses, visualization tools, selection intensity and genetic diversity | C1, C4, C7 |
| g. | Product verification, release and delivery | There is a pipeline and process for maximum impact of breeding program outputs | effective pipeline, sufficient data is generated and available | C5, C6 |
| h. | Collaboration and culture | There is a culture that allows for improvement, sustainability and synergy | external trialling and germplasm, breeding teams are the experts, culture of continuous improvement, deploy new and successful breeding methods, annual review, respect and safety | C2, C7, C8, C9, C10, C11 |

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NEW Component – Organizational Effectiveness

Vanda Morgan

BPAT assessments

BPAT Assessment for No crop selected No location selected No assessor selected

| | | | | | | | | | | | | |
|---|------------------------------------|-----------------|--|-----------------|------------------------|-------------|---------------------------------------|-------------|---------------------------|------------------|---|-----------------|
| SCORES | C1 score 2.2 | C2 score 2.0 | C3 score 2.6 | C4 score 2.5 | C5 score 2.8 | C6 score | C7 score 2.5 | C8 score | C9 score 2.5 | C10 score 2.7 | C11. Organisational Effectiveness score 2.0 | |
| <input type="checkbox"/> NARES Assessment | Vision and Strategy Q107 - Q114 | | Structure, processes, systems Q115 - Q128 | | Culture Q129 - Q134 | | Performance management Q135 - Q141 | | Leadership Q142 - Q147 | | Change management Q148-Q154 | Summary Q155 |

107 **107** What is the organization's strategic vision? (management's view) Question weighting (0-1)

108 x

109

110 x

111

112

113 x

114

Assessor Score Cross reference Institution Quest Sec5 Q5.1

Assessor Feedback

Attachments Please attach copy if available

[View Scoring Criteria and Notes for Assessor](#)

[← PREVIOUS QUESTION](#)

[NEXT QUESTION →](#)

Close

50 BPATs completed to date

| CGIAR/NARES | Number | Crops |
|-------------|--------|--|
| ICRISAT | 15 | pigeon pea, sorghum, chickpea, groundnut, pearl millet, finger millet |
| CIMMYT | 5 | bread wheat, tropical/sub tropical maize |
| IITA | 11 | Mchare banana, Matoke banana, plantain, maize, yam, cowpea, soybean, cassava (4) |
| AfricaRice | 2 | irrigated lowlands, Rainfed lowlands |
| IRRI | 3 | marginal environments, favourable environments, hybrids |
| CIAT | 4 | rice, cassava, common bean, Brachiaria forages |
| CIP | 2 | potato, sweet potato |
| NARO | 1 | Uganda Matoke banana |
| EIAR | 7 | chickpea, bread wheat, durum wheat, bean, sorghum, maize (2) |



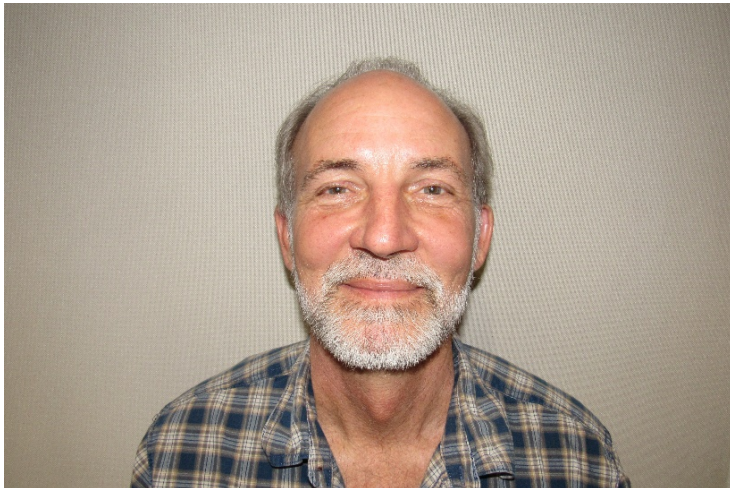
BPAT team for CIMMYT review -135y+



Dr Yilma Kebede USA – 40 y; Pioneer, BMGF



Prof Mark Cooper USA – 30 y; Pioneer, UQ



Dr Randy Holley USA – 30 y, Syngenta, Pioneer



Dr Christopher Lambrides – 35 y, Pioneer, CSIRO, UQ



2015

• Single EXCEL Spreadsheets for

- BPAT Assessor form
- Pre-visit surveys
- Assessor registration



2016

- EXCEL files with Macros and VBA programming
- Website development
- Social media setup



2017/8

- Forms in MSAccess
- Reports issued in PDF
- Website
 - Download Tools
 - Assessor Registration



2019

- Modifications to BPAT form and previsit surveys
- Analysis of BPAT outcomes - Power BI

The image shows two Excel spreadsheets. The top one is titled 'Breeding Program Assessment Tool v2 in excel' and contains various data tables. The bottom one is titled 'BPAT Assessor Registration form.xlsx' and shows a registration form with the following details:

Breeding Program Assessment Project - Assessor Registration

FIRST NAME: Sandra
 LAST NAME: Micallef
 Email: s.micallef@uq.edu.au

NEXT

The image shows the 'BPAT On-Site' assessment interface. It features a 'Step 1: Enter Program Details' section with several assessment categories, each with a 'NOT Complete' status:

- C1. Breeding Organisation (Q1 - Q15)
- C2. Infrastructure (Q16 - Q22)
- C3. Breeding Methodology (Q23 - Q31)
- C4. Cultivar Dev, Release & Production (Q32 - Q36)
- C5. Product Support (Q37 - Q42)
- C6. Product Impact (Q43 - Q49)
- C7. Strategic Plans & Management (Q50 - Q59)

Buttons for 'START assessment', 'Return to previous page', and 'Restart EXCEL tooling & R' are visible.

The image shows the 'BPAT Assessment for' interface for L.J. Lambie & Vitina Roberts. It displays a table of scores for various assessment components:

| SCORES | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| CL1 | Score | Score | Score | Score | Score | Score | Score | Score | Score | Score | Score |

Below the table, there is a 'JURIES Assessment' section with a list of components and their completion status:

- CL1. Breeding Objectives and Product Profiles (Q1 - Q7) Not Complete
- C2. Breeding Organisation (Q8 - Q20) Not Complete
- C3. Infrastructure (Q21 - Q29) Not Complete
- C4. Breeding Methodology (Q30 - Q41) Not Complete
- C5. Product Development and Release (Q42 - Q75) Not Complete
- C6. Product Impact (Q76 - Q84) Not Complete

At the bottom, there is an 'Assessor Registration form' section with a 'USE ONLINE REGISTRATION' button.

The image shows a Power BI dashboard titled 'BPAT Summary Report Draft 2'. It features a table of scores and two bar charts. The table shows scores for various components, and the bar charts show 'Avg score per crop' and 'Avg score by Institution'.

| Component | Score | Completion % |
|---|-------|--------------|
| CL1. Breeding Objectives and Product Profiles | 2.2 | 60% |
| C2. Breeding Organisation | 2.6 | 73% |
| C3. Infrastructure | 2.8 | 69% |
| C4. Breeding Methodology | 2.5 | - |
| C5. Product Development and Release | 2.5 | - |
| C6. Product Impact | 2.5 | - |
| C7. Innovation | 2.5 | - |
| C8. Engagement with NARES | 2.5 | - |
| C9. Alignment | 2.5 | - |
| C10. Budget and Finance | 2.7 | - |

Sandra Micallef – BPAT Data Manager

BPAT tools

BPAT what's next

- BPAT phase 2 – 2020+
 - 50 NARES + CG programs
 - Return visits after 3 years
- BPAT workshop in Seattle Jan 2020
 - Frame new questions for the re-assessments
 - EiB





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Thank you and any questions?



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