Module 3 update
Genotyping / sequencing tools and services

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Module 3 Genetic Gain contribution

Genotyping / sequencing tools and services

1) **Enabling access to shared genotyping services**

2) **Improving procedural workflows for sampling logistics and tracking**

3) **Centralization of genotyping service within the OneCGIAR ambit for efficiency**

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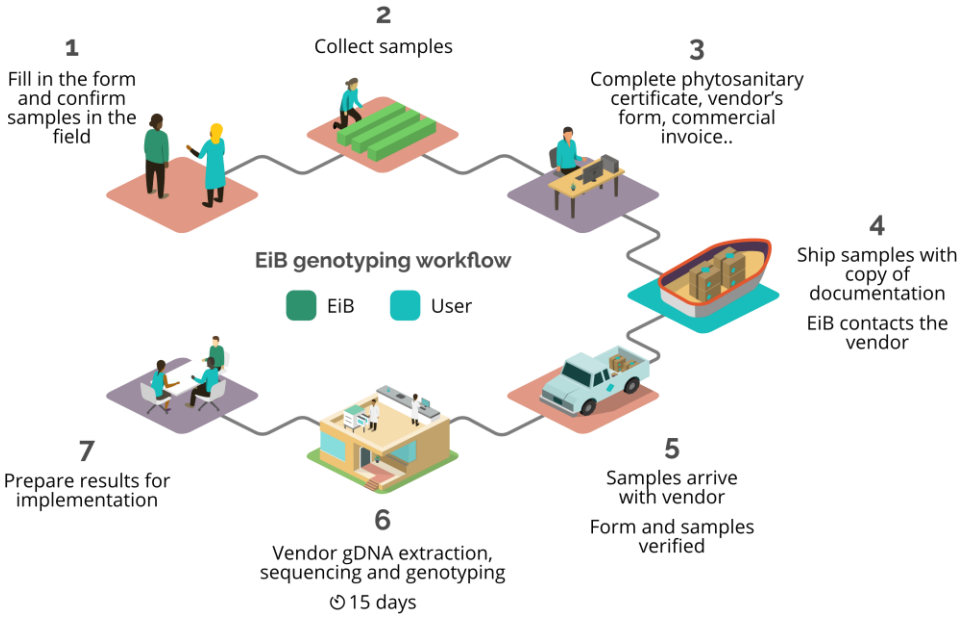
Enabling access to shared genotyping services

Overview: enabling the access to shared genotyping services (low and mid density) by AFS network for routine QC, MAS and GS applications. High density solution(s) to be made available for genome assemblies and resequencing of elite core lines for all priority crops. Make data publicly available.



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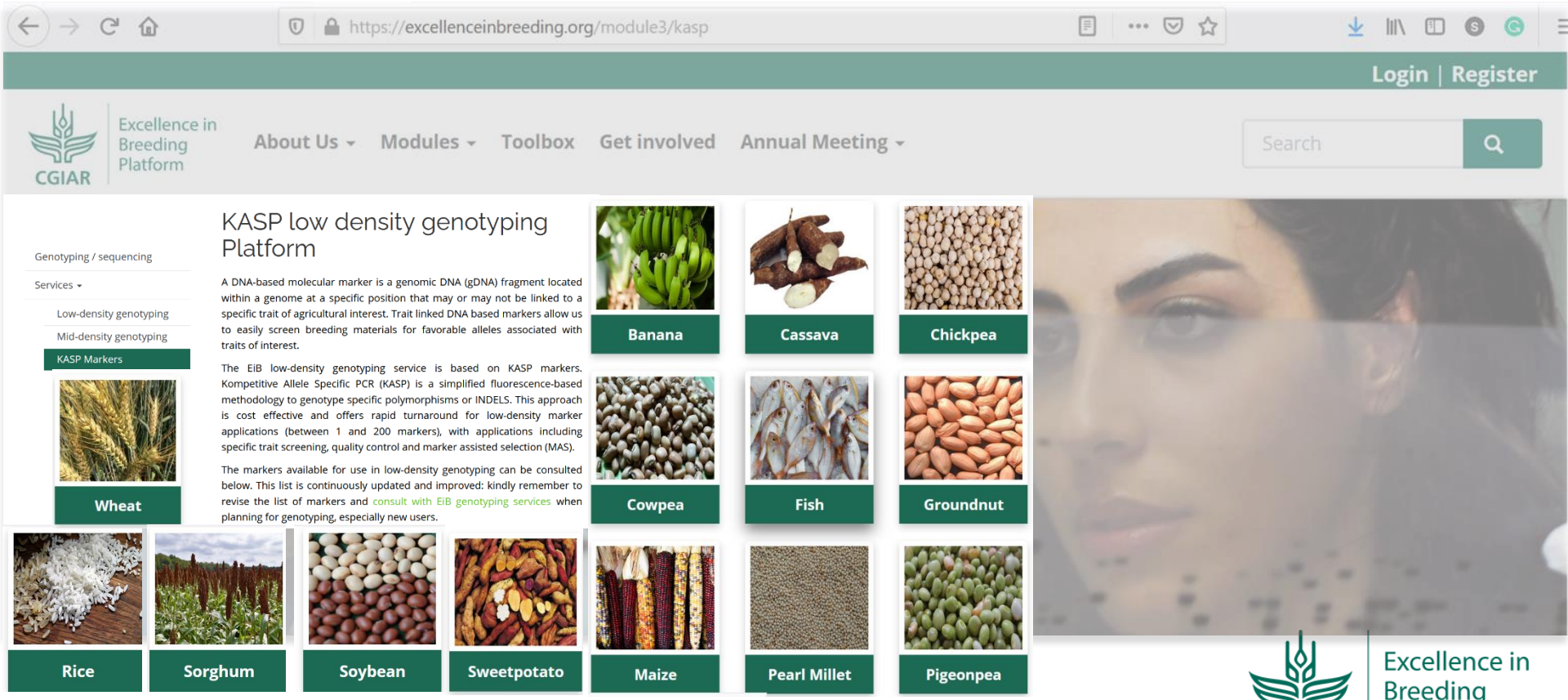
- **Tactics:** Coordination of different crop networks make available the marker resources already existing and that are continually build. Aggregate demand and engage with different partners to sensitize the advantage of shared services. Initiate new groups in the practice of genotyping within their BPs to eliminate discrepancies in knowledge and utilization.



Refer to: https://excellenceinbreeding.org/module3/kasp

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MDSG Status

Marker availability

Crop	Panel name	Vendor	Marker density	Status
Cowpea	Cowpea DArTag EiB (1.0)	DArT	2.6K	Implemented
Groundnut	Groundnut DArTag EiB (1.0)	DArT	2.5K	Implemented
Potato	Potato DArTag EiB (1.0)	DArT	2.1K	Implemented
Rice	1K RiCA (v4)	Agriplex / DArt	1K	Implemented
Wheat	Wheat DArTag EiB 2.4K (1.0)	DArT	2.4K	Implemented
Wheat	Wheat DArTag 3.9K EiB (2.0)	DArT	3.9K	Validation
Maize	Maize DArTag EiB (2.0)	DArT	3.5K	Validation
Sorghum	Sorghum DArTag EiB (1.0)	DArT	3.5K	Design
Pigeonpea	Pigeonpea DArTag EiB (1.0)	DArT	2K	Design
Finger Millet	TBA	DArT	2K	Planning
Cassava	TBA	DArT	3-4K	Planning

Plus:
common bean soon

Refer : https://excellenceinbreeding.org/toolbox/services/mid-density-genotyping-service

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Elite line reference assembly & WGRS

CROP	CROP	CROP
Wheat	Potato	Cassava
Sweet potato	Pearl Millet	Chickpea
Common bean	Finger Millet	Yam (D. Rotundata)
Cowpea	Sorghum	Rice
Groundnut	Pigeon Pea	Maize

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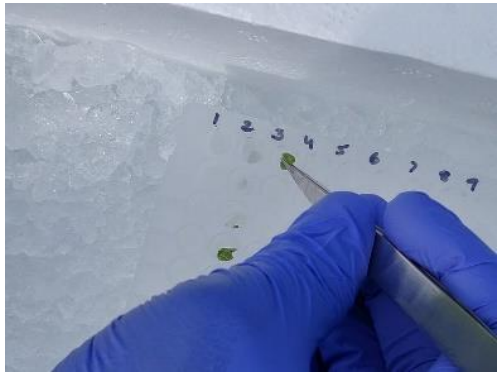
Challenges:

1. Different groups is at different stage which requires crop specific strategies
    a. Different groups have different needs
2. Bioinformatics support
    a. Different needs & wills
    b. Several projects going at the same time with the similar objectives
3. Understand the importance of business continuity
    a. Genotyping is not planned much ahead



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Improved procedural workflows for sampling logistics and tracking

- **Overview:** Training and support to improve the procedural workflows for sampling logistics and tracking
  a. India
  b. Africa: **2021**: TZ, ETh, MZ, ZIm, MO, EG, KN, UG
  c. North and South America
- **Tactics: 2020:** 1. Training modules and tutorials to support sampling logistics
  2022. 2. In person training workshops to support capacity building
  Since 2020 3. User friendly tools

Challenges: 1.Covid restricts in-person training and workshops 2. addition of new users require continuous training sessions 3. existing users needs constant backstopping

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Centralization of genotyping services

- **Overview:** Centralization trait introgression/ augmentation strategy and operation by crop and region and to enable fully costed support services for shared genotyping users.
- **Tactics:** ***In development stage*** a centralization strategy for trait introgression/augmentation by having an automated and online submission system
- **Challenges:** Genotyping activities, storage of data and associated operations are yet to be centralized

In progress

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EiB connectivity

M2 — Rice — AF & NARs


M5 — Re-sequencing elite lines & WGS

NARs — Rice — wheat — NARs Africa

Communications



Brainstorming time