Variety Release and Registration of Public Bred Varieties and Land Races

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CGIAR is a global research partnership for a food-secure future
10,000 scientists and staff in 96 countries
Trait prioritization/Trait combinations

**Foliar Diseases**
- MSV, GLS, ET, PLS, PS

**Ear Rots/Aflatoxins**
- *Fusarium, Diplodia*

**High Yield Potential**
- Local and Introductions
- Density response

**Striga**
- Specific in some areas

**MLN**
- New serious challenge

**Pests**
- Field Pests
- Storage Pests

**Producibility**
- High yielding females
Trait prioritization/Trait combination

**Drought**
- Flowering and Grain Filling
- Drought Stress

**Low N**
- Continues to be a problem

**Heat**
- Heat Stress Alone
- Heat Stress Combined with Drought Stress

**Low P/Acid Soils**
- Phosphors Hunger
- Acid soils – underestimated problem

**Pro A Maize**
- Potential reduction in Industrial Bio-fortification

**QPM**
- Renewed Demand for QPM

**High Zn Maize**
- Combined with QPM and/or Pro-A
Fall Armyworm (*Spodoptera frugiperda*)
A new and major threat in Africa
Breeding for drought tolerance at CIMMYT is four decades old...
How did CIMMYT-derived maize hybrids perform during the El Niño-induced drought and heat in southern Africa (2015-16)?

CIMMYT-derived varieties yielded almost double than the most popular commercial variety (SC513)

1.5 Mg ha\(^{-1}\) compared to 2.9 Mg ha\(^{-1}\)

Source: Setimela et al. 2017
The Impact of Drought in the Tropics

- **Drought** is an unfortunate recurring theme in **sub-Saharan Africa**.
- **El Niño** in **Southern Africa**, 2015-2016 affected food security of an estimated 15.9 million people.
Pathways for release of CGIAR-derived Improved Maize Varieties

Breeding new maize varieties → Regional Trials, ROFT → Variety release, registration (DUS, VCU) → Basic & Certified Seed Production → Varietal Promotion and dissemination

- CGIAR, NARS
- CGIAR, NARS, Seed companies
- NARS, Seed companies
- NARS (for basic seed only), Seed companies
- Seed companies
Regional trial distribution network
Product development and deployment flow

Breeding Funnel

Stage 1
- Regional On-station Trials
  - Regional Product Advancement Meetings / Stage-Gate

Stage 2
- Regional On-Farm Trials
  - Regional Product Advancement Meetings / Stage-Gate

Stage 3
- Client Preferences; Comparative Advantage; Product Targets
  - Product Announcement to Partners
    - Allocation and Licensing of Products to Partners
      - National Performance Trials
        - Varietal Release / Registration by Partners
          - Seed Scale-up
            - Adoption by Farmers
              - Impact Assessment

- Feedback from Partners
  - Farmers’ Variety & Trait Preferences
    - Early generation seed supply

Who releases varieties developed by CIMMYT/CGIAR?

- CIMMYT/CGIAR centres do not release any “variety”. Partners (public/private) release CIMMYT/CGIAR products (hybrids or improved OPVs) as “Varieties”, following national rules and regulations.

- CIMMYT/CGIAR responsibility is to develop improved germplasm (inbred lines, hybrids, improved OPVs) and deploy these through partners (public/private).

- CIMMYT has an open and transparent policy on how CIMMYT-derived products are allocated to the partners, based on defined criteria and process of allocation.
Process for Allocation of CIMMYT’s Elite Maize Hybrids

CIMMYT-derived pre-commercial hybrids are allocated and licensed on a non-exclusive or semi-exclusive basis to interested partners in SSA, Asia and Latin America, based on submission of a Product Allocation Request Form.

– Non-exclusive
  • When NARS release CIMMYT developed hybrid in their respective country and license to more than one company to market a particular hybrid/OPV, e.g. Uganda and Ethiopia NARS

– Semi-exclusive
  • Allocated for one particular partner with credential for a particular country or group of countries
  • Same hybrid can be allocated to different partners in different geographical areas e.g. EA and WA; Latin America and Africa
Ownership of Parental Inbred Lines developed by CIMMYT/CGIAR

• While CIMMYT-derived hybrid combinations are allocated and licensed to partners (on a semi-exclusive / non-exclusive basis), the ownership of parental inbred lines remains with CIMMYT, and the parental lines are international public goods:
  • Can be used in different hybrid combinations
  • Can be used for further research
Access to CIMMYT Maize Inbred lines

- CIMMYT's and other public elite maize inbred lines can be used as trait donors:
  - In different hybrid combinations
  - Used for further research
  - Free to access on request for breeding purposes from breeders or gene bank
• Seed shipments are accompanied by the required phytosanitary documentation and a Standard Material Transfer Agreement (SMTA).
Maize releases 2016

Varieties commercialized by CIMMYT partners with traits preferred by smallholder farmers
Variety Releases

**2007-2014**

>200 drought-tolerant and nutrient use-efficient maize varieties were released by >100 companies in 14 countries.

**First MLN tolerant varieties**
commercialized in east Africa in 2016.

**100,000** families growing and eating pro-vitamin A enriched maize.

**First heat tolerant varieties**
commercialized in southern Africa in 2014
Many of the hybrids on the market in Zimbabwe are CIMMYT germplasm

- CIMMYT is the largest contributor of improved maize germplasm annually as international public goods.
- Over 54% of publicly bred maize varieties released in the developing world are reported to have CIMMYT's elite maize germplasm
Groundnut varieties released since 2012

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<th>Breeding code</th>
<th>Release name</th>
<th>Country</th>
<th>Year of release</th>
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## Pigeonpea releases

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CIMMYT’s maize Germplasm Bank contains over 28,000 unique collections of maize seed and related species from 88 countries.

The collections are a source of diversity to breed for traits such as heat and drought tolerance, resistance to diseases and pests, and to improve grain yield and grain quality.”
What is a Variety Identification Number (VIN)?

- VIN is a number assigned by the breeding institution which must be used to identify the variety to regulators, regional bodies, seed producers and marketers, farmers, etc.
- VIN will **not** replace a brand name. Companies will still be able to assign brand names according to the terms of their licenses with breeding institutions.
- VIN is intended to be used for registration in regional release catalogues.
- CG centres, national programs, others, can assign VIN to products that meet DUS requirements.
- The US uses a version of a VIN system, driven largely by breeding institution licensing requirements; Seed companies using licensed material must list the VIN on packaging/label, in a readable format.

Source: Aline O’Connor (Agri-Experience)

The scoping report is available by writing to: info@agri-experience.com
CIMMYT shall be soon implementing the VIN...

- CIMMYT will give VIN for each of the new products allocated to public/private sector partners.
- VIN will be part of the Product Licensing Agreement, which the partner has to sign.
- Example of CIMMYT VIN: **CIM17MKQ##**
  (CIMMYT, 2017, Maize, Kenya Breeding Program, QPM or any other special trait, serial number)
Variety Naming in COMESA Catalogue...

- CKH16XXX released
  - Company X in Tanzania
  - Company Y in Ethiopia

- Kenya
- Tanzania
- Uganda
- Ethiopia

- Brand name A
- SADC/COMESA Catalogue
  - Brand name B
Variety Naming in SADC/COMESA Catalogue

- Not all CIMMYT products allocated or licensed to partners may become “commercial varieties”; some may not pass through further evaluation/NPT.
- Partners give commercial (brand) names for released varieties.
- Commercial name of the variety is used in COMESA catalogue.
- Under no circumstances CIMMYT reveals the pedigree information on the hybrids allocated/licensed to seed companies, as this is absolutely confidential.
Payments for CG derived varieties registered in the SADC/COMESA catalogue

Who pays for CG derived varieties registered in the SADC/COMESA catalogue?

- Seed company/partner who registered the variety will have to pay the fee required to register/maintain the variety in SADC/COMESA catalogue.
Conclusions

CIMMYT-derived maize products/hybrids allocated to different partners in different countries/geographies (on a semi-exclusive basis) can be potentially registered on SADC/COMESA catalogue, by using the Variety Identification Number (VIN), in addition to the commercial/brand name.
Thank you for your interest!