



Issues and challenges of plant breeding in Southern Africa

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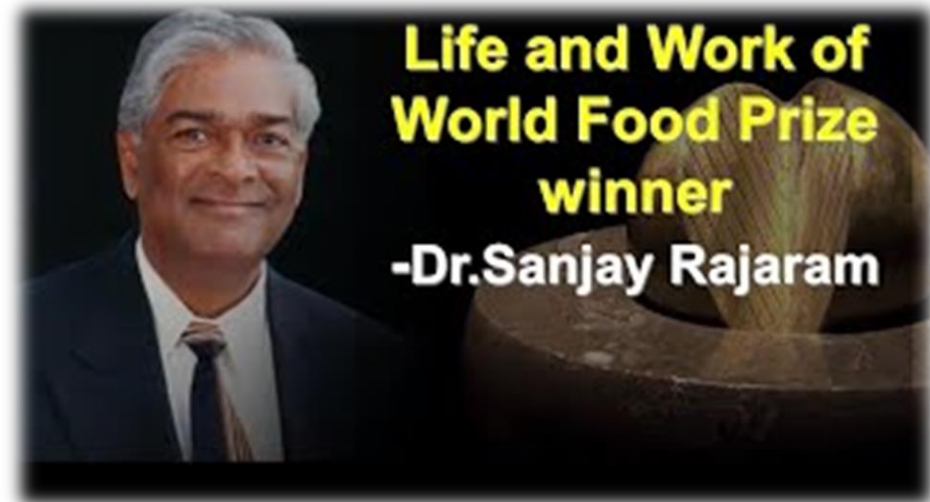
R & D Lead Cereals
Sub-Saharan Africa



Sensako/Syngenta Research & Development



I am **Francois Koekemoer** and I truly believe everybody wants to make a contribution and **leave a legacy and feel appreciated**



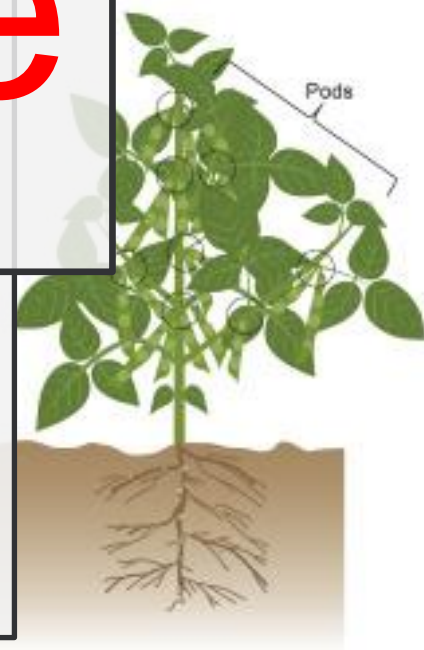


A) Design

B) **Architecture**

C) Nothing

D) Blueprint



Requirements to built a building



Critical Pillars for successful Seed company

- 1) Experienced breeders, a long process = continuity.
- 2) Diverse Germplasm = new cultivars
- 3) Infrastructure and breeding tools
- 4) Networks

Plant Breeding as a career

- A plant breeder is an architect of plants
- Phenotype or Ideotype
- Plants or cultivars
- Scarce commodity locally and internationally
- Long term commitment
- Mentorship

Characteristics of a typical Plant Breeder

- Good eye for a phenotype
- Good leadership skills
- Must see the bigger picture
- Emotional Intelligence important
- Passion for technology
- Precise and detailed orientated
- Perseverance

Germplasm

- Cross-fertilized crops, maize and sunflower
 - Hybrids
 - Cannot retain seed
 - More profitable
 - Highly competitive
- Self-fertilized crops, wheat, barley, oats and lupines
 - Varieties
 - Can retain seed – Farm Saved Seed
 - Less profitable
 - Less competitive

INFRASTRUCTURE

Breeding programs are operationally serviced from two sites. Bethlehem and Napier

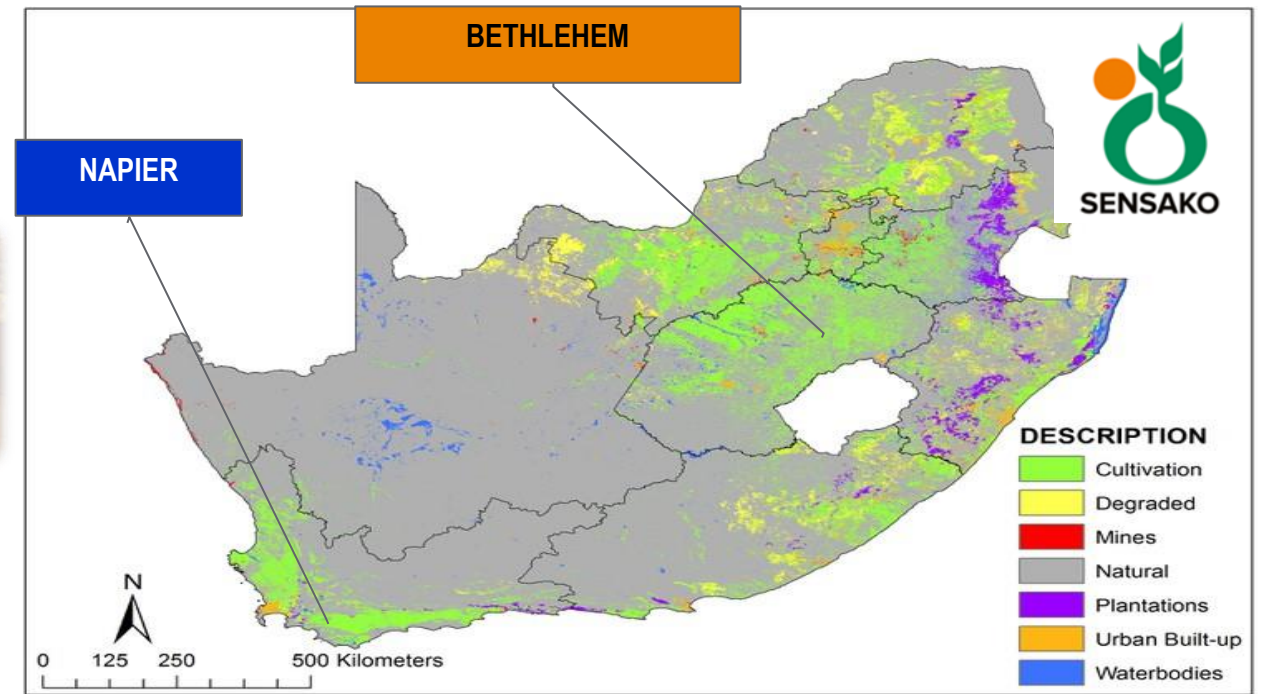
Bethlehem (450ha)

- Research Farm
- Irrigation wheat breeding
- Dry Land (facultative) wheat breeding
- Analytics laboratory
- Germplasm development
- Technical services
- Summer crop breeding



Napier (50ha)

- Research Farm
- Cape spring wheat breeding
- Doubled haploid laboratory
- Oats
- Barley





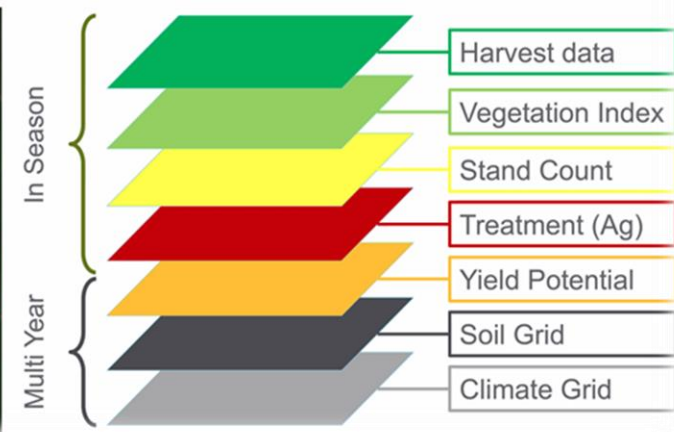


Agronomy Spatial Data vision

See fields through Pixel matrix



Align all "Spatial Data" behind



Tools and technology



- **Agrisure Artesian** corn hybrids = optimal water usage
- **Agrisure Viptera®** corn hybrids = above-ground insect control
- Extensive international **germplasm libraries** on various crops
- World class **Biotechnology** platforms
- World class **Trait Integration** platforms
- **Double haploid** facilities for wheat and maize

Challenges for a typical Seed Company

- Long-term and expensive investment
- Product portfolio
- GMO vs Non-GMO
- Route to market
- Marketing teams
- Local and Multi-National companies

Challenges for a typical Seed Company (2)

- Scale and return of investment
- Protection of IP of germplasm
- Doing business with Government vs commercial farmers
- Commercial vs sub-substance farmers
- Input costs for producing crops

Challenges for a typical Seed Company (3)

- Genotype by Environment interaction
- Bundling of products opportunities

Research & Development

Experience

- Most experienced wheat breeding team in Southern Africa
- More than 200 years of experience
- 2 wheat breeders nominated under the 20 most influential breeders in Africa (D. Lesch and F. Koekemoer)
- Highly skilled mostly MSc and PhD qualifications

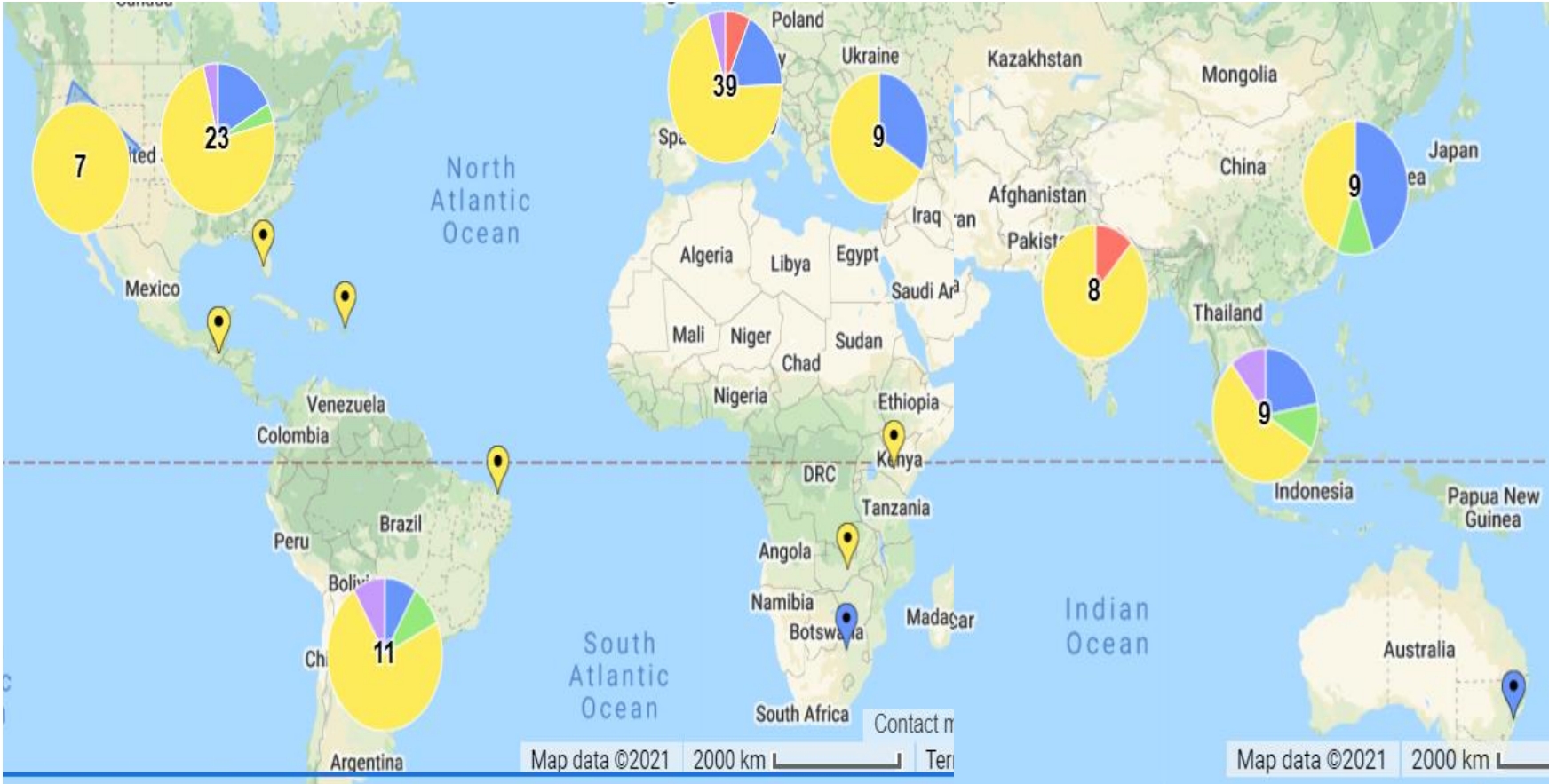
Networks & Partnerships

- More than 30 international companies, more than 20 countries

Cultivars

- 75% wheat market share in South Africa
- Wheat market share in Zambia (more than 35%) and Namibia (more than 90%)

Summary of a Multi-National R&D capacity



5,000

SCIENTISTS: CHEMISTS – SYNTHETIC, COMPUTATIONAL AND ANALYTICAL – AND BIOCHEMISTS, BIOLOGISTS, INDICATION AND CROP SPECIALISTS

\$1.3 bn

OUR ANNUAL INVESTMENT IN RESEARCH AND DEVELOPMENT

116

R&D SITES GLOBALLY

400+

COLLABORATIONS WITH UNIVERSITIES, RESEARCH INSTITUTES AND COMMERCIAL ORGANIZATIONS

- 📍 Crop Protection Research
- 📍 Crop Protection Development
- 📍 Seeds Research
- 📍 Seeds Development
- 📍 Not Applicable

Sensako Challenge as a small private Seed Company

- Organically growth
- To take company to the next level
- Access to diverse summer crop germplasm
- Access to tools and biotechnology

To conclude

Alone we can do so little, together we can do so much." --Helen Keller

We truly believe that what a strong group of people can accomplish together is **much larger, far greater**, and will **significantly exceed** what an individual can achieve alone.