

SWEETPOTATO BREEDING PROGRESS IN THE SAHEL

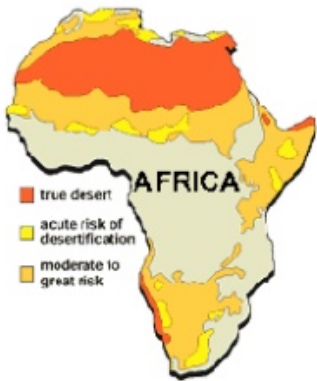
SOME Koussao



SPHI, September 24-26, 2018, Concord Hotel, Nairobi, Kenya

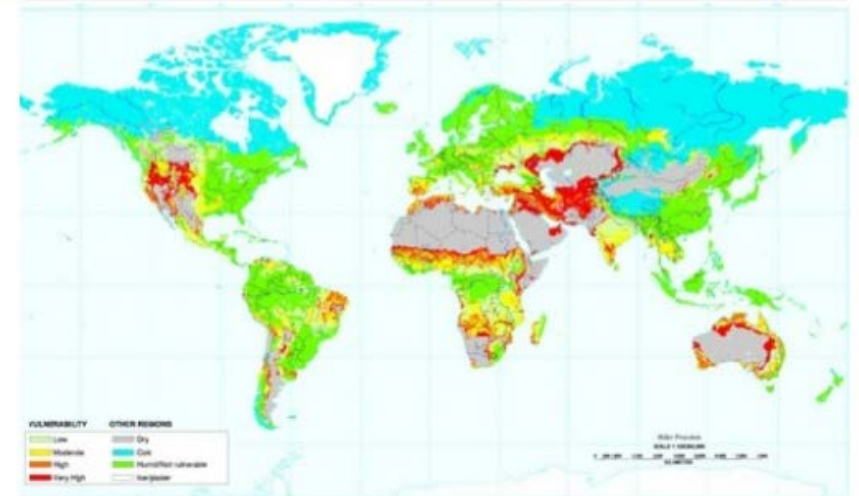
Characteristics of Savannah-Sahel zone

The area of greatest risk: The Sahel



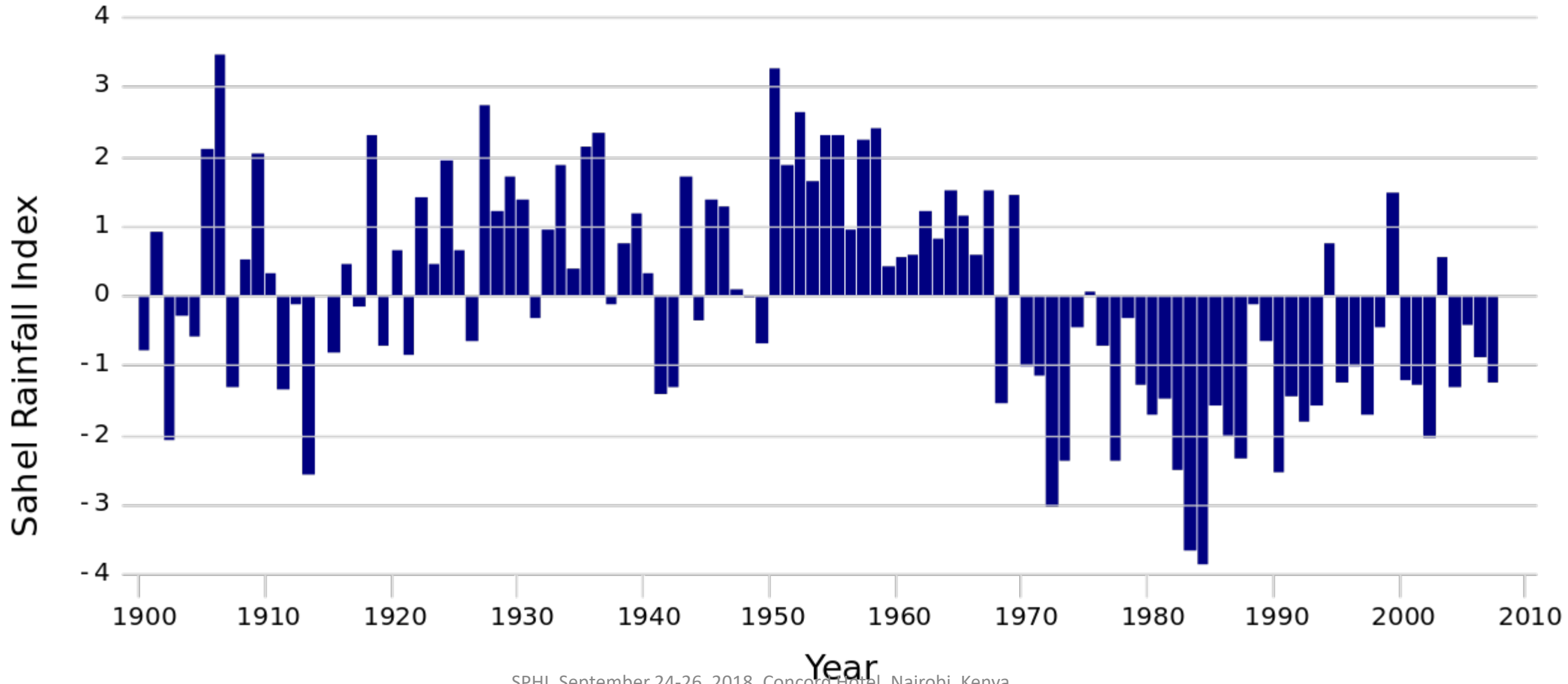
South of the Sahara desert / North of the savanna grasslands

Which areas are vulnerable?



Vulnerability: Red = very high Orange = high Yellow = moderate

Sahel rainfall time series



Some consequences

- Climatic changes and drought reduce biological productivity including for sweetpotato
- Increase migration
- Reduce human well-being including malnutrition and VAD

- Erratic rainfalls :
 - ✓ Quantity generally low (400 to 1200 mm)
 - ✓ Geographically not well distributed
 - ✓ Unimodal and short (3 to 5 months)
 - ✓ Violent
- Sweetpotato weevil, a serious problem
- SPVd affecting planting material quality and root production
- Variety dominated by white-fleshed sweetpotato in an area of malnutrition including VAD prevalence
- Yield of existing OFSP varieties still below some farmer's variety yield (Fadanga)
- Short shelf-life

BREEDING OBJECTIVES

- To develop high yielding and well adapted sweetpotato to the sudano-sahelian zones of Burkina Faso (90 to 105 days)
- To improve the beta-carotene and dry matter content in the local sweetpotato that could be used to address vitamin A deficiency
- To develop resistant varieties to pests (weevil) and diseases (SPVD)
- To address market-related traits: shape, shelf-life, taste, etc

MAIN BREEDING ACTIVITIES

- Screening germplasm (387 local and introduced clones) for :
 - Drought tolerance and sweetpotato weevil resistance
 - Resistance to SPVD using ACP-Elisa, molecular techniques and field observations
 - Shelf-life attributes (cortex thickness very important)
- Identify parental clones for the various traits of interest
- Develop OFSP varieties for the Sudano-Sahelian zones of West Africa

MAJOR ACHIEVEMENTS

- Five OFSP varieties released and registered in the national variety catalogue in 2014



Nagnounondo-1, 22-25 T/ha, DM 28%



Bagre, 22 T/ha, DM 27%



Joel, 17 T/ha, DM 26%, sweet



Nagnounondo-1, 15-20 T/ha, DM 25%



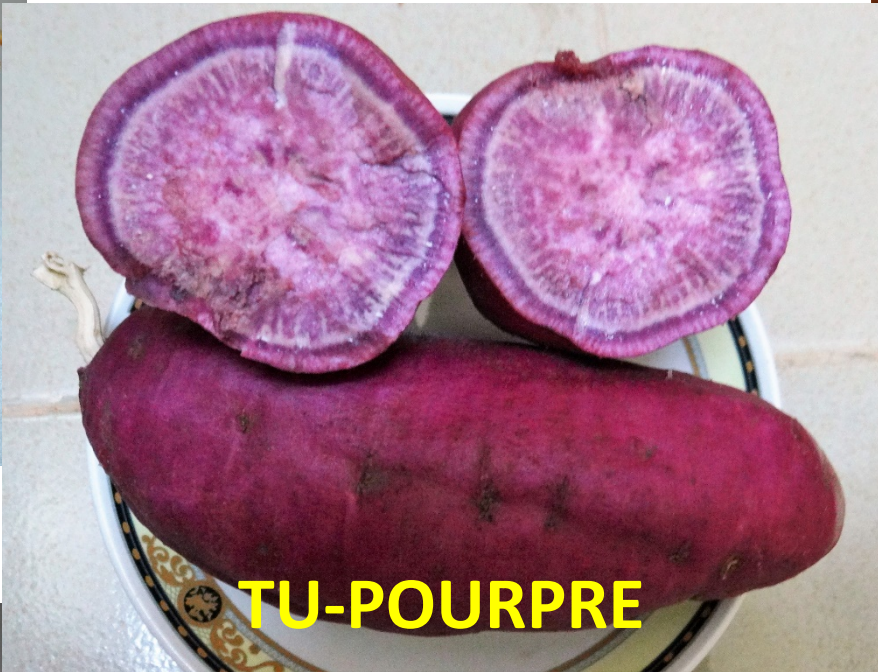
Tiebele-2: 20-20 T/ha, DM 25%

**All
susceptible
to SPVD**

Five varieties in the pipeline for release

- Four OFSP varieties
- 1 Purple-fleshed variety
- Have moderate to good resistance to SPVD

N°	Pedigree	Yield (t/ha)	Colour	DM Cont. (%)	B-carotene (mg/100g of fresh root)	Reaction to SPVD
1	BF59X CIP-4	20-25	Flesh: Deep Orange Skin: Yellow	29	8.32	Good resistance to potato virus disease (SPVD)
2	BF59X CIP-1	15-20	Flesh: Orange Skin: Pink	27	4.00	Moderate resistance to SPVD
3	BF13XCIP- 3	15-20	Flesh: Light Orange Skin: Light Pink	26	1.76	Moderate resistance to SPVD
4	TU-Or	15-20	Flesh: Light Orange Skin: Light Pink Good shape	26	7.12	Susceptible
5	TU- Pourpre	25-30	Flesh: Purple Skin: Purple	31	Rich in antioxidant	Moderate resistance



Parental clones identified

- Drought tolerant and Weevil resistant: CIP199062-1, BF16, Ligri and Djakani with yield $\geq 8,5$ T/ha after 55 days of rain of 566 mm
- Virus (SPFMV, SPCSV) resistant: Fadanga, BF13 and BF18 (poor flowering ability)
- Good shelf-life attribute (20 to 46% of losses due to mainly to rotting after 99 days of conservation in room temperature): BF77xResisto-5-1, TIB-16, Mother delight, BF77xResisto-5-20, BF92xResisto-2-11

Sharing material with other countries

- Many OFSP varieties shared with some countries

- ☐ Côte d'Ivoire (CNRA)

- ☐ Mali (IER and World Vegetables)

- ☐ Senegal

- ☐ Gambia

- ☐ Ghana

- ☐ Togo and Benin

- ☐ Chad

MAIN CHALLENGES

- Weak seed system to drive the breeding products
- Lack of tissue culture facility for cleaning up diseases and to maintain/produce clean material
- Water issue mainly during the dry season

PARTNERSHIP

- NGOs : HKI, CRS, iDE , GIZ involved in the varieties evaluation in different locations
- Programmes: FAO, USAID-Regis, Farm Radio International
- Ministry of Agriculture through extension
- Farmers organizations in 5 regions
- Seed companies and multipliers: NAFASO, DVMs

ACKNOWLEDGEMENTS

- AGRA
- CIP
- PIGEPE/IFAD
- WACCI (University of Ghana)



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