BREEDING FOR ENHANCED BETA-CAROTENE CONTENT OF SWEETPOTATO IN BURKINA FASO

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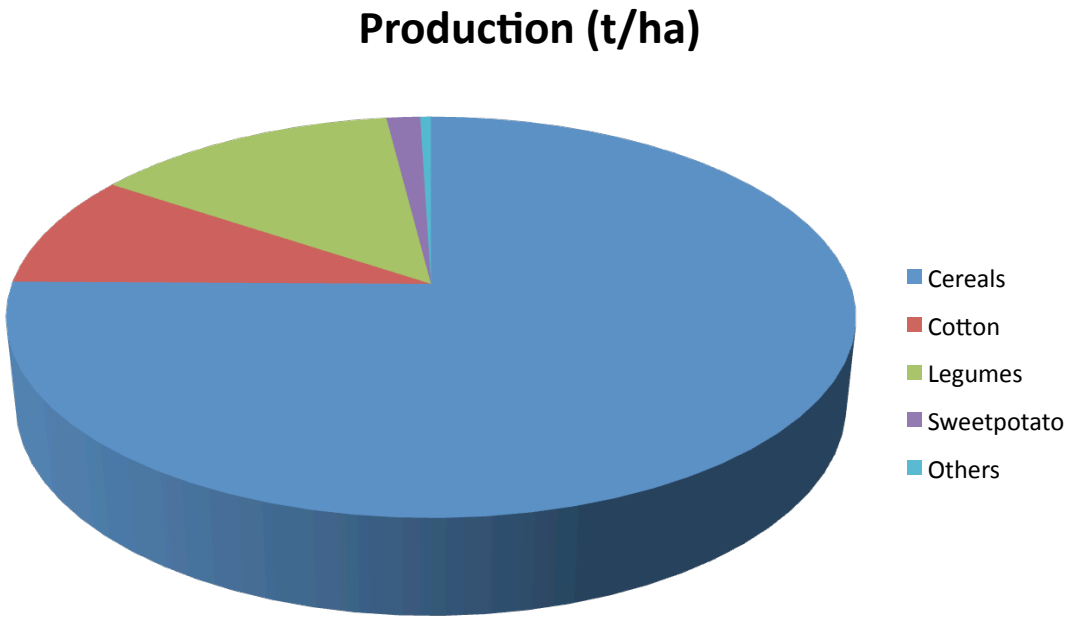
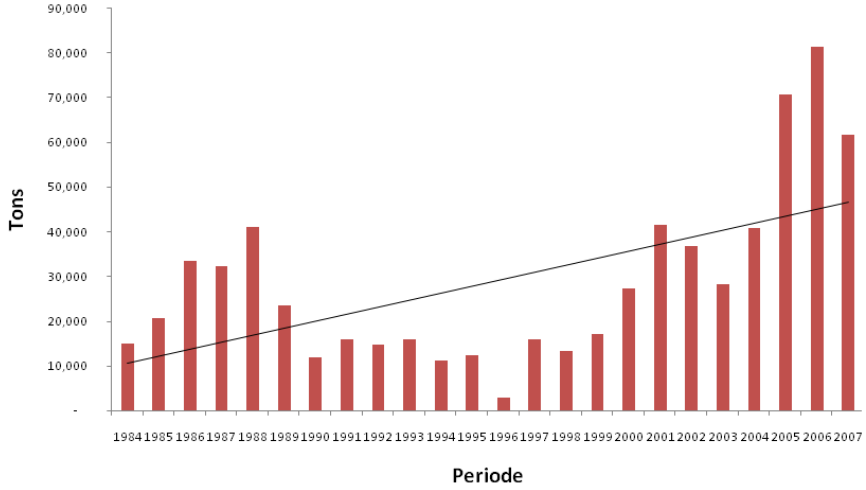
INTRODUCTION



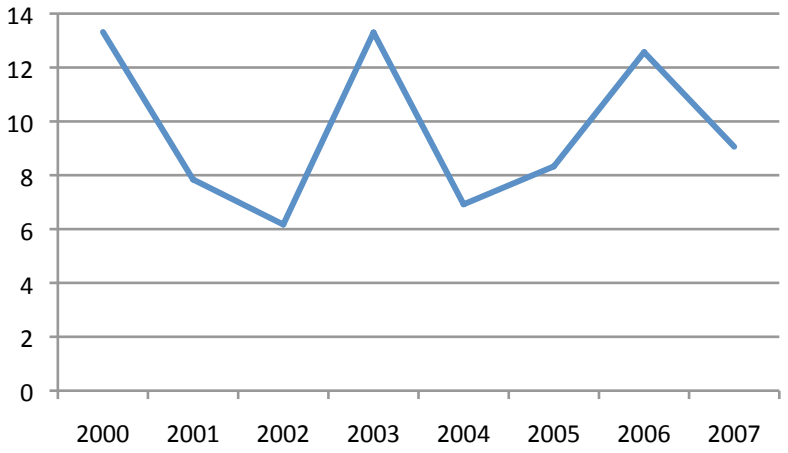
- Sweetpotato production is estimated at 81 000 t in 2008

Sweetpotato production areas (green)

Evolution of sweetpotato production from 1984 to 2007



Yield evolution in the last 10 years

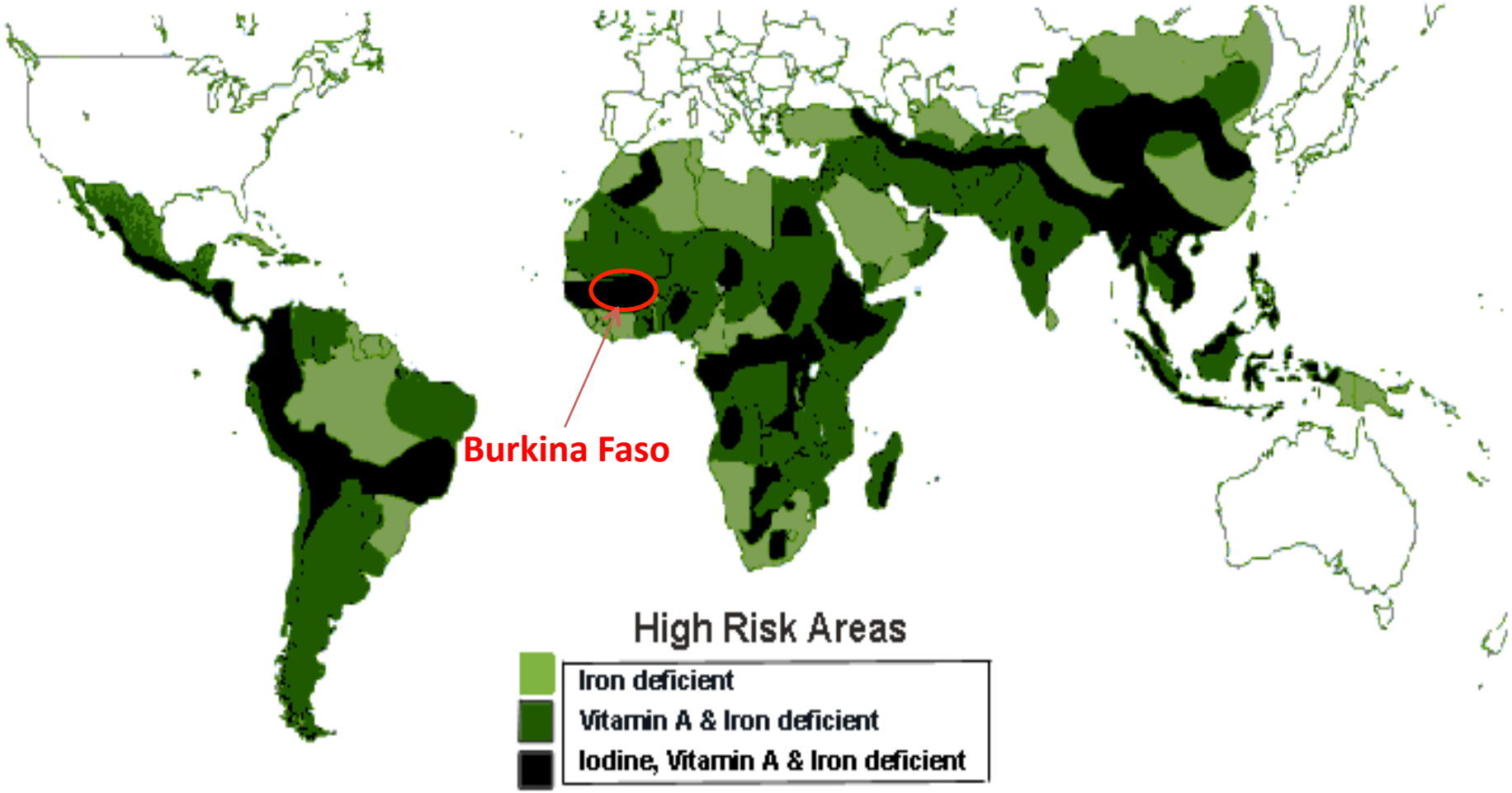


DGSPA, 2008

- Sweetpotato is becoming a supporting crop that significantly helps in food security in the area of production

- It is a staple in rural areas and cash crop especially for women in urban centers.

Nutritional status in the world

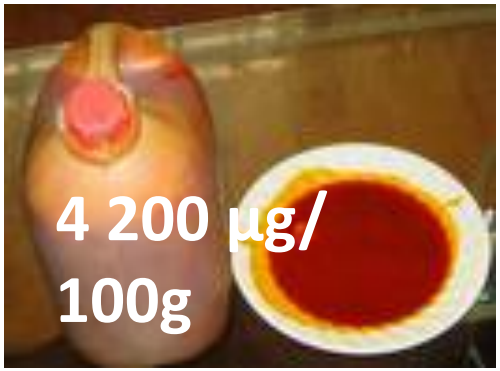


USAID, 2003

Vitamin A deficiency in Burkina Faso

- Based on a small community- study in the rural part of Burkina Faso, 84.5% of children under-five and 61.8% of their mothers were found to be VAD (Zeba et al., 2006).

- As an intervention strategies to address VAD, large scale supplementation with high-dosage Vitamin A capsule has been preferred



Red palm oil

60 - 580µg/100g

Milk

2000 µg/100g

Egg

Mango

Liver

Parkia biglobosa

Green vegetables

Orange-Flesh Sweetpotato

- Varieties grown in Burkina Faso are dominated by the white-flesh sweetpotatoes.

  ☹ They are poor in beta-carotene and micronutrients content

  ☹ have low yield (9 t/ha)

  ☺ **But are rich in dry matter and well-adapted to the located environment**

- ***Improved OFSP have been introduced***:

  ☹ They are negatively affected by biotic and abiotic factors (virus, insect, drought etc.)

Breeding objectives

GENERAL OBJECTIVE

- Development of high beta-carotene content and high yielding sweetpotato in Burkina Faso:

SPECIFIC OBJECTIVES

- Identify the main production constraints and understand farmer's and consumer's preferences through Participatory Rural Appraisal (PRA) .

- Collect and characterize the local germplasm and select superior parents to be used in a basic breeding program.

- Develop new varieties rich in beta-carotene and adapted to the local environment using in crosses the introduced beta-carotene sources and the local material.

- Analyze the gene actions involved in beta-carotene and yield inheritance in crosses of local cultivars with selected high beta-carotene varieties.

- Select high yield with high dry matter and high beta-carotene clones adapted to the local environment.

Materials and methods

- Participatory Rural appraisal (PRA) to identify and understand famer's and consumer's preferences in the 2 main production areas.

- Germplasm collection and characterization (morphological and molecular)

Population development

- crossing block with 30 parents (15 locals choose for their performance and the flowering habit and 15 OFSP)

- Crossing according to NCD II (5 x 5 targeted)

State of the research

- PRA data available and will be analyzed using SPSS package
- 144 accessions from 90% of production area collected.
- Morphological characterization done but has to be repeated to confirm the traits.
- 1703 crosses have been made and 309 controlled seeds obtained.

  Seeds have put in germination under screen house

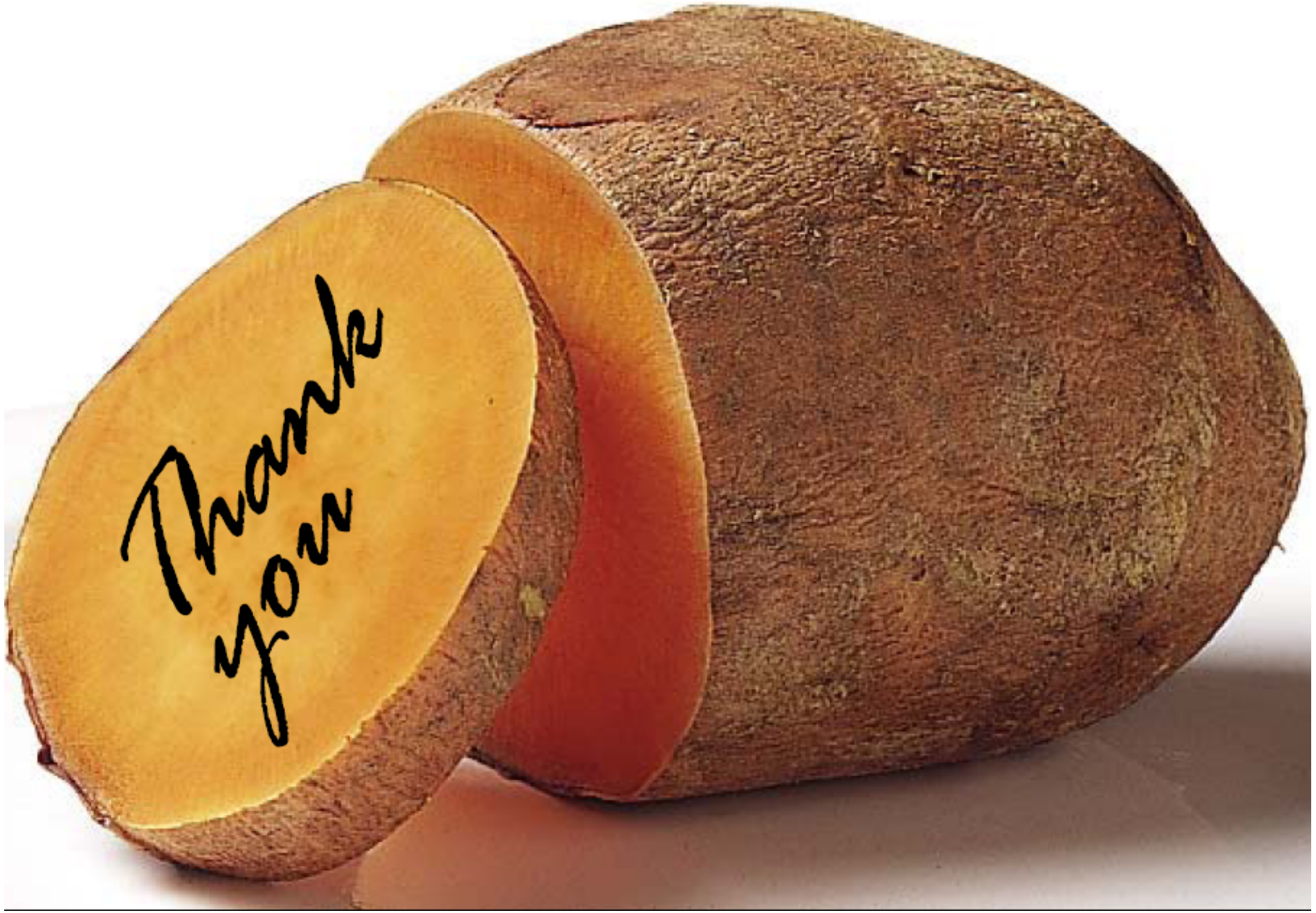
  Seedlings are in multiplication stage

To be done

- Progenies will be evaluated in three environments and two replications
- Analyses of beta-carotene with HPLC
- Genetic analysis will be done according to NCD II
- Molecular characterization of the collected material with SSR markers
- Superior parents will continue to be identify and crosses to increase seed production

Facing challenges

- Identified parents are not flowering (17 over 30). Darkness treatment for 16 h is found to be unsuccessful.
- Challenge on getting sufficient progeny vine for evaluation.
- Future maintaining disease free planting material


Thank you