DEVELOPMENT OF SWEETPOTATO VARIETIES IN BURKINA FASO

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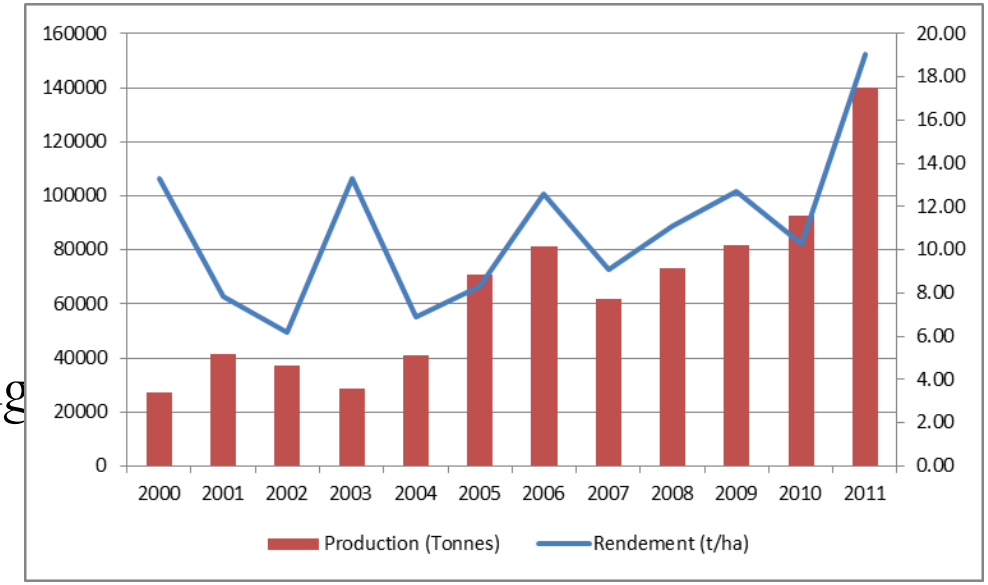
- Sweetpotato production and utilization is getting increase in Burkina

- These last 10 years the production has evolved from 27000 tons in 2000 to 141000 tons in 2011 representing an increase of more than 400%

- Yields are unstable and varied between 6 and 18 t/ha depending on the year

Evolution of sweetpotato production and yield from 2000 to 2011



- Most sweetpotato materials used are farmers varieties
- There are dominated by those with white fleshed
- Are late maturing (4 to 6 months)
- Small storage root size
- However, resistant to most of virus strains and have good storage ability

Farmer's variety in the Eastern region

Major production constraints ranked according to their importance (2010)

Production constraints	Frequency	Percentage	Rank
Weevil damages	29	60,4	1
Susceptibility to poor soil	26	54,2	2
Disease occurrences	23	47,9	3
Lack of reliable market	17	35,4	4
Planting materials	12	25	5
Susceptibility to drought	12	25	5
Storage ability	12	25	5
Unadapted Variety	9	18,8	8
Lack of Processing	1	2,1	9
Bad cooking ability	1	2,1	9

Desired traits identified and rankend by farmers

Traits	Frequences	Percentage	Rank
High yield	35	72,9	1
Big storage root	33	68,8	2
Good market appeal	31	64,6	3
Resistant to weevil	23	47,9	4
Early maturing	22	45,8	5
Cooking quality	19	39,6	6
Numerous storage root	15	31,3	7
Skin color	15	31,3	8
Tolerance to drought	11	22,9	9
Non sweet storage root	13	27,1	10
Orange flesh storage root	7	14,6	11
Good taste	7	14,6	11
Hard storage root (high DM)	2	4,2	13
Processing	2	4,2	13
Good presentation (not too big with smooth skin)	2	4,2	13
Storage ability	2	4,2	13

Breeding objectives

To develop high yielding sweetpotato with high beta-carotene content as a contribution to food security and with the potential to alleviate malnutrition in Burkina Faso.

Specifically, to:

- develop high yielding varieties with wide to specific adaptation to the local agro-ecological contexts
- select varieties with high nutritional values (OFSP, with regard to the DM content)
- Ensure that developed varieties met farmers and consumers expectations

STRATEGIES ADOPTED

- Variety development through controlled crossed of divergent parents
- Seed germination and vine multiplication
- On station evaluations in 2 years and 3 different agro-ecological zones
- On farm evaluation in collaborative with CRS, HKI and FDC in numerous other zones

Major results

- Parental combinations to obtain better yield, high beta-carotene, good dry matter content known
  - BF59 and BF77 crossed well with Tainung to give good yield
  - BF82 cross well with CIP-199062-1 and TIB-440060 to give F1 with orange flesh

- Promising varieties identified for further evaluation with farmers identified

The Best twelve F_1 genotypes that had significantly higher yield than the best check

Genotypes	Root yield (t/ha)	Upgr BiomYield (t/ha)	B-carotene (mg/100g of fresh weight)	Virus2	DM%	Irwgt
BF82xTainung-8	20.33	16.33	0.48	2.33	23.2	179.15
BF82xTainung-20	19.67	17.23	0.78	3.33	21.82	242.68
BF82xCIP-17	18.56	14.78	3.92	1.17	28.45	118.18
BF80xTainung-2	18.11	11.89	2	2.33	19.27	203.89
BF82xTainung-24	17.83	25.89	8.29	1	21.79	136.43
BF92xCIP-6	17.11	17.83	6.44	1.83	26.61	175.9
BF59xCIP-4	16.78	21.56	8.32	1.83	24.81	116.15
BF24xTIB-3	16.17	17.28	7.66	2.67	27.33	116.72
BF59xTIB-6	15.22	11.39	4.36	2.33	21.48	275.94
BF82xCIP-18	15.22	30.11	2.32	1.5	22.81	186.07
BF59xCIP-1	13.56	18.33	8.32	1.17	27.09	110.82
BF82xTIB-4	13.5	10.33	1.03	2.17	30.06	145.36

BF82xTainung-8 (20.33 t/ha)

BF82xTainung-24 (17.83 t/ha)

BF59xTainung-5 (54.66 t/ha) – White flesh

The four F_1 genotypes that had significantly higher beta-carotene than the best check (BF14 with 8.35)

Genotypes	Root yield	BiomYield	B-carotene (mg/100 g fw)	Virus2	DM%	Irwgt
BF82xTIB-8	7.78	11	**10.85**	2.67	25.71	105.23
BF82xCIP-13	9.89	12	**9.96**	1.33	**30.86**	59.42
BF92xCIP-8	4.56	13.17	**9.57**	1.67	22.54	101.08
BF92xTIB-2	10.45	15.5	**9.41**	2	**31.61**	170.54

The higher bet-carotene genotypes have small yield

The eight F_1 genotypes that have dry matter content higher than 28%

Genotypes	Root yield	BiomYield	B-carotene	Virus2	DM%	Irwgt
BF82xTainung-11	7.78	13.11	0.87	1.67	**32.15**	109.6
BF92xTIB-2	10.45	15.5	9.41	2	**31.61**	170.54
BF82xCIP-13	9.89	12	9.96	1.33	**30.86**	59.42
BF82xTIB-4	13.5	10.33	1.03	2.17	**30.06**	145.36
BF82xTIB-9	12.5	15.06	0.63	2.17	**29.59**	105.81
BF82xCIP-11	11.94	11.67	4.13	1.83	**28.89**	104.26
BF59xTIB-4	8.33	16.67	7.01	2.17	**28.81**	104.31
BF82xCIP-17	18.56	14.78	3.92	1.17	**28.45**	118.18

Have low yield and ,
When yield acceptable, beta-carotene content low

The two F_1 genotypes that had higher yield than the best yielding check, good beta-carotene content and dry matter content over 28%

Genotypes	Root yield	BiomYield	B-carotene	Virus2	DM%	Irwgt
BF82xCIP-11	**11.94**	11.67	**4.13**	1.83	**28.89**	104.26
BF82xCIP-17	**18.56**	14.78	**3.92**	1.17	**28.45**	118.18

Existing OFSP evaluated with farmers

Well appreciated in the Eastern Region

Well appreciated in the Central and Southern Regions Region


THANK YOU