Inter-regional Cotton Research Network
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Production of quality seed-cotton in West and Central Africa

Michel CRETENET, Bruno BACHELIER
Cirad UPR 102, Montpellier

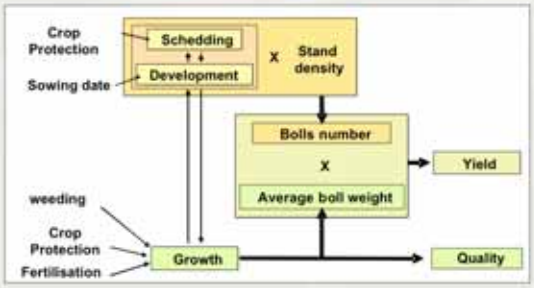
Production of quality seed-cotton:

Cotton crop management and fibres quality

- Fibres quality as the potential of a variety
- Quality at the boll stage
- Quality at the plant and the field levels
- Cultivation technics to produce quality cotton
- The key points for a quality cotton production

Production of quality seed-cotton: crop management and fibre quality

Fibre quality = expression of the potentiel of a cotton variety through quality build up process



Production of quality seed-cotton: crop management and fibre quality

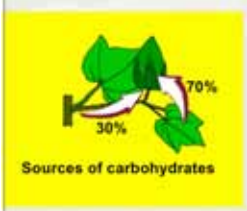
Quality at the boll level

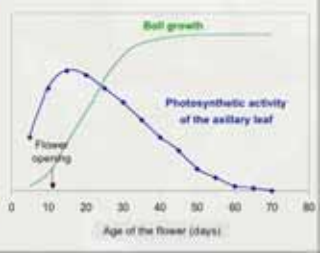
- **Each boll has its history**
  - Trophic conditions (minerals, water)
  - Environmental conditions (t°, radiation, pests…)
- **Each boll has a value**
  - PMC (average boll weight)
  - % fibre
  - Technological characteristics

Production of quality seed-cotton: crop management and fibre quality

Quality at the boll level

- The « boll / axillary leaf » system determines the average boll weight

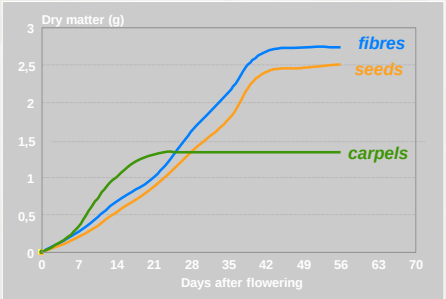




Production of quality seed-cotton: crop management and fibre quality

Quality at the boll level

The components of the average boll weight



Production of quality seed-cotton: crop management and fibre quality

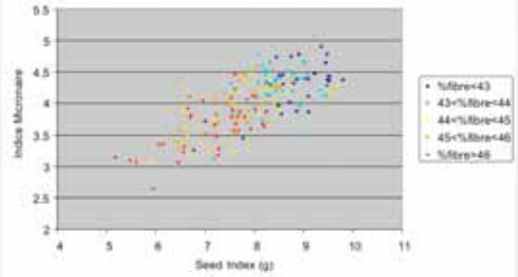
Boll components

Component	Constituent	Conversion efficiency g product / g glucose
Seeds	Proteins	0.39
	Lipids	0.32
Fibres	Cellulose	0.81
Carpels	Lignin	0.46

Production of quality seed-cotton: crop management and fibre quality

Quality at the boll level

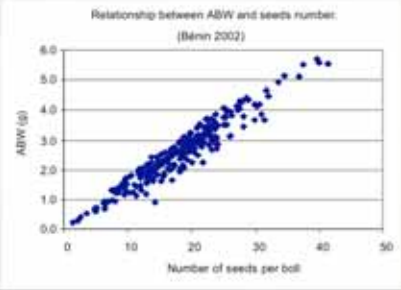
Seed index / micronaire relationship



Production of quality seed-cotton: crop management and fibre quality

Quality at the boll level

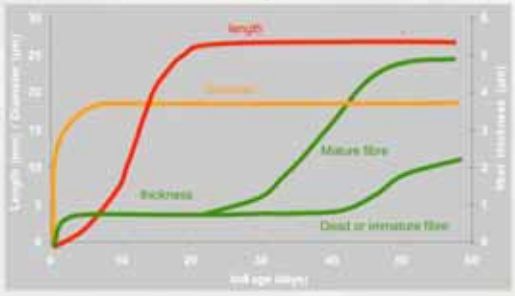
The components of the average boll weight



Production of quality seed-cotton: crop management and fibre quality

Quality at the boll level

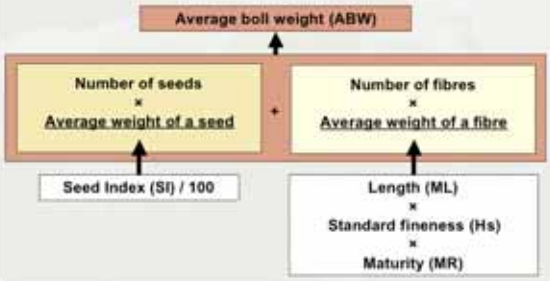
Elaboration of the technological characteristics of fibre



Production of quality seed-cotton: crop management and fibre quality

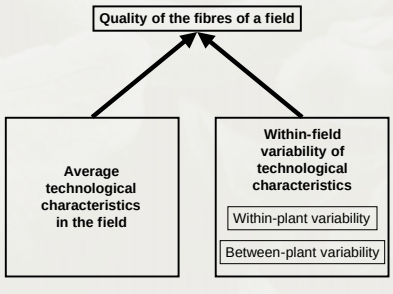
Quality at the boll level

Components of the Average Boll Weight



Production of quality seed-cotton: crop management and fibre quality

Quality at the plant and at the field levels



Production of quality seed-cotton: crop management and fibre quality

Quality at the plant and at the field levels

- **Precocity of the cultivation cycle**
  - Variety
  - Sum of average daily temperatures
  - Sowing date
  - Mineral deficiencies...

Production of quality seed-cotton: crop management and fibre quality

Quality at the plant and at the field levels

- Precocity of the cultivation cycle

- **Precocity and varietal factor:**
  - Date of 1st flower (Days After Emergence)
  - Date of 1st boll opening (DAE)
  - Rythm of flowering
  - Allocation of carbohydrates (bolls / other organs)
  - Physiological shedding
  - 1st harvest (50% boll opening) / total harvest

Production of quality seed-cotton: crop management and fibre quality

Quality at the plant and at the field levels

- Precocity of the cultivation cycle

- Precocity and varietal factor

- **Split harvests and quality**

Harvest (DAE)	ML (mm)	UHML (mm)	UI (%)	STR (g/tex)	ELO (%)	IM	MR	PM (%)	H (mtex)	Hs (mtex)	Rd (%)	+b
H1 (110)	28,1	30,4	85,8	32,5	6,4	3,8	0,83	75,4	162	191	74,7	11,1
H2 (117)	28,7	30,9	86,5	34,6	6,1	3,0	0,89	80,5	145	211	75,7	11,0
H3 (124)	25,9	30,3	85,6	34,3	5,6	2,6	0,81	51,8	135	225	76,3	10,6
H4 (131)	24,3	29,2	84,0	33,7	5,2	2,0	0,46	35,1	134	270	75,6	10,2

Production of quality seed-cotton: crop management and fibre quality

Cultivation technics for a production of quality cotton

- **Soil preparation**
  - If early: tillage / If late: scrapping and mulch
- **Varietal choice**
  - Compromise between potential (yield and quality) and precocity
  - Interaction variety / sowing date
- **Sowing**
  - Factor of homogeneity for the culture and the technological characteristics
- **Weeding**
  - Reduction of the competion with weeds → precocity
- **Fertilization (mineral and/or organic)**
  - Nitrogen ↘ gining out-turn
  - Potassium ↗ quality (length, strength, fineness)
- **Crop protection**
  - Diversion of sap flow and/or direct damages to fibre
- **Harvest**
  - Split (in time), with 2 bags made of cotton (PP prohibited)
  - Drying, screening, transport and domestic storage

Production of quality seed-cotton: conclusion

Some key-points

✓Choose a variety adapted to the growing conditions

✓Control seed multiplication

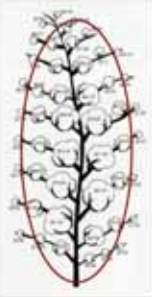
✓Protect bolls in position 1 et 2

✓Promote bolls growth (plant density, nutrition, upkeep...)

✓Promote a concentrated production (soil preparation, sowing, crop protection ...)

✓Make early and fractionated harvests

✓Screen and protect the harvested seed-cotton



Le Manuel qualité pour les filières cotonnières UEMOA

Thanks for your attention