



**AFRICAN COTTON PRODUCTION:
THE IMPACT OF
AGRONOMY PRACTICES ON YIELD**

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OUTLINES OF THE PRESENTATION

Introduction: the challenge of productivity

Overview of cotton yields in the world

Cotton yields in Africa

Best practices for cotton production

Conclusion



INTRODUCTION:
THE CHALLENGE OF PRODUCTIVITY

INTRODUCTION

Productivity is key for improving incomes in African cotton sectors.

Low productivity translates into lower incomes for both farmers and ginners.

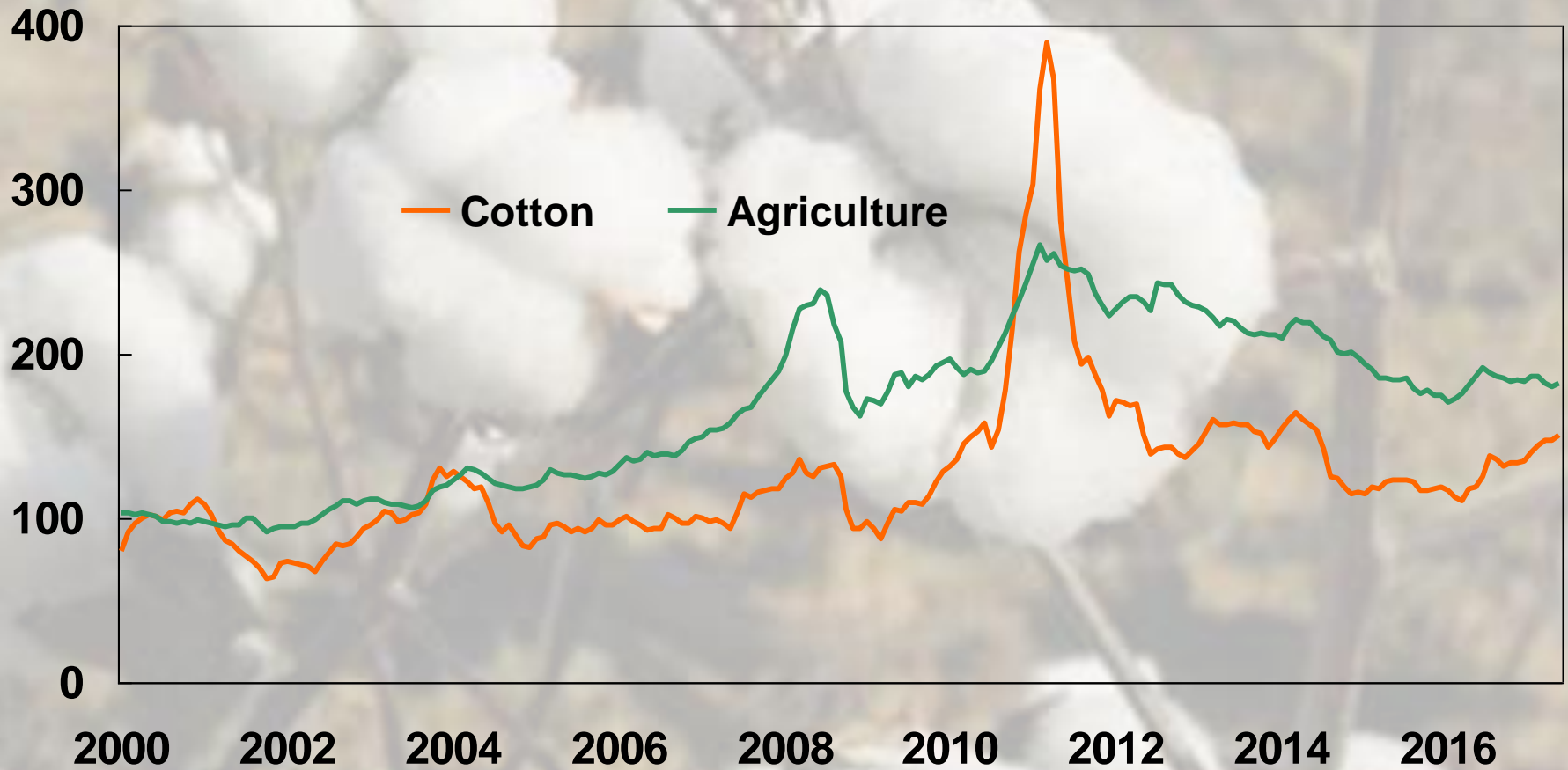
Price is just one component of cotton incomes.

All African cotton stakeholders price-takers but they can have an influence on yields.

Cotton prices under pressure at both ends of the value chain.

COMMODITY PRICES

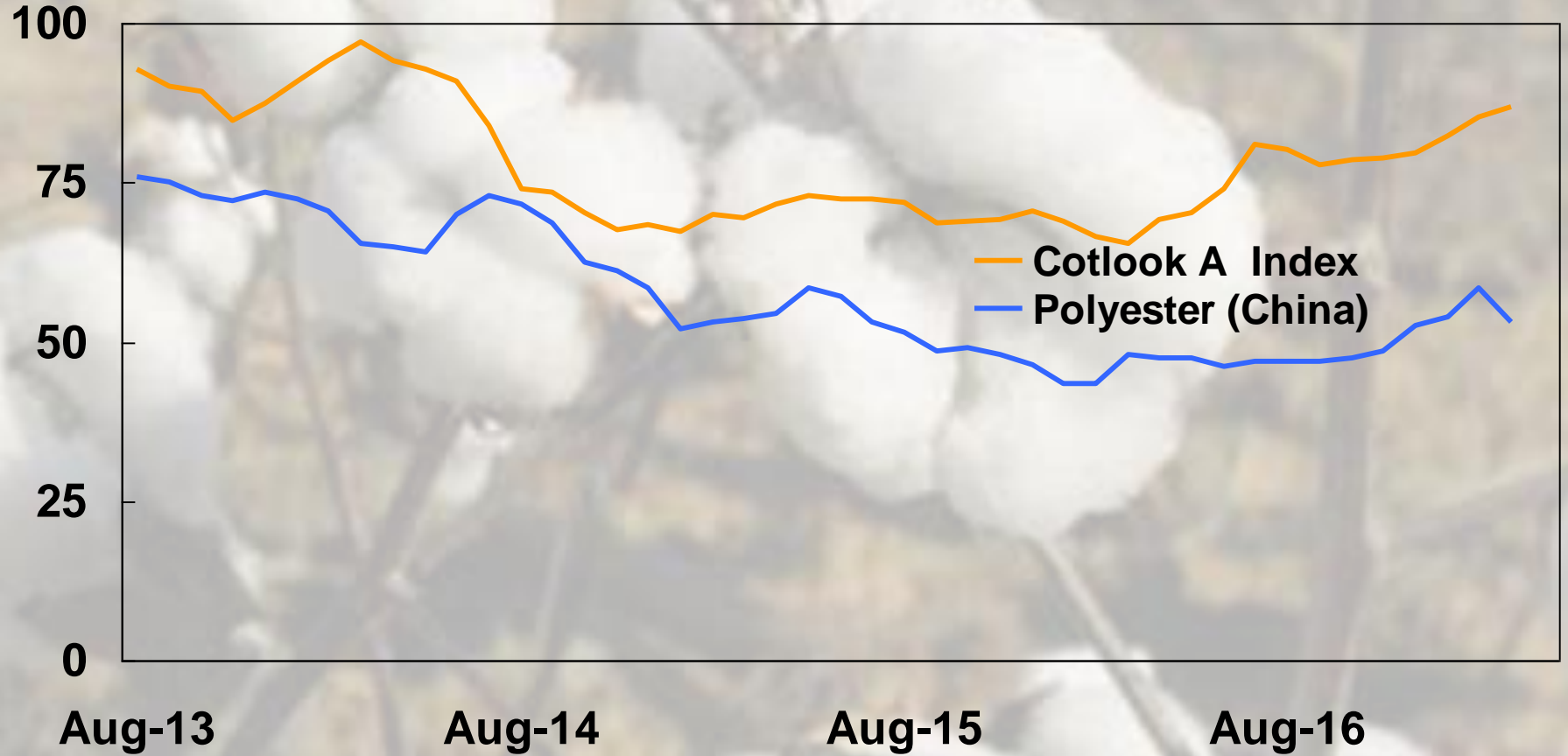
Monthly indexes based on nominal US dollars (2000 = 100)



Sources: Cotton Outlook, World Bank

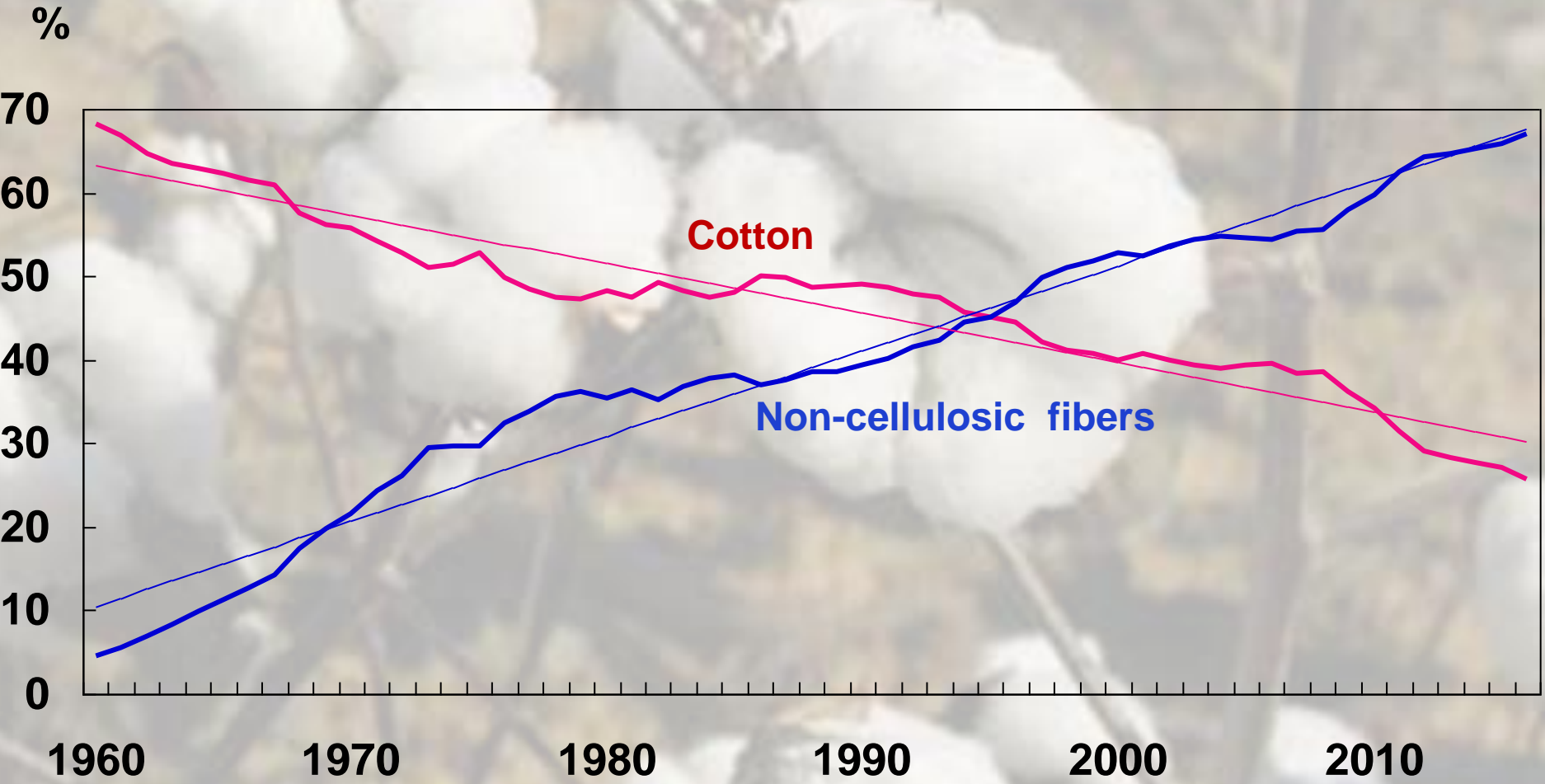
PRICE COMPETITION

Monthly averages (USD cents per pound)



Source: ICAC

TEXTILE FIBER MARKET SHARES



Source: ICAC

A close-up photograph of cotton bolls on a branch, with the text overlaid in the center. The bolls are white and fluffy, and the background is a blurred field of cotton plants.

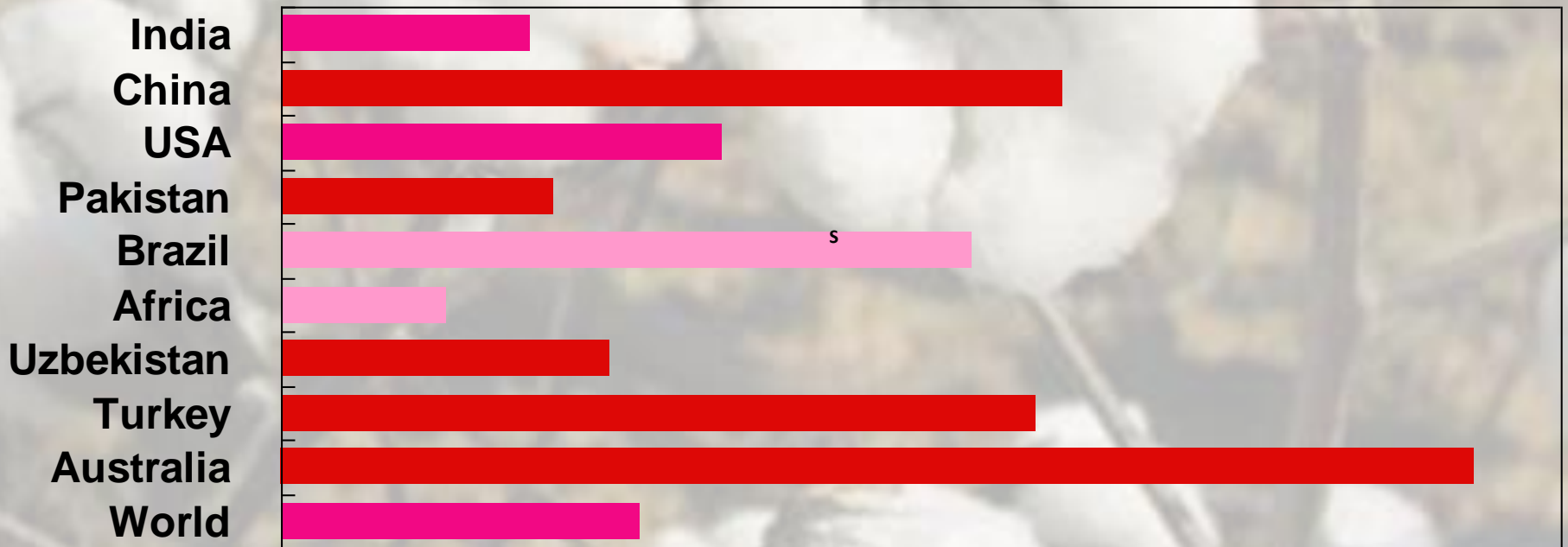
**OVERVIEW OF COTTON YIELDS
IN THE WORLD**

AVERAGE YIELD BY COUNTRY

2015/16

kg of lint per hectare

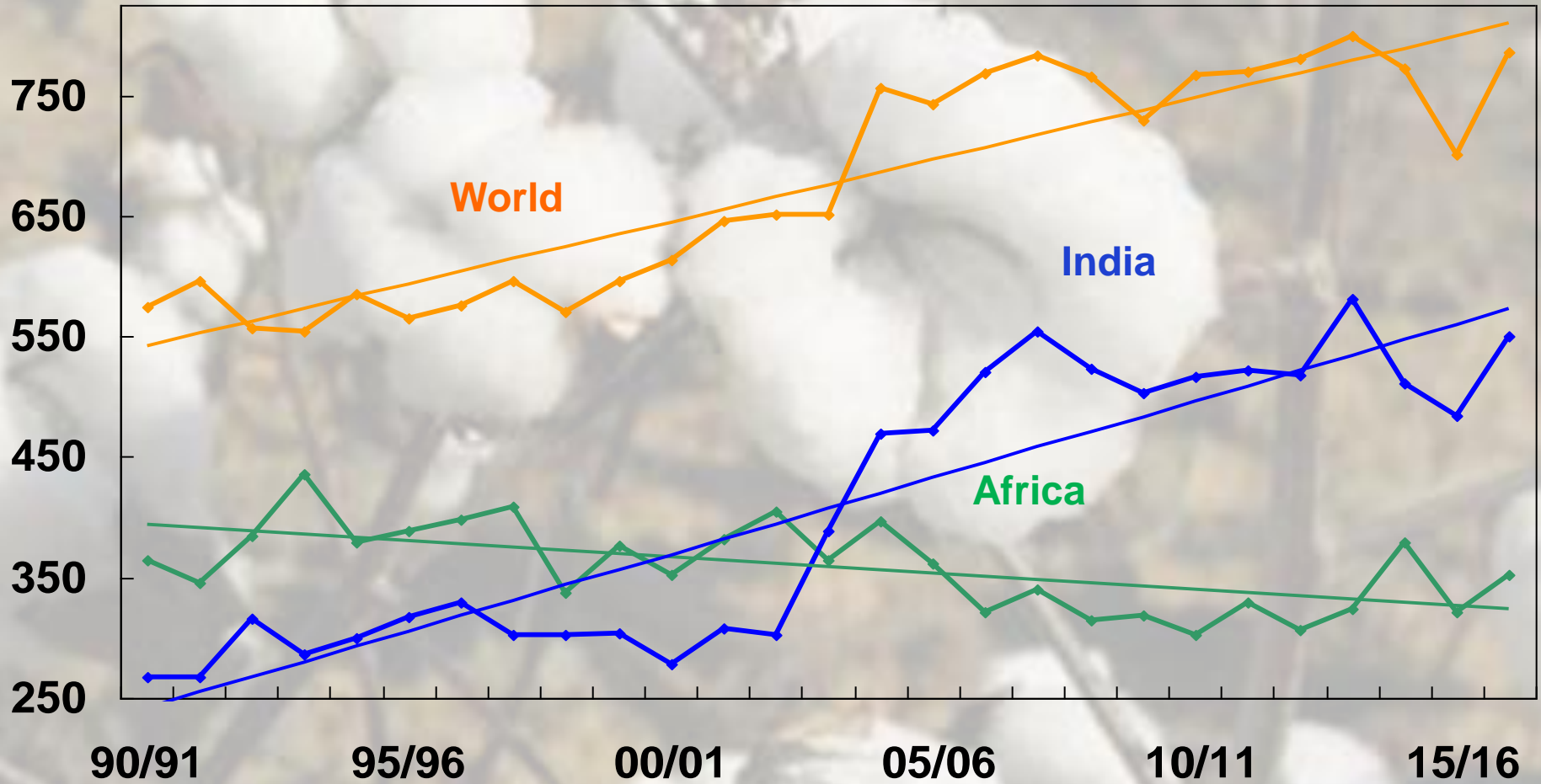
0 500 1000 1500 2000 2500



Source: ICAC

AVERAGE YIELD TRENDS

kg of lint per hectare



Source: ICAC

YIELDS IMPACT PRODUCTION COSTS

According to ICAC, the world average cost of production of lint in 2015/16 was 1.16 \$/kg (about 53 US cents/kg ex-gin, after deducting value of seeds):

Fertilizers	Harvesting	Weeding	Ginning	Insecticides	Seeds	Irrigation
22 %	21 %	18 %	15 %	10 %	8 %	6 %

Production costs highly variable among countries:

USA	China	Pakistan	Brazil	Turkey	Australia	India
1.88 \$/kg	1.70 \$/kg	1.18 \$/kg	1.15 \$/kg	1.08 \$/kg	0.97 \$/kg	0.71 \$/kg

Source: ICAC

A close-up photograph of cotton bolls on a branch, with the text 'COTTON YIELDS IN AFRICA' overlaid in the center. The bolls are white and fluffy, and the background is a blurred field of cotton plants.

COTTON YIELDS IN AFRICA

MAJOR CONSTRAINTS AFFECTING YIELDS IN AFRICA

Weather hazards (rainfed) and climate change

Soil infertility

Lack of know-how and equipment

Poor quality of seeds

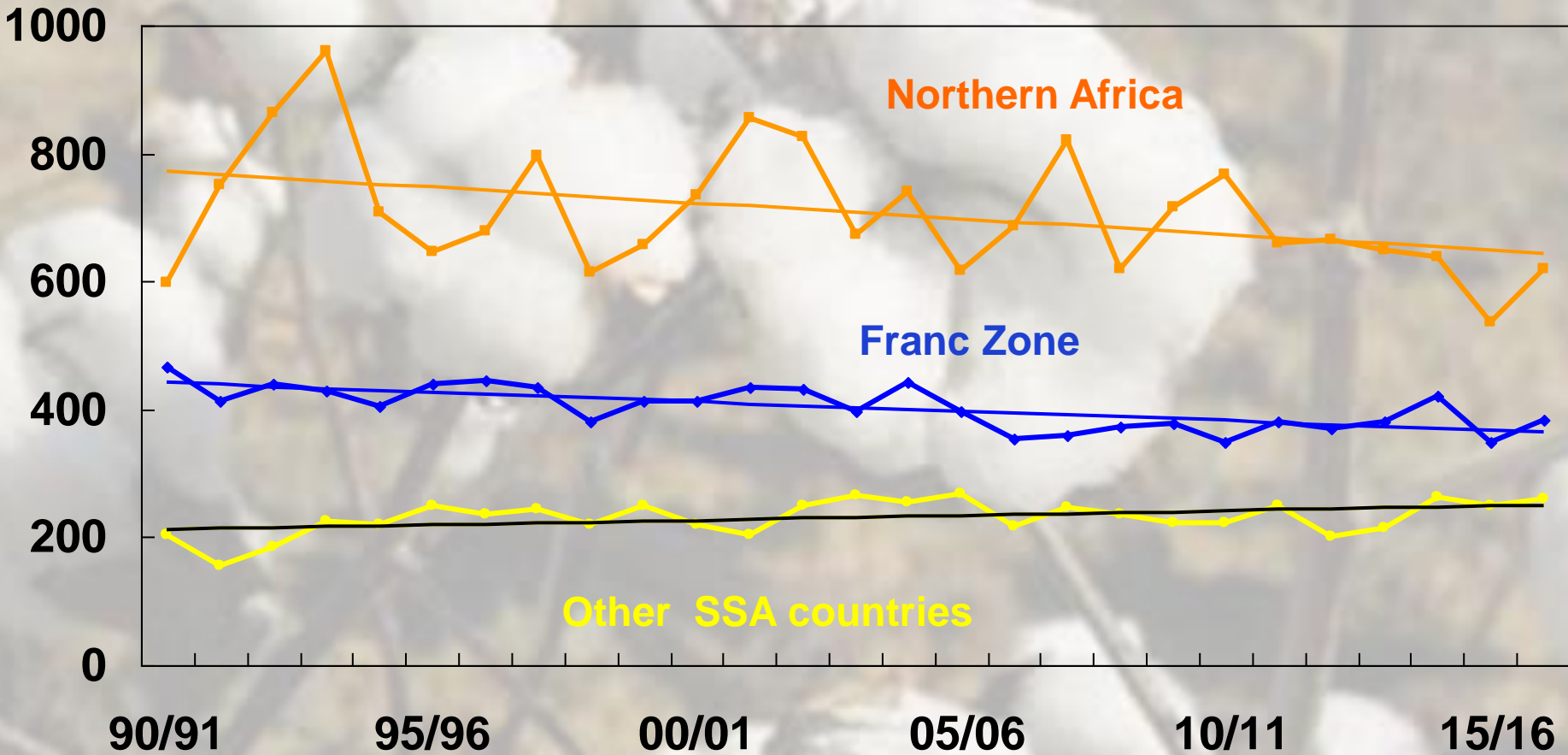
Low use and high costs of inputs

Cotton sector structure (pricing, input credit, marketing)

Ginning outturn is a key factor of profitability

AVERAGE YIELD BY REGION IN AFRICA

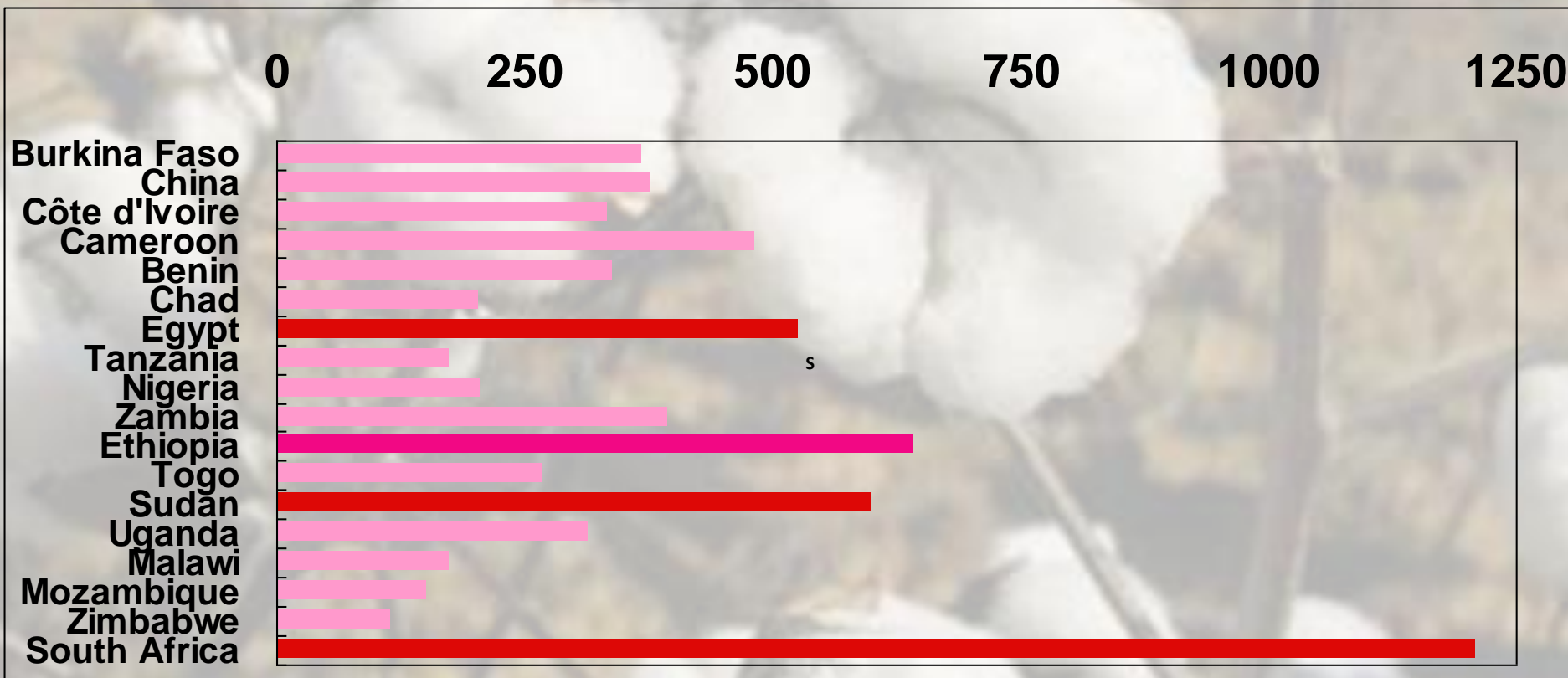
kg lint per hectare



Source: ICAC

AVERAGE YIELD BY COUNTRY IN AFRICA 2015/16

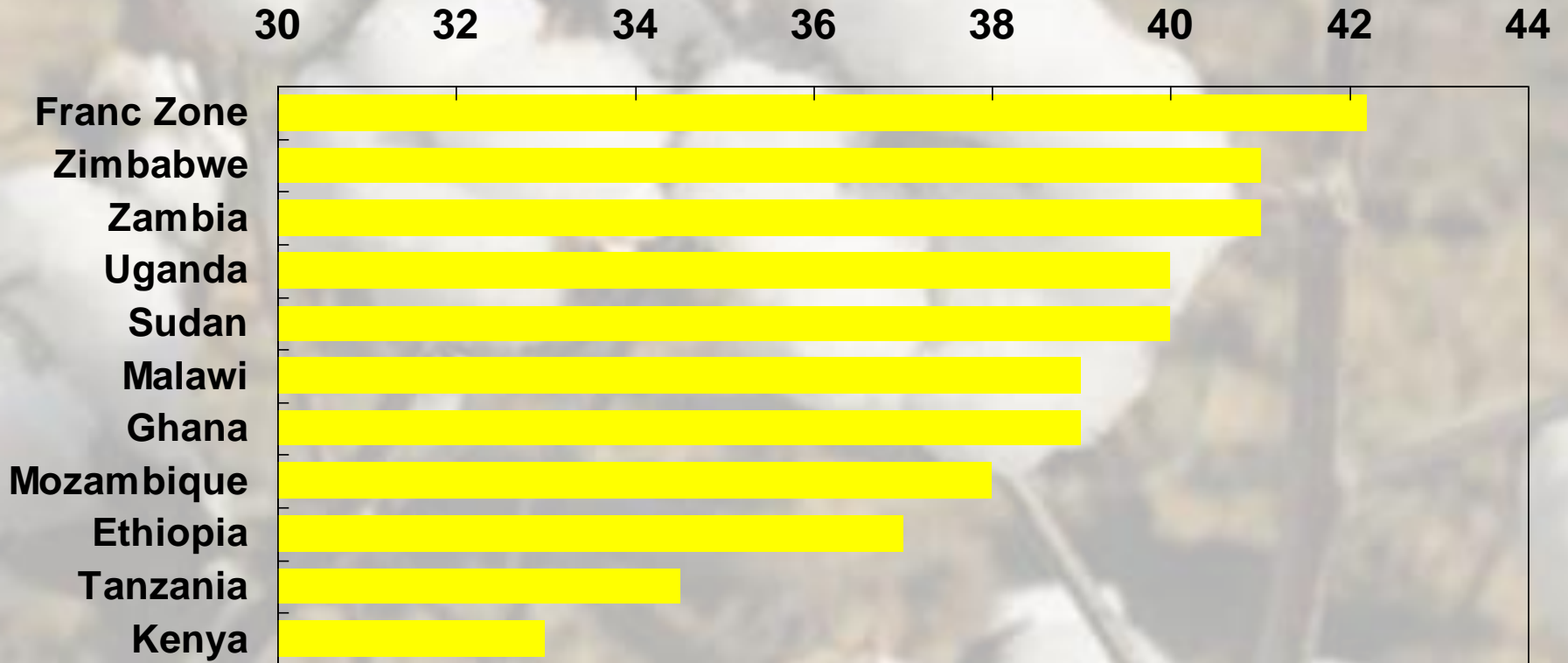
kg of lint per hectare



Source: ICAC

GINNING OUTTURN

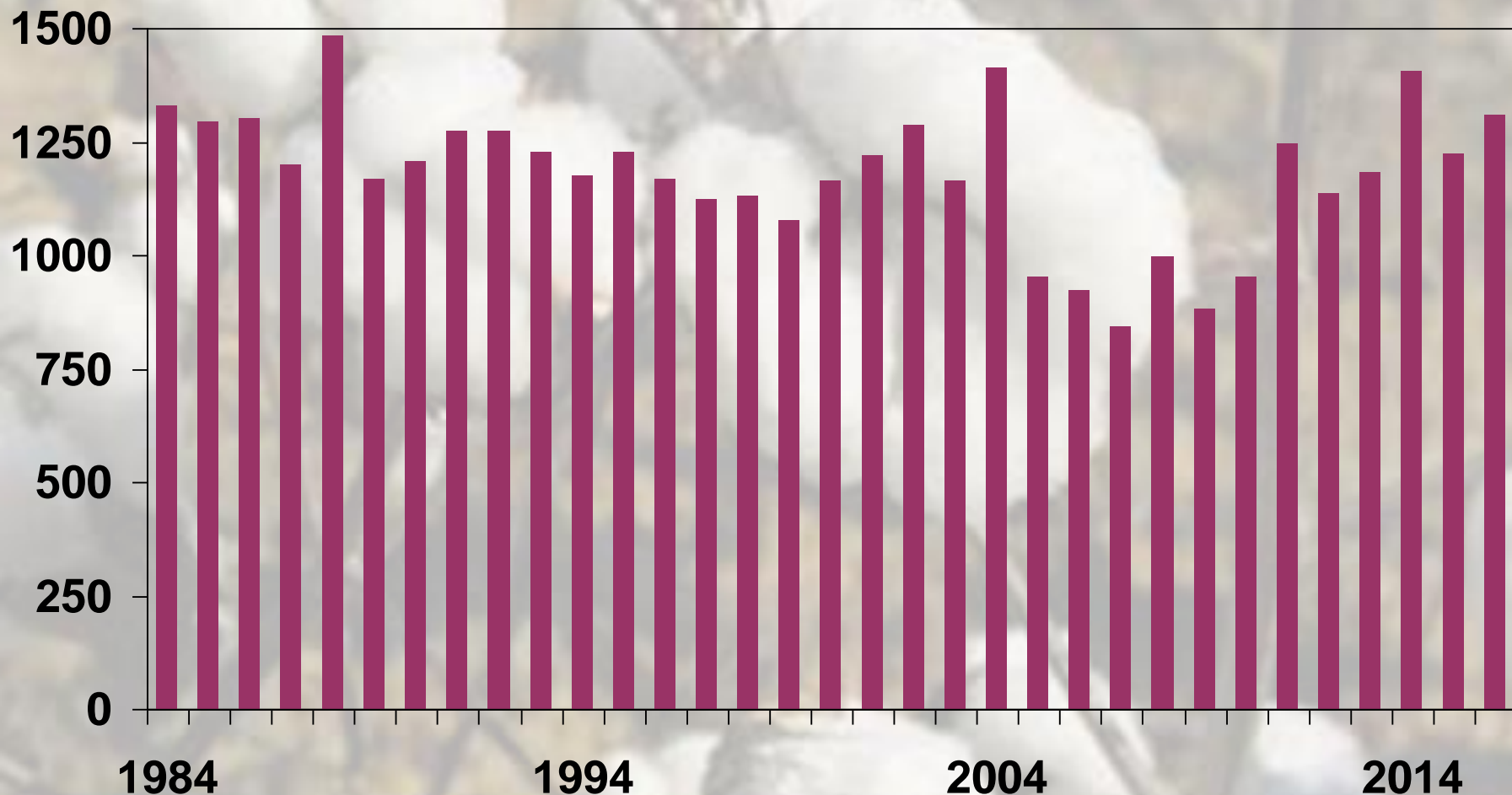
% lint / seed cotton



Sources: cotton companies

AVERAGE YIELD IN CAMEROON

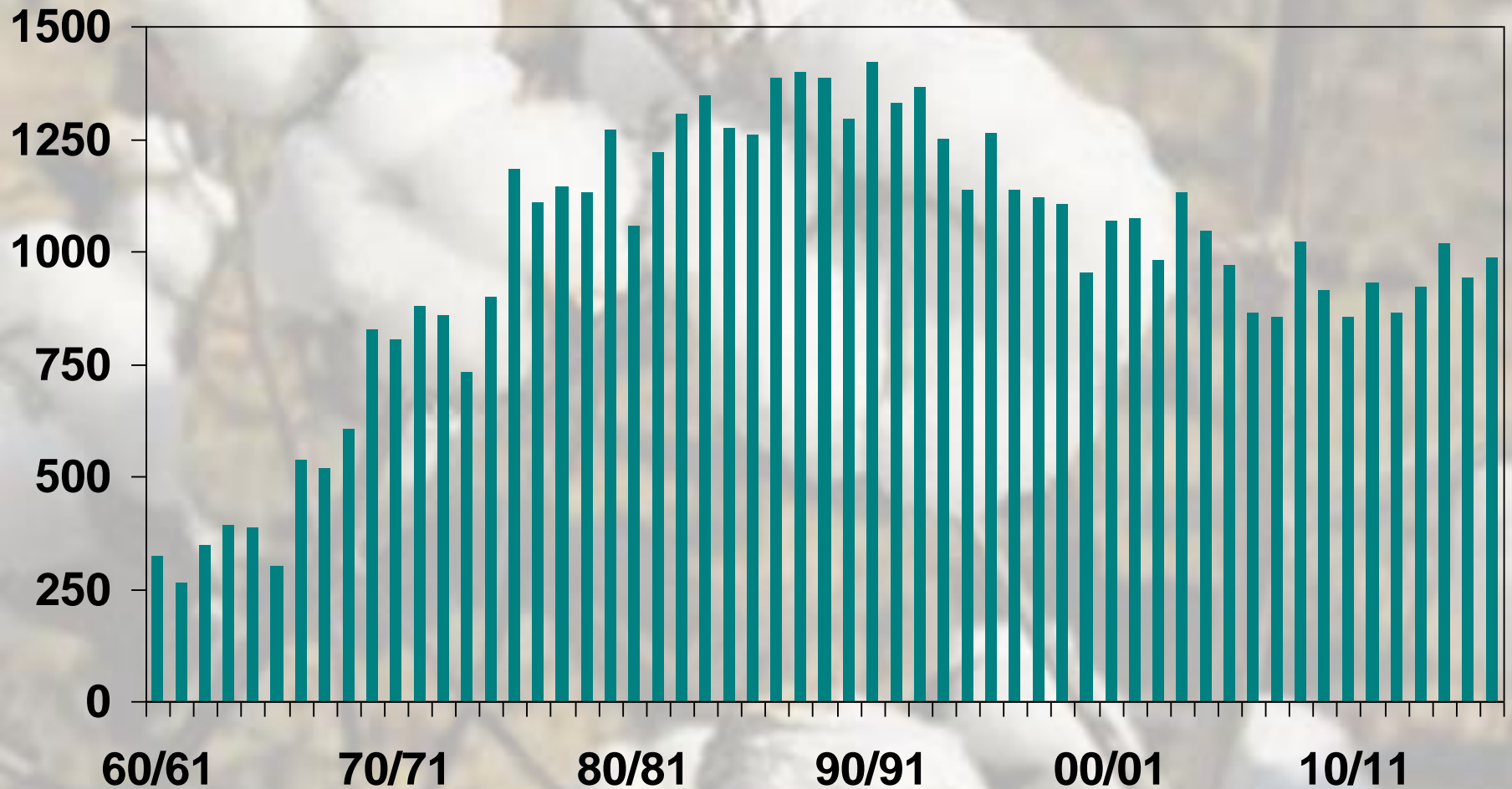
kg seed cotton per hectare



Source: SODECOTON

AVERAGE YIELD IN MALI

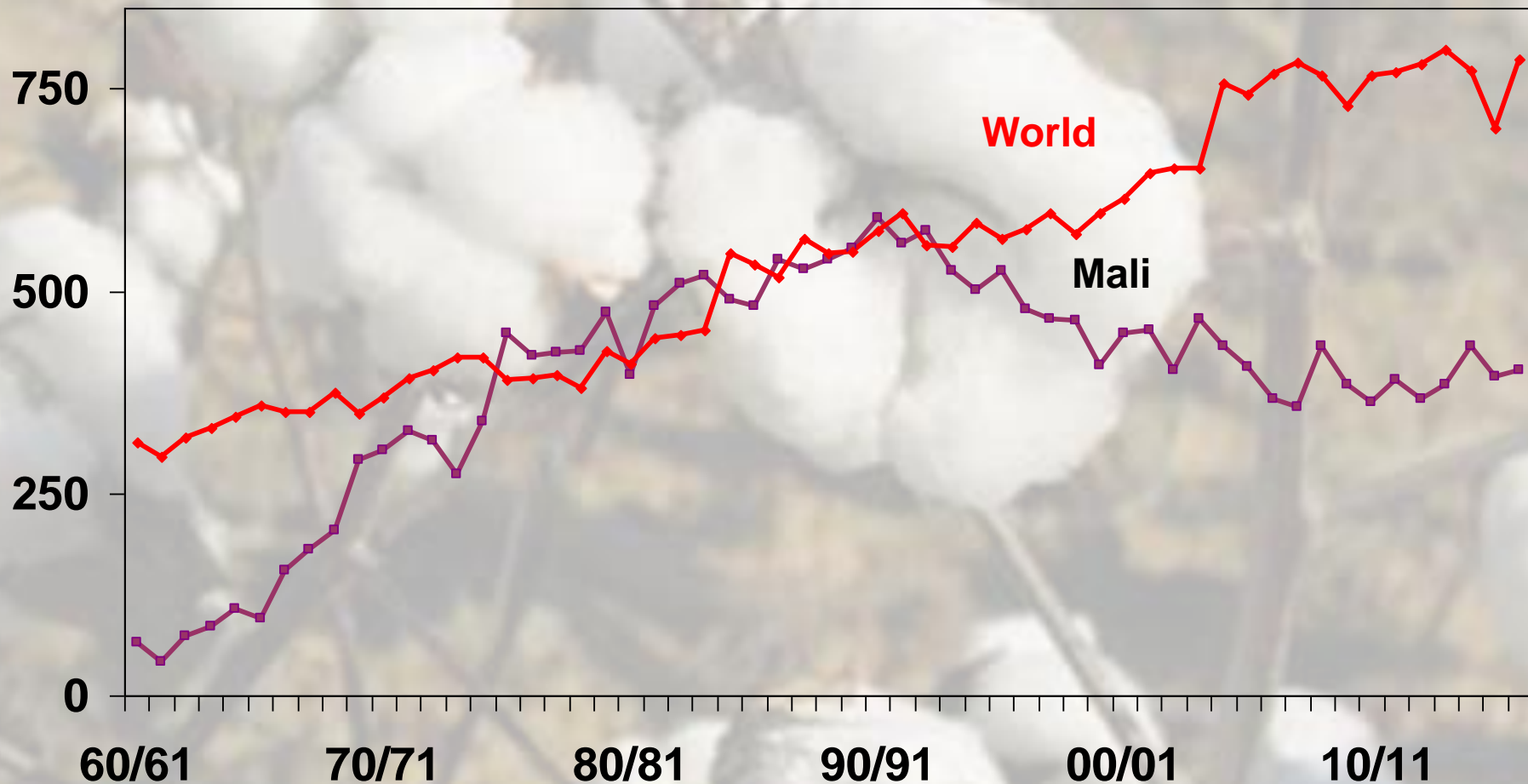
kg seed cotton per hectare



Source: CMDT

AVERAGE YIELDS

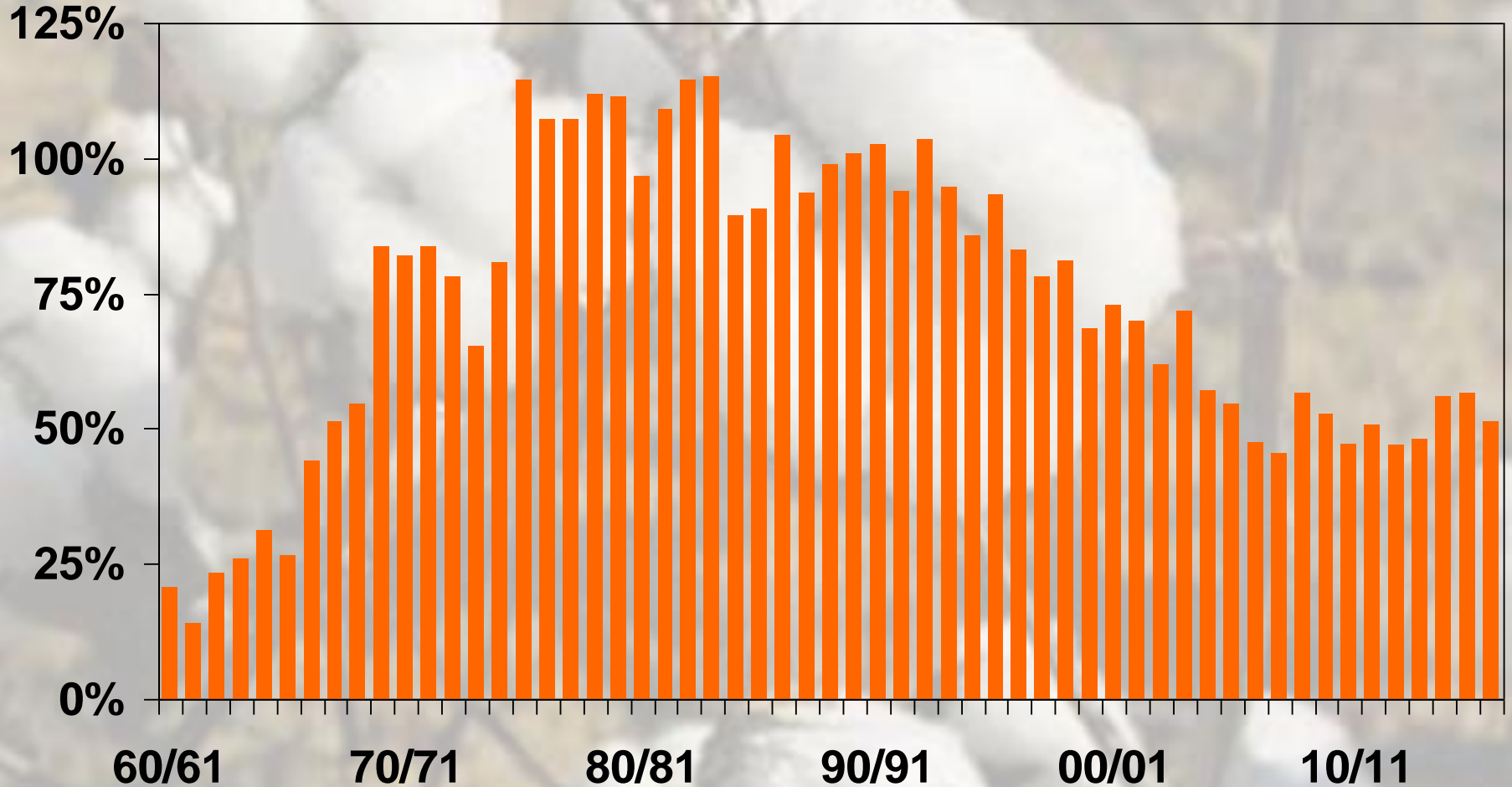
kg lint per hectare



Sources: CMDT, ICAC

AVERAGE YIELDS

Mali vs World (%)



Sources: CMDT, ICAC

AVERAGE YIELDS CAN BE MISLEADING

The potential of the existing varieties under normal rainfed conditions is above 2 tons seed cotton per hectare, with the currently recommended production practices.

Actual average yields are about twice lower in WCA countries and about 4 times lower in ESA countries.

Yields vary widely among producers.

In all countries, a few individual farmers regularly reach, and even exceed, the potential yield (even when most of their fellow farmers complain about lack of rain or other factors...).

COTTON YIELDS IN CAMEROON 2016/17

Genetic potential: 3,500 kg seed cotton/hectare

Field trials: 2,200 kg /ha

Nationwide

Average yield: 1,306 kg seed cotton/hectare

Production: 240,135 t seed cotton

Ginning outturn: 42.5%

Average yield: 555 kg lint /ha

Large producers (5ha+)

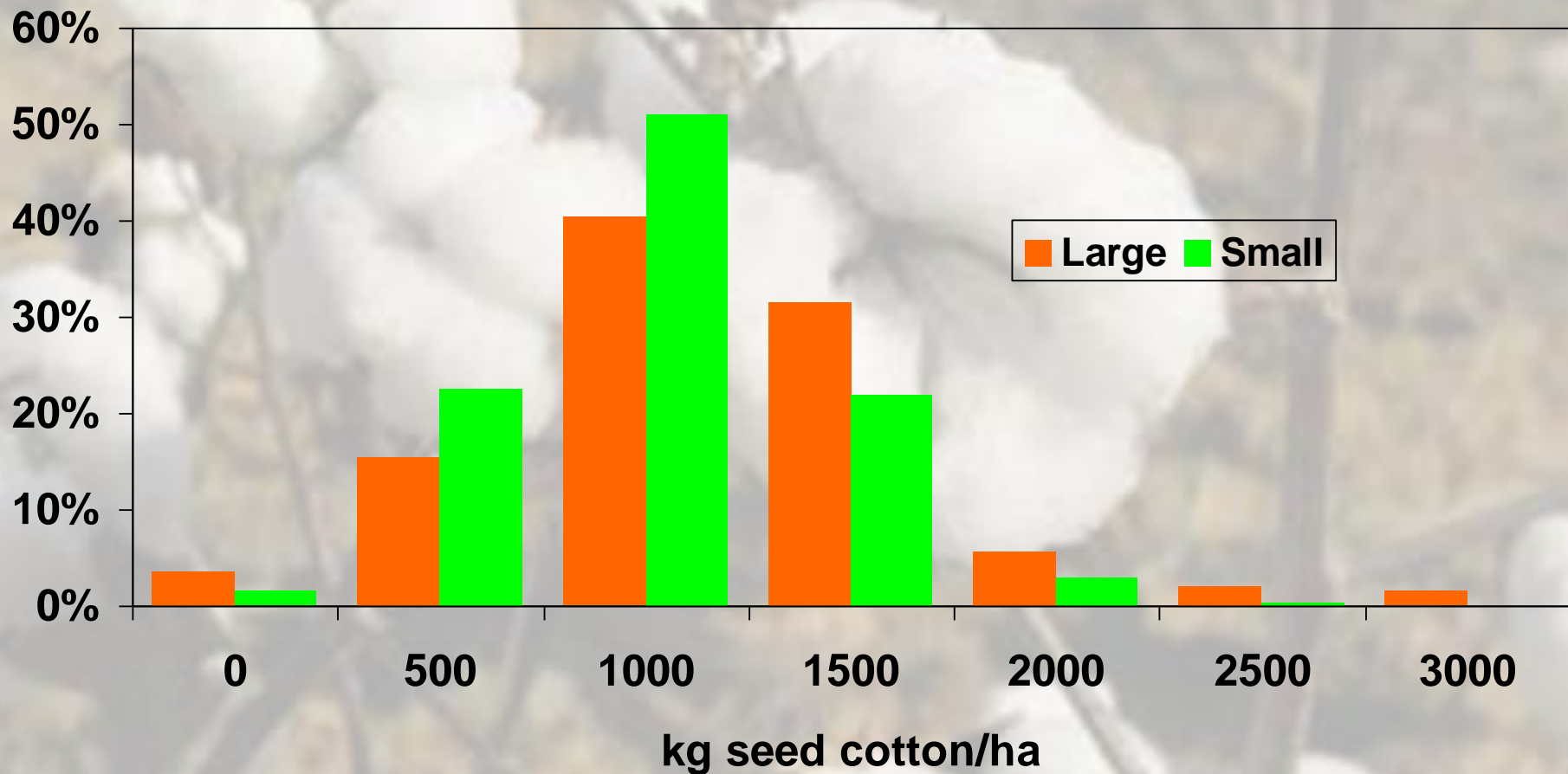
Average yield: 1,375 kg seed cotton/hectare

Small producer groups

Average yield: 1,268 kg seed cotton/hectare

Source: SODECOTON

DISTRIBUTION OF YIELDS IN CAMEROON



Source: SODECOTON

COTTON YIELDS IN CÔTE D'IVOIRE

2016/17

Nationwide

Planted area: 345,000 hectares

Average yield: 952 kg seed cotton/hectare

Production: 328,145 t seed cotton

Ginning outturn: 42.7%

Average yield: 407 kg lint /ha

Highest yielding producer

Planted area: 29 hectares

Average yield: 3,019 kg seed cotton/hectare (= average x 3.2)

Production: 87.6 t seed cotton

Average yield: 1,290 kg lint /ha

Source: APROCOT-CI

REASONS BEHIND LOW YIELDS

Opportunistic behavior (focus on price rather than yield).

Lack of know-how.

"Poor timing of operations (lack of manpower and equipment; competition with other crops during growing and harvesting season).

Suboptimal use of inputs (fertilizers on credit used for other crops).

A close-up photograph of cotton bolls on a branch, with the image faded to serve as a background for the text.

**BEST PRACTICES
FOR COTTON PRODUCTION**

BEST PRODUCTION PRACTICES

Cotton is a demanding crop: labor intensive in Africa, and highly susceptible to insects.

Timing of operations is crucial.

Once seeds are planted, the maximum genetic potential for that field and season is determined.

First 40 days is the most critical period in cotton production (yield potential is established).

Beyond, management practices can only assist in maintaining yield and quality.

Lint quality at its best when the cotton boll opens.

Best production practices are well known and applied by highest-yielding cotton farmers.

BEST PRODUCTION PRACTICES

Management for optimal soil moisture (minimum tillage).

Planting during the early window of the optimal planting period.

Use of delinted seeds.

Adequate plant population (row spacing and intra-row gaps).

Proper fertility management (chemical fertilizers, organic manure).

Effective weed control (herbicides).

Effective pest management tactics (scouting, integrated pest management).

Harvest at optimum times to preserve quality.

Bt cotton can improve yields (+12% in Burkina Faso).

Organic cotton production can be more profitable than conventional production despite lower yields.

CAMEROON BEST PERFORMERS' PRACTICES

Combination of:

After effect of organic manure

Use of growth regulator

Early planting

Direct planting on chemical ploughing (glyphosate)

Early fertilizer application at emergence (unfractionated)

Weed control with selective post-emergence herbicides

7-8 pesticide sprayings

IMPACT OF GAP IN TANZANIA

	Broadcasting	Broadcasting + Spraying	Good Agricultural Practices
Labour (days/ha)	27	42	101
Inputs (TZS/ha)	12,500	27,500	27,500
Total costs (TZS/ha)	150,000	240,000	540,000
Yield (kg seed cotton/ha)	250	500	1,000
Production cost (TZS/kg)	600	480	540
Net revenue (TZS/ha)	50,000	160,000	260,000

Source: ITC (2015)



CONCLUSIONS

CONCLUSIONS

Increasing productivity of producers and ginners stands out as the top priority for improving the competitiveness and profitability of cotton production in Africa.

Average yields in Africa are less than half the potential of existing varieties.

Best practices for cotton production are well known and applied by best performing farmers.

Cotton sector structure has an impact on productivity (input credit issues).

African farmers yielding less than one ton seed cotton per hectare have no future.

Conventional cotton faces a bleak future vs “identity cottons”.

COTTON PRODUCTION POTENTIAL IN AFRICA

Planted area: 5 million hectares

Average yield: 1.5 ton seed cotton per hectare

Average ginning outturn: 42%

Average yield: 630 lint per ha

Potential production: >3 million tons lint



THANK YOU FOR YOUR ATTENTION