Broadening the scope of regulation:

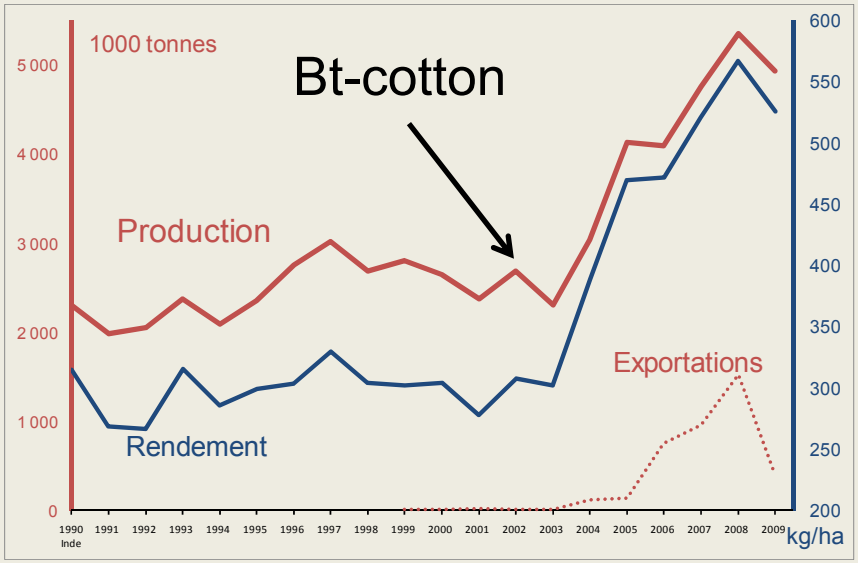
A prerequisite for a positive contribution of transgenic crop use to sustainable development

Michel FOK

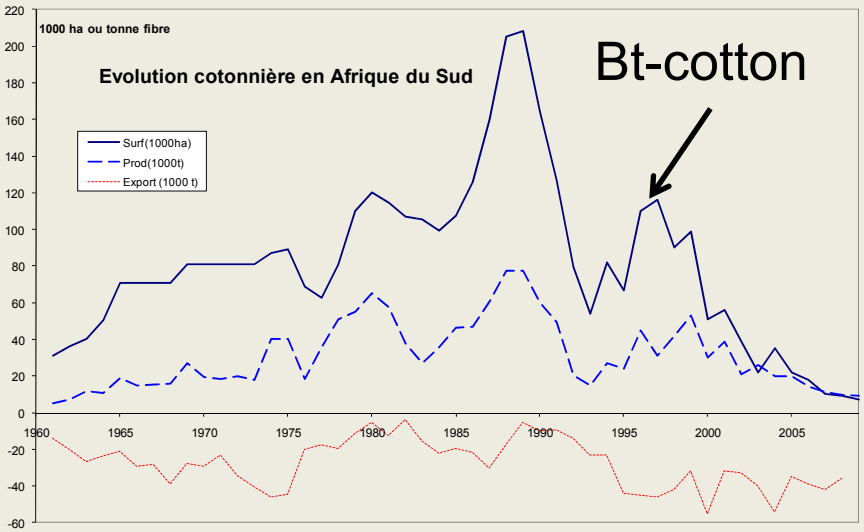
GM use & development: no simple answer

Answer is contextual

Success in 



failure in 



Regulation matters in the effects of contexts

Need for broader scope of reguation

My point ⇐ *ex post* analysis

∃ lessons available

- After ≅ 15 years of GM use;
- At large scale

…on various crops

…because current regulation ≠ sufficient

- Ex ante regulation
  - Based on anticipations…but not taking into account observations
- Limited scope of concern
  - Biosecurity (gene flow)
  - Coexistence (separation distance GM & non-GM)
- Subject to political pressure
  - e.g. separation distance for maize :
    - 20 to 2000 m in EU

Anticipations = correct?

Many anticipations related to socio, eco and environment

- Superweed, pest resistance, price of seeds, profitability, benefit to smallholders, pesticide use…

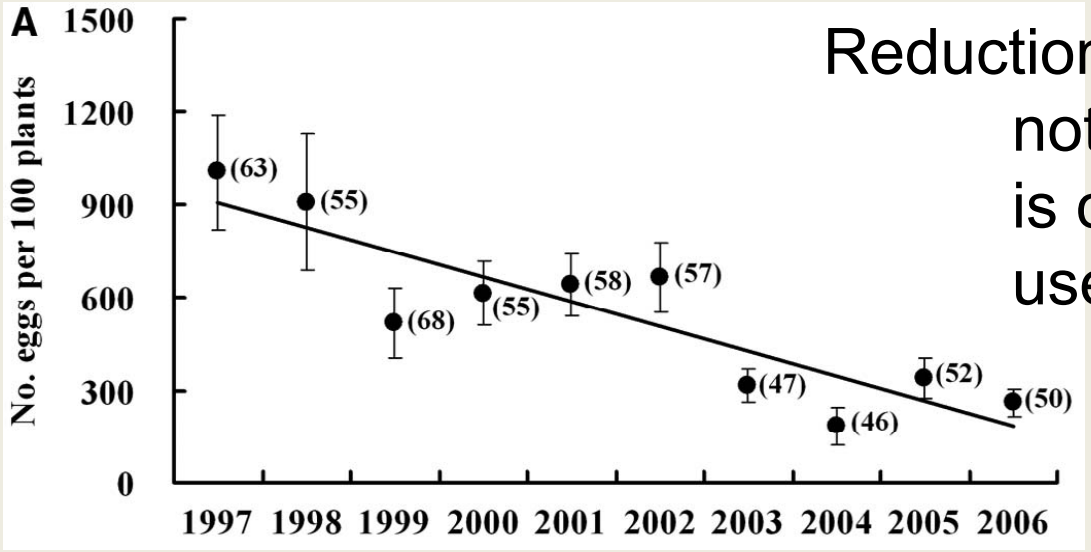
Superweed = single correct anticipation

- Resistant weed to glyphosate: +/+ reported

Resistant weeds:
Monsanto's nightmare?

Pest ecosystem shifts: badly anticipated

- 'cause of exclusive focus on pest resistance
  - Not really materialized
- Secondary pests: no longer secondary
  - to be controlled by more expensive pesticides
  - …under specific conditions



Reduction of target pest pressure:
not really considered
is continuous and general
use of Bt-cotton justified ?

Regulation ⇒ systemic & coordinated use

- to prevent parasite ecosystem shifts
  - By setting maximum area share of GM
  - …particularly when single gene by single firm
- as well as to preserve coexistence for
  - Freedom of choice
  - Use GM only when & where necessary
  - Exploitation of non-GM market

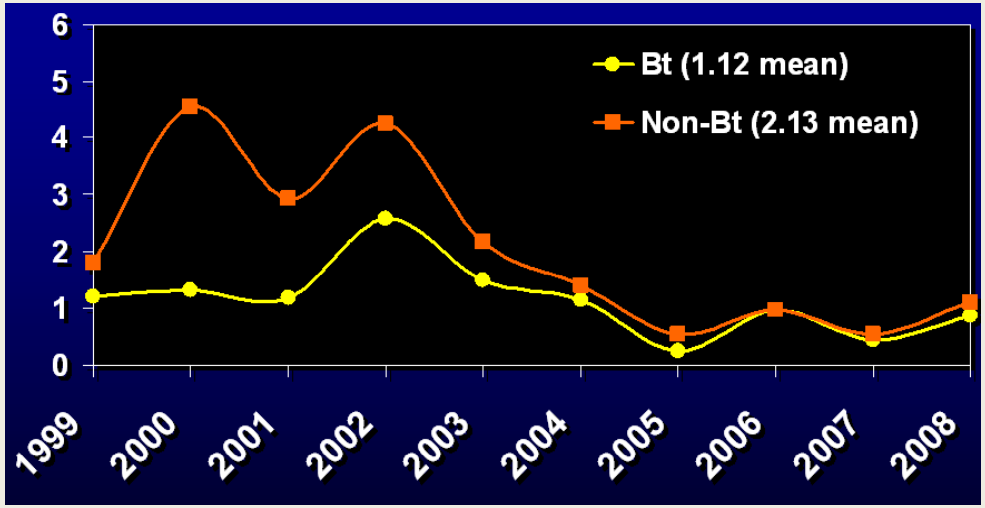
Regulation ⇒ adjust seed control

- To ensure "GM purity" of seeds
  - Matter of effectiveness of GM seeds
- To ensure "non-GM purity" of seeds
  - ⇒coexistence feasibility
  - ⇒ fairness in royalties collection
    - Not discouraging the use of non-GM seeds

Regulation ⇒ fairer seed prices

- High pricing is a fact
  - From monopoly and **competition**
- Unfair pricing ⇐ mis-calculation of GM impacts
  - Observed impacts ≠ effects only of seeds

- Abusive pricing: not taking into account decreasing impact



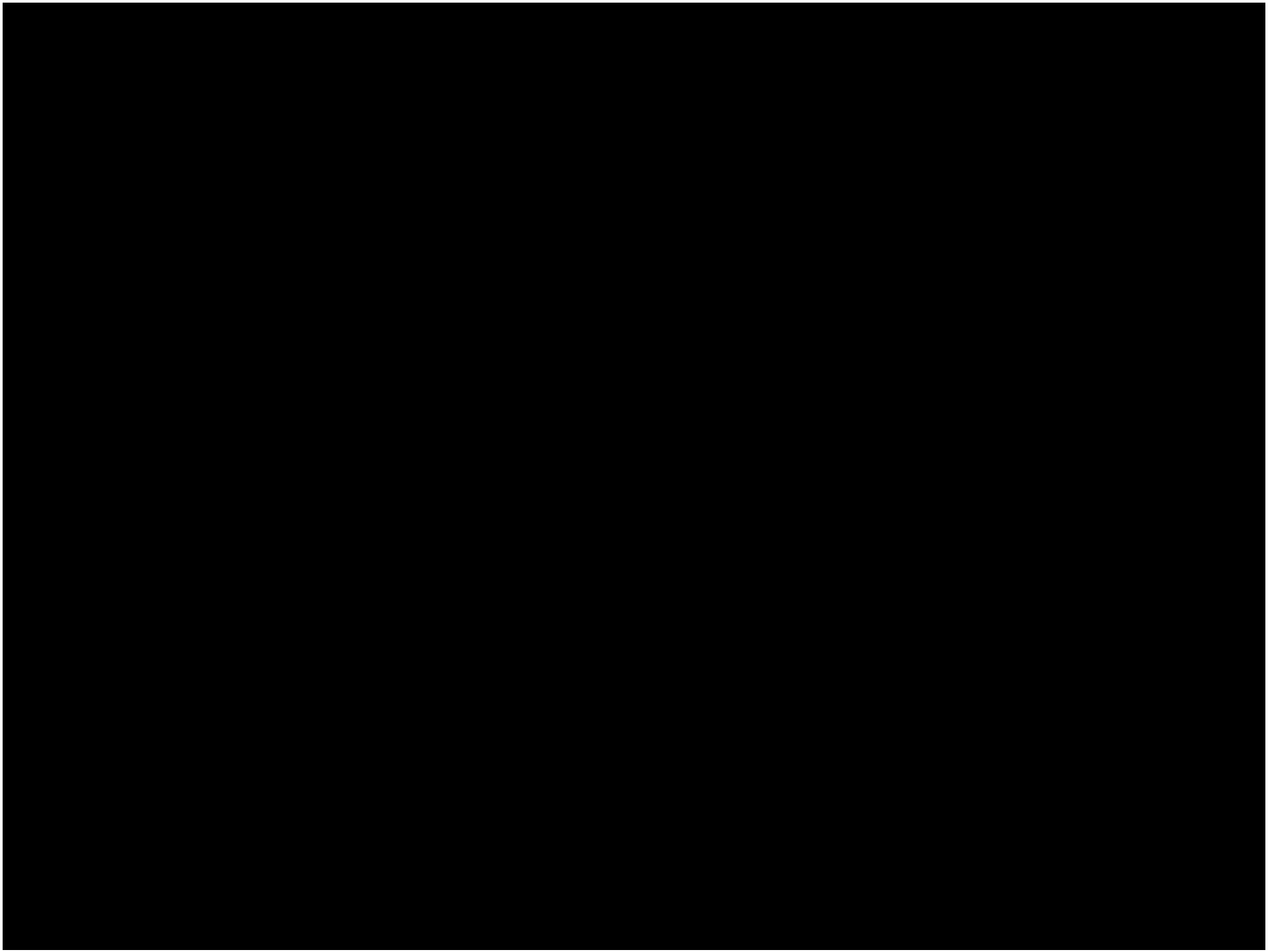
Decreasing number of insecticide sprays

Regulation $\Rightarrow$ non-GM availability

- Availability of non-GM varieties and seeds
- By continuation of varietal research for non-GM
  - To ensure comparable performance to GM varieties

Regulation beyond individual actions

- Some cases of individual actions for better use of GM
  - Brazil (Parana State) : GM soybean only on very weedy plots
- Profesional/sectoral actions are possible
  - To better bargain seed price
  - coordinated use of GM (Australia till 2003)
- But state role is indispensable
  - Systemic approach in GM use
  - Seed production scheme and control
  - Research on non-GM
  - Regulate seed prices if needed



Resistance: still hard to claim

In the USA

Pests	Resistance to *Cry1Ac*		Resistance to *Cry2Ab*	
	In lab.	in the field	in lab.	in the field
Pectinophora gossypiella	yes	no	yes	no
Helicoverpa virescens	perhaps	no	no	no
Helicoverpa zea	yes	perhaps	no	no

Dennehy, T. J., Head, G. P., Anilkumar, K. J. & Price, P. A. (2010) Update On Susceptibility of Key Cotton Pests to Bt Toxins Cry1Ac and Cry2Ab