



Integrated Crop Management in the Age of Genetically Engineered Traits

F. Eversheim

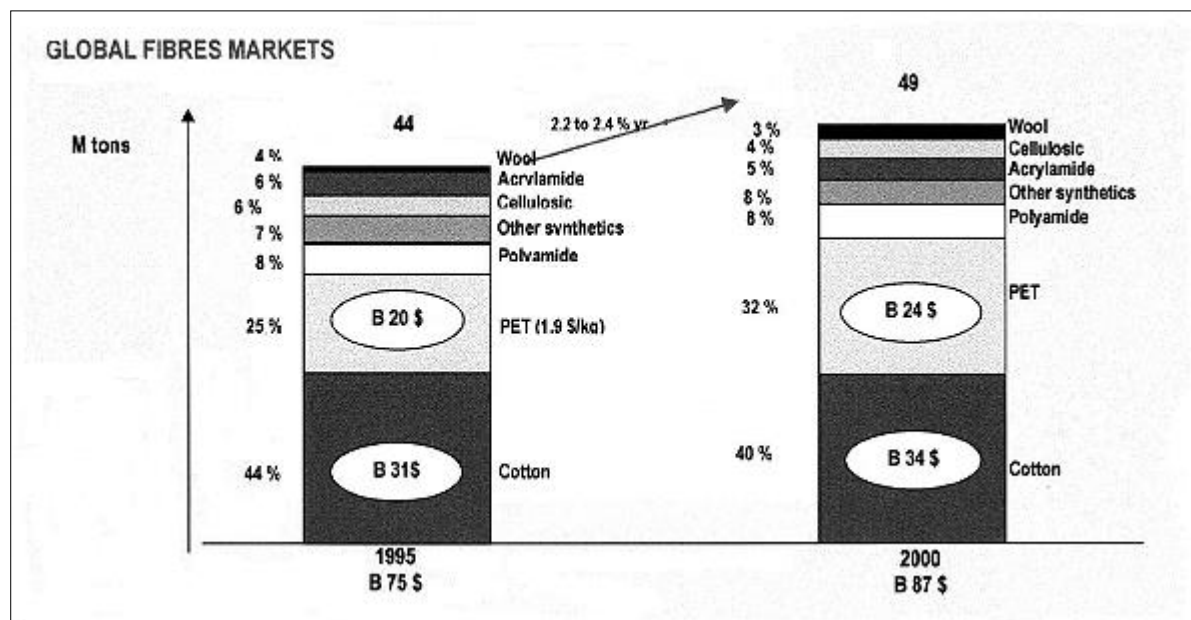
Aventis Crop Science GmbH Global Trait Manager Cotton and Rice Industriepark
Hoechst Building K607D-65926 Frankfurt am Main Germany

ABSTRACT

With the recent introduction of genetically engineered input traits such as insect resistance and herbicide tolerance, a new dimension has been added to cotton production. Maximizing cotton yield and fibre quality will move beyond conventional crop protection, integrating the new technology with the use of insecticides, herbicides and harvest aid chemicals to one of integrated crop management. Integrated crop management now begins with selection of cotton genetics and the genetically engineered in put traits that are embedded within the seed. This is followed by an adapted crop protection programme and ends with the sale of high quality fibre. This paper discusses cotton cultivars, biotechnology and conventional crop protection options available to cotton producers, what these technologies are and how to use them in an effort to improve and sustain profits in a highly competitive global market. Aventis and Cotton Seed International of Australia have started a long term co-operation to provide cotton farmer inputs for highest productivity for their crop and the processing industry with superior quality fibre. The effort is based on leading programmes in cotton breeding, cotton biotechnology and conventional crop protection.

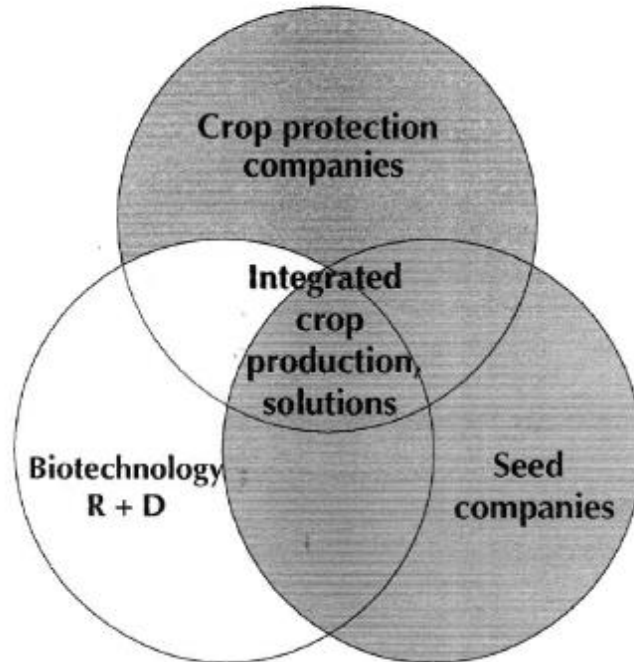
Introduction

The demand for cotton is increasing even though it forms a declining percentage of overall global fibre consumption.

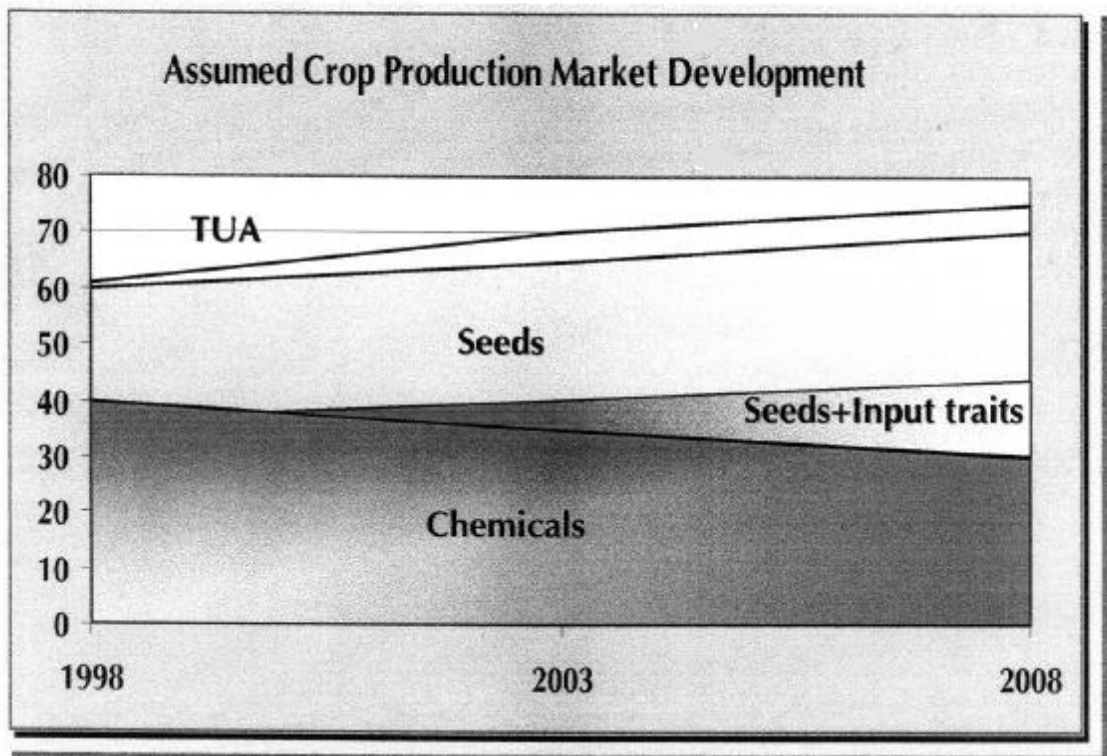


Evolution of a crop production industry

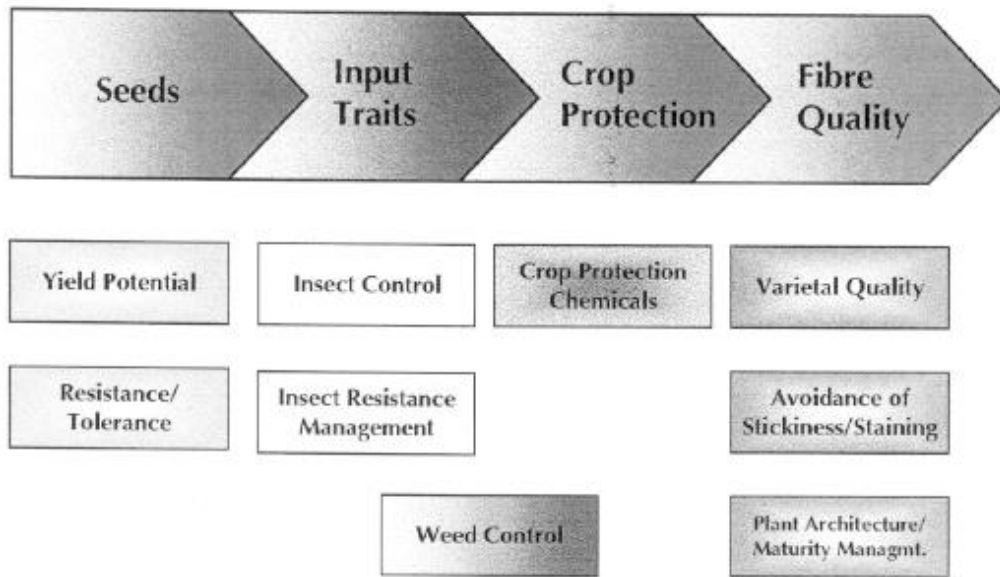
The integration of plant biotechnology, seeds and crop protection will provide cotton growers and the processing industry with more choice and improved cotton production options.



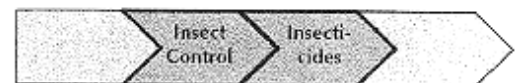
There will be an increasing tendency to incorporate „crop protection“ into the seeds



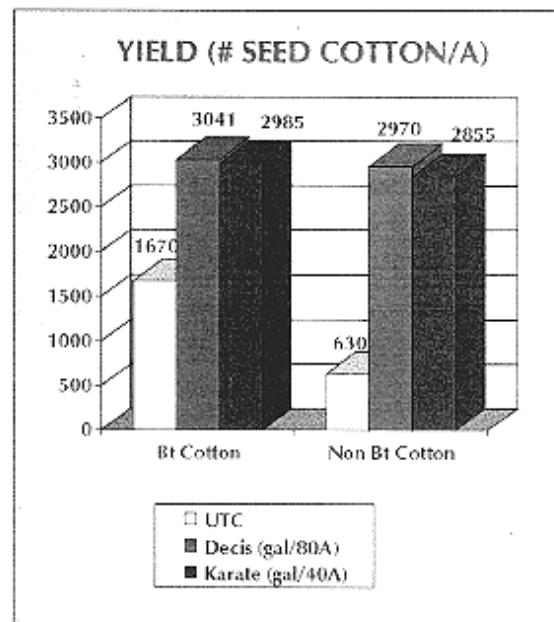
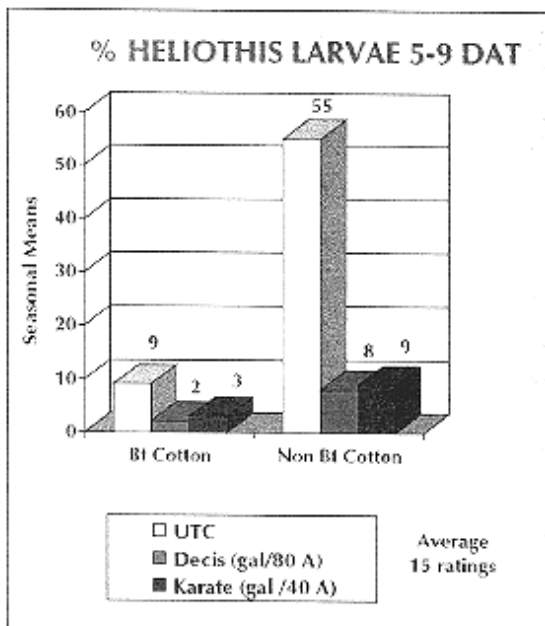
Selection of seeds/varieties will determine the crop production options for the cotton grower

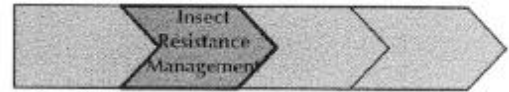


High performance and sustainability will be achieved in integrated cotton crop production systems, using all technologies available.

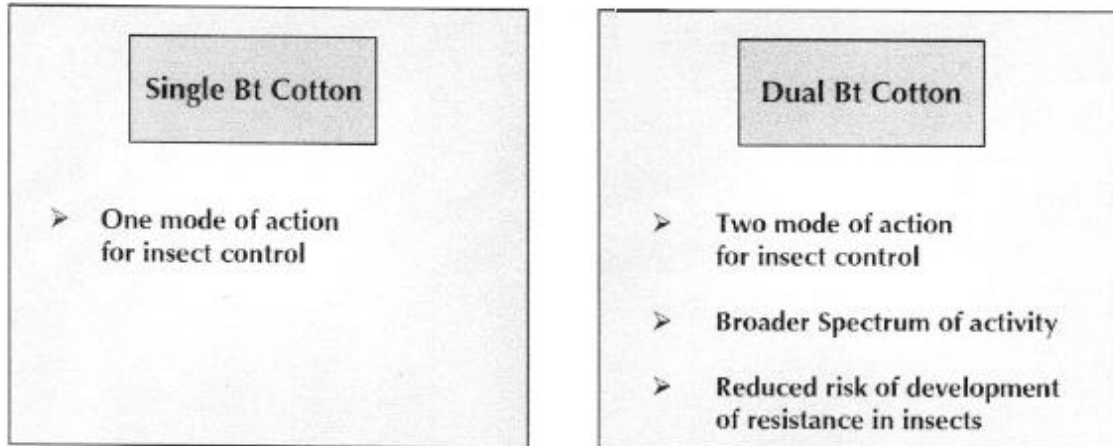


Use of insecticides in Bt cotton improves insect control and enhances yield.



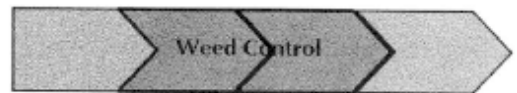


Dual gene Bt cotton will provide farmers with excellent insect control and improved sustainability of Bt cotton efficacy.



In any case an approved ICM scheme should be followed to reduce resistance selection pressure !

AgrEvo's Bt insect protection will be marketed under the  brand name

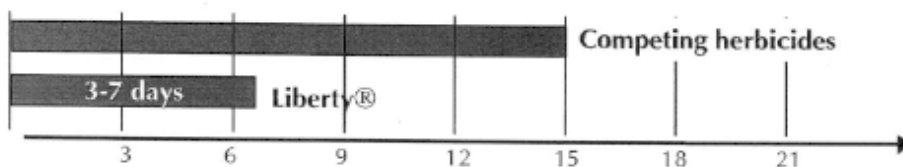


Libertylink cotton will provide farmers with herbicide properties for weed control which are not available today.

- Full crop compatibility and wide window of application




- Fast action



AgrEvo and Cotton Seed International (CSI) the international trade branch of CSIRO Australia cooperate in their joint venture „ACSI“ for superior cotton production systems.

↪ **Single elements are available today**

FiberMax varieties

 **AgrEvo** Cotton crop protection products

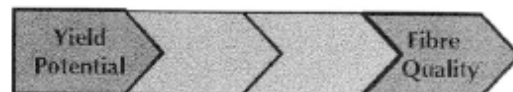
↪ **Biotechnology elements will enter the market in the next years providing new qualities**



Bt cotton including dual Bt gene technology



herbicide tolerant cotton with unique crop compatibility



The target of crop production is high yield of best quality fibres.

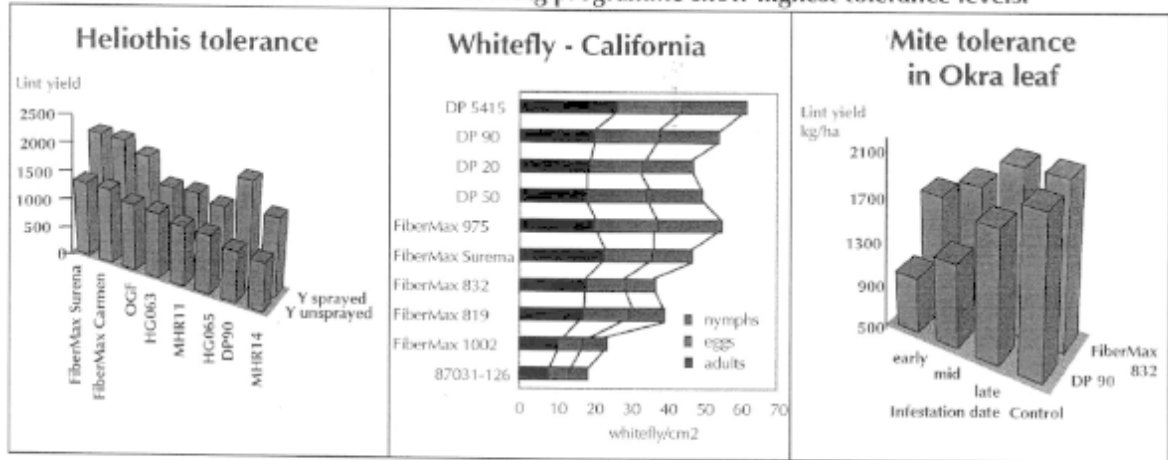
↪ **FiberMax** varieties combine high yield potential with best fibre quality

↪ Extensive field trials in the US show

- competitive to superior yield
- superior quality in high fibre strength and low micronaire values
- very promising results in processing/spinning

Conventional cotton breeding has to contribute a low level of pest susceptibility in commercial varieties

Varieties from the Australian cotton breeding programme show highest tolerance levels.



Australian cotton varieties will be marketed outside of Australia under the brand name

FiberMax

FiberMax



'96 ARKANSAS - Average of 2 Sites (Marianna & Clarkedale)

Rank	Variety	Lint lb/ac	% Site Mean Lint Yield	Length	Strength g/tex	Micronair
1	FiberMax Carmen	1414	120%	1,18	32,2	4,55
2	ST 474	1390	118%	1,12	29,4	4,83
3	FiberMax 832	1351	115%	1,23	32,7	4,53
4	FiberMax 975	1339	114%	1,15	30,1	5,00
6	SG 125	1320	112%	1,17	28,9	4,55
	Mean	1177	100%	1,16	31,0	4,59

SPINNING PERFORMANCE - FRUIT OF THE LOOM

	Jul	Aug	Sep	Oct	Nov	Dec
Knit Stops	20.32	16.57	13.73	13.98	16.60	16.90
Ends Down @ Cards	0.38	0.30	0.26	0.28	0.34	0.44
E-Down @ Spin 26/1	347	316	208	237	343	302
E-Down @ Spin 18/1	238	254	191	185	274	287
Y-Break @ Spin 26/1	262	251	136	148	202	209
Y-Break @ Spin 18/1	126	131	108	103	211	233



Over the next years AgrEvo will offer a complete production technology to cotton growers and cotton processors

More than in the past AgrEvo will be a reliable partner to the cotton industry.

