

Bayer Crop Protection

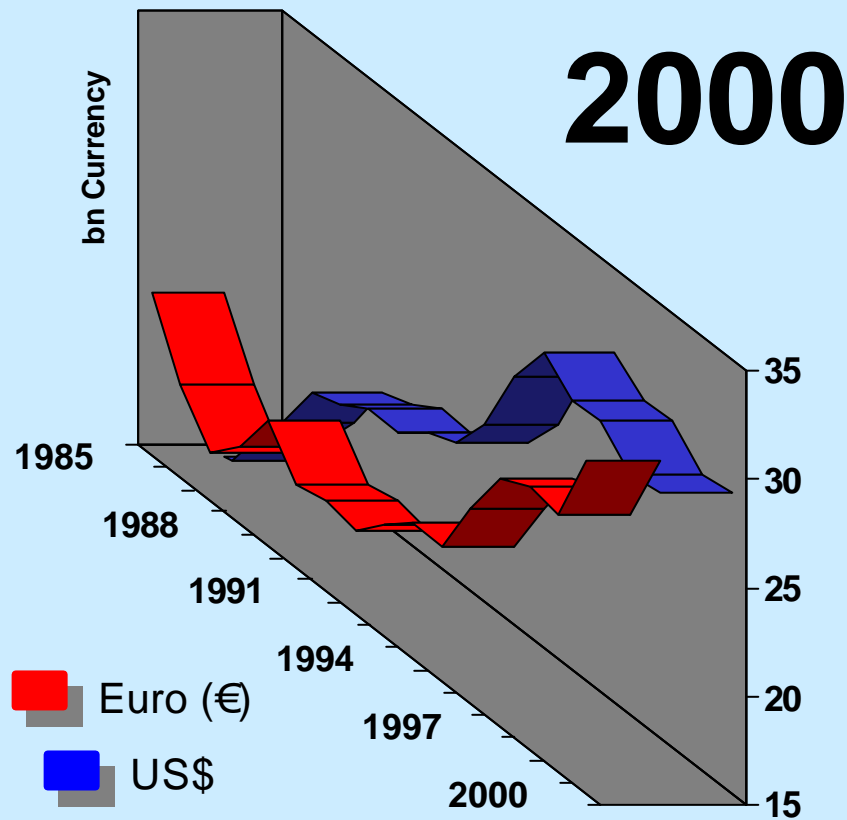
With Innovation and Investment into the Future



Crop Protection



Crop Protection World Market in 2000: Recovery



Source: Bayer Crop Protection Estimates

Herbicides: ↗

Insecticides: ↗

Fungicides: →

Europe/Intern.: ↘

NAFTA: →

Asia/Pacific: ↗

Latin America: ↗

Market growth: + 13% in €
(+ 0.8% in US\$)

Market Performance - Key Factors in 2000

- Continued low commodity prices and depressed farm incomes
- Decreasing market in the EU
- Ongoing decline of Japanese rice area
- Continuing consolidation process (Industry and Trade)
- Euro value decline against strong US Dollar
- Economic improvement in Latin America and East Asia
- Very modest rise in green biotech crop plantings

➡ Market increase of 13% in €(0.8% in US\$) for Agrochemicals

Bayer: Key Factors for Growth in 2000

New Launches

- **Calypso[®]** next generation chloronicotinyl insecticide with a new spectrum of activity widens portfolio ensuring long term leadership in this segment
- **Everest[®]** new grass herbicide with excellent performance incl. resistant wild oats poised to achieve significant market share in North American wheat market
- **Melody[®]** speciality oomycete fungicide already shows outstanding potential in the biggest fungicide segment

New Products

- **Win[®]** innovative rice fungicide achieves sales of over 50 mio € in the third year with further potential
- **Axiom[®]** high performance graminicide in corn with strong market acceptance in the US incl. perfect fit in herbicide tolerant crops
- **Teldor[®]** new class botrytis fungicide doubling sales in the second year to over 20 mio €
- **Impulse[®]** speciality fungicide against mildew in cereals and grapes with further 20% sales increase

Bayer: Key Factors for Growth in 2000

Outperformers

- **Confidor[®] / Gaucho[®]** increased sales again by over 15% to a record high of over 560 mio €
- **Folicur[®] / Raxil[®]** consolidated sales at 250 mio € against fierce competition
- **Seed Treatments** sales increase to 285 mio €, achieving a market share of 35 %
- **Garden / Prof. Care** business unit grew again by 30 % to over 260 mio €

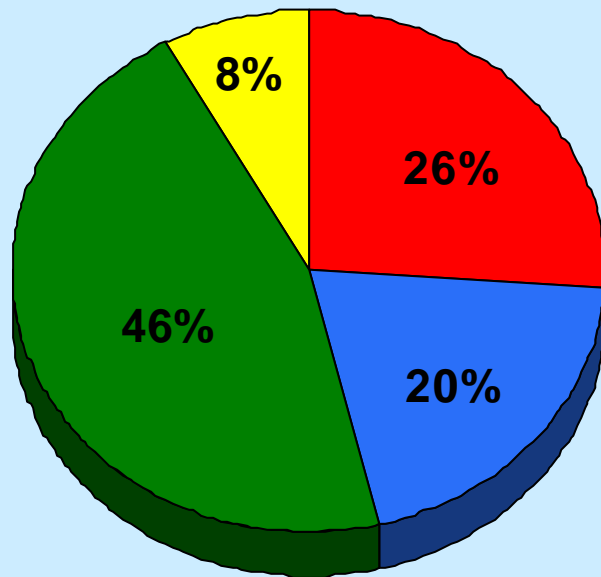
Strategic Acquisitions

- **Misung Ltd.** successful integration in Korea doubled Bayer market share
- **Bayer-Pursell** established as key player in the US Home & Garden market, now 100% owned by Bayer
- **PBI Home & Garden** strengthening the European Home & Garden business
- **Flint[®]** highly profitable second generation strobilurin fungicide
- **Mikado[®]** the leading corn herbicide in Europe

Crop Protection Breakdown by Business Units 2000 (E)

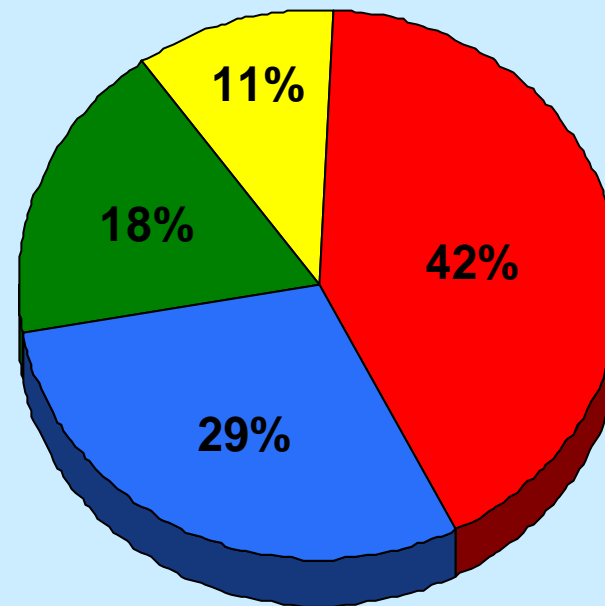
World Market

30.3 bn €



Bayer

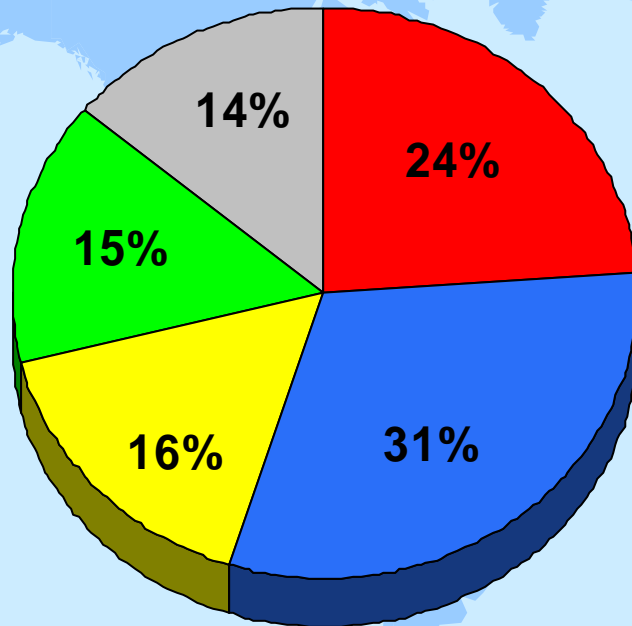
2.46 bn € / MS 8.1 %



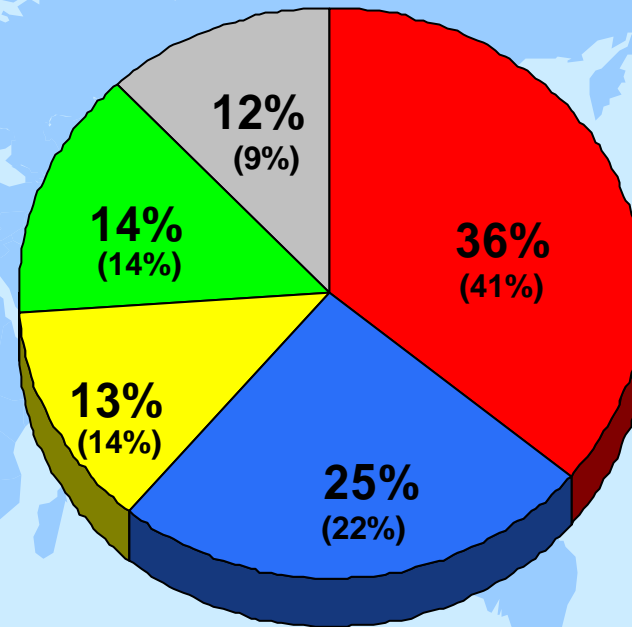
■ Insecticides ■ Fungicides ■ Herbicides ■ GPC

Crop Protection Regional Breakdown 2000 (E)

World Market
30.3 bn € / + 13%



Bayer
2.46 bn € / + 13%

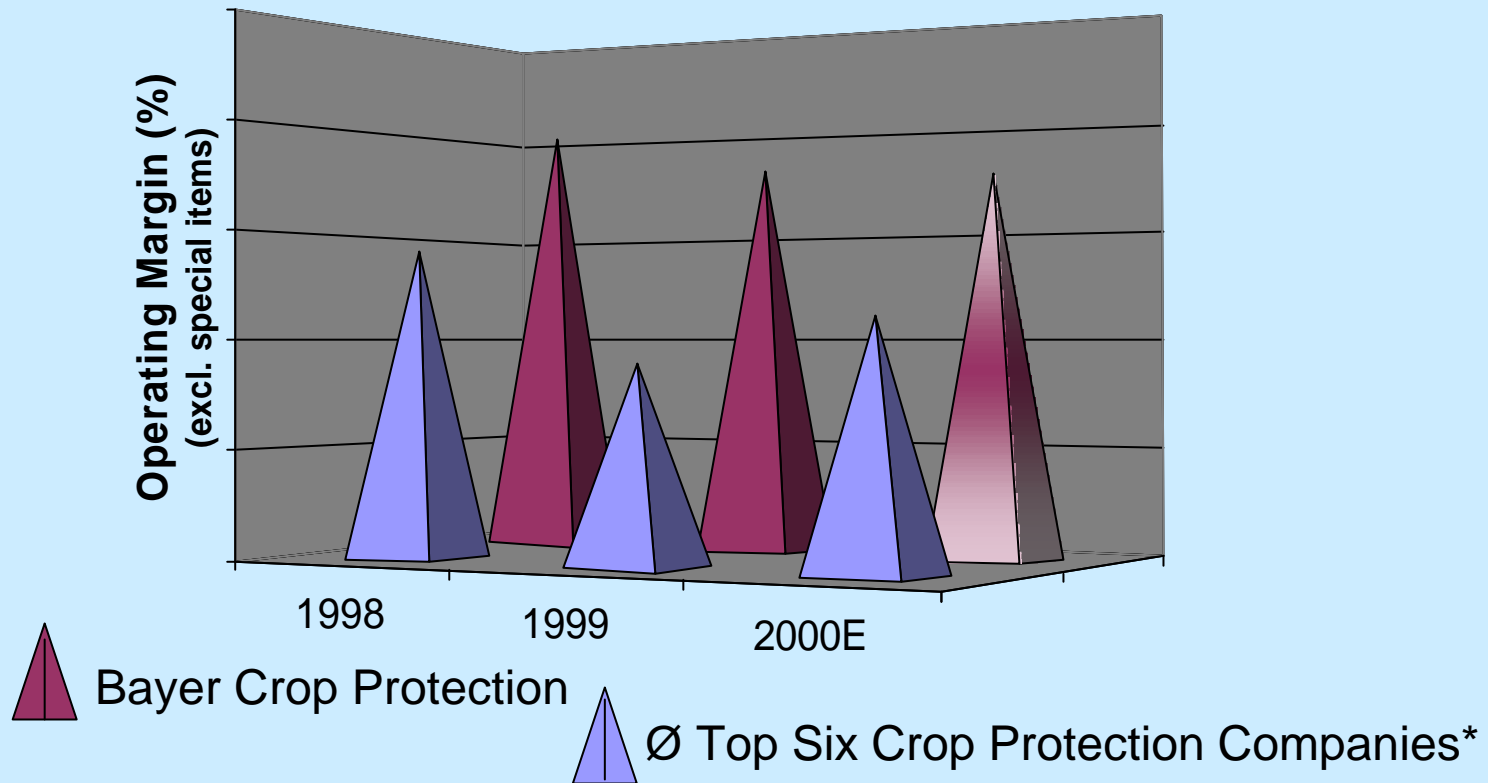


■ Europe
 ■ NAFTA
 ■ International
 ■ Latin America
 ■ North East Asia

(1999 figures in brackets)

Bayer's Operating Margin is Consistently Ahead of the Industry Average

Bayer profit 2000 expected to be in the same range as 1999



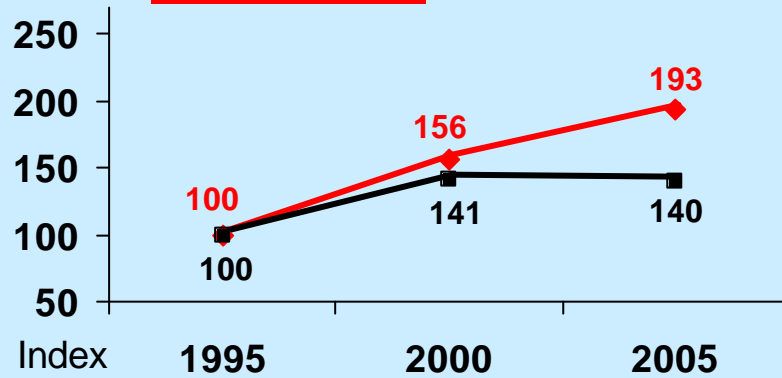
*Calculations based on Reports of - JP Morgan, Lehman Brothers, Credit Suisse First Boston, Dresdner Kleinwort Benson

Crop Protection

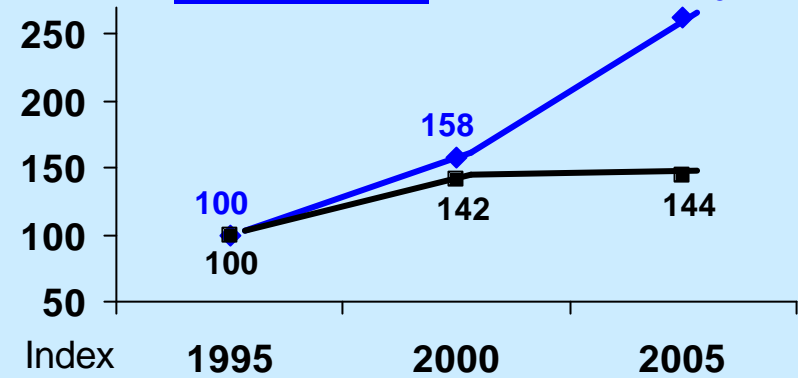


Bayer's Strength in Insecticides & Fungicides Secures High Profitability

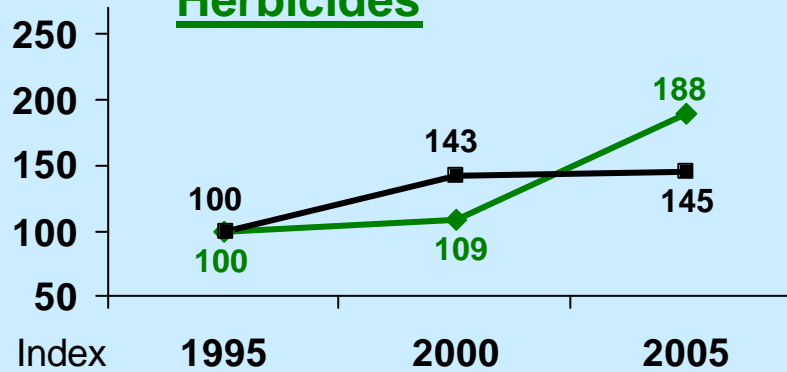
Insecticides



Fungicides

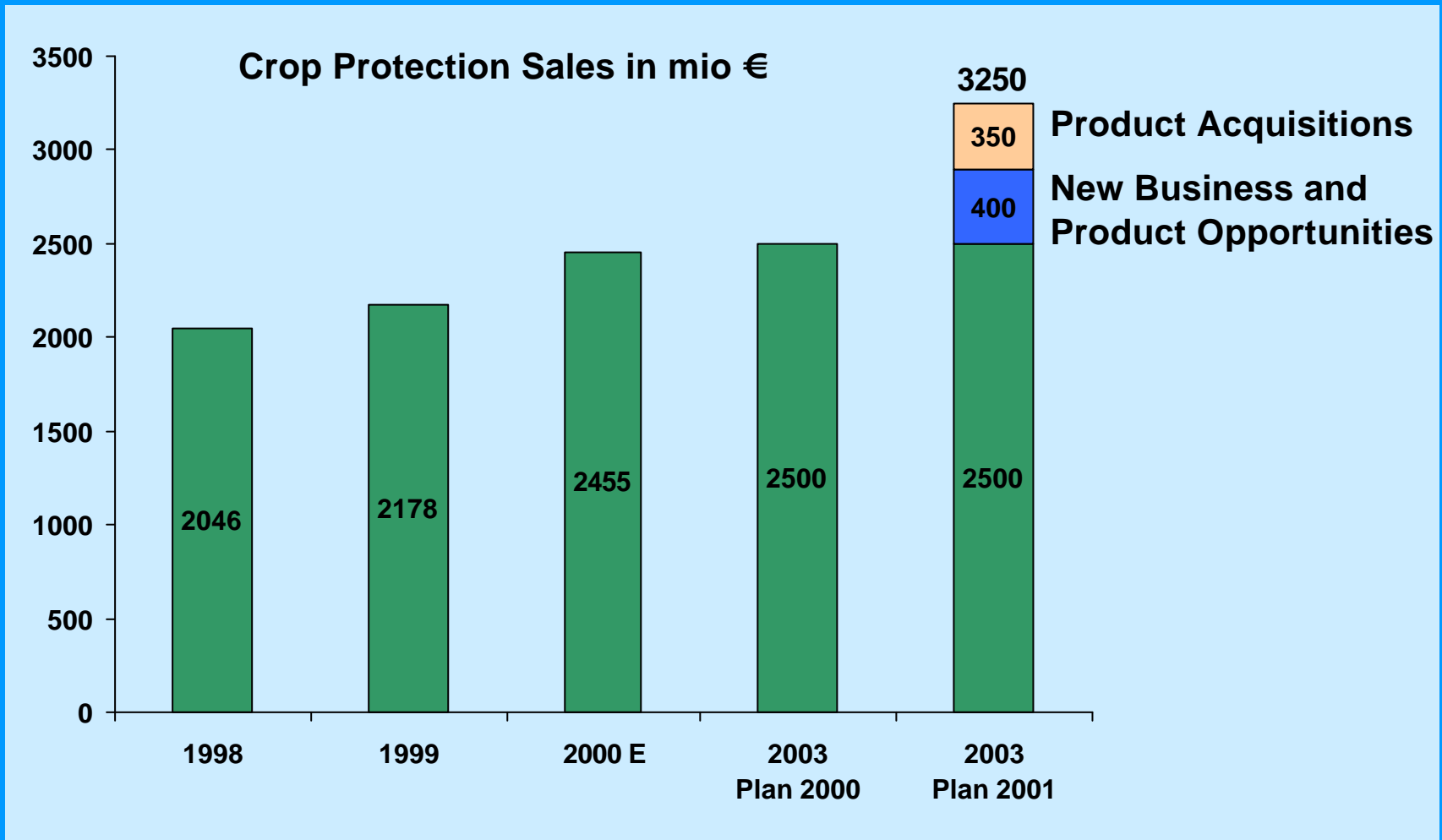


Herbicides



(Bayer Estimates based on €)

Bayer's Strength: Growth by Capturing Opportunities



Crop Protection



Imidacloprid No.1 Insecticide - Innovative Chemistry and New Applications Boost Sales to Over 560 mio €



Seed treatment
dressing, pelleting

- sugar beet
- cereals
- corn
- sunflower
- cotton



Soil treatment
granules, tablets,
liquid applications

- rice
- vegetables
- potatoes
- lawns
- ornamental plants
- tobacco



Leaf treatment
sprays

- pome and stone fruits
- cotton
- grapes



Stem treatment
brush applications,
“painting”, injection

- citrus fruits
- hops
- pome fruits
- ornamental trees

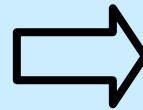
The Glassy-Winged Sharpshooter - Evolution Creates New Markets



Glassy-Winged Sharpshooter migrates from Citrus to Grapes



Serious Crop Damage traditionally controlled by Chain Saw



Uncontrollable bacterial Pierce's Disease transmitted by GWSS in Grapes



Innovate and effective Chemical Control with Imidacloprid

FLINT® - the New Blockbuster Product Line

FLINT®

Trifloxystrobin (TFX)

STRATEGO®

TFX + Propiconazole

TWIST®

TFX

SPHERE®

TFX + Cyproconazole

ECLAIR®

TFX + Cymoxanil

TEGA®

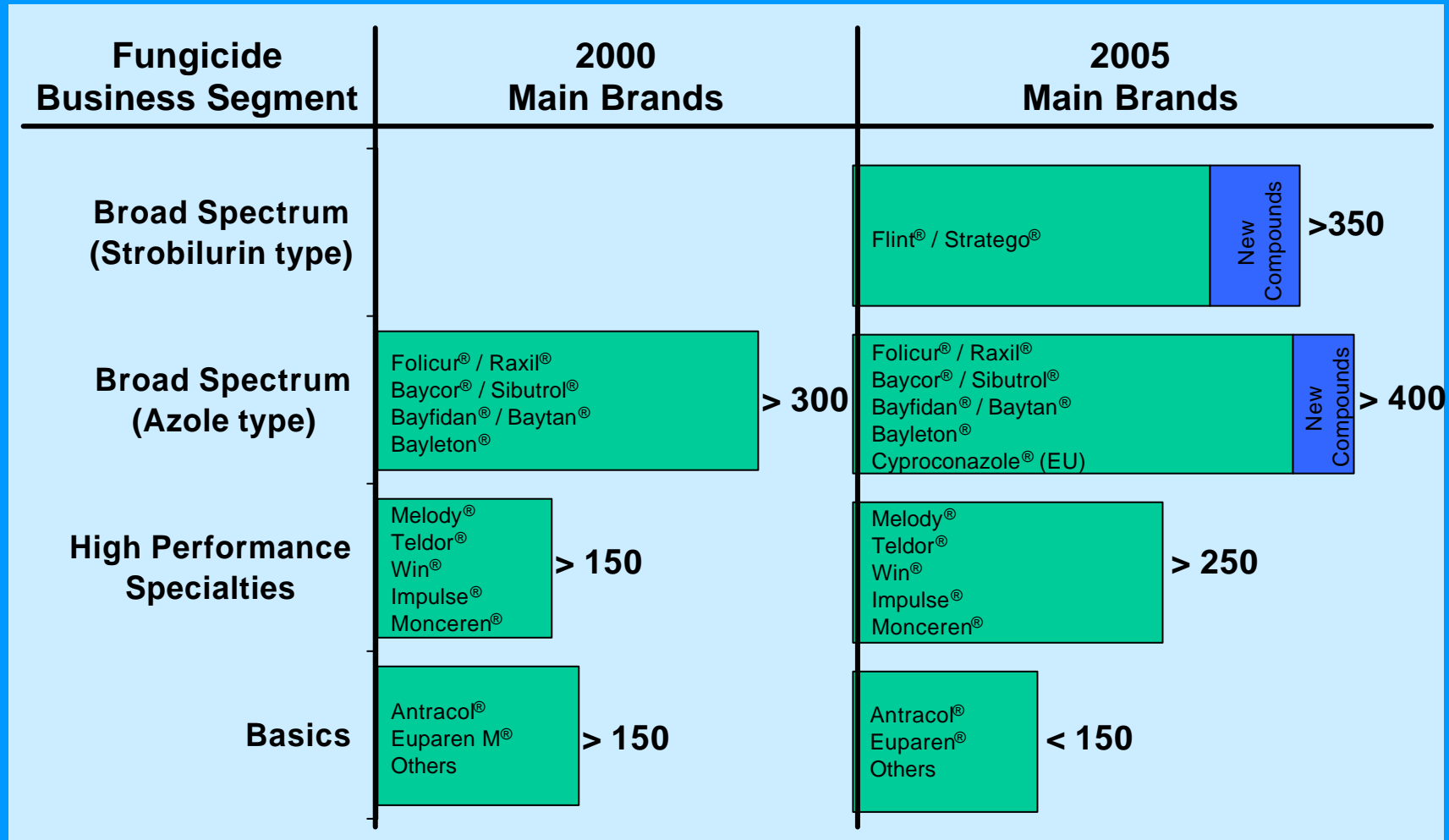
TFX

COMPASS®

TFX

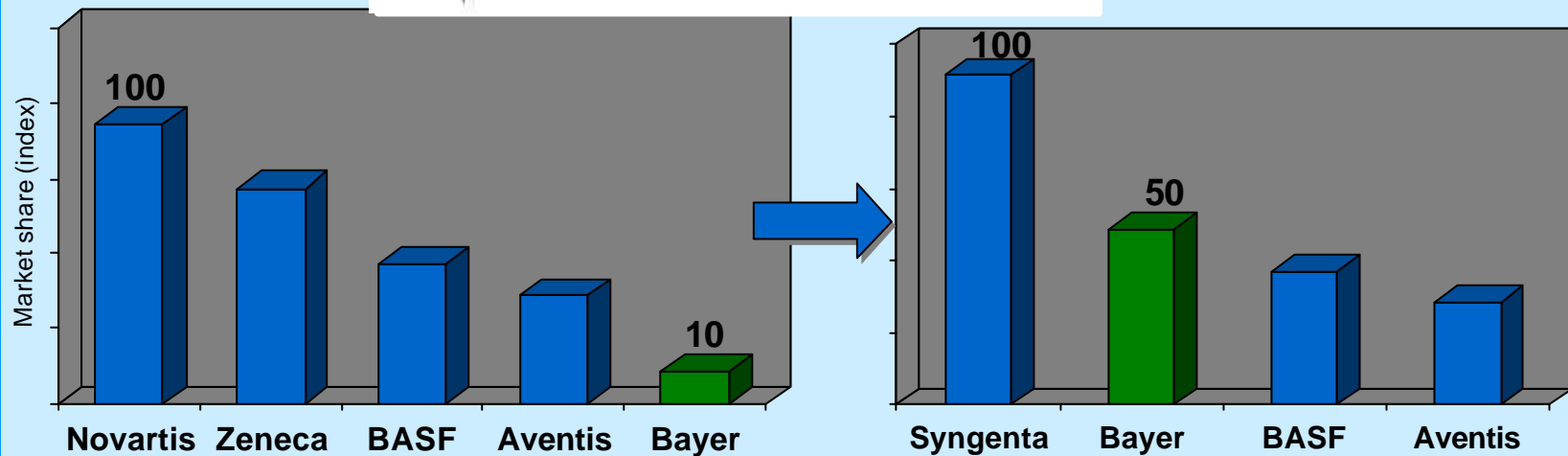
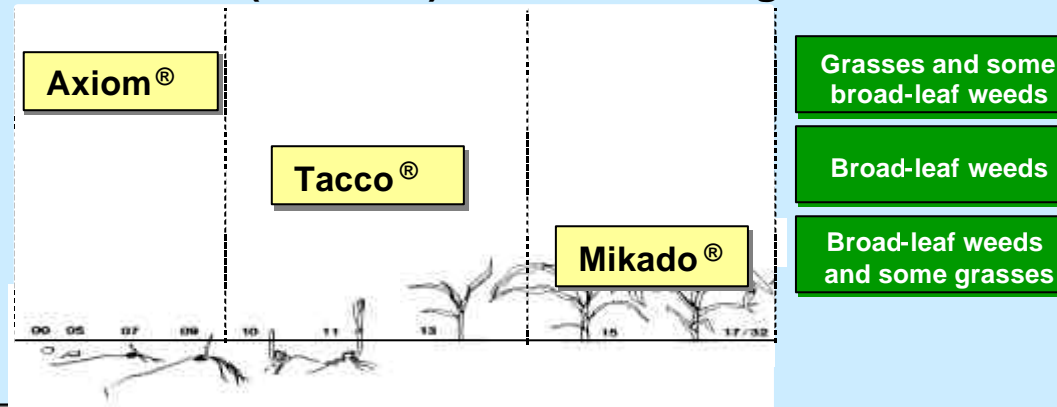
1. FLINT® product line targeted to reach 300 mio € annual sales by 2004, with initial sales in 2001 of 130 - 150 mio €
2. FLINT® growth supported by growing demand for high performance strobilurin based products
3. Strobilurin fungicide sales expected to achieve 1 bn € in 2000 and increase further to 1.25 bn € in 2005

Bayer Regains Technology Leadership in Fungicides



Bayer Joins Top League in the European Corn Herbicide Market

Acquisition of Sulcotrione (Mikado®) and in-licensing of Metosulam (Tacco®)



(Source: Agroaccess 1999)

(Pro forma based on 1999)

Crop Protection



Bayer's Garden Professional Care Business (GPC)



Home & Garden



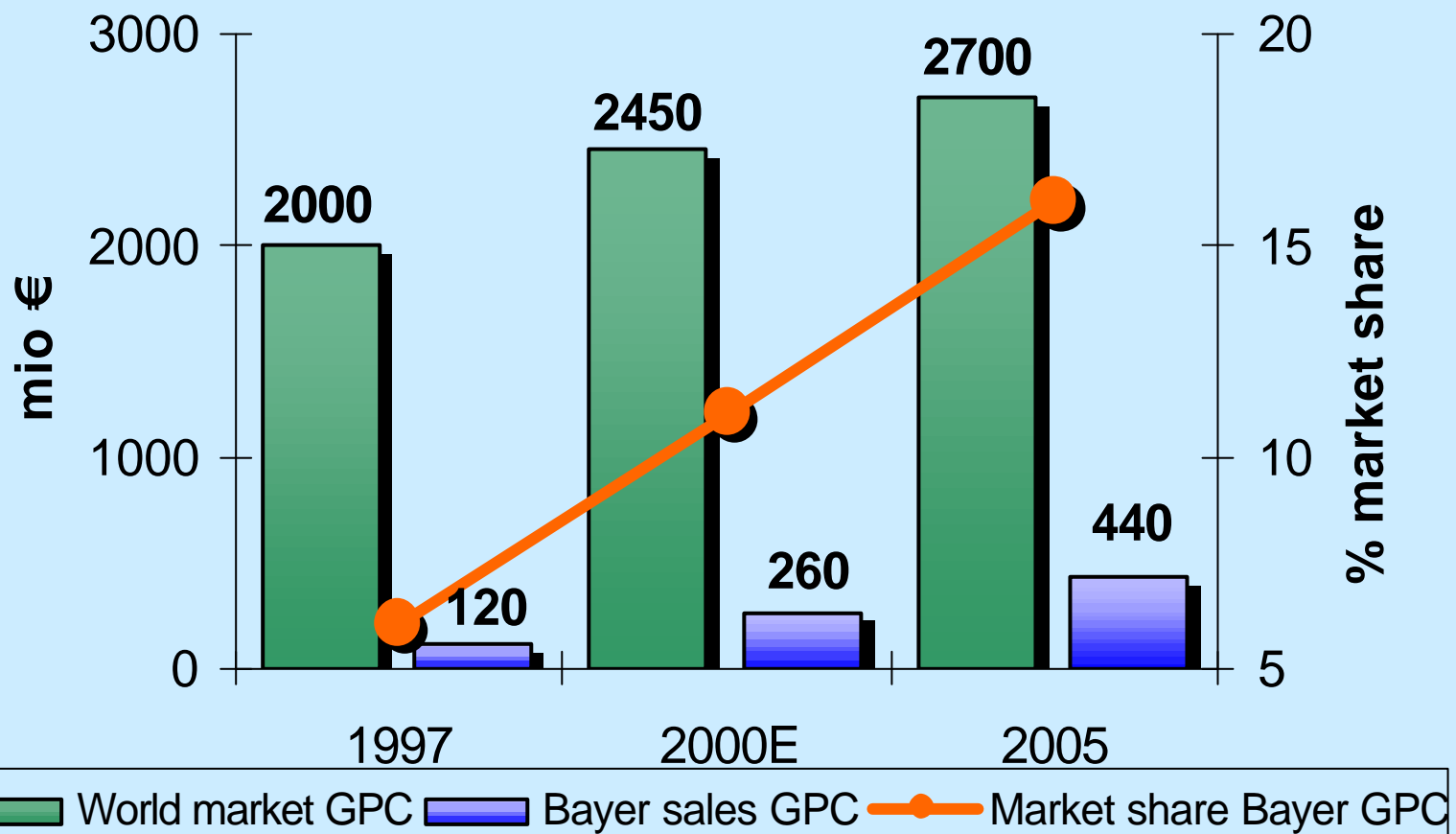
Termites



Turf

Marketing of Products for
Non-Agricultural Markets to
Consumers
(Home & Garden)
and Professional Users
(Turf, Termites)

Bayer`s Rapid Expansion in GPC Continues



Seed Treatment : Win Win Situation for Farmers and Bayer

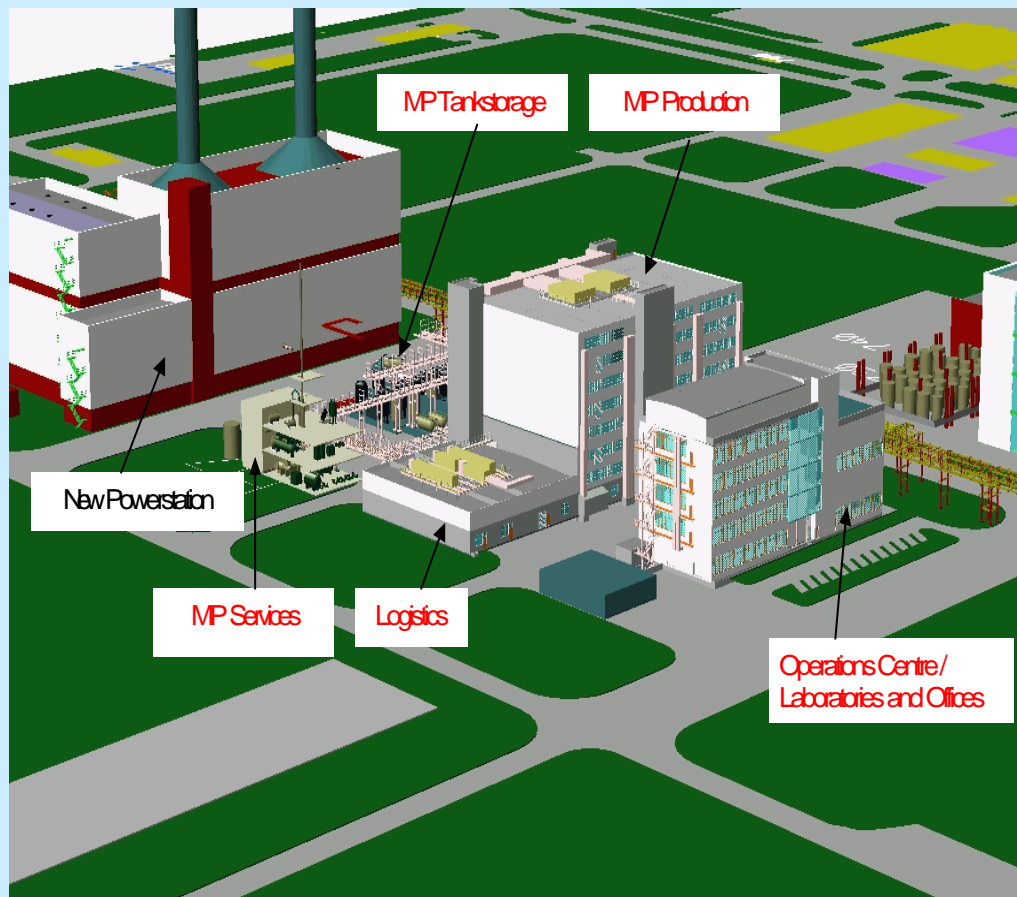
Corn: Seed Treatment Pest: Corn Rootworm Launch: 2001 (USA)	Traditional Furrow Treatments	New Gaucho®/Poncho® Seed Treatment
Active Ingredient / Acre*	100	25
Efficacy*	100	120
Total Costs / Acre*	100	≈ 100
⇒ product cost	100	≥ 100
⇒ farmer convenience	100	150
No of Products	5	1
Market Size**	250	250
Bayer Market Share	12 %	40 %

*Based on Indices

**Total est. Market Size (USA farmer level, mio US\$)

Leading Production Know-how at Bayer Dormagen Site

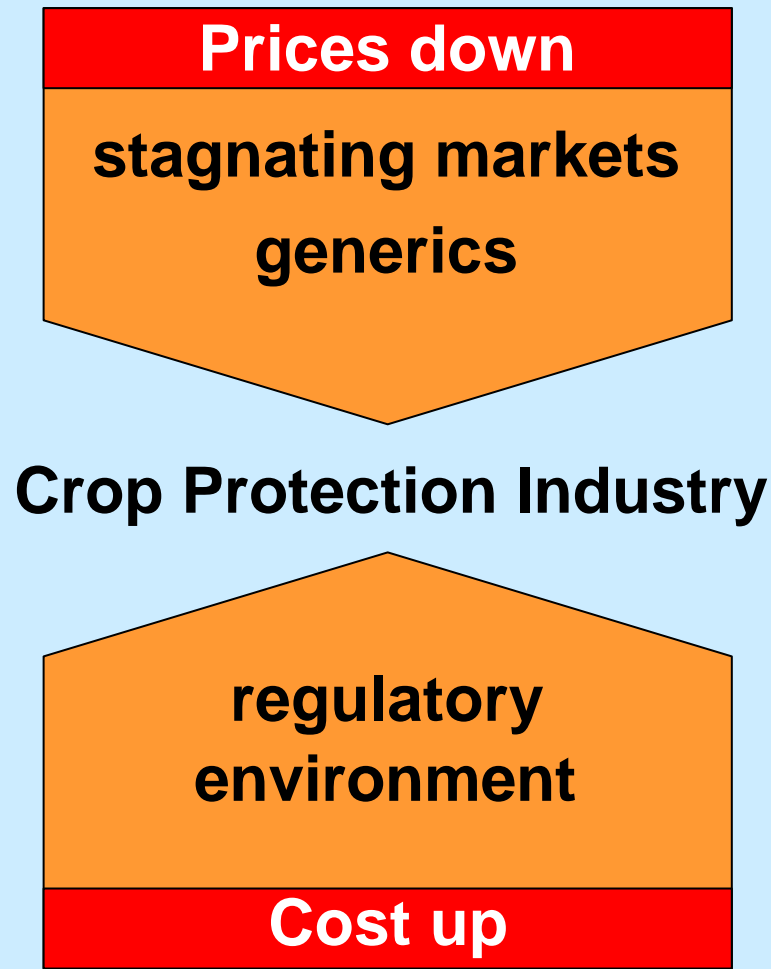
Multi-Purpose-Production – Investment 110 mio €



- State-of-the-art facility
- Designed to handle wide range of actives
- Development of high active substances reduces capacity requirements
- Streamlined innovative process-development activities
- Cost effective concentration of small-scale production and pilot plant facilities

Crop Protection

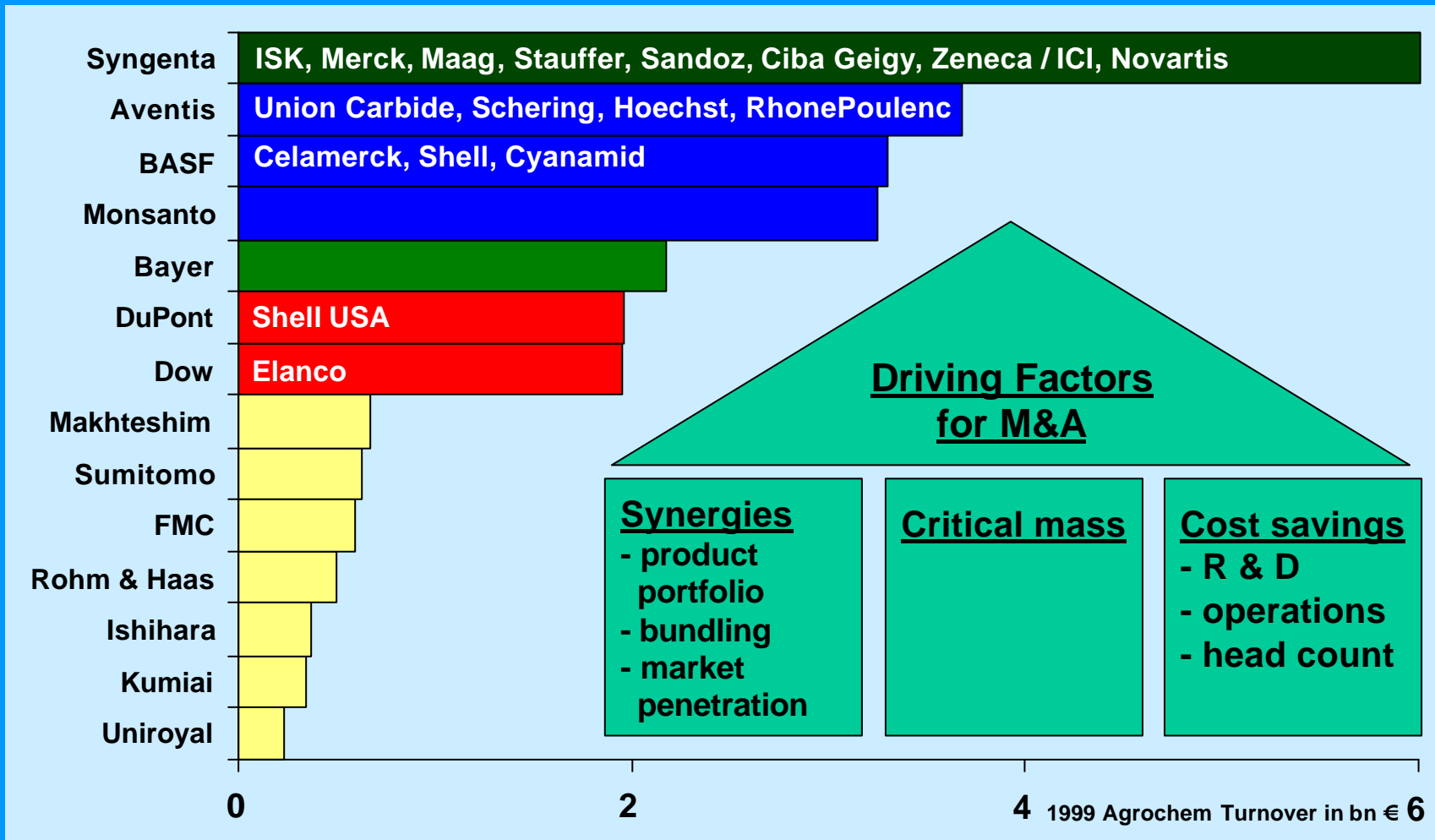
Pressure on Crop Protection Markets has Led to Consolidation



One Strategic Alternative:



Consolidation in Crop Protection has Halved the Number of Companies



Accelerated Innovation in Crop Protection will Secure Growth

Prices down

**stagnating markets
generics**

Crop Protection Industry

**regulatory
environment**

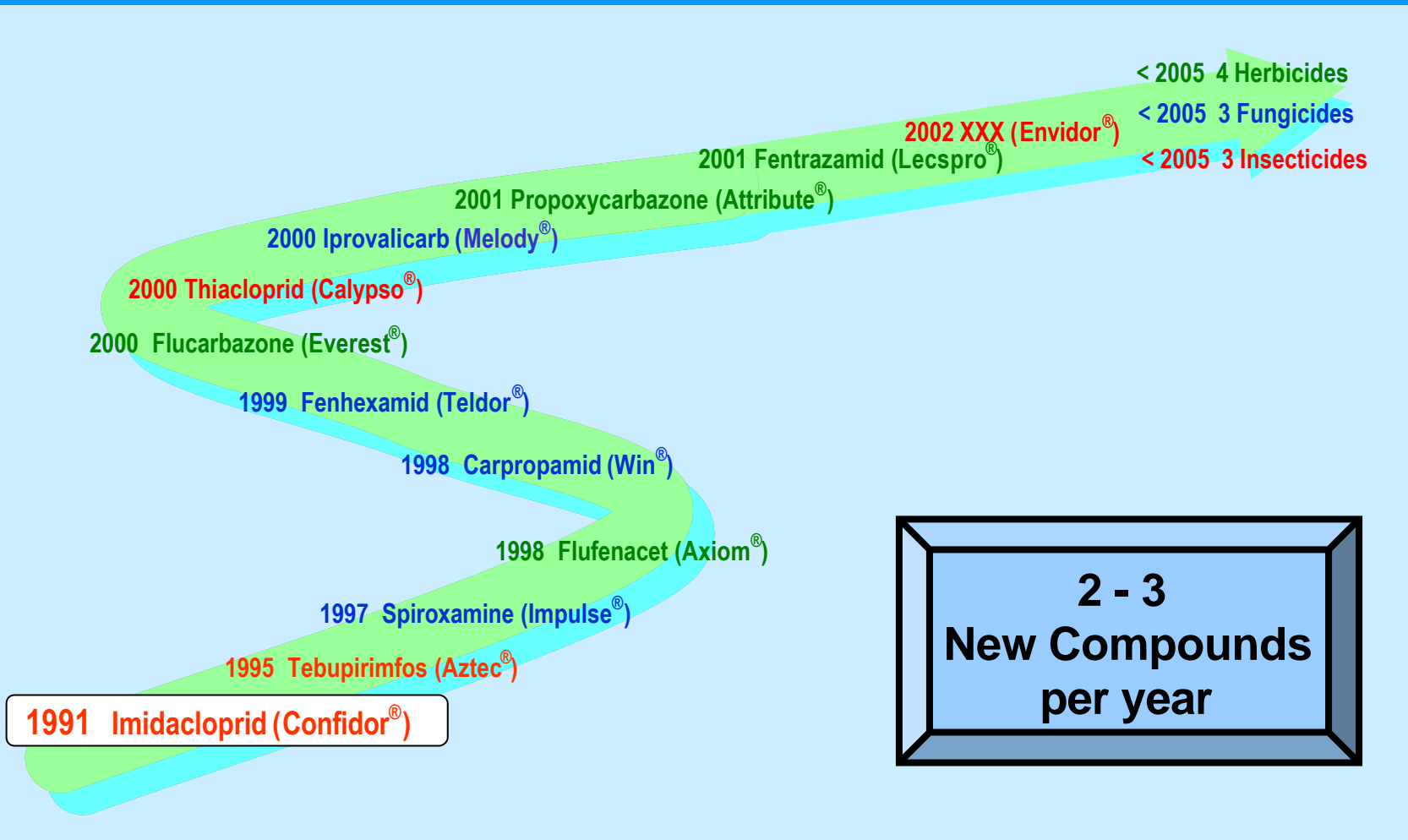
Cost up

The Way Forward:

Innovation

**... in Chemistry
... and Biotechnology**

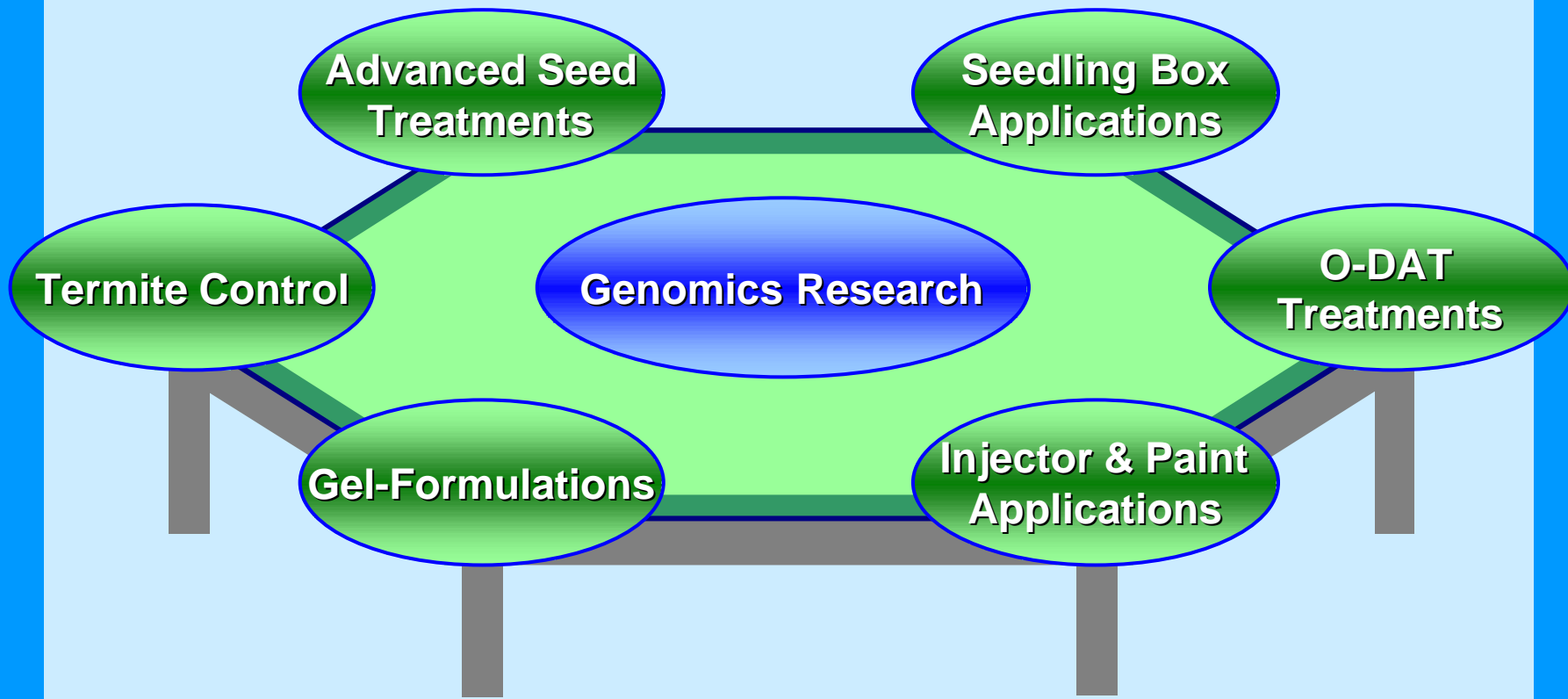
Milestones from Bayer's Agrochemical Research



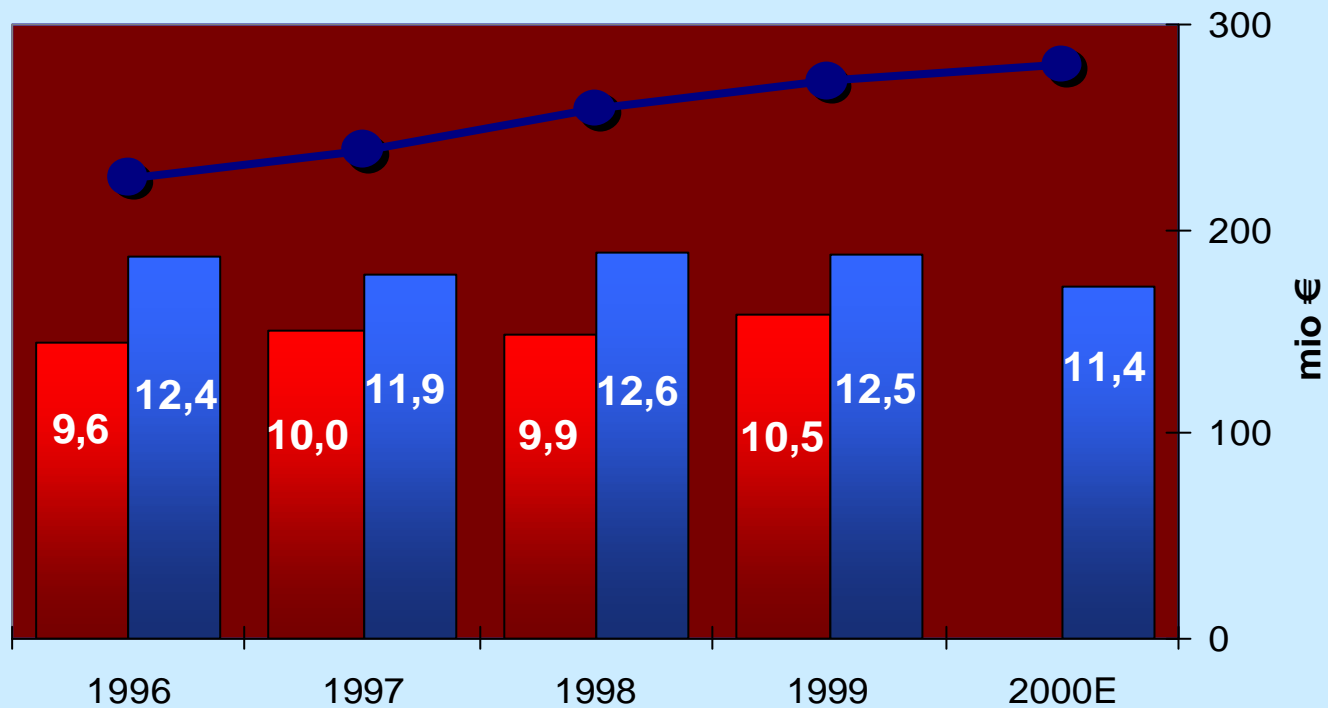
Crop Protection



Bayer's Innovative Technology Platform



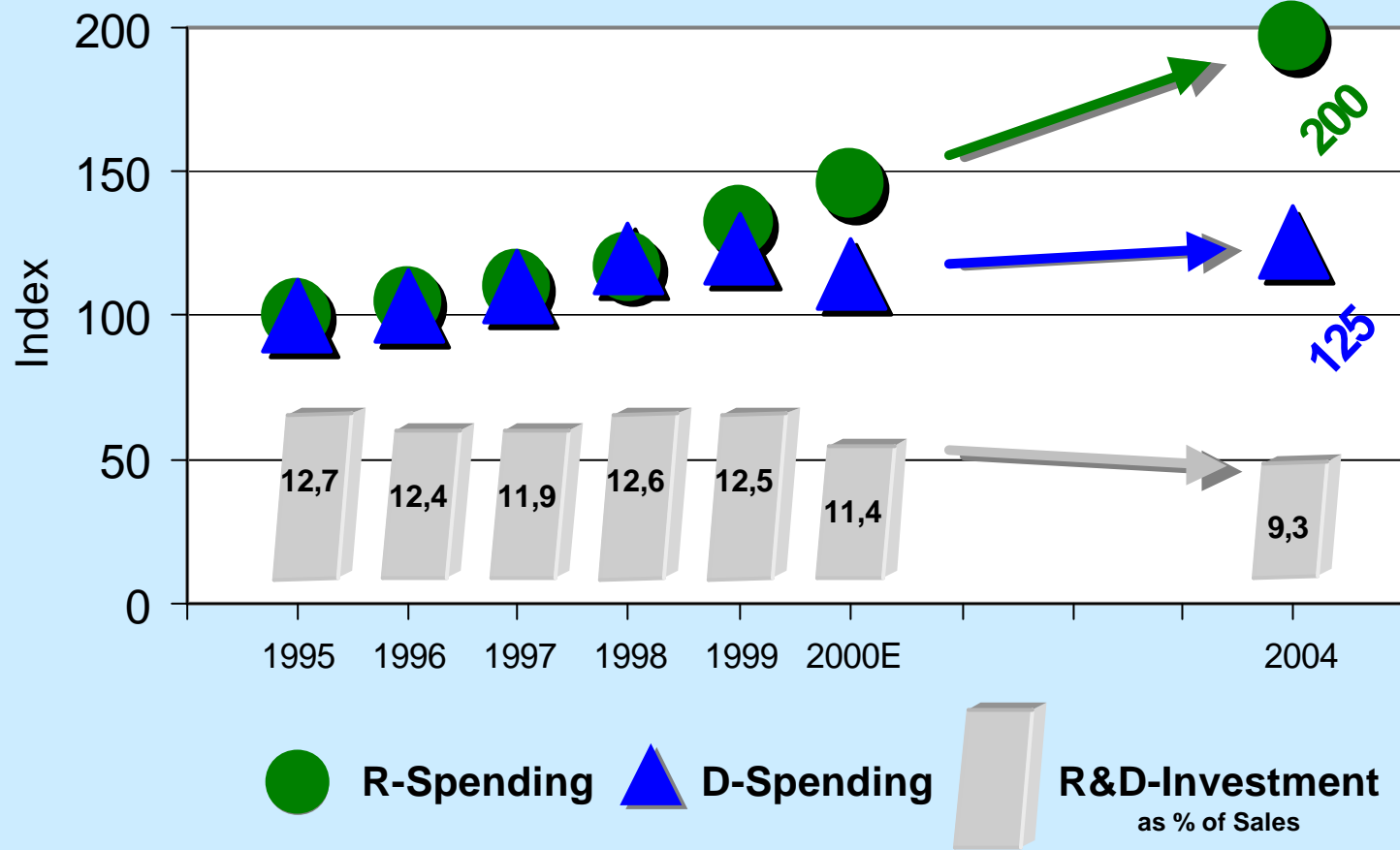
Aggressive R & D Budget in Comparison to TOP 10 AgChem Companies Secures Future Growth



■ ∅ Top Ten as % of sales
 ■ Bayer as % of sales
 —●— Bayer R&D Spending

■ Source: Wood MacKenzie

Shift of Development Spending will Double Innovative Research Investments



Intelligent Research Brings Bayer Into a Leading Position

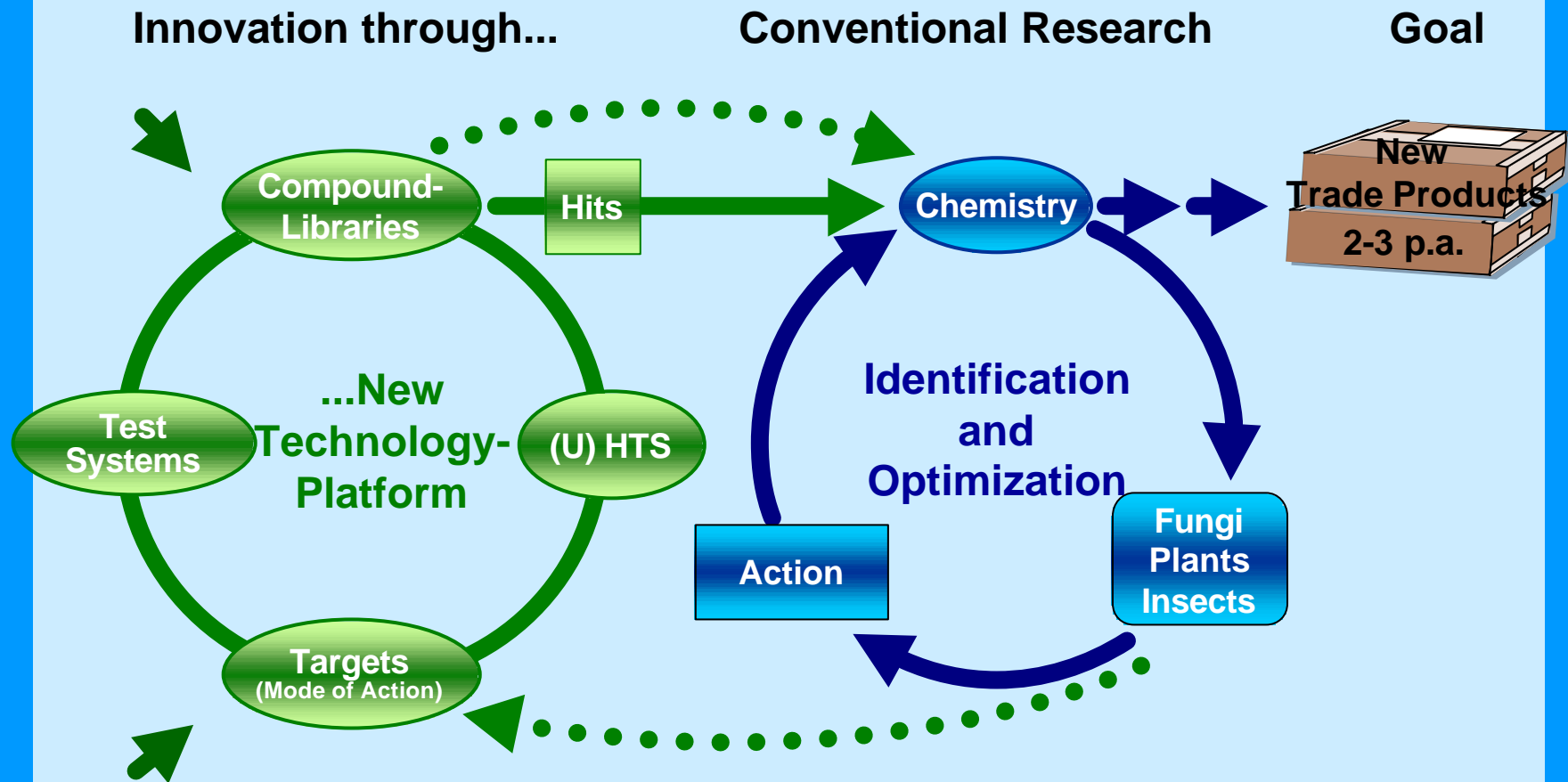
Goals

Milestones

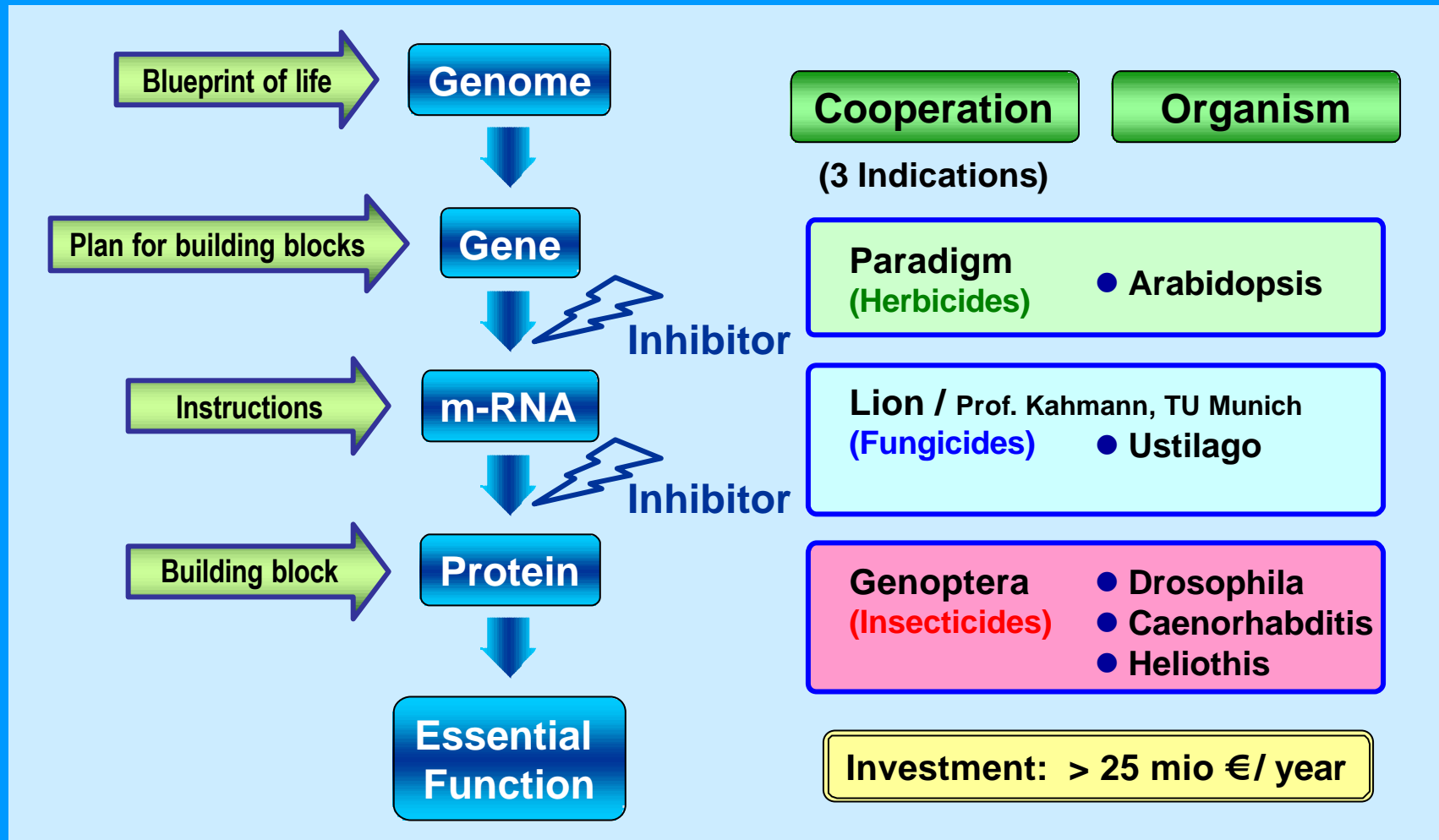
Innovative AgChem Products With New Modes Of Action

- High Efficacy
- Targeted Resistance Management
- Lower Dosage per Acre
- Higher Crop Quality
- Environmental Improvements
- Consumer and Applicator Safety

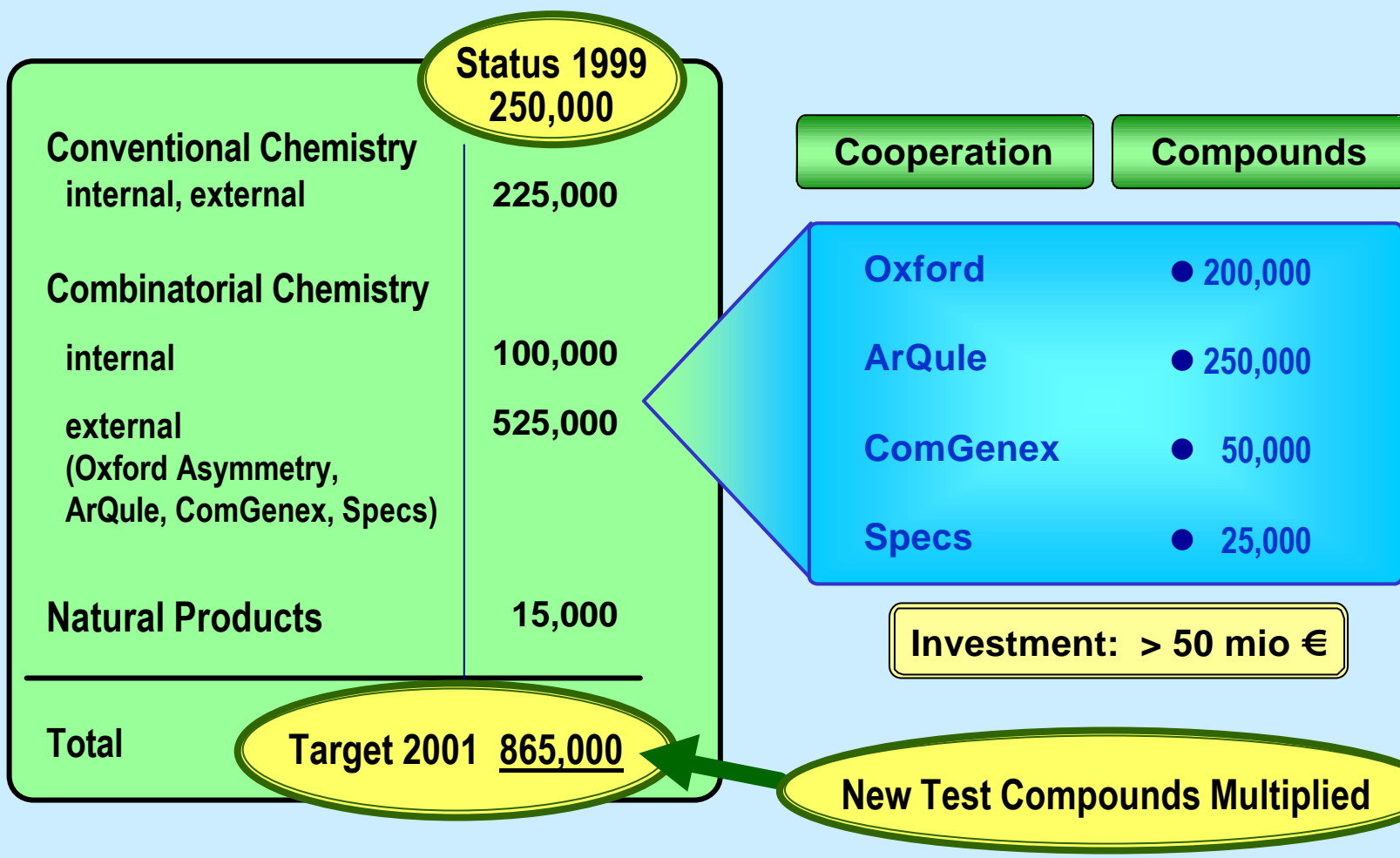
Change of Paradigm in Bayer's Research Strategy



Bayer Genomics: Broad Biotechnology Platform Covers All 3 Indications



Worldwide Access to Chemical Libraries



Leading Cutting Edge Research Technology

Quantum Leap

HTS: 1999



- 10,000 - 30,000 Compounds/day
- < 500,000 Compounds/library
- 96/384-well test plates
- Cost/Compound: 0.1 - 0.5 €

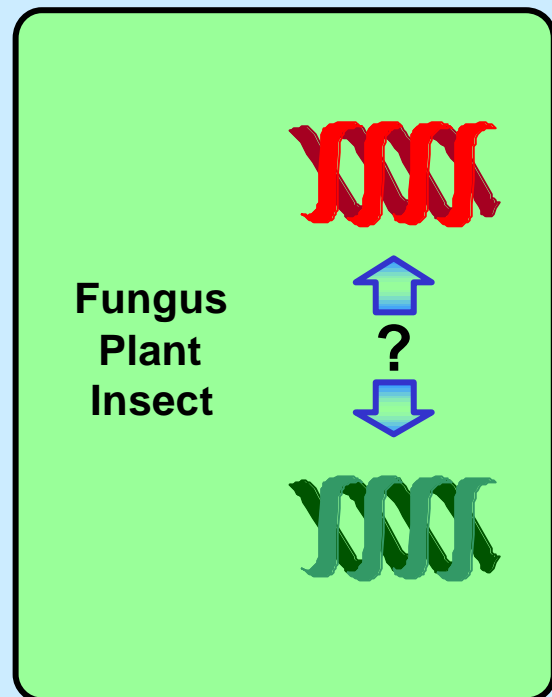
UHTS: 2001



- 100,000 - 200,000 Compounds/day
- >> 500,000 Compounds/library
- 384/1536-well test plates
- Cost/Compound: < 0.1 €

Scientific Computation: Intelligent Data Evaluation

Bioinformatics

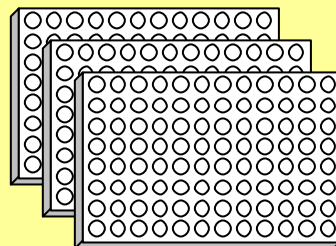


Cheminformatics

Library design



Chemical
Diversity



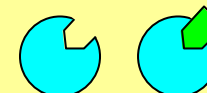
Lead Structure Identification/ Optimization



Analysis of
HTS Data



Design of Lead
Structures
in Proteins



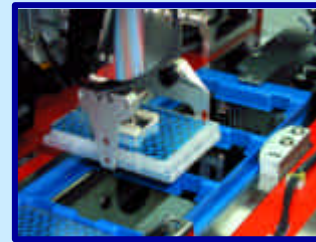
Co-operation Project with Lion/Triplos: > 25 Mio €

New High Tech Logistics as Support Tool

- **Bottle store**
(> 2 Mio spaces)
- **Test plate store**
(> 100,000 test plates)
- **Test plate replicator**
- **Compound bottling**



Compound bottling



Test plate grab arm



Test plate replicator



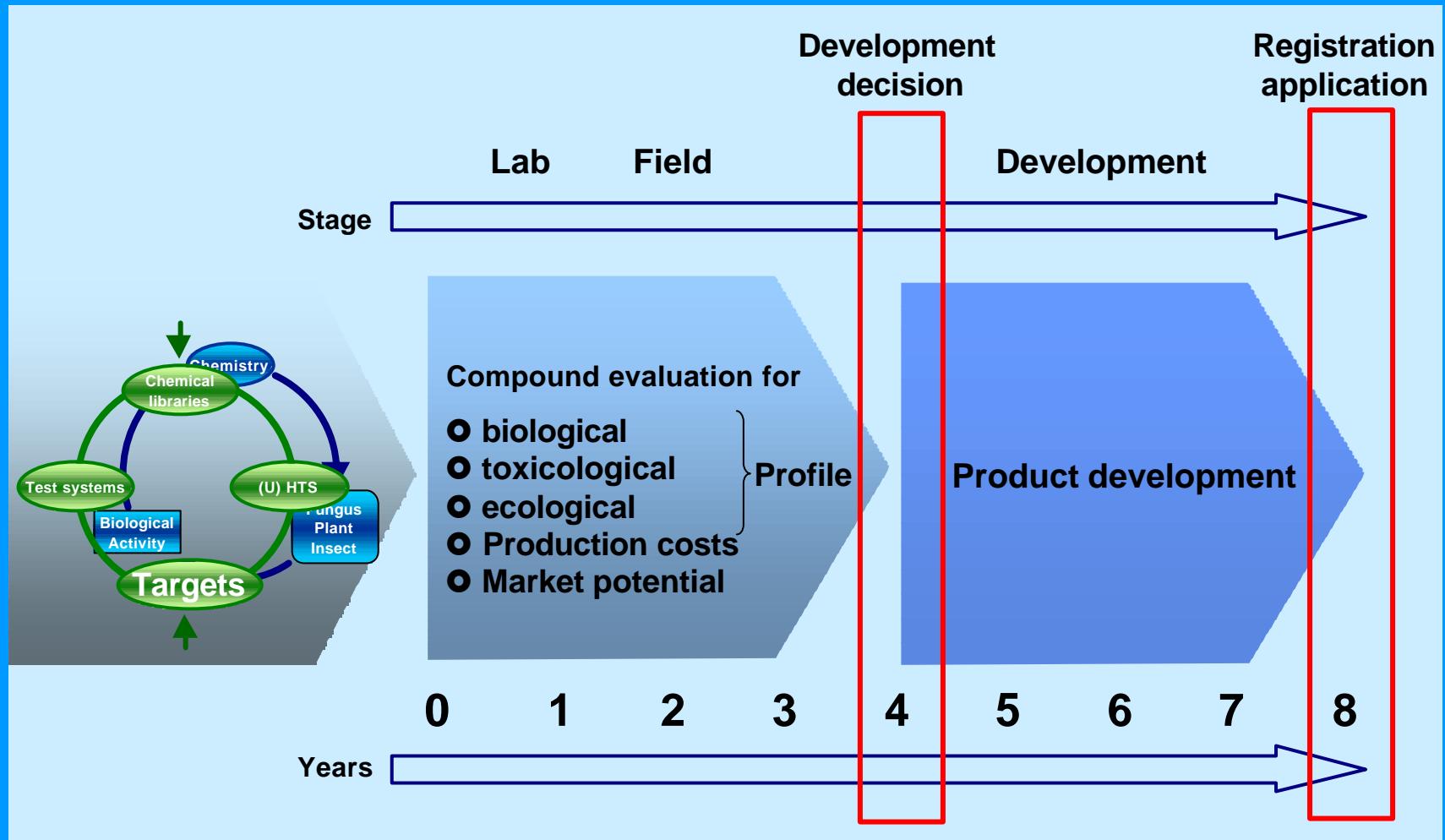
Store Robot



Investment: > 20 mio €

Crop Protection

The New Route from Idea to Commercial Product

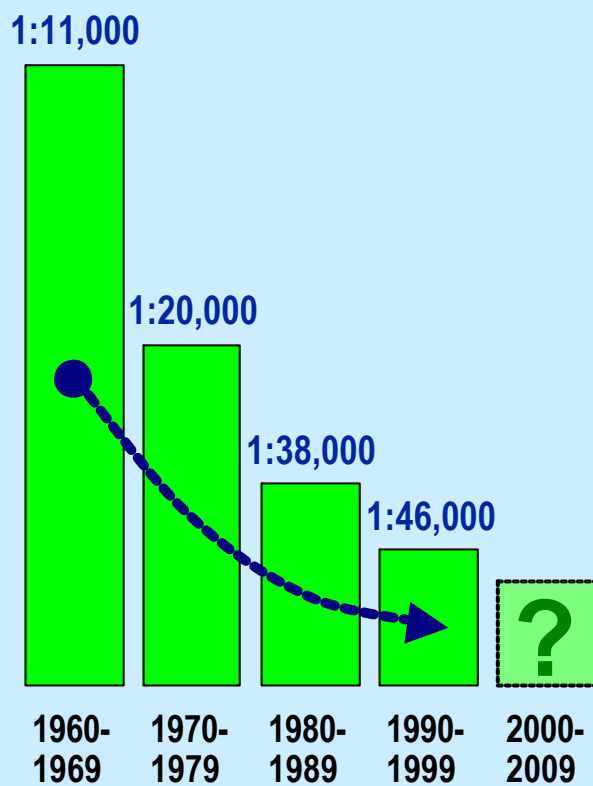


Crop Protection

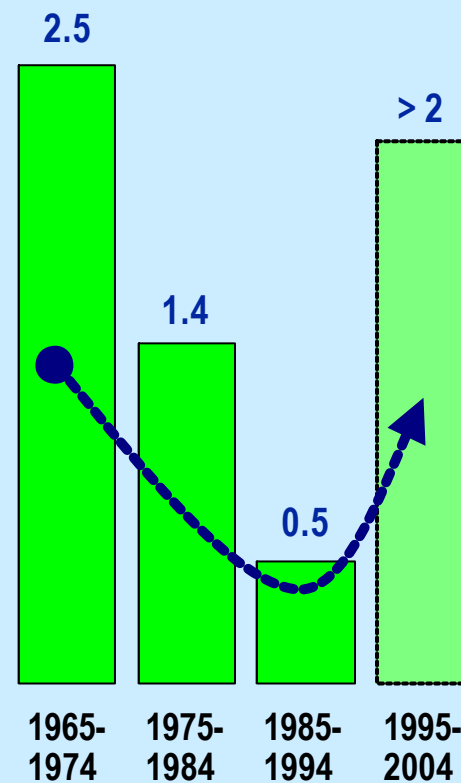


Crop Protection Research Success Rates Increase

Hit Rate



New Launches/Year



Intelligent Research Multiplies Chances for New Compounds

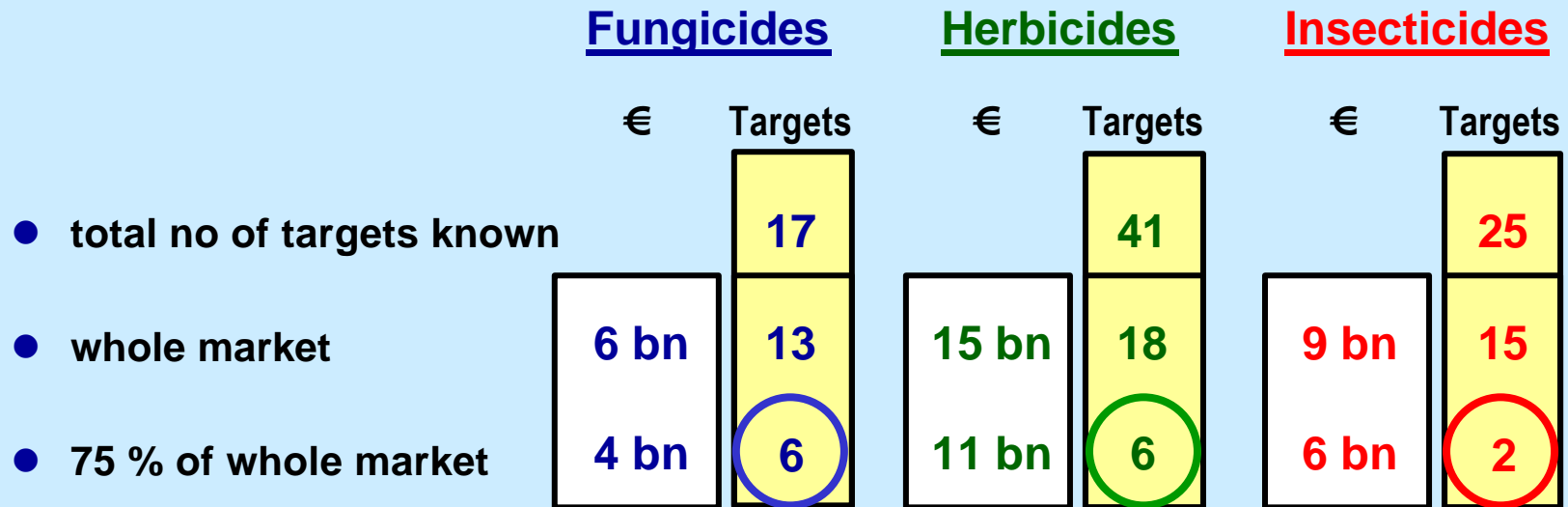
Goals

Milestones

Innovative AgChem Products With New Modes Of Action

Deadline	Goal	Status
End 1999	start routine operations HTS with 12 runs	14 runs
Q 1 2000	JV Genoptera integration	successful
End 2000	start routine operations UHTS with 1 run	6 runs
End 2000	Delivery of > 25 assays	> 30
Q 2 2001	logistic centre in operation	in time
End 2001	≥ 10 lead structures	

Crop Protection: New Targets and New Markets



Due to resistance and environmental concerns new active ingredients with novel mode of action are necessary

Europe: Nearly 700 AI's Have to be Re-registered Until 2004

Official Journal of the European Communities

COMMISSION REGULATION (EC) No 451/2000
of 28 February 2000
laying down the detailed rules for the implementation of the second and third stages of the work programme referred to in Article 8(2) of Council Directive 91/414/EEC

CALL FOR NOTIFICATION

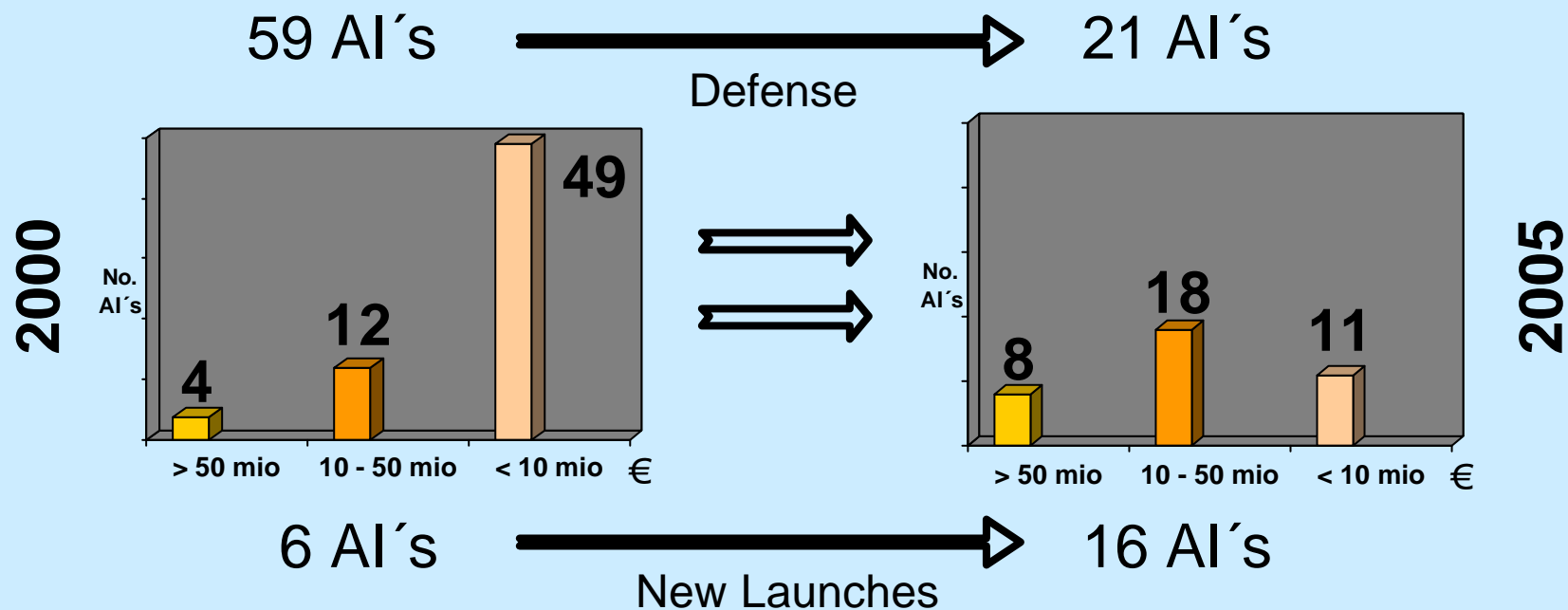
	TOTAL CALLS	EXP. INCLUSION IN ANNEX I (ECPA ESTIMATE)
FIRST LIST	90	75
SECOND LIST	148	50
THIRD LIST	448	100
IN TOTAL	678	225

Bayer Portfolio Europe: Streamlining and Rejuvenation

Sales and No. of Bayer Active Ingredients in Europe

Total Sales: 890 mio €

Total Sales: 1250 mio €



Crop Protection



Bayer Crop Protection is Well Positioned for the Future

- **Good performance in 2000**
- **Industry leader in profitability**
- **Future growth well above industry average**
- **Technology leader in Insecticides, Fungicides, Seed Treatments and GPC**
- **Young product portfolio**
- **2-3 new products per year from innovative research pipeline**
- **Cutting edge genomics research platform**
- **Well positioned for future options incl. acquisitions in Crop Protection and Biotechnology**