



Concepts and Strategies for a successful Product Development

The case of EPN's for the control of hazelnut weevil, *Balaninus nucum*

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From strain to the market

- Introduction in the market of a plant protection product
- Not only efficacy
- a long and costly process
- concepts and strategies
- decisions to be taken at different levels and at key moments.

Product development is a complex project

Development Stages Plan (DSP)

- Chemistry
- Biology
- Human health risk assessment
- Environmental risk assessment
- Regulatory
- Legal and patent matters
- Production process development and optimisation
- market studies
- Investments studies (economy)

The progress will be evaluated by a Development Committee (DC)
a high level management tool

Comparative costs of product development

- Globally these companies invest 7.5% of their turn over for R&D, of which
- 3.7% for Patent
- 17.7% Re.-registration
- 24.8% Maintenance
- 31.3% Discovery
- 22.5% Development

ECPA survey published by Agrow in December 2005

Comparative costs of product development

- 60 % of R&D
- 20 new product in the last 10 years
- 250 Mio € per product
- 8 - 10 years

Sales and Development Costs for New Plant Protection Products ('000 €)

	Chemical pesticide	MBCAs	IBCA's	Semiochem. Pheromones	Natural extracts	Comments
Level sales at "Plateau"	113'000	3'000				Average Chemicals and MBCA including Bt
		250	120	280	250	Excluding Bt
Development costs	250'000	1'900	1'335	945	1'920	
Production investment	650'000	1'500	0.350	0.550	2.500	
Devt.cost/ plateau sales	2.21	7.6	318	3.38	256	
Payback time	6	21 Excluding Bt	17	8	14	Years

Sales and Development Costs for New Plant Protection Products ('000 €)

	Chemical pesticide		MBCAs		IBCA's		Semiochem. Pheromones		Natural extracts		Comments
	€	%	€	%	€	%	€	%	€	%	
Development Cost											
Chemistry	112500	45					180	19	420	22	
Biology	45'000	18	350	18	310	23	25	3	-	-	
Field trials (eff.)	15'000	6	350	18	420	31	280	30	770	40	
Human risks assessment	15'000	6	120	6	--	-	30	3	320	17	
Environmental risks assessm.	7'500	3	230	12	50	4	70	7	130	7	
Regulatory patents	2'500	1	220	12	20	1	70	7	280	15	
Production	32'500	13	635	33	535	40	290	31	110	6	

The case of EPNs for the control of

Balaninus nucum in hazelnuts



Hazel nut borer

Haselnussbohrer

Balaninus nucum

Balaninus nucum in hazelnuts

In that case, all decisions relative to the development and the production of the agents were already taken by the manufacturers

Agrometrix ICM decided to investigate into 6 directions:

- to test in vivo (field trials) , the best suitable product (efficacy)
- to study the behaviour of EPNs in the field under cropping situation
- to collect micro- ecological, meteorological and phenomenological data in hazelnut plantations
- to design a development and forecasting model
- to design control strategies
- to develop an electronic decision supporting device for growers, individually or in groups

Markets - attractive in size and sales forecast ?

Worldwide 900'000 ha

400'00ha is of commercial value

Turkey	230'000 ha
Italy	40'000 ha
Spain	30'000 ha
USA	110'000 ha
France	3'000 ha

- *Balaninus nucum* is the most important pest
- 50% loss evaluated to above 2'000 €/ha
- Endosulfan, 300 €/ha treatment, 5-10% losses
- 2008, need for new potential insecticide

EPNs Sales forecast (excluding USA)

COUNTRY	Concerned Acreage	Potential area for EPNs	Sales Forecast ('000 €)
Italy	40'000	15'000	12'250
Spain	30'000	20'000	9'800
France	3'000	1'500	735
Turkey	230'000	30'000	24'500
TOTAL			44'285

Planning of Activities

	2002	2003	2004	2005	2006	2007	2008
Market assessment	▲			▲	▲	▲	
Screening in vitro		▲	▲				
Field Trials (containers)							
Field trials (semi-commercial)							
Collection of field data							
Construction of a model							
Development electronic device - validation							
IPM strategy – Control Programme						●	
Production scale up (localisation, investment)					▲		

Planning of Activities

Production scale up (localisation, investment)					▲		
Distribution concept					▲		
Information and training							
Commercialisation							

Decision chart for the Control of *Balaninus nucum* in hazelnuts

DATE		AGROMETRIX ICM, Basle, Switzerland											
Responsible department		Development											
Responsible		A. Flueckiger											
Type of Development Project		CONVENTIONAL											
DECISION		Promotion to Stage				3		YES				NO	
COMPARATIVE ASSESMENT assess each criteria from 1 (poor) to 10 (good)													
			Candia te1		Candidate 2		Candidate 3		Competitive Product 1		Competitive Product 2		
	N°	Wei ght(1 -5)	H. bacter.		H. indica		H. megidis		Endosulfan		Karate (new		
Biology													
Efficacy in vitro	1	3	7	21	7	21	6	18	9	27	10	30	
Efficacy in vivo (field)	2	5	7	35	6	30	4	20	9	45	8	40	
specificity	3	4	6	28	6	28	6	28	3	12	2	8	
Mode of action	4	2	9	18	9	18	9	18	2	4	2	4	

Decision chart for the Control of *Balaninus nucum* in hazelnuts III

	N°	1-5	H. Bacter.		H. indica		H. megidis		Endosulfan		Karate (new)	
Use Concept												
IPM compatibility	13	4	9	36	9	36	8	32	6	24	6	24
Cost to grower	14	5	4	20	3	15	6	30	9	45	8	40
Use flexibility/ease	15	3	4	12	4	12	3	9	9	27	9	27
Trade												
Ease logistic	16	4	3	12	3	12	2	8	10	40	10	40
Availability distribution	17	5	2	10	1	5	2	10	10	50	10	50
Economy												
Market size	18	4	5	20	5	20	4	16	9	36	8	32
Potential sales	19	5	5	25	5	25	3	15	3	15	9	45
Financial performance	20	5	4	20	2	10	5	15	9	45	8	40
TOTAL			542		517		492		563		599	

- COST action 850 / Agrometrix ICM / EPNs manufacturers
- coordination with several research institutions
- coordination with Agroscope in Switzerland
- cooperation with growers organisations in France and Italy
- Participation of several EPNs producers
- Co-operation with Information technology firms
- Exchange of essential scientific knowledge over 3 years

Decision

- Evaluation chart, the Executive Management Committee agreed
- to pursue the project and allocated the necessary resources, but for one year only (2006).
- The completion of the project in 2007 and 2008 is subject to further analysis and forecasts.

