

Integrated Crop Protection: a hot potato?



Phytofar

Tuesday, 1st of Sept 2015 - Kick-off meeting Potato Europe

Content

1. **Phytofar?**
2. **Some key figures illustrating our industry**
3. **IPM in potato**
 - **Definition**
 - **Different aspects and solutions**
 - **Specifically related to potato growing**
 - **General aspects to safeguard human health, environment and biodiversity**
4. **Conclusions**



Phytofar – Belgian Association of Crop Protection Industry

Phytofar ?

- ✓ **Phytofar = the Belgian-Luxembourg Association of Crop Protection Industry**
- ✓ **Phytofar represents for its members all products that fall under Regulation 1107/2009 (chemical, biochemical and microbiological) for all farming methods and farm types**
- ✓ **Phytofar is active in the professional segment (agri and non-agri) and in the "home & garden" segment**
- ✓ **Phytofar promotes the proper use of plant protection products to ensure a sustainable agriculture with respect for people, animals and the environment**
- ✓ **Mission: healthy and safe food for everyone!**
- ✓ **18 members: Adama, Agriphar, BASF, Bayer CropScience, Bayer Environmental Science, Belchim, Certis, Compo, Dow AgroSciences, Dupont, Eastman, Edialux, Hermoo, Monsanto, Nufarm, Protex, Scotts, Syngenta**
- ✓ **More info? www.phytofar.be ; tel 02 238 97 72 ; info@phytofar.be**

Why is Integrated Pest Management (IPM) IMPORTANT

GLOBAL POPULATION
is on the rise



and therefore so is
FOOD DEMAND



this means farmers must
INCREASE YIELDS
ON EXISTING LANDS



IPM provides farmers with tools and strategies to
**SUSTAINABLY MAXIMISE
PRODUCTION**

AND
MINIMISE LOSSES
DUE TO INSECTS, WEEDS
AND DISEASES



while
**PROTECTING
BIODIVERSITY**
AND LOOKING AFTER
THE ENVIRONMENT



Source: ECPA

Role of the Crop Protection industry



Some key figures illustrating our industry

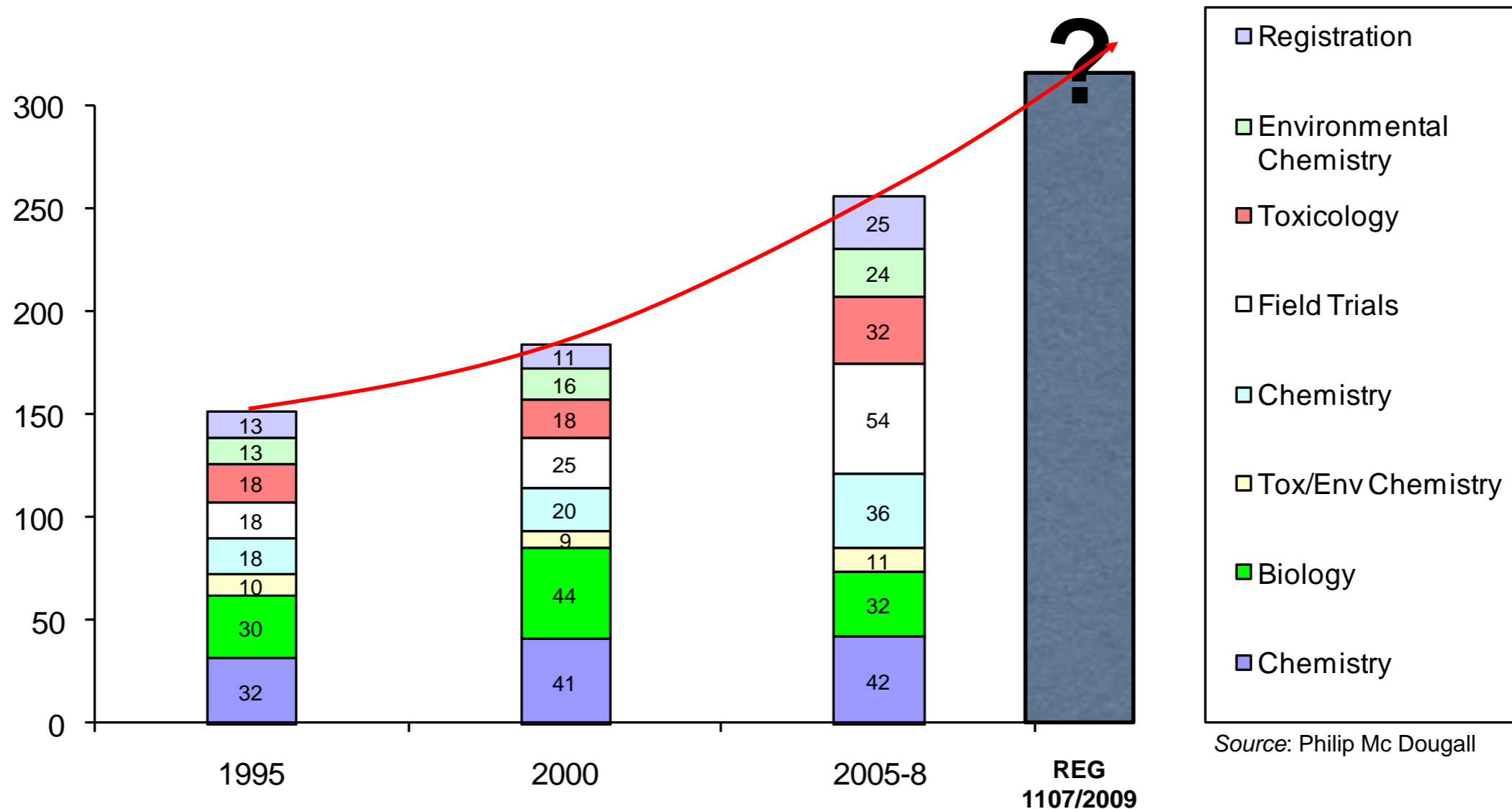
Development time of a PPP & EU impact



Source: Philip Mc Dougall

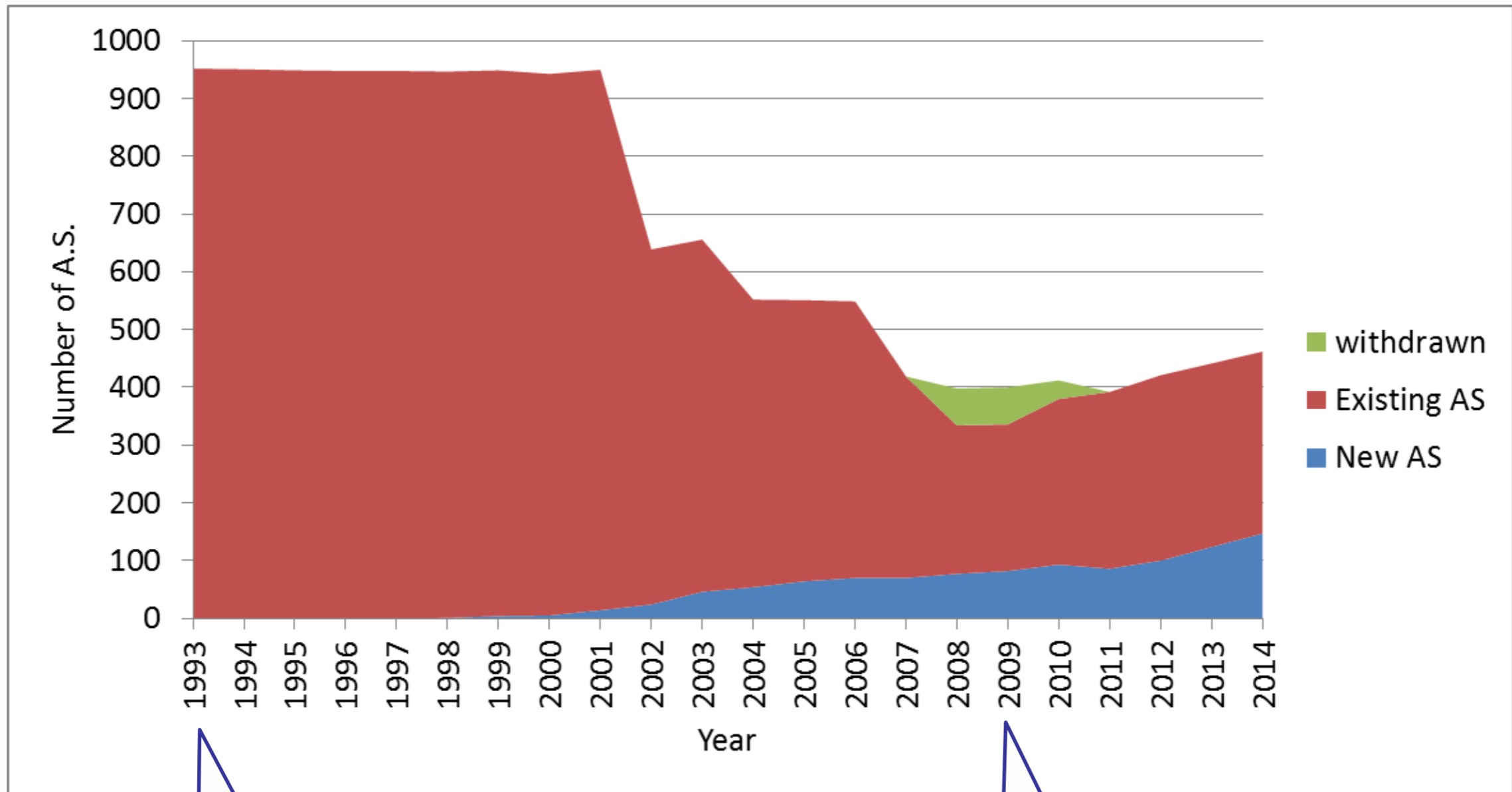
=> Such long development timelines require a realistic and stable legislation

Development cost of a crop protection product



	1980 – 1989	1990 – 1999	2005 - 2014
New Active Ingredient (A.I.) Introductions	123	128	73
% New A.I.s targeted at Europe	33.3	31.3	16.4
Total R&D spend (Inc. GM) \$m	1271	3060	6711
% Total R&D on new A.I.s for Europe	33.3	25.0	7.7

Evolution of authorised active substances in the EU

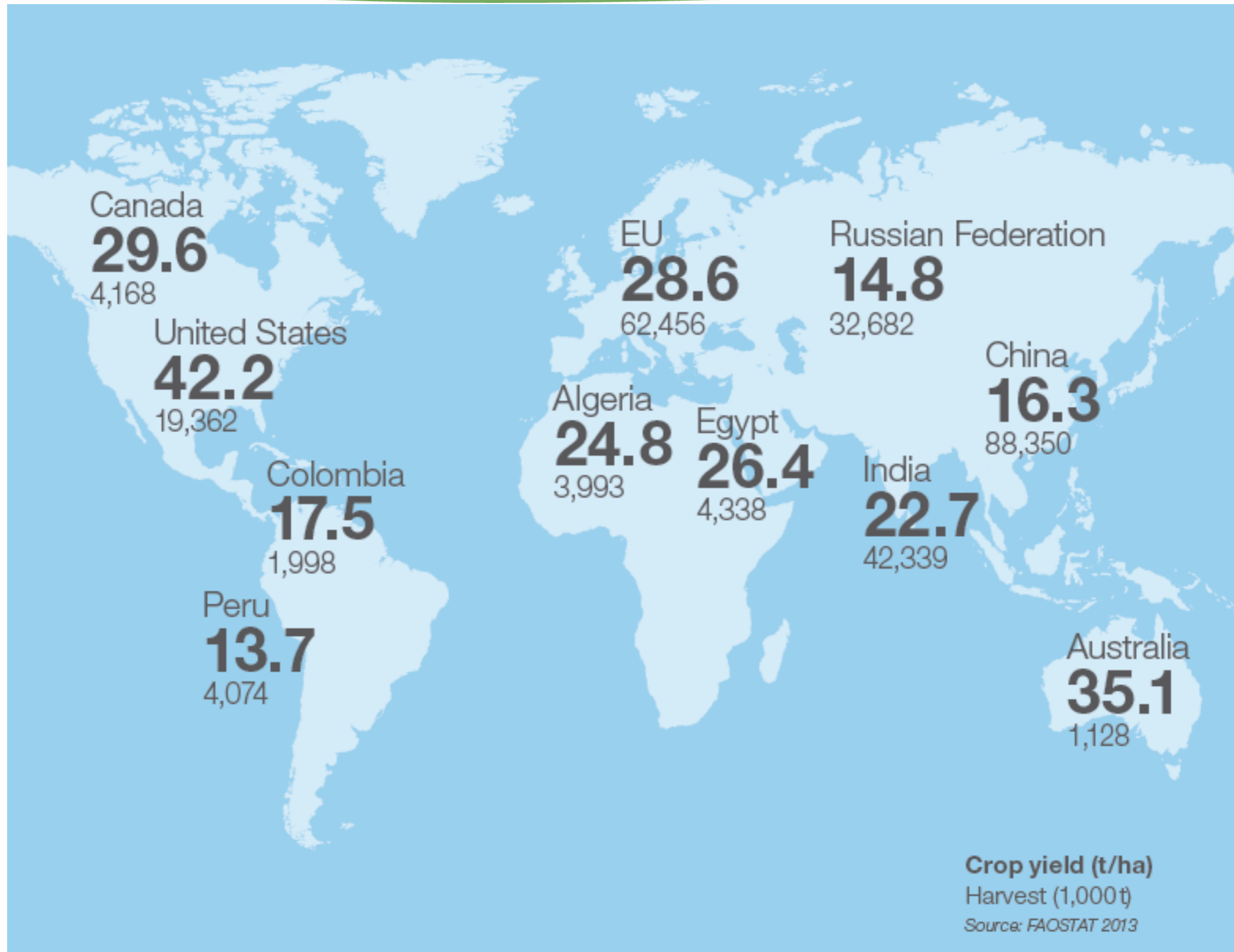


Source: ECPA

Dir 91/414

Reg 1107/2009

Global potato production



IPM in potato

Key Components of an IPM Strategy



FARMERS

are the primary decision makers in implementing IPM strategies



PREVENT the build-up of pests

- understand conditions
- select varieties
- manage crops

MONITOR crops for both pests and natural control mechanisms

- inspect fields
- identify issues
- determine action

INTERVENE when control measures are needed

- choose method
- plan approach
- intervene responsibly

IPM and sustainability

How to **continuously improve sustainability** at a successful farming business?

- > possible through an **integrated crop solution** that includes
- high-quality **seeds**
 - high-quality crop protection **products**
 - customer-tailored **services**



Integrated crop solution for potatoes

PRODUCTIVE, PROFITABLE AND ENVIRONMENTALLY FRIENDLY

Our farms should produce profitable potatoes by means of:

- 1. maintaining soil fertility**
- 2. reducing soil erosion**
- 3. using certified, healthy seed potatoes**
- 4. following the principles of pest and resistance management**
- 5. minimizing the side effects of farming practices on the environment**
- 6. harvesting and storing potatoes to preserve their high quality**

1. Maintaining soil fertility

Fertile soils with high water-holding capacity provide the basis for high-yielding potatoes

- Soil fertility should be maintained through **three to four-year crop rotation** and by applying **green manure crops** to add and fix nutrients to the rooting zone (e.g. yellow mustard).
- Crop rotation is needed in order to prevent potatoes against nematodes
- Green manure crops are often **good nutrition for bees in autumn**, just before their overwintering. Yellow mustard is by far the best.
- Be sure to **plant the potatoes on the right moment**, depending on soil and weather conditions (April)
- Potatoes are a high-yield crop and consequently need **optimum nutrition**. Dressings of phosphate, potassium, and nitrogen are adjusted to support an excellent yield potential of marketable potatoes.
 - > Ideally, the nutrient demand of the potato crop is monitored through soil sampling before planting.



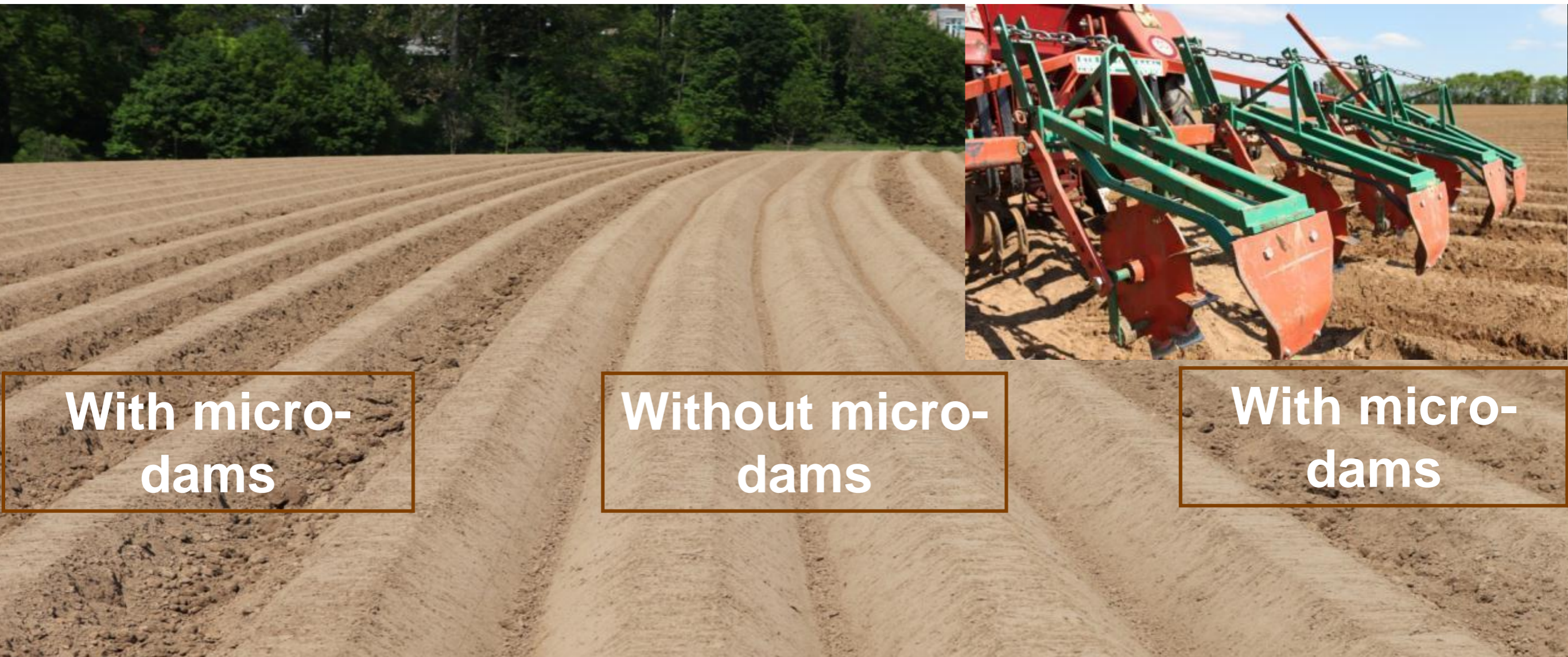
2. Reducing soil erosion

Some soil types, e.g. loss soil, tend to be sensitive to water erosion, especially before canopy closure.

Picture at Hof ten Bosch, Huldenberg, August 2011



2. Reducing soil erosion



With micro-dams

Without micro-dams

With micro-dams

Picture at Hof ten Bosch, Huldenberg, August 2011

2. Reducing soil erosion

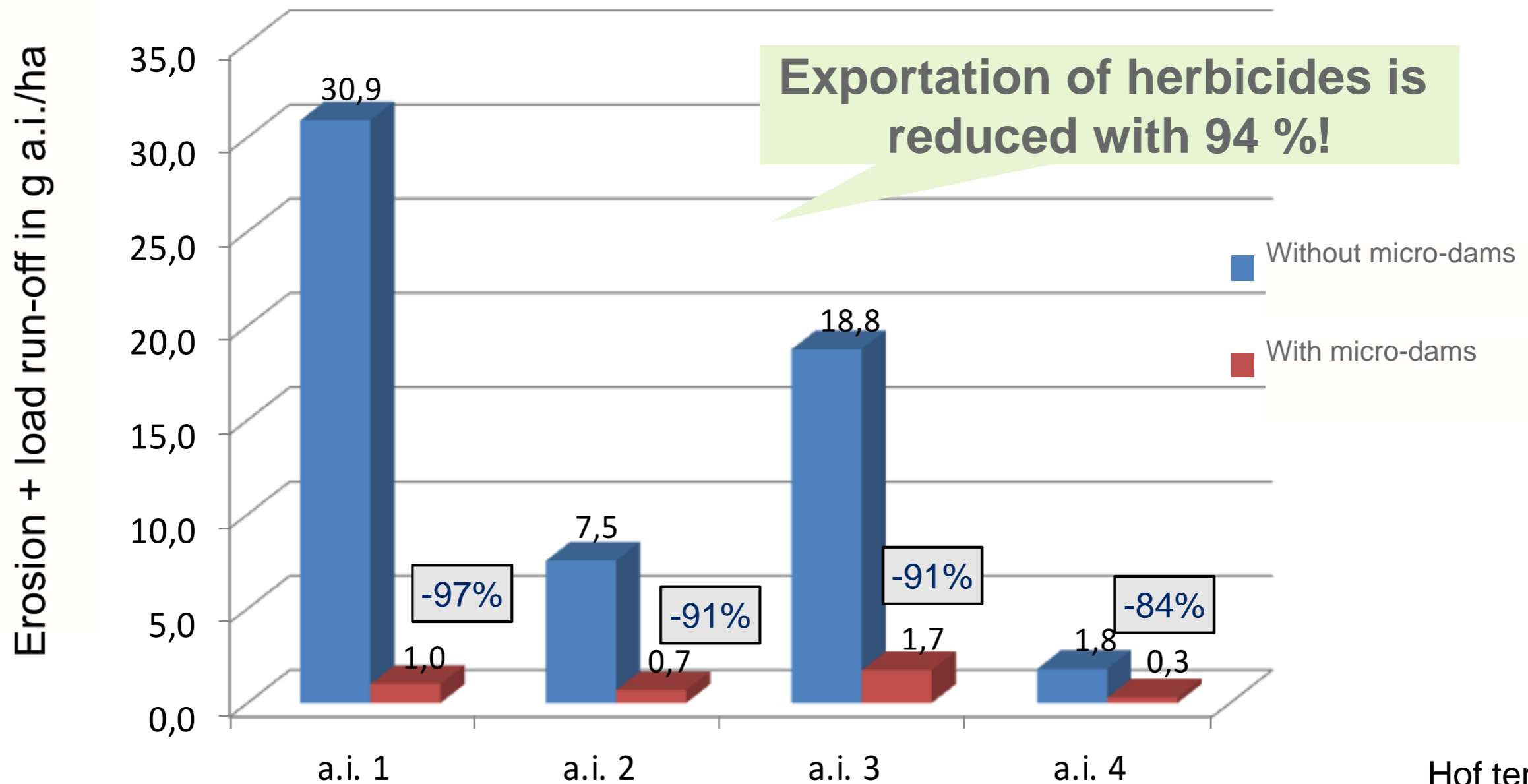


With micro-dams

Without micro-dams

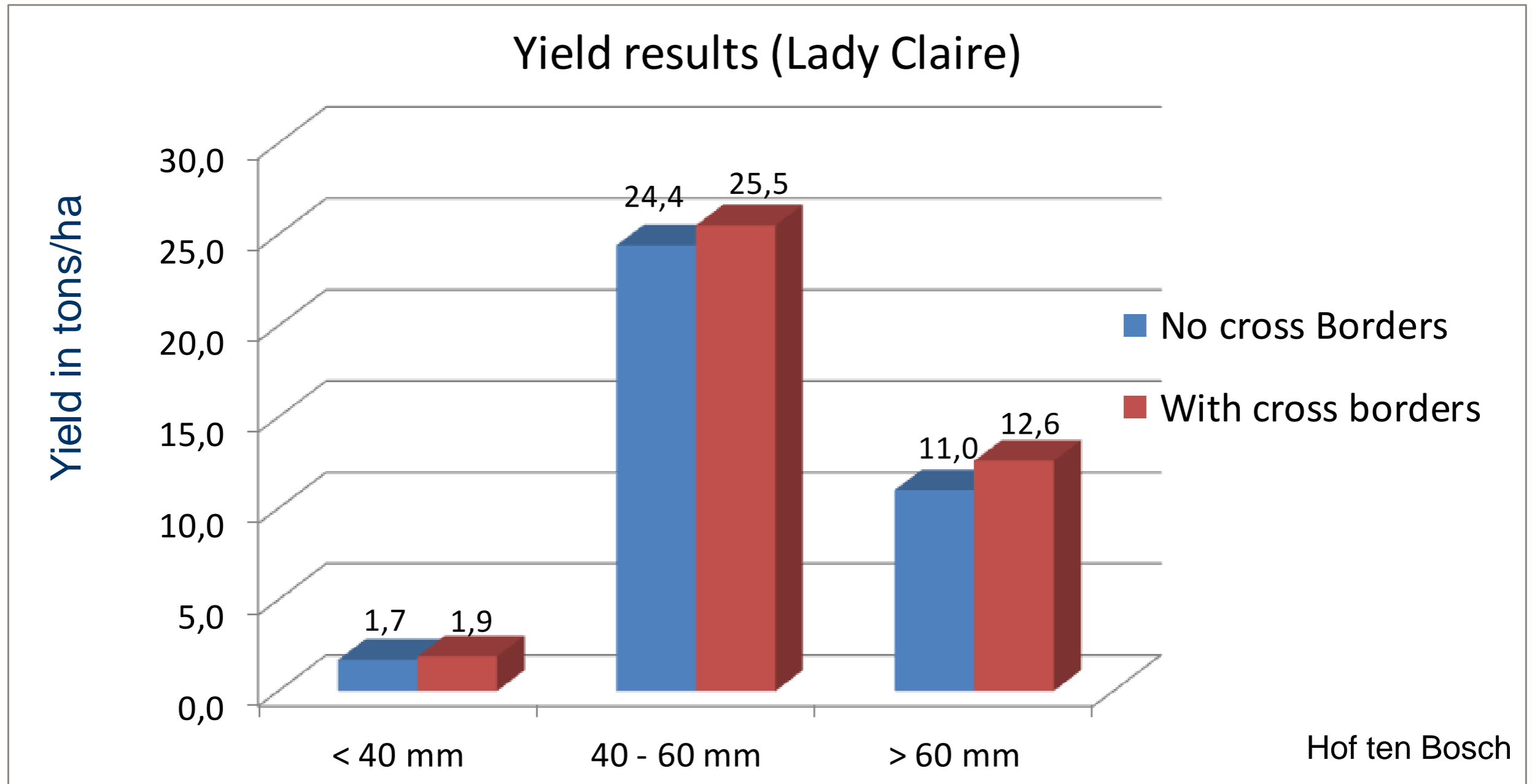
Hof ten Bosch

2. Reducing soil erosion



Hof ten Bosch

2. Reducing soil erosion



Total yield increase of 2,9 t/ha (treated vs non treated)

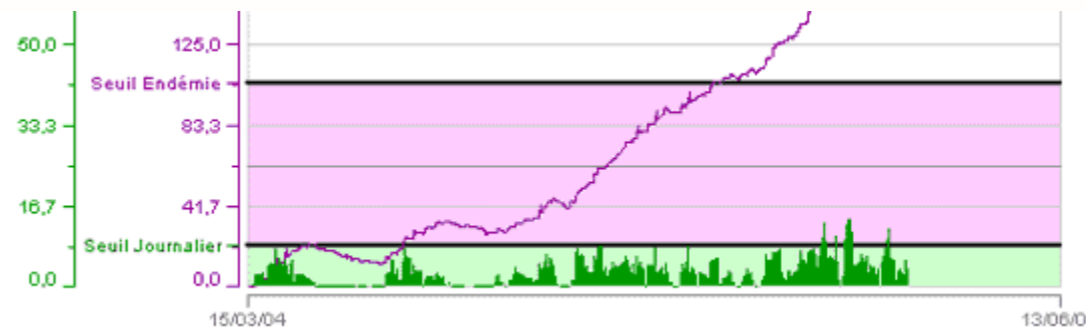
3. Certified, healthy seed potatoes

Certified healthy seed potatoes that are **free from virus and bacterial diseases** are the basis for maximizing the transfer of solar energy into carbohydrates and high-yield potatoes



4. Pest and resistance management

Phytophthora is a fungal pathogen that can have a devastating impact on yields if it is not managed in good time and by sophisticated means



->The type of fungicide is adjusted to the crop stage, weather conditions, and the presence of the disease



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4. Pest and resistance management

N° of A.S. In BE	Potato
Insecticide	19
Fungicide	26
Herbicide	18

- To protect the crops against diseases and resistance, it is crucial to use **fungicides with different mode of actions** and co-formulations.
- IPM also requires to apply a fungicide that prevents the development of ***Phytophthora* in both leaves and tubers**. By doing so, the farmer prevents the transfer of the disease from field to storage, protecting and maintaining the high quality of the potatoes during their long storage period.
- Harmful insects are usually only a minor issue in potatoes. A foliar application with an **insecticide** non-hazardous to pollinators, can only be applied if the threshold for aphids or Colorado beetles is exceeded.
- Herbicides** are generally only used once in the beginning of the season.

5. Minimizing the side effects of farming practices on the environment

The impact of farming practices on the environment (water, bees, neighbours, neighbouring crops) should be limited.

- **Read the label** of the crop protection products carefully and always follow the guidelines, e.g. never spray an insecticide when bees are foraging
- Focus on **reducing surface erosion** through the use of micro-dams, conservation tillage and anti-erosion techniques at planting and ridging
- Focus on **reducing drift** by using low drift nozzles in combination with applications at low-wind speeds guided by local weather forecasts
- Make use of **precision farming and GPS navigation** to ensure accurate application and prevent any overlap during application. It can deliver savings of 4% in the use of fertilizers and crop protection products.

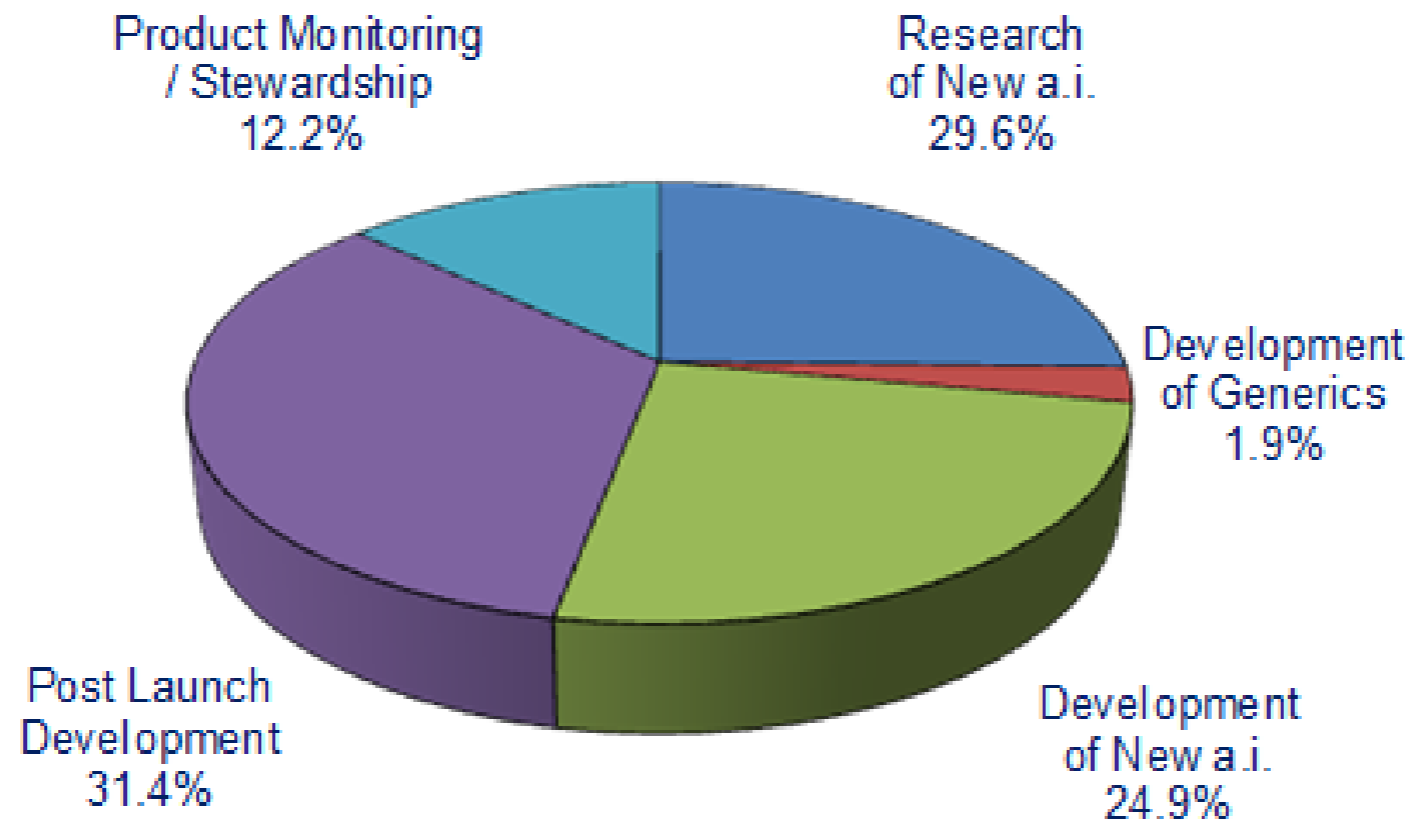
6. Harvesting and storing potatoes to preserve their high quality

- Harvesting high-quality potatoes is dependent on a firm skin to prevent damage and the potential entry of fungal and bacterial diseases. **Skin setting** can be enhanced through the use of a chemical desiccation.
- About 2–3 weeks after desiccation, potatoes are mechanically **harvested** in dry weather conditions at soil temperatures of above 15 °C.
- To prevent bruising, potatoes are handled gently and then graded and **stored** in a well-insulated storage room at 4 °C. The storage period can last up to 8–9 months after harvest.

Investments to maintain existing products on the market

A major (and growing) part of the R&D budget is invested in further development, optimization and support **Post Launch** and **Stewardship** of existing products and solutions

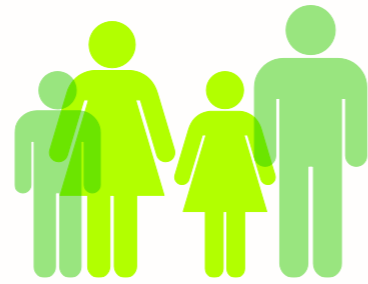
2012



Total = \$2,943 million

Phytofar : focus and actions in 5 domains

Health



Food



Resource Efficiency



Water



Biodiversity

IPM TRAINING INCLUDES:

IDENTIFYING
beneficial insects



WHEN AND HOW
to manage pests



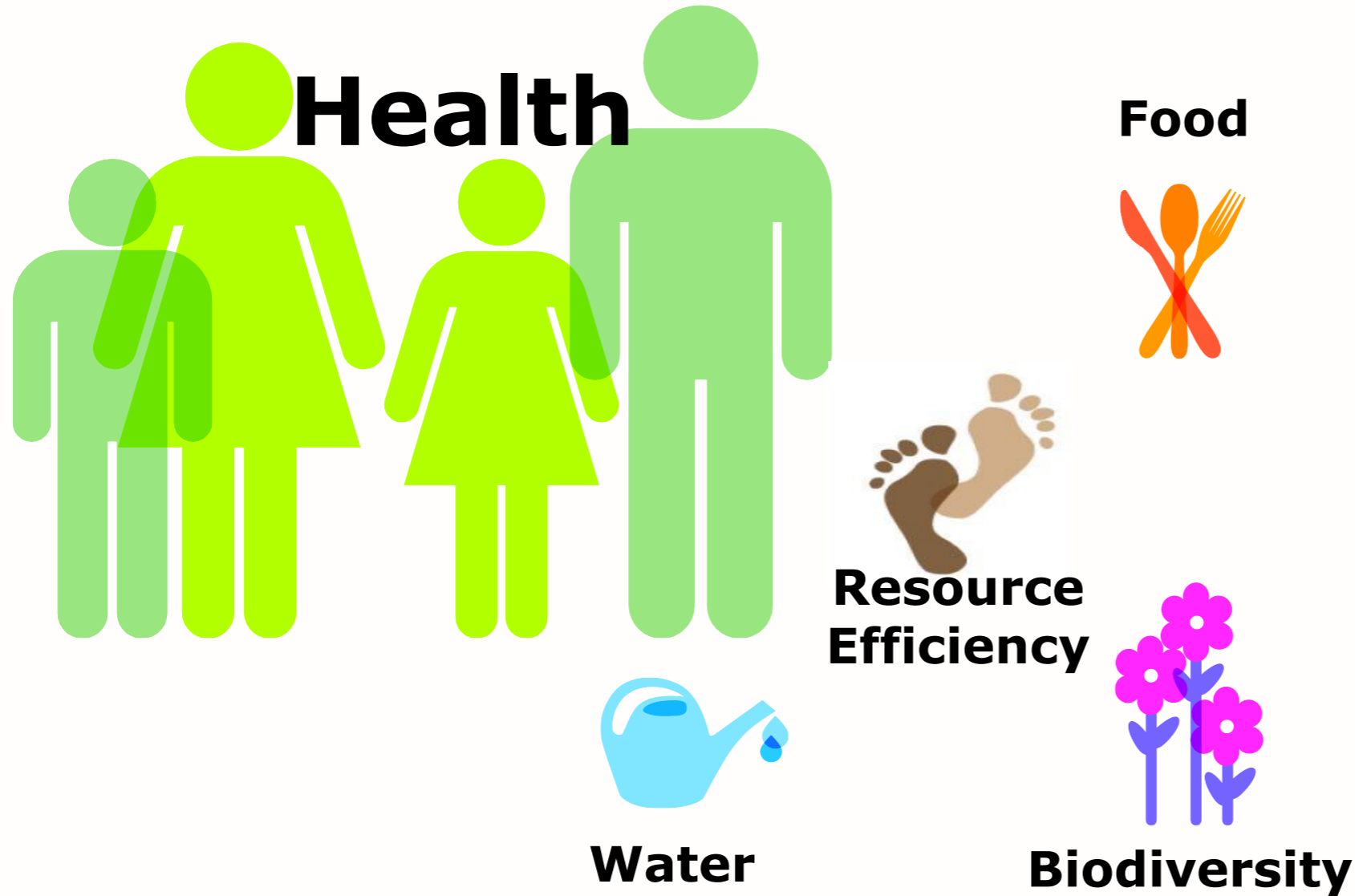
RESPONSIBLE USE
of crop protection products



PROPER DISPOSAL
of empty containers or unused products



Phytofar : focus and actions in 5 domains



How to safeguard farmer's health and the environment

Besides the abovementioned specific IPM measures for potatoes, some general advices are listed up to protect farmer's health and the environment, and to encourage biodiversity on the farm.

1. Personal protective equipment

-> wear suitable protective clothing during handling and application!

VEILIG WERKEN MET GEWASBESCHERMINGSMIDDELEN

Nieuwe CLP-pictogrammen

CLP = nieuwe internationale richtlijnen voor classificatie, etikettering en verpakking. De nieuwe CLP-pictogrammen op de etiketten van gewasbeschermingsmiddelen vervangen stilaan de oude. **VANAF 1 JUNI 2017** kan u nog enkel producten met de nieuwe pictogrammen kopen.

Lees het etiket!

Dit bevat **ALLE BELANGRIJKE INFORMATIE** over de eigenschappen en het correct en veilig gebruik van het product.

- Dosis, toepassingstijdstip
- Voorzorgsmaatregelen voor het milieu, vb. bufferzones
- Voorzorgsmaatregelen voor de gebruiker, vb. beschermkledij
- Aanwijzingen voor eerste hulp
- Geveersymbolen
- Noodnummers

Draag de juiste beschermkledij!

BELANGRIJK: Het dragen van handschoenen vermindert de blootstelling met meer dan 85%! Draag dus altijd handschoenen!

- Lees het etiket om te weten welke kledij nodig is.
- Beschermkledij afwassen en drogen na gebruik en buiten het fytolokaal bewaren.
- Handschoenen, laarzen en een overall moeten voelstofdicht zijn en bestand tegen chemische stoffen. Handschoenen zijn best van neopreen of nitril (groen). Wegwerphandschoenen in latex zijn niet geschikt!
- Indien een katoenen overall gebruikt wordt samen met een beschermende schort, moet deze altijd apart gewassen worden.
- Als het etiket voorschrijft om een masker te dragen, kies dan niet voor een wegwerpmasker maar voor een masker met aangepaste filters.

KIES ALTIJD VOOR BESCHERMENDE KLEDIJ VAN GOEDE KWALITEIT!

Noodnummers

Bevragen de toegang hebben tot het fytolokaal:

Antigifcentrum: **070-245 245**
Europees noodnummer: **112**

TRAVAILLER EN TOUTE SÉCURITÉ AVEC LES PRODUITS DE PROTECTION DES PLANTES

Nouveaux pictogrammes CLP

CLP = nouvelles directives internationales portant sur la classification, l'étiquetage et l'emballage. Les nouveaux pictogrammes CLP figurent sur les étiquettes des produits de protection des plantes et remplacent progressivement les anciens. **À PARTIR DU 1er JUIN 2017**, vous ne pouvez plus acheter que les produits arborant les nouveaux pictogrammes.

Lisez l'étiquette!

Elle comporte **TOUTES LES INFORMATIONS IMPORTANTES** relatives aux propriétés et à l'utilisation correcte et sans risque du produit.

- Dose, stade d'application
- Mesures de précaution pour l'environnement, par ex. zones tampons
- Mesures de précaution pour l'utilisateur, par ex. vêtements de protection
- Indications pour les premiers secours
- Symboles de danger
- Numéros d'urgence

Portez les vêtements de protection adéquats!

IMPORTANT: Porter des gants réduit l'exposition de plus de 85 %. Veillez donc à toujours porter des gants!

- Lisez l'étiquette pour savoir quels vêtements il convient de porter. Nettoyez et séchez les vêtements de protection après chaque utilisation et conservez-les en dehors du local phyto.
- Les gants, les bottes et la salopette doivent être imperméables et résistants aux produits chimiques. Les gants seront de préférence en néoprène ou nitrile (vert). Des gants en latex à usage unique ne sont pas appropriés.
- Si vous utilisez une salopette en coton en même temps qu'un tablier de protection, veillez toujours à la laver séparément.
- Si l'étiquette impose de porter un masque, préférez un masque avec des fibres adaptés à un masque à usage unique.

CHOISISSEZ TOUJOURS DES VÊTEMENTS DE PROTECTION DE BONNE QUALITÉ!

Numéros d'urgence

Personnes compétentes qui ont accès au local phyto:

Centre Antipoisons: **070-245 245**
Numéro d'urgence européen: **112**

SICHER ARBEITEN MIT PFLANZENSCHUTZMITTELN

Neue CLP-Piktogramme

CLP = neue internationale Richtlinien für die Einstufung, Kennzeichnung und Verpackung. Die neuen CLP-Piktogramme auf den Etiketten von Pflanzenschutzmitteln ersetzen nach und nach die alten. **AB 1. JUNI 2017** gibt es nur noch Produkte mit den neuen Piktogrammen zu kaufen.

Lesen Sie das Etikett!

Es enthält **ALLE WICHTIGE INFORMATIONEN** über die Eigenschaften und den vorschriftsmäßigen und sicheren Gebrauch des Produktes.

- Dosis, Zeitpunkt der Anwendung
- Sicherheitshinweise bezüglich der Umwelt, z.B. Pufferzonen
- Sicherheitshinweise für den Anwender, z.B. Schutzkleidung
- Hinweise für Erste Hilfe
- Gefahrpiktogramme
- Notrufnummern

Tragen Sie die richtige Schutzkleidung!

WICHTIG: Das Tragen von Handschuhen verringert die Exposition um mehr als 85%! Tragen Sie darum immer Handschuhe!

- Lesen Sie das Etikett, damit Sie wissen, welche Kleidung erforderlich ist.
- Schutzkleidung nach Gebrauch abwaschen und trocknen. Bewahren Sie die Schutzkleidung stets außerhalb des Pflanzenschutzmittelagars auf.
- Handschuhe, Stiefel und Overall müssen flüssigkeitsdicht chemikalienbeständig sein. Handschuhe sind am besten aus Neopren oder Nitril (grün).
- Wird ein Baumwoll-Overall zusammen mit einer Schutzschürze verwendet, so muss diese stets getrennt gewaschen werden.
- Wenn das Etikett vorschreibt, eine Maske zu tragen, keine Wegwerfmäskeln wählen, sondern eine Halbmaske mit Sicherheitsbrille oder eine Vollmaske.

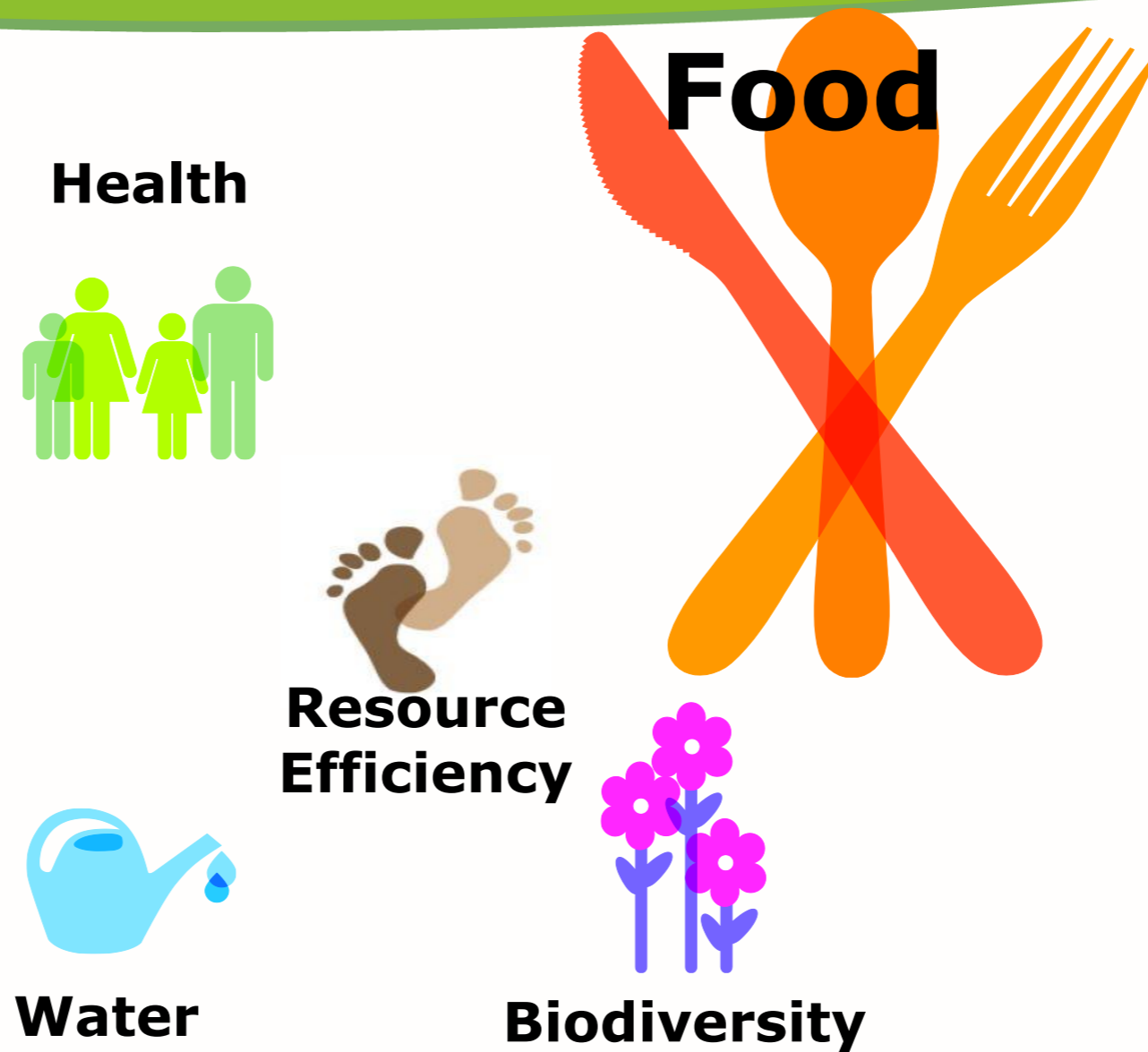
STETS HOCHWERTIGE SCHUTZKLEIDUNG WÄHLEN!

Notrufnummern

Personen, die Zugang zum Pflanzenschutzmittelagars haben:

Giftnotrufzentrale: **070-245 245**
Europäische Notrufnummer: **112**

Phytofar : focus and actions in 5 domains



Residues - MRL (Maximum Residu Limit)

In potato, over 99% of the samples are consistent with MRL (EFSA 2011).

Year	Samples below LOQ	Samples with measureable residues below MRL	Number of samples exceeding MRL	TOTAL
2011	75,8 %	23,6 %	0,6 %	1449 samples

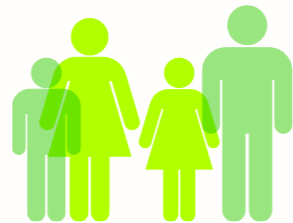
Processed food: No exceedence of MRL in potato (EFSA 2013)

Belgian MRL results (2013): 100% conformity

Origin of Potato	Number of Samples	Number of samples with residues above the reporting level (LOQ)	Number of samples exceeding MRL	percentage of samples below the MRL
Domestic	40	27	0	100
EEA	24	19	0	100
Third Country	7	2	0	100

Phytofar : focus and actions in 5 domains

Health



Food



**Resource
Efficiency**



Biodiversity



How to safeguard farmer's health and the environment

2. Managing rest water from spraying applications

The risks of contamination of the aquatic environment by crop protection products are predominantly related to handling issues during sprayer filling and washing operations.

-> Make use of a (bio)remediation system!



Phytobac



Biofilter

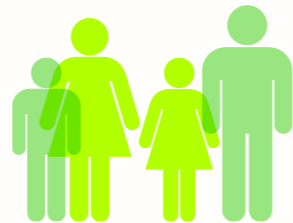
Heliosecc

Sentinel



Phytofar : focus and actions in 5 domains

Health



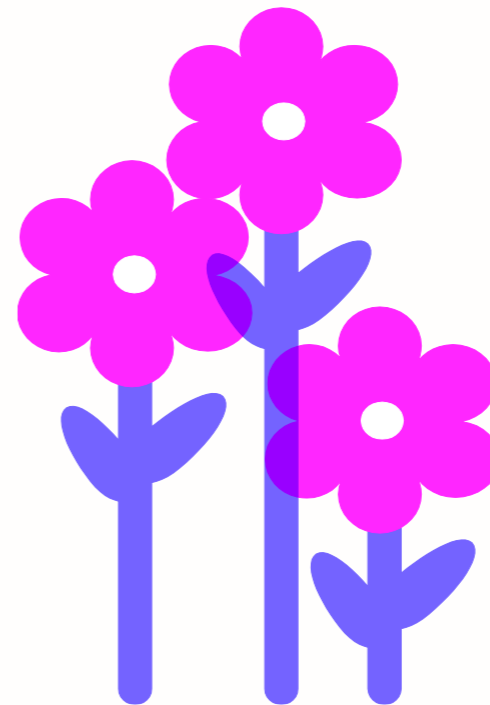
Food



Resource Efficiency



Water



Biodiversity



Phytofar

How to safeguard farmer's health and the environment

3. Increasing biodiversity

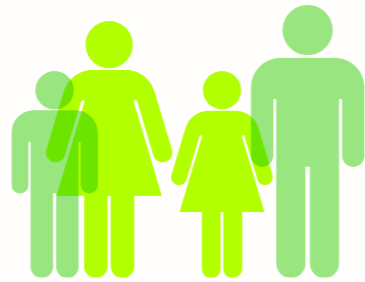
Mixed hedges and flowering strips along the fields provide continuous flowers and pollen from January to October, creating a reservoir for beneficial insects and pollinators.

Nesting boxes (mainly in fruit) for small birds that control codling moth by eating the caterpillars; and nesting places for larger predatory species, such as falcons, buzzards, or owls that feed on the rats and mice that can damage fruit trees.



Phytofar : focus and actions in 5 domains

Health



Food



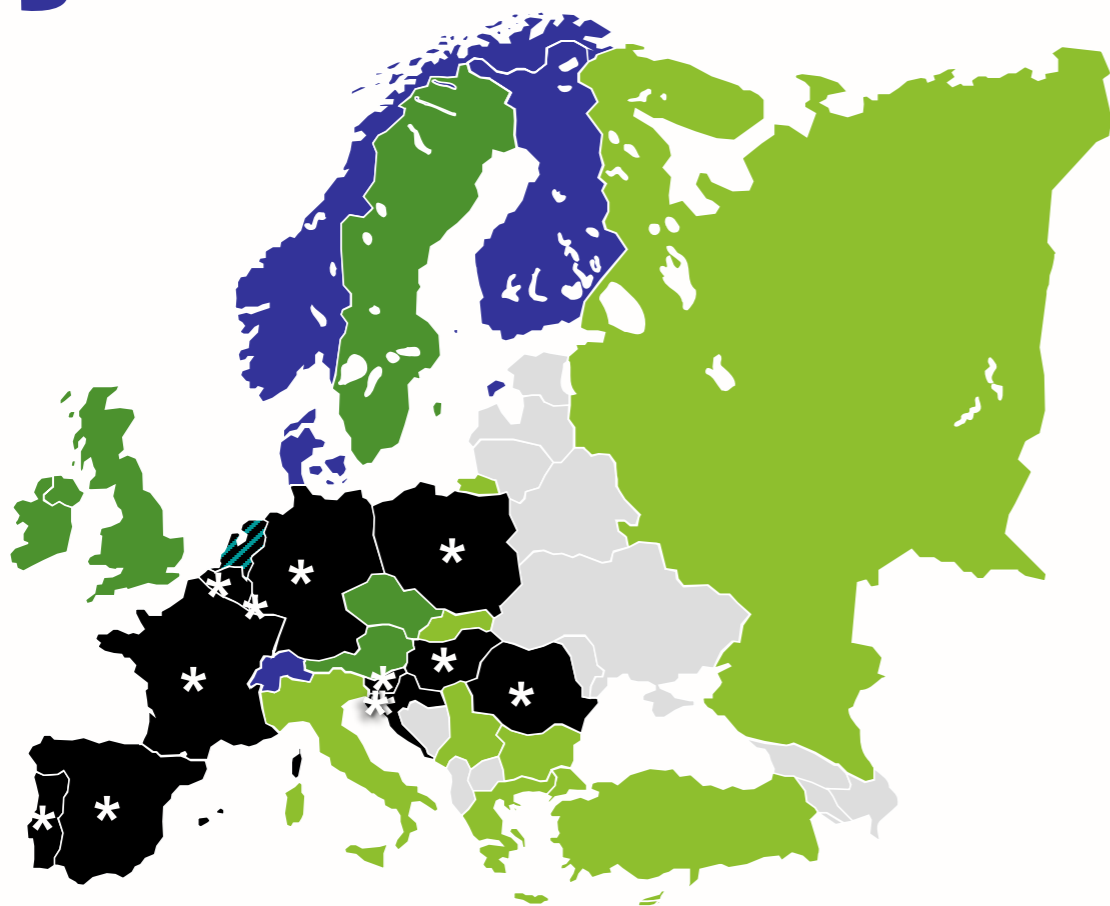
Resource Efficiency



Water

Container Management Systems (CMS)

- 1. Nationwide industry run collection and disposal system
- * 2. E10 countries covered by annual ECPA statistics
- 3. Nationwide collection and disposal system, joined by industry
- 4. Pilot projects start-ups in 2013 for collection and disposal system
- 5. National waste collection and disposal system run by municipal authorities



Conclusions

Integrated potato growing reflects the **integration of research and modern technology** into the rich tradition of potato farming.

By **combining different techniques** and by following in-depth advice, the average yield of potatoes can amount to a high yield / ha (40-50 t/ha).

We as crop protection industry fully support IPM

- **right product on the right place**
- **anti resistance management**
- **reduce possible risks for human health and environment**
- **optimal usage of different inputs (fertilizers, water,...) by protecting the plants in order to realize a sustainable production and a sustainable farm income**
- **best guarantee on a flourishing potato production in Europe on the long term!**



Thank you for your
attention!



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Tuesday, 1st of Sept 2015 - Kick-off meeting Potato Europe