

ALIMENTOS TRANSGÉNICOS E
MUDANÇAS TECNOLÓGICAS: UMA
PAISAGEM GLOBAL EM MUDANÇA

The Portuguese Case

Manuel Pedro Fevereiro

www.itqb.unl.pt/~BCV/pedro.htm

Center for Biotechnology Information (CiB)

<http://www.cib.biocnologia.com.pt>



Why me?

(CiB and the rest)

Why this technology?

**To change a plant qualitative character
introducing an expressible DNA sequence.**



Why transgenic varieties in Portugal?

Maize
Cotton
Soybean
Colza
Potato/Tomato/Squash

The case of maize



Maize production in Portugal – 2003

Production: 365.000 t
 Consume: 1.525.000 t
 Import: 1.160.000 t (EU 268.000 t; others 892.000 t).

89% used for feed production.

- The acceptance of GM maize and soybean for feed production is not questioned neither by the feed industry nor by the cattle and milk producers.
- Labeling is required by law, but no effect on the markets was identified

The remaining 11% were used for:

Starch - 65.000 t
 Gritz (bear) - 65.000 t

Bread - 30.000 t (landraces – not hybrids)



Labeled feed for milk cows



Bt Maize production in Portugal – 2005

800 ha in the center and south of Portugal

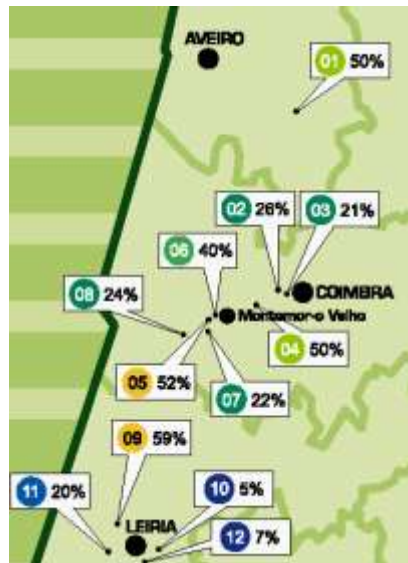
Bt Maize production in Portugal -2006

± 1.750 ha

But a reduction of 20% in total sowed area were expected
due to the decoupling of subsidies from production.
(Common Agriculture Policy)



Corn Borer (*Ostrinia* and *Sesamia*) incidence 2005



Portuguese network trials - Pioneer



What is a Corn Borer attack?



BT Maize (MON 810) was introduced in the European catalog by September 2004

Sowing transgenic varieties in Portugal is regulated by law (160/2005) since September 2005 (including co-existence measures).

Farmers must:

- Participate in training courses;
- Keep the GM seeds in separated places. Close and maintain labeled all bags used;
- Notify the Regional Agriculture Office about the areas and varieties of GM seeds to be sown and which co-existence measures to be applied;
- Inform of any change in their former plans;
- Communicate by letter to all neighbors (within 300 meters range) and to those sharing machineries the intention to sow GM seeds;
- Accept that this communication is made public;



- In the case of maize, take all the minimizing measures to avoid cross pollination.

(in fact in Portuguese the wording is “adventitious contamination”), including 12-28 circumventing conventional maize lines if conventional or organic maize (of the same FAO category, or sown with less than one week interval) are to be sown within 200-300 meters, respectively;

- Respect 20% refuge in the case of insect resistant maize;
- Facilitate access to the authorities for inspection;
- Accept the destruction of the crop if the Agriculture Office decides that the rules were not properly observed;
- Be prepared to pay fees in a maximum of 3.700 euros in the case of no conformity;
- Additional penalties regarding the access to subsidies may also be applied;
- Comply with the traceability law.



A practical case: the CADOMA cooperative Odemira –South of Portugal – a milk producing region



José Francisco Silva

This cooperative decided not to segregate Bt maize from the conventional one.

All the associate members accepted this decision.

All the maize is harvested and processed together and used by the associates to feed their milk cows.

(A funny story the President of this County publicly declared the County “free of GMOs”. Then the farmers went to talk with him. He told them that if he new that farmers were sowing transgenic maize he would never had made that declaration).



Another case

José Maria Telo Rasquilha (MBA – London)

A large scale (for Portugal) farm at Elvas near Badajoz (Spain)

Total watered crop area: 1,000 ha

Maize – 350 ha;
Wheat/oat – 350 ha;
Permanent crops – 300 ha.



Accounting maize production 2005

	Bt Maize	Convencional Maize
Hectares (ha)	150	200
Production (t/ha)	13,2	10,2
Trading Price (€/t)	145 [200 (1995-2004)]	145
Net income/ha (€)	1.914	1,464
Costs/ha (€)		
Land preparation (no till)	120	120
Seeds	210	160
Fertilizers	200	250
Agrochemicals (3x)		160
Water (Pivot)	100	100
Electricity	100	100
Harvest	70	70
Drying	10	10
Total	810	920
Operational income/ha	1,104	544
Differential	560 €/ha	



A final word:

Experimental fields in Portugal

In between burocracy, urban myths and intellectual dishonesty



Que características se podem introduzir nas plantas com recurso à Engenharia Genética

Resistência a insectos, nematodes, fungos, bactérias e vírus.

Resistência ao frio, à seca, à salinidade, a determinado herbicida e a determinado metal pesado.

Alteração do conteúdo nutricional em aminoácidos, vitaminas, antioxidantes, fibras, ácidos gordos, hidratos de carbono, micronutrientes.

Alteração da cor, do sabor, da fragrância, e da textura.



Quais as vantagens para as pessoas?

- Produtos de melhor qualidade (menos agroquímicos/ aflotoxinas)
- Menor desertificação das zonas rurais (menos dificuldades económicas/ mais competitividade)
- Redução dos impactos ambientais (lavoura/pesticidas/herbicidas/água...)
- Redução das intoxicações
- Redução da velocidade de destruição das zonas naturais
- Menor erosão dos solos
- Redução do uso de combustíveis
- Maior qualidade de vida para o agricultor



Portaria n 904/2006 de 4 de Setembro

Artigo 12º

Iniciativa municipal

1—O estabelecimento de uma zona livre pode ser requerido pelo município à DRA competente.

2—A assembleia municipal, após parecer positivo das estruturas representativas de agricultores, que devem informar os seus representados, delibera o pedido de estabelecimento de zona livre.

3—A deliberação sobre o pedido de estabelecimento de zona livre é aprovada por maioria qualificada de dois terços de todos os membros da assembleia municipal.

4—Caso algum agricultor da área proposta para zona livre declare por escrito a vontade de não participar na mesma, a assembleia municipal fica impedida de prosseguir com o pedido de estabelecimento.

5—Após a deliberação referida nos n.os 2 e 3, compete à câmara municipal assegurar o cumprimento do procedimento previsto no artigo 3º.

6—Compete igualmente ao município, nos termos previstos para o estabelecimento, a iniciativa tendente à cessação da zona livre ou renovação do pedido de estabelecimento, nos casos em que a mesma não ocorra automaticamente.