Appendix 1. Post Market Monitoring of insect protected *Bt* maize MON 810 in Europe – Conclusions of a survey with Farmer Questionnaires in 2014

APPLIED STATISTICS AND INFORMATICS IN LIFE SCIENCES

Post Market Monitoring of insect protected Bt maize MON 810[1] in Europe

Biometrical annual Report on the 2014 growing season

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[1] The commercial name for MON 810 being YieldGard®corn borer maize. YieldGard®corn borer is a registered trademark of Monsanto Technology LLC.

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Summary

Monitoring of a genetically modified organism (GMO) that has been placed on the market is regulated in Annex VII of Directive 2001/18/EC [OJEC, 2001]. Monitoring is supposed to confirm that any assumption regarding the occurrence and impact of potential adverse effects of the GMO or its use in the environmental risk assessment (ERA) is correct and to identify any adverse effect of the GMO and its use on human health or the environment which were not anticipated in the ERA. Monsanto has implemented monitoring of *Bt* maize containing event MON 810 through different tools, the main one being a farm questionnaire since 2006.

This biometrical report presents the outcomes of the statistical analysis of the farm questionnaires collected in Europe's major MON 810 cultivating countries Spain and Portugal in 2014. The questionnaires have been completed between December 2014 and February 2015. In the 2014 growing season 261 farmers have been surveyed.

2014 data indicate that in comparison to conventional maize plants, MON 810 plants

- received less insecticides caused by their inherent protection against certain lepidopteran pests,
- germinated more vigourously caused by the high quality germplasm,
- had less incidence of stalk/root lodging caused by the inherent protection against certain lepidopteran pests,
- had a longer time to maturity caused by the absence of pest pressure of certain lepidopteran pests,
- gave a higher yield caused by the better fitness of the plant,
- were less susceptible to pests, other than corn borers, especially lepidopteran pests caused by the inherent protection against certain lepidopteran pests and the resulting better fitness of the plants.

The identified deviations were expected due to the knowledge of the MON 810 characteristics. The observed significant effects are not adverse. They mostly relate to the increased fitness of MON 810 plants resulting from the inherent protection against certain lepidopteran pests. Overall, the monitoring results substantiate the results from scientific research.

In this year of data collection no adverse effects have been identified by MON 810 cultivating farmers.

1 Introduction

According to Annex VII of Directive 2001/18/EC [OJEC, 2001] of the European Parliament and of the Council on the deliberate release into the environment of genetically modified plants (GMP), the objective of the monitoring is to:

- confirm that any assumption regarding the occurrence and impact of potential adverse effects of the GMO or its use in the environmental risk assessment (ERA) is correct, and
- identify the occurrence of adverse effects of the GMO or its use on human or animal health, or the environment, which were not anticipated in the ERA.

Upon approval of MON 810 (Commission Decision 98/294/EC [OJEC, 1998]), Monsanto has established a management strategy in order to minimize the development of insect resistance and offered to inform the Commission and/or the Competent Authorities about the results. These results on insect resistance monitoring, however, are not part of the current report.

The risk assessment for MON 810 showed that the placing of MON 810 on the market poses negligible risk to human and animal health and the environment. Any potential adverse effects of MON 810 on human and animal health and the environment, which were not anticipated in the ERA, can be addressed under General Surveillance (GS). An important element of the GS, applied by Monsanto on a voluntary basis, is a farm questionnaire.

The objective of this biometrical report is to present the rationale behind the farm questionnaire approach and the analysis of the farm questionnaire results from the 2014 planting season. The questionnaire approach was applied for the first time in 2006. The format of the questionnaire is reviewed on a yearly basis based on the outcome of the latest survey.

2 Methodology

2.1 Tool for General Surveillance: the farm questionnaire

Structure of the farm questionnaire

Based on commonly defined protection goals, such as soil function, plant health and sustainable agriculture together with derived areas of potential impact on these protection goals, a range of relevant monitoring characters for MON 810 GS has been identified (Table 1). These monitoring characters might be influenced by the cultivation of MON 810, but in an agricultural landscape other influencing factors (Table 3) exist which need to be taken into account and therefore monitored as well.

For that purpose a farm questionnaire was designed to obtain data on monitoring characters and influencing factors (see Appendix B). Any unusual observations in monitoring characters would lead to an assessment of the collected information in order to determine whether the unusal observation is attributable to changes in influencing factors or the genetic modification. Farmers record a range of agronomic information and are the most frequent and consistent observers of crops and fields (*e.g.* by collection of field-specific records of seeds, tilling methods, physical and chemical soil analysis, fertilizer application, crop protection measures, yields and quality). Additionally, farmers hold in "farm files", which are historical records of their agricultural land and its management. These provide background knowledge and experience that can be used as a baseline for assessing deviations from what is normal for their cultivation areas.

The experimental questionnaire was developed by the German Federal Biological Research Centre for Agriculture and Forestry (BBA, now JKI), maize breeders and statisticians in Germany [Wilhelm, 2004]. Its questions were developed in order to be to be easily understood, not to be too burdensome and to be sufficiently pragmatic to take into account real commercial situations.

The questionnaire approach was tested in a pilot survey in 2005. Based on that survey an adapted version of the questionnaire was created and applied for the first time in 2006. The format of the questionnaire is reviewed on a yearly basis based on the outcome of the latest survey. As appropriate, adjustments are made to improve the statistical relevance of the collected data. In 2009, the questionnaire was adapted according to DG Environment feedback (13 March 2009) and discussions within EuropaBio (see Appendix B).

The questionnaire is organized around collecting data in four specific areas:

Part 1: Maize grown area

Part 2: Typical agronomic practices to grow maize on the farm

Part 3: Observations of MON 810

Part 4: Implementation of *Bt* maize specific measures

Part 1 records general, basic data on maize cultivation, cultivation area and local pest and disease pressure (independent from GM or non-GM cultivation background and possible influencing factors). The objectives of **Part 2** are to establish what the usual practices of conventional cultivation are. It therefore establishes a baseline to which information generated in *Bt* areas can be compared. **Part 3** collects data on MON 810 practices and observations.

The aim of the survey is to identify potential adverse effects that might be related to MON 810 plants and their cultivation. Therefore, most questions are formulated to identify deviation from the situation with conventional maize. Farmers are asked to assess the situation in comparison to conventional cultivation. If a farmer assesses the situation to be different, he is additionally asked to specify the direction of the difference; hence the category $Different$ is divided into two subcategories. To simplify this two-stage procedure in the questionnaire for most questions, three possible categories of answers are given: $As\ usual$, $Plus$ (*e.g.* later, higher, more) and $Minus$ (*e.g.* earlier, lower or less). Thus, a rather high frequency (> 10 %) of $Plus$- or $Minus$- answers would indicate possible effects (see Section 2.4).

Moreover, Monsanto uses this questionnaire to monitor if farmers are in compliance with the MON 810 cultivation recommendations. For that purpose, the answers and free remarks in **Part 4** were evaluated.

Coding of personal data

For both confidentiality and identification reasons, each questionnaire was assigned a unique code where personal data were coded according to the following format:

2	0	1	4	-	0	1	-	M	A	R	-	E	S	-	0	1	-	0	1	-	0	1
Year					Event Code			Partner Code				Country Code			Interviewer Code			Farmer Code			Area Code	

Codes:

Event:	01	MON 810
	02	...
Partner:	MON	Monsanto
	MAR	Markin
	AGR	Agro.Ges
	...	...
Country:	ES	Spain
	PT	Portugal
	...	...
Interviewer:	01	A
	02	B
	03	...
Farmer:	incremental counter within the interviewer	
Area:	incremental counter within the farmer	

(*e.g.* 2014-01-MAR-ES-01-01-01). The data were stored and handled in accordance with the Data Protection Directive 95/46/EC [OJEC, 1995]. This is in order to ensure an honest response and to avoid competitive intelligence.

Training of interviewers

To assist the interviewers in filling out the questionnaires with the farmers, a 'user's manual' was developed. While questions have been carefully phrased to obtain accurate observations from farmers, preceding experience with the questionnaire may increase awareness.

Additionally, like in previous years, all interviewers have been trained to understand the background of the questions. Here also experience gained during previous years surveys (uncertainties, misinterpretation of questions) could be shared.

2.2 Definition of monitoring characters

The main focus of the questionnaire was the survey of several monitoring characters that were derived from protection goals like soil function, plant health and sustainable agriculture. Table 1 provides an overview on the monitored characters and the protection goals that are addressed by them.

Table 1: Monitoring characters and corresponding protection goals

Monitoring characters	Protection goals
Crop rotation	Sustainable agriculture, plant health
Time of planting	Sustainable agriculture
Tillage and planting technique	Sustainable agriculture
Insect control practices	Sustainable agriculture
Weed control practices	Sustainable agriculture
Fungal control practices	Sustainable agriculture
Fertiliser application	Sustainable agriculture, soil function
Irrigation practices	Sustainable agriculture
Time of harvest	Sustainable agriculture, plant health
Germination vigour	Plant health
Time to emergence	Plant health
Time to male flowering	Plant health
Plant growth and development	Plant health, soil function
Incidence of stalk/ root lodging	Plant health
Time to maturity	Sustainable agriculture, plant health
Yield	Plant health, soil function
Occurrence of MON 810 volunteers	Sustainable agriculture
Disease susceptibility	Plant health, sustainable agriculture, biodiversity
Insect pest control (*Ostrinia nubilalis*)	Plant health, sustainable agriculture
Insect pest control (*Sesamia* spp.)	Plant health, sustainable agriculture
Pest susceptibility	Sustainable agriculture, plant health, biodiversity
Weed pressure	Sustainable agriculture, soil function, biodiversity
Occurrence of insects	Biodiversity
Occurrence of birds	Biodiversity
Occurrence of mammals	Biodiversity
Performance of fed animals	Animal health
Additional observations	All

Note: only the main corresponding protection goals are listed. However, each of the monitoring characters is addressing most of the protection goals, *e.g.*: all the characters that concur to demonstrate the agronomic equivalence of MON 810 to conventional maize are addressing impact on biodiversity.

The data for the monitoring characters were surveyed on a qualitative scale by asking farmers for their assessment of the situation compared to conventional cultivation. The farmer is asked to specify the conventional variety/ies he is cultivating on his farm to then use it/them as comparator(s). The farmers additionally use their general experience of cultivating conventional maize, thereby especially assessing the seasonal specifics. Farmers usually know whether observed differences are based on *e.g.* different varieties' maturity groups. For most questions, the possible categories of answers $As\ usual$ and $Different$, with the latter category subdivided into $Plus$ (*e.g.* later, higher, more) or $Minus$ (*e.g.* earlier, lower or less) were given (see Table 2).

Table 2: Monitoring characters and their categories

Monitoring characters – observations of MON 810	***Different Minus***	***As usual***	***Different Plus***
Crop Rotation	-	as usual	changed
Time of planting	earlier	as usual	later
Tillage and planting technique	-	as usual	changed
Insect control practices	-	as usual	changed
Weed control practices	-	as usual	changed
Fungal control practices	-	as usual	changed
Fertiliser application	-	as usual	changed
Irrigation practices	-	as usual	changed
Time of harvest	earlier	as usual	later
Germination vigour	less	as usual	more
Time to emergence	accelerated	as usual	delayed
Time to male flowering	accelerated	as usual	delayed
Plant growth and development	accelerated	as usual	delayed
Incidence of stalk/root lodging	less	as usual	more
Time to maturity	accelerated	as usual	delayed
Yield	lower	as usual	higher
Occurrence of MON 810 volunteers	less	as usual	more
Disease susceptibility	less	as usual	more
Insect pest control (*Ostrinia nubilalis*)	weak	good	very good
Insect pest control (*Sesamia* spp.)	weak	good	very good
Pest susceptibility	less	as usual	more
Weed pressure	less	as usual	more
Occurrence of insects	less	as usual	more
Occurrence of birds	less	as usual	more
Occurrence of mammals	less	as usual	more
Performance of fed animals	-	as usual	changed

2.3 Definition of influencing factors

Besides named monitoring characters, several potentially influencing factors were surveyed to assess the local conditions and to determine the cause of potential effects in the monitoring characters (Table 3).

Table 3: Monitored influencing factors

Type	**Factor**
Site	Soil characteristics Soil quality Humus content
Cultivation	Crop rotation Soil tillage Planting technique Weed and pest control practices Application of fertilizer Irrigation Time of sowing Time of harvest
Environment	Local pest pressure Local disease pressure Local occurrence of weeds

2.4 Definition of baselines, effects and statistical test procedure

Normally - if there is no effect of MON 810 cultivation or other influencing factors, and the question is well formulated and unambiguous - one would expect a predominant part of the farmers assessing the situation to be $As\ usual$. Small frequencies of differing answers result for example from uncertainty or environmental impacts and are expected to be balanced in both $Minus$ and $Plus$ direction and to run up to approximately 5 % (Figure 1). Therefore, the ***baseline*** for the analysis of monitoring characters with categories *As usual* and *Different* is 90 % - 10 %, where $Minus$- and $Plus$-answers are balanced and both about 5 %.

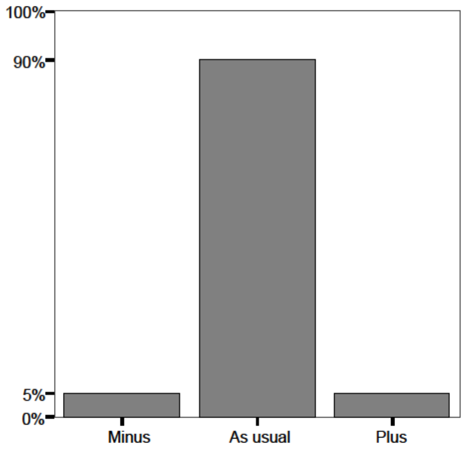

Figure 1: Balanced (expected) baseline distribution of the farmers' answers (no effect)

An effect of the cultivation of MON 810 or any other influencing factor would arise in a greater percentage of $Different$ (*i.e.* $Plus$- or $Minus$-) answers, where "greater" or an ***effect***, was quantitatively defined by exceeding a threshold of 10 % (Figure 2(a) and (b)). Graphically, an effect would be expressed by an unbalanced distribution (Figure 3(a) and (b)).

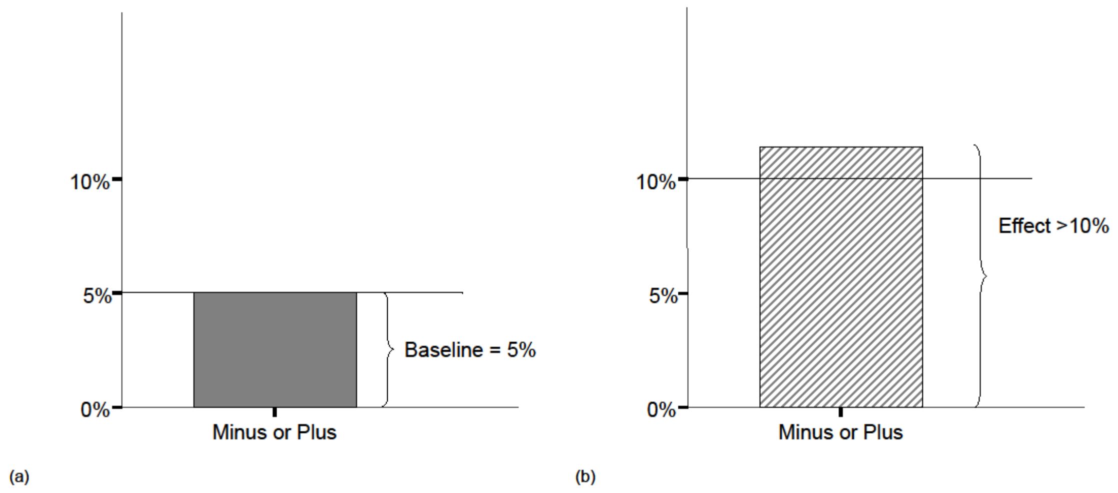

Figure 2: Definition of (a) baseline and (b) effect

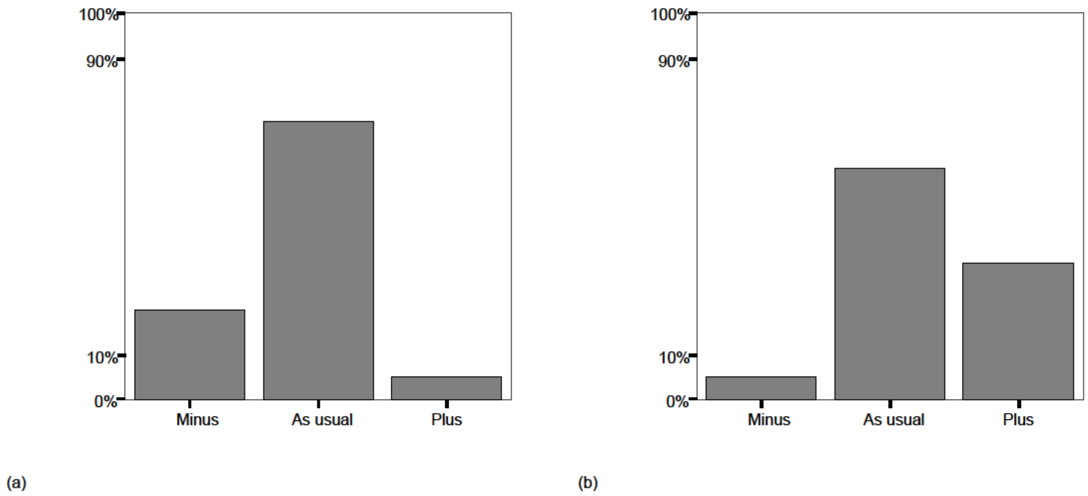

Figure 3: Examples for distributions of farmers' answers indicating an effect (a) > 10 % in category $Minus$ → effect, (b) > 10% in category $Plus$ → effect

Accordingly, identification of an effect within the data is done by testing the frequencies of the $Plus$ - or $Minus$ -answers statistically against the threshold of 10 %. The exact binomial test procedure is applied. However, in order to control for the experiment-wise type I error rate, a closed principle test procedure is performed by testing all three probabilities subsequently in descending order (Figure 4):

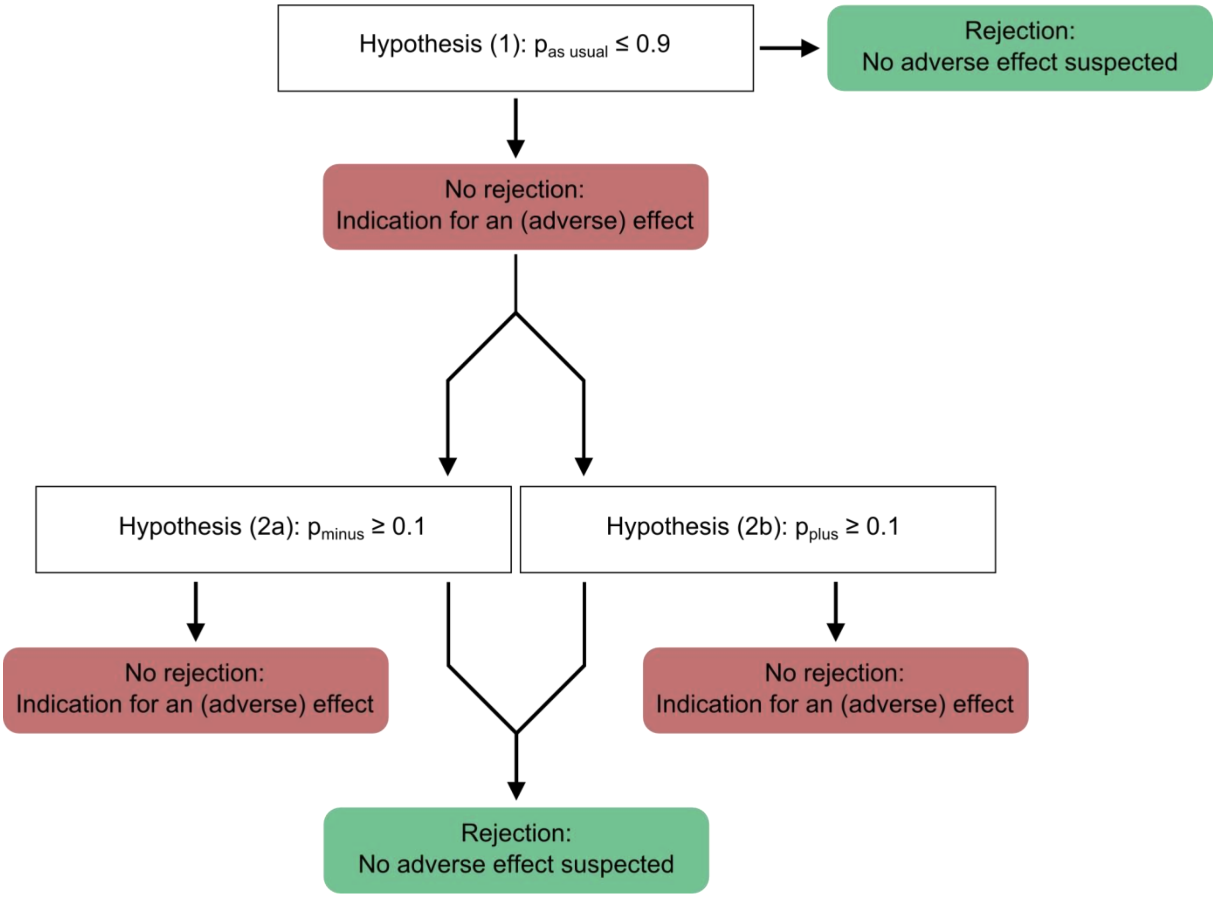

Figure 4: Closed principle test procedure for the three probabilities of $As\ usual$, $Plus$- and $Minus$-answers

- Hypothesis (1): Test of the probability $p_{As\ usual}$ (usually the largest probability)

  Null hypothesis: GMP cultivation has an (adverse) effect, the probability of getting $As\ usual$-answers is smaller than 90 % ($H_0: p_{As\ usual} \leq 0.9$)
- Hypothesis (2a): Test of the p_{Minus} probabilities

  Null hypothesis: GMP cultivation has an (adverse) effect, the probability of getting $Minus$-answers is larger than 10 % ($H_0: p_{Minus} \geq 0.1$)
- Hypothesis (2b): Test of the p_{Plus} probabilities

  Null hypothesis: GMP cultivation has an (adverse) effect, the probability of getting $Plus$-answers is larger than 10 % ($H_0: p_{Plus} \geq 0.1$)

This test procedure controls for the experiment-wise error rate because an erroneous decision, *i.e.* an error of the first kind (rejection of the null hypothesis although it is true) during the whole procedure can only be done once: an erroneous rejection of the null hypothesis (1) (*i.e.* in reality $p_{As\ usual} \leq 0.9$) corresponds to an erroneous rejection of the null hypothesis (2a) or (2b) (*i.e.* in reality $p_{Plus} \geq 0.1$ or $p_{Minus} \geq 0.1$) [Marcus, 1976], [Maurer, 1995].

Hypotheses (2a) and (2b) represent the quintessential formulation of the PMEM objective.

Consequently the analysis of each monitoring character is to be performed according to the following scheme:

1. The frequencies of the farmer responses for the three categories are calculated. The calculation of frequencies and their percentages is done both on the basis of all and on the basis of valid answers. When farmers gave no statement, answers are accounted as missing values and therefore not considered valid. As a consequence, the "valid percentages" state the proportions of actually known answers, whereas the "percentages" only specify the proportions of the categories within the whole answer spectrum, including no answers. Additionally, the accumulated valid percentages are calculated to illustrate the distribution function and for quality control reasons.
2. The frequencies of $As\ usual$-, $Plus$- and $Minus$-answers are statistically tested as described above (in case of questions that allow for only two answers like *e.g. Crop Rotation's* “as usual”/”changed”, only $As\ usual$- and $Plus$-answer frequencies are tested accordingly).
   The resulting p-values are compared to a level of significance $\alpha = 0.01$. If the p-value is smaller than $\alpha = 0.01$, the corresponding null hypothesis ($p_{As\ usual} \leq 0.9$, $p_{Minus} \geq 0.1$ or $p_{Plus} \geq 0.1$) is rejected. If the p-value is larger than $\alpha = 0.01$, respective hypothesis cannot be rejected.
   - In case Hypothesis (1) with $p_{As\ usual} \leq 0.9$ is rejected, no effect is indicated.
   - In case Hypothesis (1) with $p_{As\ usual} \leq 0.9$ cannot be rejected, but both, Hypothesis (2a) with $p_{Minus} \geq 0.1$ and Hypothesis (2b) with $p_{Plus} \geq 0.1$ can be rejected, no effect is indicated.
   - In case Hypothesis (1) with $p_{As\ usual} \leq 0.9$ cannot be rejected and at least one of the hypotheses (2a) and (2b) cannot be rejected either, an effect is indicated.

   See Figure 4 for a flow chart of the above named decision making processes.
3. Where an effect is indicated, the effect must be interpreted (adverse/beneficial).
4. Where an adverse effect is identified, the cause of the effect must be ascertained (MON 810 cultivation, other influencing factors).
5. Identification of adverse effects potentially caused by MON 810 cultivation would require further examinations. Such cases, however, have neither been found in this years', nor in previous years' data.

2.5 Sample size determination and selection

The sample size determination of the survey was based on the exact binomial test. It depends on the threshold for the test, the error of the first kind α, the error of the second kind β and the effect size d [Rasch, 2007a].

The error of the first kind is the probability to reject the null hypothesis although it is true, *i.e.* not to identify an existing effect. This probability should be as small as possible since it is the aim of GS to identify any adverse effects. The error of the first kind is also called consumer's risk.

The error of the second kind is the probability to accept the null hypothesis although it is false, *i.e.* to identify an effect although none exists. This probability should also be as small as possible as it would raise false alarm (Table 4). The error of the second kind is also called producer's risk.

The magnitude of the effect size d was chosen from experience in analyzing farm questionnaires in a pilot study in Germany 2001 - 2005 [Schmidt, 2008].

Table 4: Error of the first kind α and error of the second kind β for the test decision in testing frequencies of $Plus$- or $Minus$-answers from farm questionnaires against the threshold of 10 %

		Real situation	
		$p \geq 10\%$ **Indication for an effect**	$p < 10\%$ **No effect**
Test decision	**Acceptance** $H_0 : p \geq 10\%$	Correct decision with Probability $1 - \alpha = 99\%$	Wrong decision with Probability $\beta = 1\%$
	Rejection $H_0 : p \geq 10\%$	Wrong decision with Probability $\alpha = 1\%$	Correct decision with Probability $1 - \beta = 99\% = POWER$

CADEMO light [Cademo, 2006] was used as proposed by [Rasch, 2007a] to determine the sample size for a binomial test (Method 3/62/1005). Within this survey the accuracy demands $p = 0.1$ (threshold for adverse effects to be tested: 10 % of $Minus$- (or $Plus$)-answers), $\alpha = 0.01$ (error of the first kind), $\beta = 0.01$ (error of the second kind), and $d = 3\%$ (effect size) should be met. Under these demands for a one sample problem, testing a probability against a threshold with a one-sided test, a sample size of 2436 questionnaires was calculated. To get this sample size even in the case of questionnaires having to be excluded from the survey *e.g.* because of low quality, this number was rounded to 2,500 questionnaires.

Since the monitoring objects are fields where genetically modified crops are cultivated, the total population consists of all fields within the EU being cultivated within the 10-years authorization period. From this population a maximum of 2,500 fields has to be selected for the GS survey. Sampling of these 2,500 fields should ensure to reflect the range and distribution of plant production systems and environments exposed to GMP cultivation. This range is on one hand characterized by the growing season (year and its climatic, environmental conditions), while on the other hand, it is characterized by the geographic regions where GM cultivation takes place. Regions may vary in terms of their production systems, regulatory requirements, agro-political and socio-economic conditions and therefore are best described by European countries. Consequently, sampling takes place within strata (defined by years and countries of cultivation).

The total number of 2,500 monitoring objects is firstly equally subdivided into 250 objects per year. It is then tried to consider the fluctuant adoption of the GMP (grade of market maturity) by assigning these 250 objects to the respective countries on a yearly basis. If fewer than 250 fields per year are cultivated, the maximum possible number of monitoring objects is surveyed.

In reality, the sampling procedure is afflicted by the problem that the total number of growers (and of fields and field sizes) is not known, but only the total cultivated area (in ha). Therefore the sampling frame for this survey cannot be based on the total population of fields with MON 810 cultivation in Europe. Instead, a quota considering the magnitude (ha planted per country/ ha planted in the EU) and product situation (average field size in the country) of MON 810 cultivation will be applied, resulting in an estimation for the optimal number of farmers to be monitored per year and country.

As a consequence, the selection of farmers for the survey within the countries follows practical conditions. Since the total number and additional information of farmers cultivating MON 810 for each country is not known, farmers are selected from public registers (Portugal, Romania) or customer lists of the seed selling companies (Czech Republic, Slovakia). The public registers do not necessarily contain the contact details of the farmers which makes it often difficult to identify them. In addition, the customer lists of the seed selling companies is not comprehensive as they do not cover all MON 810 cultivating farmers. Moreover, in Spain there is no such info available. For this country, the interviewers identify MON 810 cultivating farmers by experience from previous surveys or search in the region. When buying the seeds, farmers are informed to possibly be contacted for a GS survey. All farmer refusals are recorded, however in general, only a few farmers refuse to participate.

The final number of farmers per country that will be included in the biometrical analysis will depend on their availability and willingness.

Consequently, cultivation areas with a high uptake of the GMP will be over-represented by a large number of monitored fields. Within each stratum (per year and country) the determined number of monitoring units is selected randomly where each field has the same chance to be surveyed. The whole sampling procedure ensures that the monitoring area will be proportional to and representative of the total regional area under GM cultivation.

2.6 Power of the Test

The power of the test $p_{Minus} \geq 0.1$ or $p_{Plus} \geq 0.1$ is the probability to reject the null hypothesis of an effect where none exists (correct decision). It is defined as $1 - \beta$ (β = error of the second kind) and is calculated as followed:

$$Power = \sum_{F=0}^{F_u - 1} \left(\frac{n!}{F!\,(n-F)!} \right) p^F (1-p)^{n-F}$$

where:

$F_u = \min_F (P(F \leq F_E | H_0) > \alpha$

$p =$ given probability of $Plus$- or $Minus$-answers for which the power is calculates

$F_E =$ absolute frequency of $Plus$- or $Minus$-answers

Figure 5 illustrates the power for an alternative hypothesis value of 0.07 (effect size 0.03). The distribution of the null hypothesis value (0.10) is represented by the red curve; the distribution of the alternative hypothesis value (0.07) is represented by the blue curve. The green line shows the critical value for an error probability $\alpha = 0.01$. If the alternative hypothesis is actually true (GM cultivation has no effect) the rejection of the null hypothesis is a correct decision which will occur with 99 % probability (under the blue curve to the left of the green line), *i.e.* with a power of 99 %.

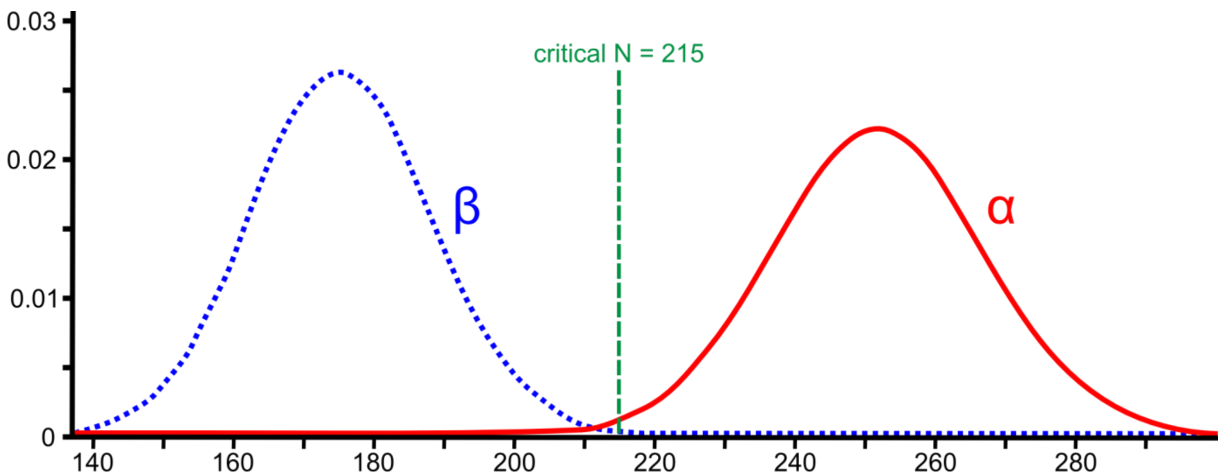

Figure 5: Null ($p = 0.1$) and alternative ($p = 0.7$) binomial distribution functions for a sample size of 2,500 type I and type II errors α and β both 0.01 (graph: G*Power Version 3.1.6)

2.7 Data management and quality control

A database was developed for data management and storage. For each question a variable was defined by a variable name (eight-digit in maximum) and a variable label (short description of the question). The variables were specified according to their type (qualitative or quantitative), format, *etc*. Missing values were defined (-1: no statement, -2: not readable). For not readable entries in the questionnaires, queries were formulated and the farmers were asked for clarification. Afterwards, these entries in the database were corrected. For quantitative variables (*e.g.* total maize area in ha) the real values from the questionnaire were taken for the database, for qualitative variables the possible parameter values (*e.g.* *Plus* / *As usual* / *Minus*) were defined and coded (and only the coded values taken).

High quality of the data is assured by preliminarily training the interviewers in a workshop via phone on a yearly basis. In face-to-face interviews, the interviewers are instructed to check whether the farmer`s answer corresponds to their documentation. When surveys are performed by phone, the farmers receive the questionnaire about two weeks in advance to pick up the information from their documentation. In 2014, nearly all interviews were conducted face-to-face. Only 4 farmers in Portugal were interviewed via phone.

All data are entered and controlled for their quality and plausibility. A quality control check first verifies the completeness of the data. Some data fields (especially the monitoring characters or comments in case the farmer's assessments differ from *As usual*) are defined to be mandatory, therefore missing values or unreadable entries are not accepted. Furthermore, the values are verified for correctness (quantitative values within a plausible min-max range, qualitative values meeting only acceptable parameter values). A plausibility control validates the variable values for their contents, both to identify incorrect answers and to prove the logical connections between different questions. It also looks for the consistency between *Plus*-/ *Minus*-answers and specifications, *i.e.* whether all these answers were provided with a specification and whether the specifications really substantiated the *Plus*-/ *Minus*-answers.

For any missing or implausible data the interviewers are asked to contact the farmers again to complete or correct the questionnaire (in these cases interviewers receive corresponding queries from BioMath).

3 Results

The questionnaires have been completed between December 2014 and February 2015. In the 2014 growing season 261 farm questionnaires have been collected. Quality and plausibility control confirmed that all 261 questionnaires could be considered for analysis. This good quality also resulted from the interviewer training.

The analysis shows that in most cases, the frequencies for the three categories of the monitoring characters show the expected balanced distribution. In some cases, deviations were identified.

An overview of numbers, percentages and levels of significance for the binomial tests of the data in 2014 is given in

Table 5. The fields in the table highlighted in grey mark the cases for which the test against the 10 % threshold resulted in p-values greater than or equal to 0.01, so the null hypotheses (that these values are greater than 10 %) could not be rejected and therefore indicate the occurrence of an effect.

Figure 6 shows the $As\ usual$ answer probabilities of all monitoring characters on the same graph, thereby forming an overall pattern and allowing the assessment of MON 810 effects at one glance. The vertical dashed line indicates the test threshold of 0.9 (biological relevance).

- No effect of MON 810 is indicated if
  - the lower confidence bound is greater than the threshold, *i.e.* the whole confidence interval lies on the right side of the dashed line or
- An effect of MON 810 is indicated if
  - the threshold lies between the lower and upper confidence bounds, *i.e.* the confidence interval crosses the dashed line.
  - the upper confidence bound is smaller than the threshold, *i.e.* the whole confidence interval lies on the left side of the dashed line.

Taken together, 2014 data indicate that in comparison to conventional maize, MON 810 plants

- received less insecticides,
- germinated more vigourously,
- had less incidence of stalk/root lodging,
- had a longer time to maturity,
- gave a higher yield,
- were less susceptible to pests other than corn borers, especially lepidopteran pests.

In the following sections the detailed analysis of all parameters surveyed using the questionnaire in 2014 is described and the results are assessed scientifically.

Table 5: Overview on the results of the descriptive analysis of the monitoring characters in 2014

Monitoring Character	N valid	Minus	P for $p_0 = 0.1$	As usual	P for $p_0 = 0.9$	Plus	P for $p_0 = 0.1$
Crop rotation	261			251 (96.2%)	< 0.01	10 (3.8%)	< 0.01
Time of planting	261	1 (0.4%)	< 0.01	249 (95.4%)	< 0.01	11 (4.2%)	< 0.01
Tillage and planting technique	261			253 (96.9%)	< 0.01	8 (3.1%)	< 0.01
Insect control practices	261			218 (83.5%)	1.0	43 (16.5%)	1.0
Weed control practices	261			256 (98.1%)	< 0.01	5 (1.9%)	< 0.01
Fungal control practices	261			261 (100.0%)	< 0.01	0 (0.0%)	< 0.01
Corn borer control practice	261			219 (83.9%)	1.0	42 (16.1%)	1.0
Fertiliser application	261			260 (99.6%)	< 0.01	1 (0.4%)	< 0.01
Irrigation practices	261			261 (100.0%)	< 0.01	0 (0.0%)	< 0.01
Time of harvest	261	1 (0.4%)	< 0.01	248 (95.0%)	< 0.01	12 (4.6%)	< 0.01
Germination vigor	261	0 (0.0%)	< 0.01	230 (88.1%)	0.819	31 (11.9%)	0.866
Time to emergence	261	0 (0.0%)	< 0.01	261 (100.0%)	< 0.01	0 (0.0%)	< 0.01
Time to male flowering	261	0 (0.0%)	< 0.01	260 (99.6%)	< 0.01	1 (0.4%)	< 0.01
Plant growth and development	261	0 (0.0%)	< 0.01	261 (100.0%)	< 0.01	0 (0.0%)	< 0.01
Incidence of stalk / root lodging	261	70 (26.8%)	1.0	191 (73.2%)	1.0	0 (0.0%)	< 0.01
Time to maturity	261	0 (0.0%)	< 0.01	231 (88.5%)	0.763	30 (11.5%)	0.819
Yield	261	4 (1.5%)	< 0.01	163 (62.5%)	1.0	94 (36.0%)	1.0
Occurrence of MON 810 volunteers	261	3 (1.1%)	< 0.01	258 (98.9%)	< 0.01	0 (0.0%)	< 0.01
Disease susceptibility	261	14 (5.4%)	< 0.01	247 (94.6%)	< 0.01	0 (0.0%)	< 0.01
Pest susceptibility	261	42 (16.1%)	1.0	218 (83.5%)	1.0	1 (0.4%)	< 0.01
Weed pressure	261	0 (0.0%)	< 0.01	261 (100.0%)	< 0.01	0 (0.0%)	< 0.01
Occurrence of insects	261	0 (0.0%)	< 0.01	261 (100.0%)	< 0.01	0 (0.0%)	< 0.01
Occurrence of birds	261	1 (0.4%)	< 0.01	260 (99.6%)	< 0.01	0 (0.0%)	< 0.01
Occurrence of mamals	261	1 (0.4%)	< 0.01	260 (99.6%)	< 0.01	0 (0.0%)	< 0.01
Performance of animals	15			15 (100.0%)	< 0.01	0 (0.0%)	0.206

For grey highlighted probability values the test against the threshold of 10 % for $Minus$ - or $Plus$-answers, respectively 90 % for $As\ usual$-answers, resulted in p-values greater than $\alpha = 0.01$, so the null hypotheses, that these values are greater than 10 % for $Minus$ - or $Plus$-answers, respectively smaller than 90 % for $As\ usual$-answers, could not be rejected, *i.e.* an effect is indicated.

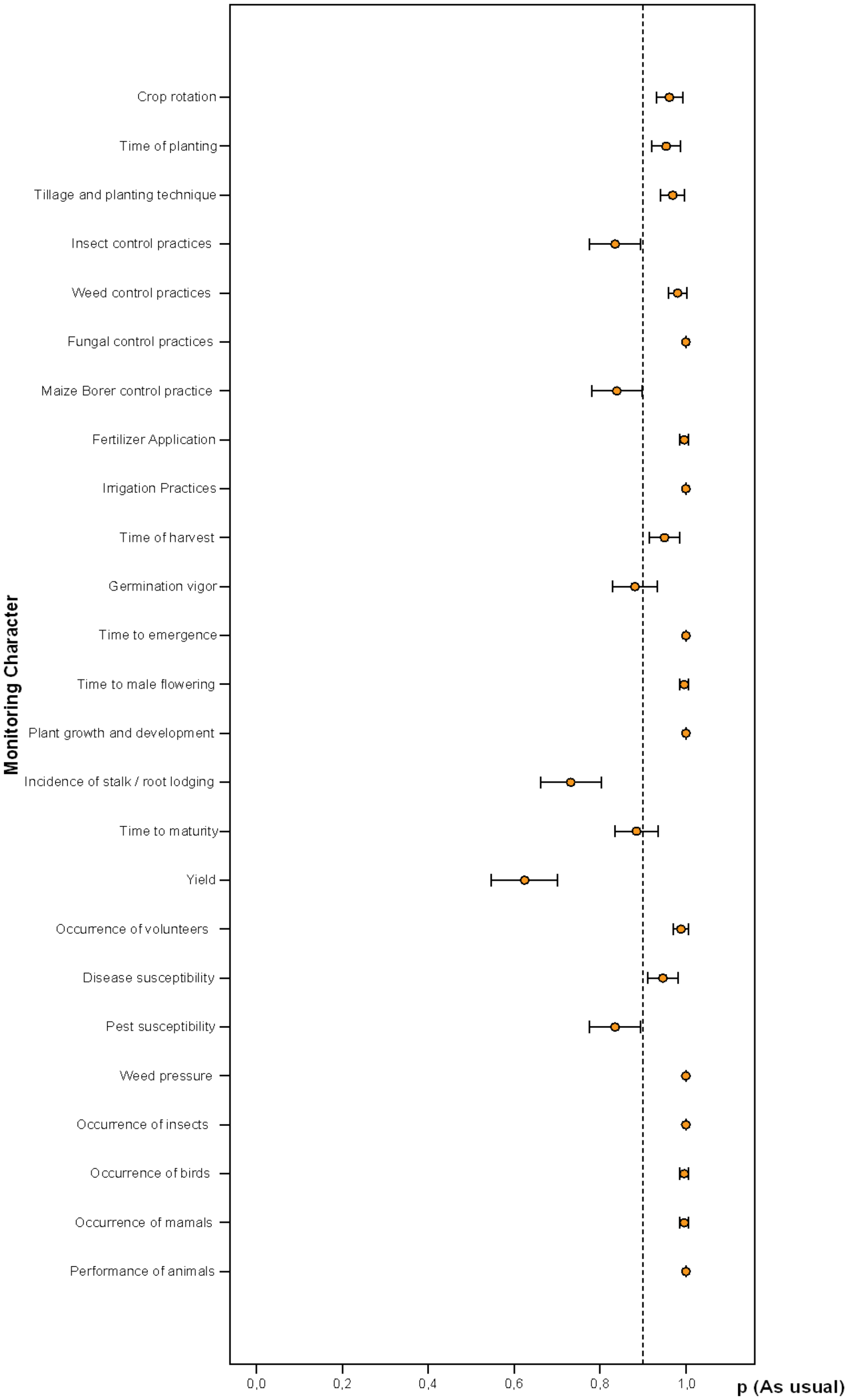

Figure 6: $As\ usual$-answer probabilities of all monitoring characters, point estimate (circle) and 95 % confidence intervals (bars). Vertical dashed line indicates the test threshold of 0.9 (biological relevance)

3.1 Sampling and quality and plausibility control

The questionnaires have been completed between December 2014 and February 2015. In the 2014 growing season 261 farm questionnaires have been collected.

In Spain, the largest market, the surveys (213) were performed by Instituto Markin, SL[2], in Portugal the surveys (48) were performed by Agro.Ges - Sociedade de Estudos e Projectos[3]. These companies have an established experience in agricultural surveys.

Since no farmer refused to participate in the survey, there was a response rate of 100 % for Spain and Portugal.

After the first quality and plausibility control, 6 inconsistencies occurred in the questionnaires (all from Spain): 4 cases of missing entries and 1 inconsistency between two conditioned answers and 1 incorrect variety name. After including the corrections, the quality and plausibility control confirmed that all 261 questionnaires could be considered for analysis.

The high quality of the questionnaires can also be ascribed to the interviewer training.

The database currently contains 2,365 cases (questionnaires) for 9 field seasons: 251 for 2006, 291 for 2007, 297 for 2008, 240 for 2009, 271 for 2010, 249 for 2011, 249 for 2012, 256 for 2013 and 261 for 2014.

[2] Instituto Markin, SL; c/ Caleruega, 60 4º D -28033 Madrid -Spain
[3] Agro.Ges -Sociedade de Estudos e Projectos, Av. da República, 412, 2750-475 Cascais -Portugal

3.2 Part 1: Maize grown area

3.2.1 Location

In 2014, 261 questionnaires were surveyed in the cultivation areas of MON 810 in Spain and Portugal. With an area of 131,537 ha in Spain and 8,542 ha in Portugal, these two countries represent Europes largest MON 810 cultivators. Of these areas, 5.5 % and 36.1 % were monitored in this study for Spain and Portugal, respectively (Table 6).

Figure 7 shows a geographical overview on the cultivation areas of MON 810 in Europe in 2014 (dark grey areas) and the location of the monitoring sites (numbers).

Table 6: MON 810 cultivation and monitored areas in 2014

Country	Total planted MON 810 area (ha)	Monitored MON 810 area (ha)	Monitored MON 810 area / total planted MON 810 area (%)
Spain	131,537	7,247	5.5
Portugal	8,542	3,087	36.1
Czech Republic	1,754	0	0.0
Romania	771	0	0.0
Slovakia	411	0	0.0
Total	143,015	10,334	7.2

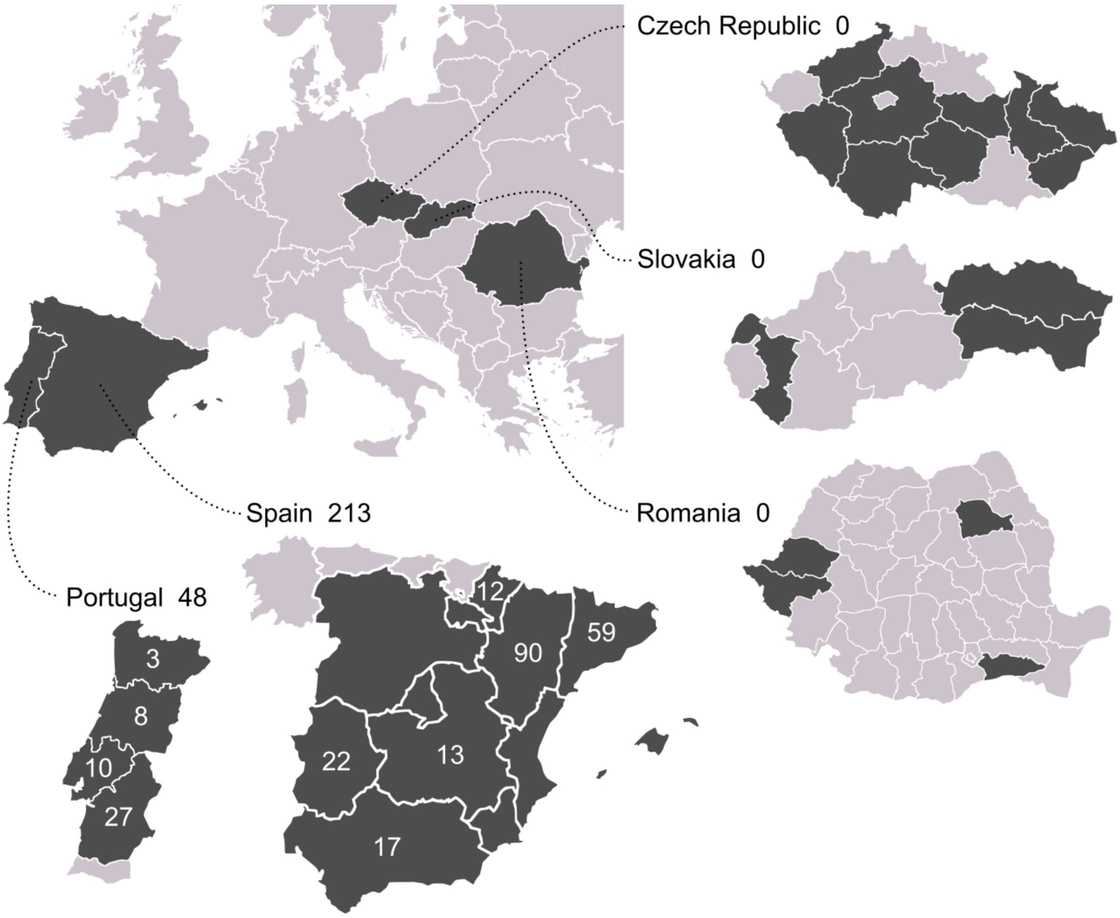

Figure 7: Number of sampling sites within the cultivation areas (grey) of MON 810 in Europe in 2014

3.2.2 Surrounding environment

The farmers were asked to describe the land usage in the surrounding of the areas planted with maize. All but one field (99.6 %) are surrounded by farmland while a single field (0.4 %) is surrounded by other types of environment (Table 7, Figure 8).

Table 7: Land usage in the surrounding of the areas planted with MON 810 in Europe in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	Farmland	260	99.6	99.6	99.6
	Farmland and forest or wild habitat	1	0.4	0.4	100.0
	Farmland, forest or wild habitat, residential or industrial	0	0.0	0.0	100.0
Total		261	100.0	100.0	

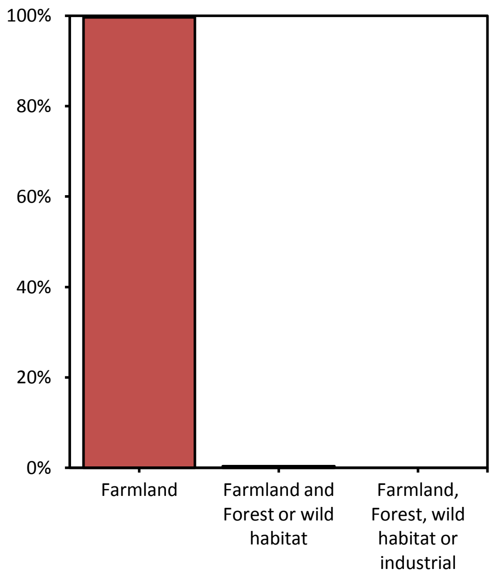

Figure 8: Land usage in the surrounding of the areas planted with MON 810 in Europe in 2014

3.2.3 Size and number of fields of the maize cultivated area

The size of the total maize area at the farms in 2014 ranged from 1.0 to 1,950.0 hectares. The average MON 810 areas per surveyed farmer in 2014 were 34.0 ha in Spain and 64.3 ha in Portugal. Details for cultivation of maize between 2006 and 2014 divided by country can be found in Table 8, Table 9 and Table 10.

Table 8: Maize area (ha) per surveyed farmer in 2006, 2007 and 2008

		2006			2007			2008		
Country	Total Area (ha)	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Spain	all maize	26.9	1.0	204.0	31.6	1.0	210.0	31.6	1.5	294.0
	MON 810	21.0	1.0	170.0	25.2	1.0	200.0	24.9	0.5	266.0
France	all maize	80.4	9.6	500.0	54.6	6.0	500.0	-	-	-
	MON 810	18.3	0.4	104.0	35.8	2.0	150.0	-	-	-
Portugal	all maize	100.3	10.0	278.0	89.3	7.0	470.0	78.6	10.0	350.0
	MON 810	35.3	3.0	130.0	54.8	0.8	320.0	41.1	2.5	240.0
Czech Republic	all maize	424.6	52.0	2,500.0	433.8	89.3	1,400.0	431.9	57.4	3,000.0
	MON 810	28.2	1.5	125.0	86.3	19.5	466.0	107.6	10.0	561.1
Slovakia	all maize	491.7	65.0	1,300.0	277.2	20.0	659.4	340.2	124.0	637.3
	MON 810	10.0	10.0	10.0	50.6	10.0	174.6	130.1	10.0	400.0
Germany	all maize	274.8	39.0	1,110.0	239.5	20.0	1,130.0	256.1	4.8	1,470.0
	MON 810	17.3	1.0	50.0	43.0	0.5	166.0	51.6	0.2	200.0
Romania	all maize	-	-	-	1,969.8	253.0	5,616.0	591.4	5.4	6,789.0
	MON 810	-	-	-	61.4	0.5	216.0	149.0	2.0	2,705.0
Poland	all maize	-	-	-	79.0	20.0	130.0	222.7	4.2	940.0
	MON 810	-	-	-	13.0	11.0	15.0	17.0	4.2	50.0

Table 9: Maize area (ha) per surveyed farmer in 2009, 2010 and 2011

		2009			2010			2011		
Country	**Total Area (ha)**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Mean**	**Min**	**Mean**	**Min**
Spain	all maize	28.3	3.0	260.0	34.2	2.0	34.2	2.0	34.2	2.0
	MON 810	21.1	2.0	200.0	23.9	1.0	23.9	1.0	23.9	1.0
France	all maize	-	-	-	-	-	-	-	-	-
	MON 810	-	-	-	-	-	-	-	-	-
Portugal	all maize	78.8	8.0	310.0	78.4	9.0	78.4	9.0	78.4	9.0
	MON 810	47.8	1.0	250.0	53.9	1.5	53.9	1.5	53.9	1.5
Czech Republic	all maize	338.9	8.4	789.1	355.7	2.2	355.7	2.2	355.7	2.2
	MON 810	90.4	6.5	500.0	112.7	2.0	112.7	2.0	112.7	2.0
Slovakia	all maize	546.7	270.0	895.0	594.9	150.0	594.9	150.0	594.9	150.0
	MON 810	132.3	50.0	285.0	184.2	60.0	184.2	60.0	184.2	60.0
Germany	all maize	-	-	-	-	-	-	-	-	-
	MON 810	-	-	-	-	-	-	-	-	-
Romania	all maize	417.5	2.5	6,869.0	196.9	20.0	196.9	20.0	196.9	20.0
	MON 810	62.1	1.0	1,114.0	32.9	0.1	32.9	0.1	32.9	0.1
Poland	all maize	58.0	39.0	95.0	61.1	19.0	61.1	19.0	61.1	19.0
	MON 810	12.8	5.5	25.0	23.8	1.5	23.8	1.5	23.8	1.5

Table 10: Maize area (ha) per surveyed farmer in 2012, 2013 and 2014

		2012			2013			2014		
Country	**Total Area (ha)**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**
Spain	all maize	33.0	1.0	320.0	41.6	1.5	1,000.0	53.0	2.0	1,950.0
	MON 810	21.8	1.0	278.0	27.7	1.0	700.0	34.0	1.0	1,445.0
France	all maize	-	-	-	-	-	-	-	-	-
	MON 810	-	-	-	-	-	-	-	-	-
Portugal	all maize	96.7	10.0	300.0	103.7	10.0	537.0	111.7	10.0	800.0
	MON 810	61.5	1.5	240.0	58.4	1.0	240.0	64.3	1.0	640.0
Czech Republic	all maize	492.2	8.4	2,000.0	454.0	9.3	1,300.0	-	-	-
	MON 810	108.6	6.6	230.0	95.8	7.3	250.0	-	-	-
Slovakia	all maize	862.9	862.9	862.9	-	-	-	-	-	-
	MON 810	169.0	169.0	169.0	-	-	-	-	-	-
Germany	all maize	-	-	-	-	-	-	-	-	-
	MON 810	-	-	-	-	-	-	-	-	-
Romania	all maize	124.0	20.0	500.0	749.0	548.0	950.0	-	-	-
	MON 810	21.6	0.0	59.3	227.8	55.6	400.0	-	-	-
Poland	all maize	-	-	-	-	-	-	-	-	-
	MON 810	-	-	-	-	-	-	-	-	-

Figure 9 shows the mean percentage of MON 810 cultivation area within total maize area per farmer from 2006 to 2014.

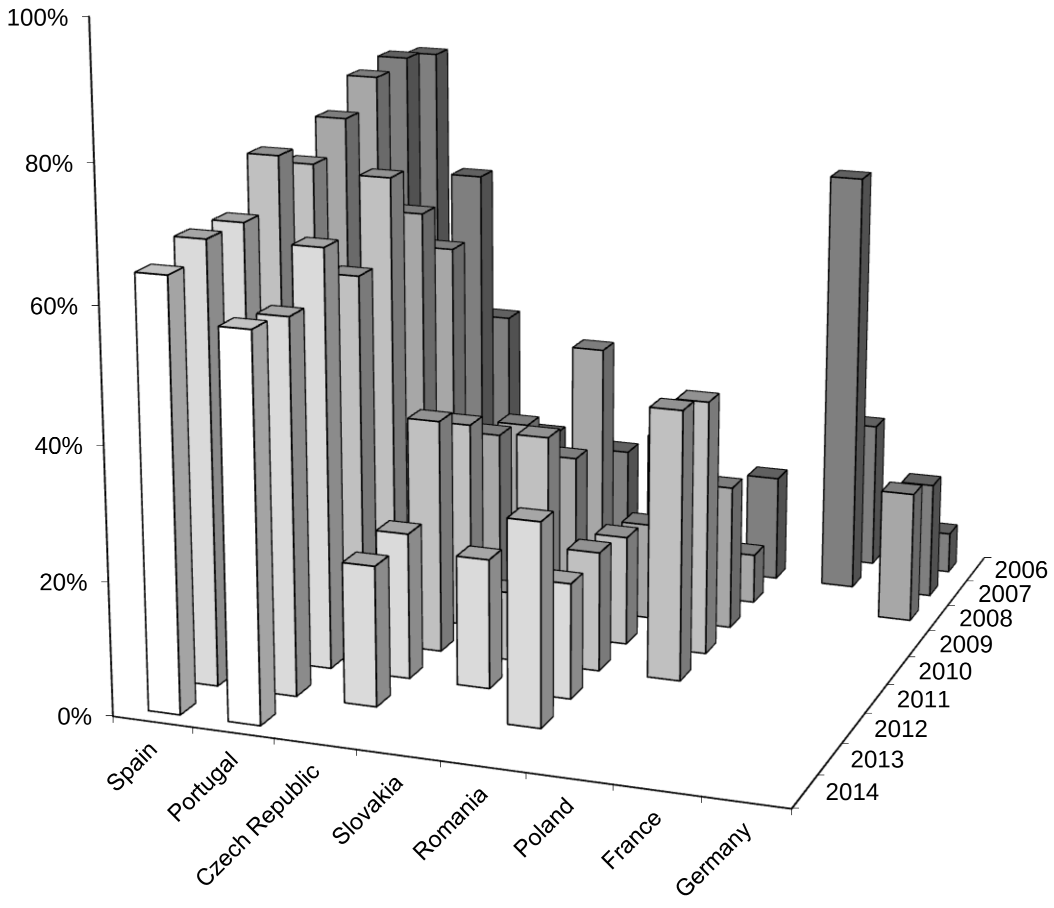

Figure 9: Mean percent of MON 810 cultivation area of total maize area per farmer in 2006 - 2014 (surveyed countries only)

In 2014 MON 810 was cultivated on 1 - 150 fields per farm. On average every farmer cultivated MON 810 on ca. 6 fields (Table 11).

Table 11: Number of fields with MON 810 in 2014

Valid N	Mean	Minimum	Maximum	Sum
261	6.22	1	150	1,624

3.2.4 Maize varieties grown

The farmers were asked to list up to five MON 810 varieties and up to five conventional maize varieties that they cultivated on their farm in 2014. 51 different MON 810 varieties and 62 different conventional maize varieties were listed. The most frequently listed varieties (at least 6 times) together with their respective frequencies are listed in Table 12.

Table 12: Names of most cultivated MON 810and conventional maize varieties in 2014

MON 810 maize		Conventional maize	
Variety	Frequency	Variety	Frequency
P 1758 Y	115	P 1758	70
PR 33 Y 72	78	DKC 6728	50
DKC 6667 YG	35	PR 33 Y 74	34
PR 33 W 86	30	P 1114	24
PR 34 A 27	30	P 1921	24
P 0725 Y	27	PR 33 W 82	23
DKC 5277 YG	19	P 0725	23
DKC 6451 YG	16	DKC 6717	17
P 1547 Y	16	P 1574	13
PR 33 D 48	14	DKC 6666	12
P 1574 Y	11	Kopias	10
LG 3711 YG	8	SY Miami	9
Antiss YG	8	Sancia	7
Kayras YG	7	Lerma	6
PR 31 D 61	7	P 1547	6
LG 30712 YG	7	SY Inove	6
Poboa YG	6		
PR 33 V 78	6		
LG 30707 YG	6		

3.2.5 Soil characteristics of the maize grown area

To assess the possible influence of the soil on monitoring characters, data on soil characteristics, quality and humus content were surveyed. Table 13 summarizes the reported soil types of the maize grown area.

Table 13: Predominant soil type of maize grown area in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	very fine	10	3.8	3.8	3.8
	fine	89	34.1	34.1	37.9
	medium	109	41.8	41.8	79.7
	medium-fine	18	6.9	6.9	86.6
	coarse	17	6.5	6.5	93.1
	no predominant soil type	18	6.9	6.9	100.0
Total		261	100.0	100.0	

Farmers responses regarding the soil quality of the maize-grown areas are given in Table 14 and Figure 10. 96.9 % (253/261) of the maize was grown on *normal* or *good* soil according to the response of the farmers.

Table 14: Soil quality of the maize grown area as assessed by the farmers in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	below average - poor	8	3.1	3.1	3.1
	average - normal	198	75.9	75.9	78.9
	above average - good	55	21.1	21.1	100.0
Total		261	100.0	100.0	

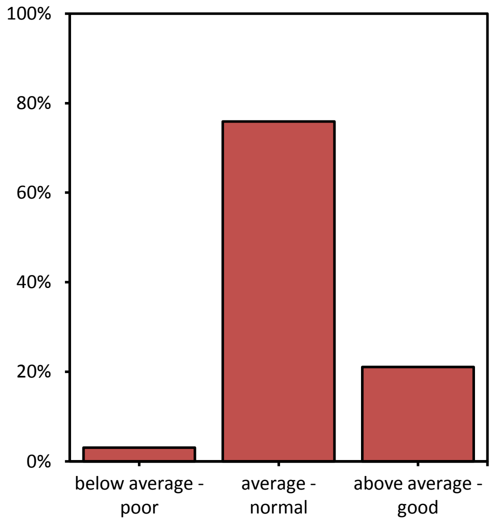

Figure 10: Soil quality of the maize grown area as assessed by the farmers in 2014

80 farmers were able to specify the humus content (not a commonly known measure all over Europe), which ranged from 0.65 % to 7.0 % with a mean of 1.8 % (Table 15). 181 farmers (all from Spain) did not specify the humus content.

Table 15: Humus content (%) in 2014

Valid N	Mean	Minimum	Maximum	Missing N
80	1.8	0.65	7	181

3.2.6 Local disease, pest and weed pressure in maize

Data of local disease, pest and weed pressures in maize were collected to find out if these environmental data had any influence on the values of the monitoring characters. These data differ from year to year,depend on the cultivation area and reflect the assessment of the farmer.

Local disease pressure as assessed by the farmers

The local disease pressure (fungal, viral) in maize was assessed to be low or $as\ usual$ by 90.8 % (237/261) of the farmers (Table 16, Figure 11).

While in Spain only 17.8 % (38/213) found the local disease pressure to be low and 72.8% (155/213) stated it to be $as\ usual$, farmers in Portugal seemed to evaluate it to be the other way around with 60.4 % (29/48) for low and 31.1 % (15/48) for $as\ usual$.

Table 16: Farmers assessment of the local disease pressure (fungal, viral) in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	low	67	25.7	25.7	25.7
	as usual	170	65.1	65.1	90.8
	high	24	9.2	9.2	100.0
Total		261	100.0	100.0	

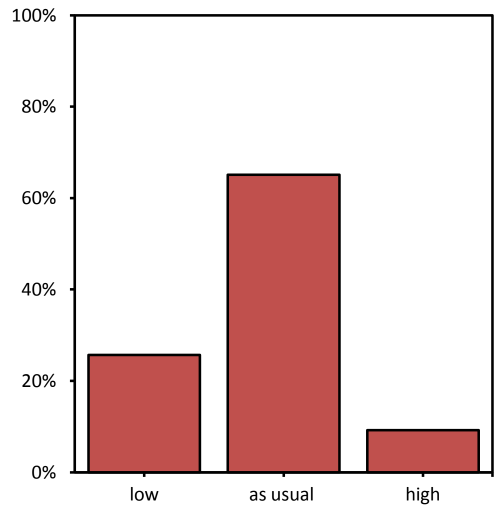

Figure 11: Farmers assessment of the local disease pressure (fungal, viral) in 2014

Local pest pressure as assessed by the farmers

Regarding the local pest pressure (insects, mites, nematodes), 83.1 % (217/261) of the farmers evaluated it to be *low* or *as usual* and 16.9 % (44/261) evaluated it to be *high* (Table 17, Figure 12). While in both countries approximately half of the farmers evaluated the local pest pressure to be *as usual* l (117/213 in Spain; 25/48 in Portugal), all 44 farmers stating *high* local pest pressure came from Spain.

Table 17: Farmers assessment of the local pest pressure (insects, mites, nematodes) in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	low	75	28.7	28.7	28.7
	as usual	142	54.4	54.4	83.1
	high	44	16.9	16.9	100.0
Total		261	100.0	100.0	

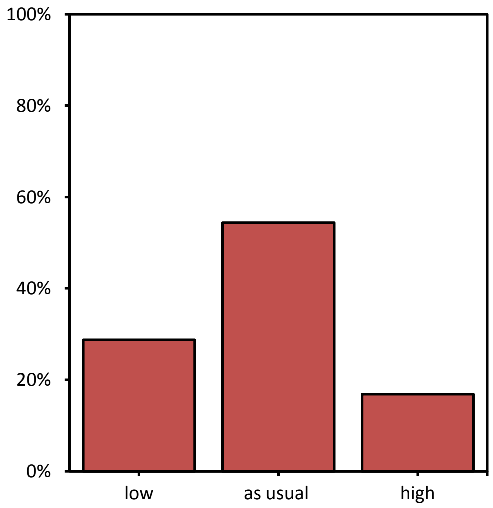

Figure 12: Farmers assessment of the local pest pressure (insects, mites, nematodes) in 2014

Local weed pressure as assessed by the farmers

90.4 % (236/261) assessed the local weed pressure to be low or $as\ usual$ and 9.6 % (25/261) evaluated it to be $high$ (Table 18, Figure 13).

Table 18: Farmers assessment of the local weed pressure in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	low	22	8.4	8.4	8.4
	as usual	214	82.0	82.0	90.4
	high	25	9.6	9.6	100.0
Total		261	100.0	100.0	

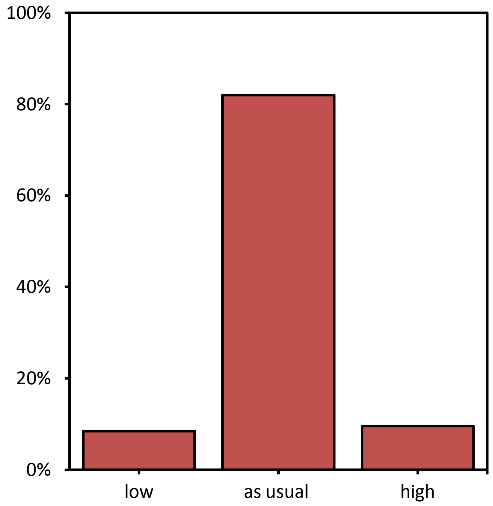

Figure 13: Farmers assessment of the local weed pressure in 2014

3.3 Part 2: Typical agronomic practices to grow maize

3.3.1 Irrigation of maize grown area

100 % (261/261) irrigated their fields (Table 19). The irrigation of the maize grown area is a productivity factor. These data reflect the general practices on the Iberian Peninsula. The irrigation depends on the weather conditions, even though it could be relevant for the analysis of GM maize specific effects.

Table 19: Irrigation of maize grown area in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	yes	261	100.0	100.0	100.0
	no	0	0.0	0.0	100.0
Total		261	100.0	100.0	

Most of the irrigating farmers used Gravity (41.0 %) followed by Sprinkler (33.79 %) and Pivot (19.9 %). Some of them used more than one of the named or other types of irrigation (Table 20).

In Spain, Gravity (103/213) and Sprinkler (87/213) were the most common irrigation methods, while farmers in Portugal mostly used Pivot (33/48).

Table 20: Irrigation of maize grown area in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	Gravity	107	41.0	41.0	41.0
	Sprinkler	88	33.7	33.7	74.7
	Pivot	52	19.9	19.9	94.6
	Sprinkler and Pivot	7	2.7	2.7	97.3
	other	5	1.9	1.9	99.2
	Gravity and Pivot	1	0.4	0.4	99.6
	Pivot and other	1	0.4	0.4	100.0
Total		261	100.0	100.0	

3.3.2 Major rotation of maize grown area

The main crop rotation within three years is $maize - maize - maize$ followed by $maize - cereals - maize$, $multiple - multiple - maize$, $cereals - maize - maize$ and $cereals - cereals - maize$. Some other crop rotations were mentioned, but all with low occurrence (Table 21).

Table 21: Major rotation of maize grown area before 2014 planting season (two years ago and previous year) sorted by frequency

	two years ago	previous year	Frequency	Percentage	Valid percentage	Accumulated percentage
Valid	maize	maize	129	49.4	49.4	49.4
	maize	cereals	23	8.8	8.8	58.2
	multiple	multiple	15	5.7	5.7	64.0
	cereals	maize	13	5.0	5.0	69.0
	cereals	cereals	9	3.4	3.4	72.4
	legumes	legumes	9	3.4	3.4	75.9
	maize	legumes	8	3.1	3.1	78.9
	other	other	7	2.7	2.7	81.6
	legumes	maize	6	2.3	2.3	83.9
	potato	cotton	4	1.5	1.5	85.4
	cotton	potato	4	1.5	1.5	87.0
	cotton	maize	3	1.1	1.1	88.1
	maize	other	3	1.1	1.1	89.3
	other oil plants	maize	2	0.8	0.8	90.0
	rice	maize	2	0.8	0.8	90.8
	maize	vegetables	2	0.8	0.8	91.6
	cereals	vegetables	2	0.8	0.8	92.3
	maize	potato	2	0.8	0.8	93.1
	cereals	other	2	0.8	0.8	93.9
	multiple	other	2	0.8	0.8	94.6
	vegetables	maize	1	0.4	0.4	95.0
	spices	maize	1	0.4	0.4	95.4
	other	maize	1	0.4	0.4	95.8
	legumes	cereals	1	0.4	0.4	96.2
	potato	cereals	1	0.4	0.4	96.6
	cereals	legumes	1	0.4	0.4	96.9
	vegetables	legumes	1	0.4	0.4	97.3
	maize	other oil plants	1	0.4	0.4	97.7
	vegetables	other oil plants	1	0.4	0.4	98.1
	maize	no cultivation	1	0.4	0.4	98.5
	maize	cotton	1	0.4	0.4	98.9
	potato	potato	1	0.4	0.4	99.2
	maize	multiple	1	0.4	0.4	99.6
	cereals	multiple	1	0.4	0.4	100.0
Total			261	100.0	100.0	

3.3.3 Soil tillage practices

The farmers were asked to answer whether they performed soil tillage. 96.6 % (252/261) said yes (Table 22) while 3.4 % (9/261) answered no. All farmers who answered no came from Spain.

Table 22: Soil tillage practices in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	yes	252	96.6	96.6	96.6
	no	9	3.4	3.4	100.0
Total		261	100.0	100.0	

All farmers who said yes specified the time of tillage. 67.1 % (169/252) performed it in $winter$, 32.9 % (83/252) in $spring$ and no one in $winter\ and\ spring$ (Table 23, Figure 14). In Portugal, all 48 farmers stated that they performed soil tillage during $spring$.

Table 23: Time of tillage in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	winter	169	67.1	67.1	67.1
	spring	83	32.9	32.9	100.0
	winter & spring	0	0.0	0.0	100.0
Total		252	100.0	100.0	

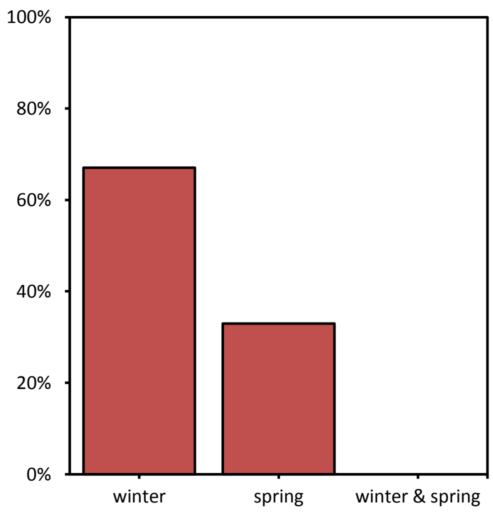

Figure 14: Time of tillage in 2014

3.3.4 Maize planting technique

90.4 % (236/261) of the farmers used $conventional$ maize planting techniques, 6.1 % (16/261) $mulch$ and 3.4 % (9/261) used $direct\ sowing$ (Table 24, Figure 15).

Table 24: Maize planting technique in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	conventional planting	236	90.4	90.4	90.4
	mulch	16	6.1	6.1	96.6
	direct sowing	9	3.4	3.4	100.0
Total		261	100.0		

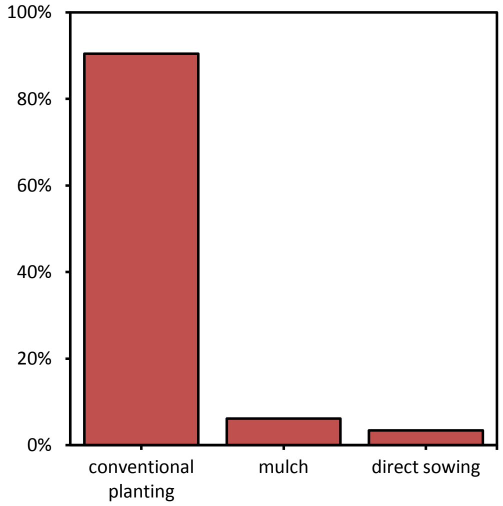

Figure 15: Maize planting technique in 2014

3.3.5 Typical weed and pest control practices in maize

Farmers were asked to specify the typical weed and pest control practices for maize at their farms. For conventional maize 94.3 % of all farmers (246/261) applied $insecticides$ and 16.5 % (43/246) of them additionally applied $insecticides\ against\ corn\ borers$. None of the farmers used $biocontrol\ treatment$, while all of them (100.0 %, 261/261) used $herbicides$, 8.4 % (22/261) used $mechanical\ weed\ control$ and not one farmer used $fungicides$ (Table 25).

Table 25: Typical weed and pest control practices in maize in 2014

Insecticide(s)		Frequency	Percent
	yes	246	94.3
	no	15	5.7
Total		261	100.0
Insecticide(s) against Corn Borer		Frequency	Percent
	yes	43	16.5
	no	203	77.8
	Total	246	
Missing	no statement	15	5.7
Total		261	100.0
Use of biocontrol treatments		Frequency	Percent
	yes	0	0.0
	no	261	100.0
Total		261	100.0
Herbicide(s)		Frequency	Percent
	yes	261	100.0
	no	0	0.0
Total		261	100.0
Mechanical weed control		Frequency	Percent
	yes	22	8.4
	no	239	91.6
Total		261	100.0
Fungicide(s)		Frequency	Percent
	yes	0	0.0
	no	261	100.0
Total		261	100.0
Other		Frequency	Percent
	yes	0	0.0
	no	261	100.0
Total		261	100.0

3.3.6 Application of fertilizer to maize grown area

All farmers (100 %, 261/261) applied fertilizer to the maize grown area (Table 26).

Table 26: Application of fertilizer to maize grown area in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	yes	261	100.0	100.0	100.0
	no	0	0.0	0.0	100.0
Total		261	100.0	100.0	

3.3.7 Typical time of maize sowing

For quality control and to see if the collected data are plausible the farmers were asked about the typical time of maize sowing.

The time of sowing ranged from 20 February 2014 to 15 July 2014 (Table 27).

Table 27: Typical time of maize sowing in 2014

	Minimum	Maximum	Mean	Valid N
Sowing from	20.02.2014	10.07.2014	09.04.2014	261
Sowing till	28.02.2014	15.07.2014	04.05.2014	261

3.3.8 Typical time of maize harvest

In order to verify the plausibility of the data, farmers were also asked for their typical time of harvest. The time of harvest for maize grain ranged from 20 August 2014 to 15 February 2015 and for maize forage from 15 August 2014 to 20 November 2014 (Table 28).

Table 28: Typical time of maize harvest in 2014

	Minimum	Maximum	Mean	Valid N
Harvest grain maize from	20.08.2014	05.01.2015	16.10.2014	251
Harvest grain maize till	25.08.2014	15.02.2015	11.11.2014	251
Harvest forage maize from	15.08.2014	25.10.2014	23.09.2014	27
Harvest forage maize till	10.09.2014	20.11.2014	12.10.2014	27

3.4 Part 3: Observations of MON 810

3.4.1 Agricultural practice for MON 810 (compared to conventional maize)

Crop rotation

The crop rotation for MON 810 was specified to be $as\ usual$ in 96.2 % (251/261) of the cases (Appendix A Table A 1, Table 29, Figure 16). The individual specifications for $changed$ crop rotation before MON 810 are given in Appendix A, Table A 1.

Table 29: Crop rotation for MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	251	96.2	96.2	96.2
	changed	10	3.8	3.8	100.0
Total		261	100.0	100.0	

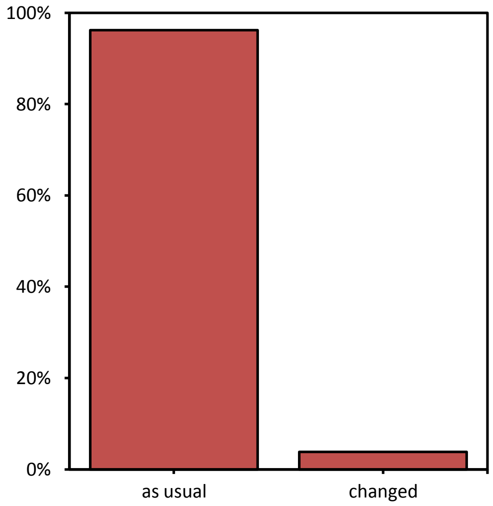

Figure 16: Crop Rotation of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ crop rotation (96.2 %) is significantly greater than 90 %. The resulting p-value is less than the level of significance $\alpha = 0.01$ (Table 30) and therefore, the null hypothesis $p_{as\ usual} \leq 0.9$ is rejected with a power of 95.46 %.

No effect on crop rotation is indicated.

Table 30: Results of the binomial test for crop rotation for MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261			251 (96.2%)	< 0.01	10 (3.8%)	< 0.01

Time of planting

The time of planting of MON 810 was specified to be $as\ usual$ compared to conventional maize by 95.4 % (249/261) of the farmers (Table 31, Figure 17). The individual specifications for $later$ and $earlier$ planting of MON 810 are given in Appendix A, Table A 2.

Table 31: Time of planting for MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	earlier	1	0.4	0.4	0.4
	as usual	249	95.4	95.4	95.8
	later	11	4.2	4.2	100.0
Total		261	100.0	100.0	

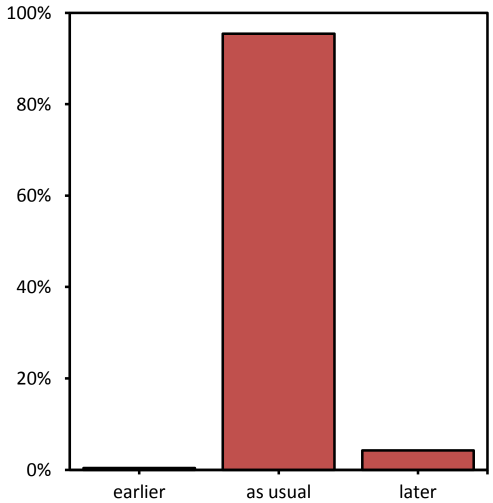

Figure 17: Time of planting of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ time of planting (95.4 %) is significantly greater than 90 %. The resulting p-value is less than the level of significance $\alpha = 0.01$ (Table 32) and therefore, the null hypothesis $p_{as\ usual} \leq 0.9$ is rejected with a power of 84.96 %.

No effect on time of planting is indicated.

Table 32: Results of the binomial test for time of planting for MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	1 (0.4%)	< 0.01	249 (95.4%)	< 0.01	11 (4.2%)	< 0.01

Tillage and planting techniques

The majority of the farmers did not change the tillage and planting techniques of MON 810 compared to those used for conventional maize, as reflected in Table 33 and Figure 18. Only 8 farmers (3.1 %; all from Spain) indicated a change. The individual specifications for *changed* tillage and planting techniques of MON 810 are given in Appendix A,Table A 3.

Table 33: Tillage and planting techniques for MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	253	96.9	96.9	96.9
	changed	8	3.1	3.1	100.0
Total		261	100.0	100.0	

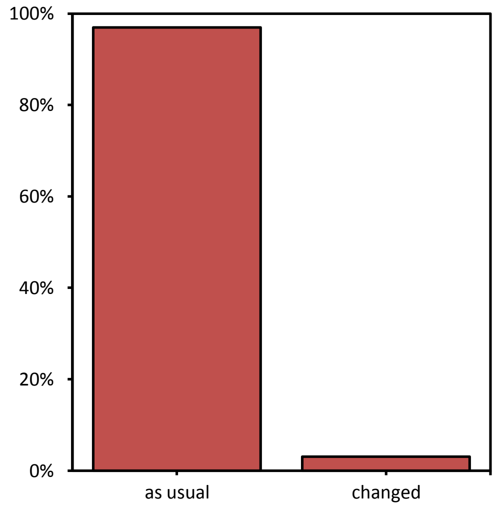

Figure 18: Tillage and planting techniques of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ tillage and planting techniques (96.9 %) is significantly greater than 90 %. The resulting p-value is less than the level of significance $\alpha = 0.01$ (Table 34) and therefore, the null hypothesis $p_{as\ usual} \leq 0.9$ is rejected with a power of 99.27 %.

No effect on tillage and planting techniques is indicated.

Table 34: Results of the binomial test for tillage and planting techniques for MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261			253 (96.9%)	< 0.01	8 (3.1%)	< 0.01

Insect and corn borer control practice

Insecticides applied in MON 810 fields sorted by their regulatory approval as seed treatment, spray application or microgranules are listed per country in Appendix A,Table A 4. MON 810 received insecticide treatments mainly through seed coatings, for which Thiacloprid was the major active ingredient in 2014. Abamectin and Chlorpyrifos were the most used active ingredients for spraying. Furthermore, Chlorpyrifos was the active ingredient of all named granulate insecticides.

All farmers were asked to describe their insect control practice in MON 810 compared to conventional maize in 2014. 83.5 % (218/261) specified no change in practice, while 16.5 % (43/261) used a $different$ program Table 35, Figure 19).

Table 35: Use of insect control in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	218	83.5	83.5	83.5
	changed	43	16.5	16.5	100.0
Total		261	100.0	100.0	

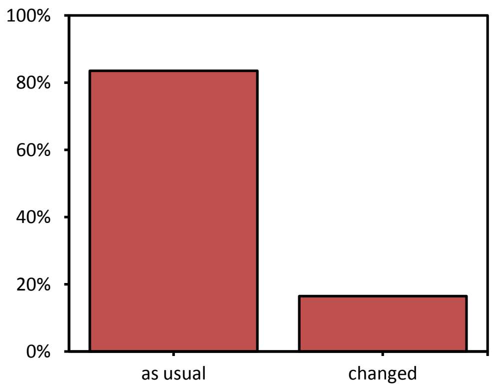

Figure 19: Insect control practice of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ insect control practice (83.5 %) is less than 90 %. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 36) and therefore, the null hypothesis $p_{as\ usual} \leq 0.9$ could not be rejected. The lower 99 % confidence interval limit is 77.6 %, the upper limit is 89.4 %.

(2) The valid percentage of $different$ insect control practice (16.5 %) is greater than 10 %. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 36) and therefore, the null hypothesis $p_{different} \geq 0.1$ is not to reject.

An effect on insect control practice is indicated.

Table 36: Results of the binomial test for insect control practice in MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261			218 (83.5%)	1.0	43 (16.5%)	1.0

All farmers that stated a difference in their insect control practices compared to conventional maize (Table 37) said that they specifically changed their corn borer control practice, as it is not necessary in MON 810 (Table 38). All individual explanations are given in Appendix A, Table A 5.

Table 37: Insect control practice compared to conventional maize in the context of the general use of insecticides in 2014

		Insect control practice in MON 810		
		as usual	changed	Total
Do you usually use insecticides? (section 3.3.5)	yes	203	43	246
	no	15	0	15
Total		218	43	261

Table 38: Corn Borer control practice compared to conventional maize in the context of the general use of insecticides against Corn Borer in 2014

		Corn borer control practice in MON 810		
		as usual	changed	Total
Do you usually use insecticides specifically against corn borer? (section 3.3.5)	yes	0	43	43
	no	203	0	203
Total		203	43	246

The reduced use of conventional insecticides to control corn borers can be anticipated, since MON 810 is specifically designed to control corn borers as *Ostrinia nubilalis* and *Sesamia* spp. Therefore, planting of MON 810 makes insecticide applications for this purpose obsolete.

Weed control practice

The herbicides applied in MON 810 fields are listed in Appendix A,Table A 6. A wide number of herbicides and actives were used. The main actives of herbicides that were cited by the farmers are:

- Mesotrione
- (S)-Metolachlor
- Nicosulfuron
- Dicamba
- Terbuthylazine
- Bromoxynil
- Isoxaflutole
- Foramsulfuron
- Isoxadifen-ethyl
- Fluroxypy

All of which are well-known products used for weed control in maize.

The farmers were asked to describe their weed control practice in MON 810 in 2014 compared to conventional maize. Only 5 farmers (1.9 %) used a $different$ weed control in MON 810 compared to conventional maize (Table 39, Figure 20).

Table 39: Use of weed control in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	256	98.1	98.1	98.1
	changed	5	1.9	1.9	100.0
Total		261	100.0	100.0	

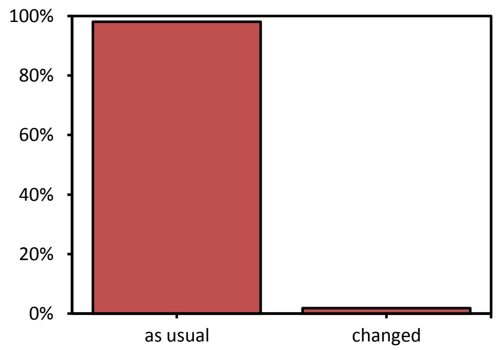

Figure 20: Weed control practice of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ weed control practice (98.1 %) is significantly greater than 90 %. The resulting p-value is less than the level of significance $\alpha = 0.01$ (Table 40) and therefore, the null hypothesis $p_{as\ usual} \leq 0.9$ is rejected with a power of 99.99 %.

No effect on weed control practice is indicated.

Table 40: Results of the binomial test for weed control practice in MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261			256 (98.1%)	< 0.01	5 (1.9%)	< 0.01

Fungal control practice

Since in 2014 no farmer declared to use a fungicide, no statement about the most common active ingredient in fungicides can be made.

No farmer did change the fungicide program of MON 810 compared to that of conventional maize (Table 41).

No effect on fungal control practice is indicated.

Table 41: Use of fungicides on MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	261	100.0	100.0	100.0
	changed	0	0.0	0.0	100.0
Total		261	100.0	100.0	

Fertilizer application practice

All farmers answered the question regarding the fertilizer application in MON 810. Only 1 farmer (0.4 %) used a $changed$ program (Table 42, Figure 21). The individual specification for changed tillage and planting technique of MON 810 are given in Appendix A,Table A 7.

Table 42: Use of fertilizer in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	260	99.6	99.6	99.6
	changed	1	0.4	0.4	100.0
Total		261	100.0	100.0	

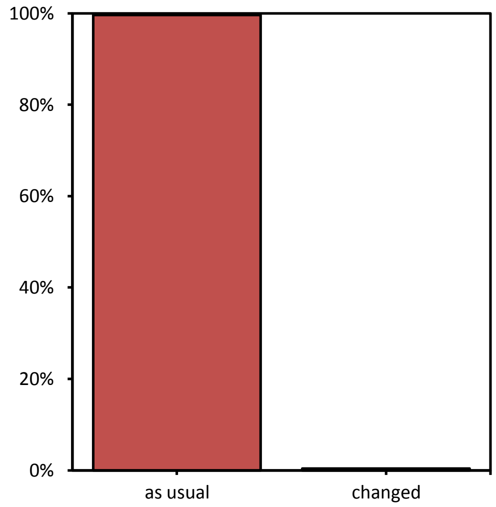

Figure 21: Fertilizer application practice of MON 810 compared to conventional maize in 2014

(1) The valid percentage for $as\ usual$ fertilizer application practice (99.6 %) is significantly greater than 90 % since the resulting p-value is less than the level of significance $\alpha = 0.01$ (Table 43). Therefore, the null hypothesis $p_{as\ usual} \leq 0.9$ is rejected with a power of 100 %.

No effect on fertilizer application practice is indicated

Table 43: Results of the binomial test for fertilizer application practice in MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261			260 (99.6%)	< 0.01	1 (0.4%)	< 0.01

Irrigation practice

All farmers answered the question regarding the irrigation practice in MON 810, no farmer *changed* the practice (Table 44).

Table 44: Irrigation practice in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	261	100.0	100.0	100.0
	changed	0	0.0	0.0	100.0
Total		261	100.0	100.0	

No effect on irrigation practice is indicated.

Harvest of MON 810

The farmers were asked whether they harvested MON 810 earlier or later than conventional maize or as usual. 248 of them (95.0 %) responded that no change in harvesting date was applied for MON 810. Only 4.6 % (12/261) stated that they harvested MON 810 $later$ and a single farmer (0.4 %) harvested $earlier$ (Table 45, Figure 22). When asked for the reason for a $later$ harvest of MON 810, some farmers said that it maturates later, while most farmers held the delayed sowing time responsible for it. The complete individual feedback of the farmers for a changed harvesting time is given in Appendix A,Table A 8.

Table 45: Harvest of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	earlier	1	0.4	0.4	0.4
	as usual	248	95.0	95.0	95.4
	later	12	4.6	4.6	100.0
Total		261	100.0	100.0	

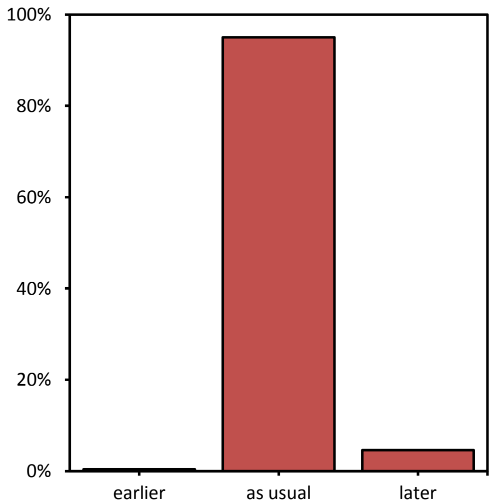

Figure 22: Harvest of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ harvest (95.0 %) is significantly greater than 90 %. The resulting p-value is less than the level of significance $\alpha = 0.01$ (Table 46) and therefore, the corresponding null hypothesis $p_{as\ usual} \leq 0.9$ could be rejected with a power of 76.82 %.

No effect on the harvest time is indicated.

Table 46: Results of the binomial tests for different harvesting time of MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	1 (0.4%)	< 0.01	248 (95.0%)	< 0.01	12 (4.6%)	< 0.01

Assessment of differences in agricultural practice in MON 810 (compared to conventional maize)

Agricultural practices in MON 810 (compared to conventional maize) were not changed in terms of crop rotation, time of planting, tillage and planting techniques, weed control practice, fungal control practice, fertilizer application practice, irrigation practice and harvest of MON 810. The only differences found refer to the insect and corn borer control practice of MON 810.

This difference in insect and corn borer control practice arises from farmers not controlling corn borers with conventional insecticide applications, because MON 810 is specifically designed to control corn borers as *Ostrinia nubilalis* and *Sesamia* spp. Furthermore, fewer insecticides were used in general since MON 810 is also less susceptible to several Lepidopteran pests other than *Ostrinia nubilalis* and *Sesamia* spp.

3.4.2 Characteristics of MON 810 in the field (compared to conventional maize)

Germination vigour

While 11.9 % (31/261) of all farmers assessed the germination of MON 810 to be *more vigorous*, the other 88.1 % (230/261) found it to be *as usual* (Table 47, Figure 23). Out of the 31 farmers who claimed the germination to be *more vigorous*, 30 came from Portugal. Most of these farmers made high field sanitation of Yieldgard maize accountable for the increased vigour. Individual explanations for the observations of the farmers are given in Appendix A, Table A 9.

Table 47: Germination of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less vigourous	0	0.0	0.0	0.0
	as usual	230	88.1	88.1	88.1
	more vigourous	31	11.9	11.9	100.0
Total		261	100.0	100.0	

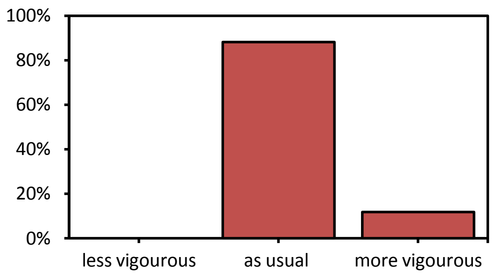

Figure 23: Harvest of MON 810 compared to conventional maize in 2014

(1) The valid percentage for *as usual* germination (88.1 %) is smaller than 90 %. The resulting p-value exceeds the level of significance $\alpha = 0.01$ (Table 48), *i.e.* the null hypothesis $p_{as\ usual} \leq 0.9$ could not be rejected. The lower 99 % confidence interval limit is 0.830, the upper limit is 0.933.

(2a) The valid percentage of *less vigorous* germination (0 %) does not exceed the 10 % threshold. The p-value does not exceed the level of significance $\alpha = 0.01$ (Table 48), *i.e.* the null hypothesis for $p_{less\ vigorous} \geq 0.1$ could be rejected with a power of 100 %.

(2b) The valid percentage for *more vigorous* germination (11.9 %) exceeds the 10 % threshold. The p-value exceeds the level of significance $\alpha = 0.01$ (Table 48), *i.e.* the null hypothesis for $p_{more\ vigorous} \geq 0.1$ is not rejected. The lower 99 % confidence interval limit is 0.067, the upper limit is 0.170.

An effect on the germination vigor is indicated.

Table 48: Results of the binomial tests for germination vigour of MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	0 (0.0%)	< 0.01	230 (88.1%)	0.819	31 (11.9%)	0.866

Time to emergence

All farmers found the time to emergence to be *as usual* (Table 49). The individual explanation for this observation is given in Appendix A, Table A 9.

Table 49: Time to emergence of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	accelerated	0	0.0	0.0	0.0
	as usual	261	100.0	100.0	100.0
	delayed	0	0.0	0.0	100.0
Total		261	100.0	100.0	

No effect on time to emergence is indicated.

Time to male flowering

Time to male flowering was assessed to be $delayed$ in 0.4 % (1/261) and to be $as\ usual$ in 99.6 % (260/261) of all cases (Table 50, Figure 24). Individual explanations for these observations are given in Appendix A, Table A 9.

Table 50: Time to male flowering of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	accelerated	0	0.0	0.0	0.0
	as usual	260	99.6	99.6	99.6
	delayed	1	0.4	0.4	100.0
Total		261	100.0	100.0	

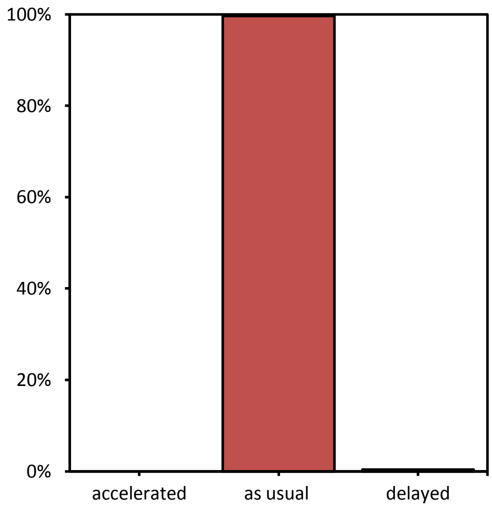

Figure 24: Time to male flowering of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ time to male flowering (99.6 %) is significantly greater then 90 % and the resulting p-value is less than the level of significance $\alpha = 0.01$ (Table 51). The null hypothesis $p_{as\ usual} \leq 0.9$ could be rejected with a power of 100 %.

No effect on time to male flowering is indicated.

Table 51: Results of the binomial tests for time to male flowering of MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	0 (0.0%)	< 0.01	260 (99.6%)	< 0.01	1 (0.4%)	< 0.01

Plant growth and development

All farmers (261/261) found plant growth and development to be *as usual* (Table 52). Individual explanations for these observations are given in Appendix A, Table A 9.

Table 52: Plant growth and development of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	accelerated	0	0.0	0.0	0.0
	as usual	261	100.0	100.0	100.0
	delayed	0	0.0	0.0	100.0
Total		261	100.0	100.0	

No effect on plant growth and development is indicated.

Incidence of stalk/root lodging

Incidence of stalk/root lodging was assessed to be $less$ in MON 810 compared to conventional maize in 26.8 % (70/261) of all cases (Table 53, Figure 25). All 70 farmers who claimed the incidence of stalk/root lodging to be $less$ came from Spain. Individual explanations for these observations are given in Appendix A, Table A 9.

Table 53: Incidence of stalk/root lodging of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less often	70	26.8	26.8	26.8
	as usual	191	73.2	73.2	100.0
	more often	0	0.0	0.0	100.0
Total		261	100.0	100.0	

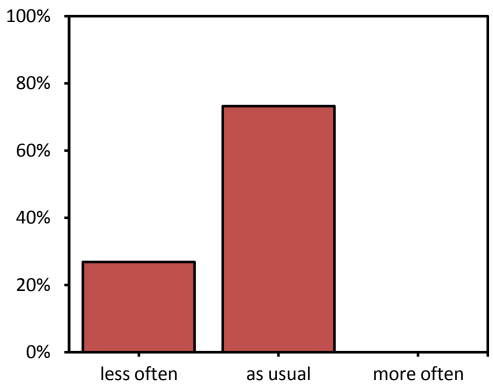

Figure 25: Incidence of stalk/root lodging of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ incidence of stalk/root lodging (73.2 %) is less than 90 %. The resulting p-value is larger than the level of significance $\alpha = 0.01$ (Table 54) and therefore, the corresponding null hypothesis $p_{as\ usual} \leq 0.9$ could not be rejected. The lower 99 % confidence interval limit is 0.661, the upper limit is 0.802.

(2a) The valid percentage of $less$ incidence of stalk/root lodging (26.8 %) does exceed the 10 % threshold. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 54) and therefore, the corresponding null hypothesis $p_{less\ often} \geq 0.1$ could not be rejected. The lower 99 % confidence interval limit is 0.198, the upper limit is 0.339.

(2b) The valid percentage of $more$ incidence of stalk/ root lodging (0.0 %) is significantly smaller than 10 % (Table 54) *i.e.* the null hypothesis for $p_{more\ often} \geq 0.1$ could be rejected with a power of 100 %. An effect on the incidence of stalk/root lodging of MON 810 is indicated.

Table 54: Results of the binomial tests for incidence of stalk/root lodging of MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
1	70 (26.8%)	1.0	191 (73.2%)	1.0	0 (0.0%)	< 0.01

Time to maturity

11.5 % (30/261; all 30 from Spain) of the farmers assessed the time to maturity to be $delayed$ for MON 810 (Table 55, Figure 26). Individual explanations for these observations are given in Appendix A, Table A 9.

Table 55: Time to maturity of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	accelerated	0	0.0	0.0	0.0
	as usual	231	88.5	88.5	88.5
	delayed	30	11.5	11.5	100.0
Total		261	100.0	100.0	

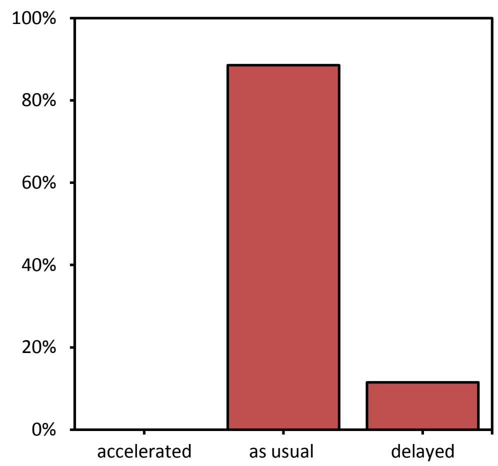

Figure 26: Time to maturity of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ time to maturity (88.5 %) is not greater than 90 %. The resulting p-value is exceeds the level of significance $\alpha = 0.01$ (Table 56) and the null hypothesis $p_{as\ usual} \leq 0.9$ could not be rejected. The lower 99 % confidence interval limit is 0.834, the upper limit is 0.936.

(2a) The valid percentage of $accelerated$ time to maturity (0.0 %) is significantly smaller than 10 % (Table 56) *i.e.* the null hypothesis for $p_{accelerated} \geq 0.1$ could be rejected with a power of 100 %.

(2b) The valid percentage of $delayed$ time to maturity (11.5 %) exceeds the 10 % threshold. The resulting p-value is greater than level of significance $\alpha = 0.01$ (Table 56) and therefore, the corresponding null hypothesis $p_{delayed} \geq 0.1$ could not be rejected. The lower 99 % confidence interval limit is 0.064, the upper limit is 0.166.

An effect on the time to maturity of MON 810 is indicated.

Table 56: Results of the binomial tests for time to maturity of MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	0 (0.0%)	< 0.01	231 (88.5%)	0.76	30 (11.5%)	0.819

Yield

Yield was $higher$ in 36.0 % (94/261) and $lower$ in 1.5 % (4/261) of all cases (Table 57, Figure 27). Individual explanations for these observations are given in Appendix A, Table A 9.

Table 57: Yield of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	lower yield	4	1.5	1.5	1.5
	as usual	163	62.5	62.5	64.0
	higher yield	94	36.0	36.0	100.0
Total		261	100.0	100.0	

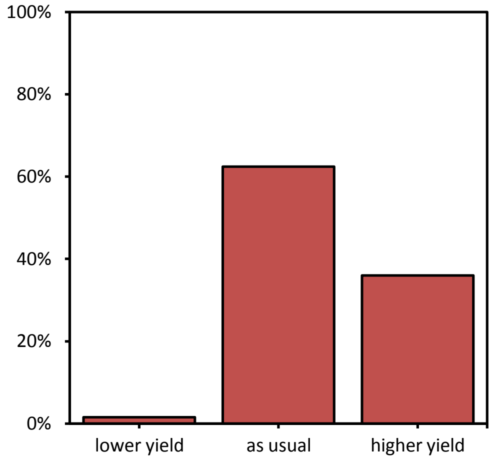

Figure 27: Yield of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ yield (62.5 %) is not greater than 90 %. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 58) and therefore, the corresponding null hypothesis $p_{as\ usual} \leq 0.9$ could not be rejected. The lower confidence interval limit is 0.547, the upper limit is 0.702.

(2a) The valid percentage of $lower$ yield (1.5 %) does not exceed the 10 % threshold. The resulting p-value is smaller than the level of significance $\alpha = 0.01$ (Table 58) and therefore, the corresponding null hypothesis $p_{lower\ yield} \geq 0.1$ could be rejected with a power of 100 %.

(2b) The valid percentage of $higher$ yield (36.0 %) exceeds the 10 % threshold. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 58) and therefore, the corresponding null hypothesis $p_{higher\ yield} \geq 0.1$ could not be rejected. The lower confidence interval limit is 0.284, the upper limit is 0.437.

An effect on yield of MON 810 is indicated.

Table 58: Results of the binomial tests for yield of MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	4 (1.5%)	< 0.01	163 (62.5%)	1.0	94 (36.0%)	1.0

Occurrence of volunteers

The occurrence of volunteers was assessed to be *less* frequent for MON 810 than for conventional maize in 1.1 % (3/261) of all cases (Table 59, Figure 28). Individual explanations for these observations are given in Appendix A, Table A 9.

Table 59: Occurrence of MON 810 volunteers compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less often	3	1.1	1.1	1.1
	as usual	258	98.9	98.9	100.0
	more often	0	0.0	0.0	100.0
Total		261	100.0	100.0	

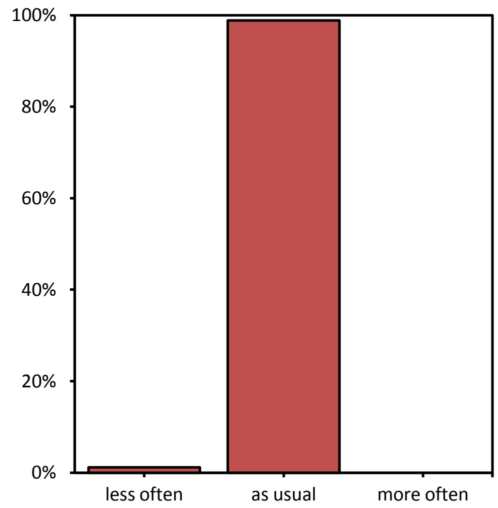

Figure 28: Occurrence of MON 810 volunteers compared to conventional maize in 2014

(1) The valid percentage of *as usual* occurrence of volunteers (98.9 %) is significantly greater than 90 %. The resulting p-value is smaller than the level of significance $\alpha = 0.01$ (Table 60) and therefore, the corresponding null hypothesis $p_{as\ usual} \leq 0.9$ could be rejected with a power of 100 %.

No effect on occurrence of MON 810 volunteers is indicated.

Table 60: Results of the binomial tests for occurrence of MON 810 volunteers compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	3 (1.1%)	< 0.01	258 (98.9%)	< 0.01	0 (0.0%)	< 0.01

Assessment of differences in the characteristics of MON 810 in the field (compared to conventional maize)

The results for the characteristics of MON 810 in the field compared to conventional maize can be summarized as follows

- a slightly more vigourous germination,
- an unchanged time to emergence,
- an unchanged time to male flowering,
- an unchanged plant growth and development,
- a less frequent incidence of stalk/root lodging,
- a delayed time to maturity,
- a higher yield and
- an unchanged occurrence rate of MON 810 volunteers.

These results underline the substantial equivalence of MON 810 to comparable conventional lines, as evidenced by recent genomic and proteomic analyses [Coll, 2008]; [Coll, 2009]; [Coll, 2010]; [Coll, 2011].

The more vigourous germination is likely associated with the quality of the germplasm.

Corn borer damage affects maturation and especially yield negatively, therefore the differences in these monitoring characters can be explained by the absence of corn borer damage. The difference in the incidence of stalk/root lodging can be explained similarly. Therefore, differences in these parameters are anticipated and only underline the effectiveness of corn borer control.

The longer time to maturity can also be assigned as an effect of corn borer control: in the presence of pests, plants need to reach maturity faster. In the absence of pest pressure, plants can maximize the output of biomass and have a longer period of seed set and ripening. This could explain the longer time to maturity reported for MON 810 by 11.5 % of farmers. The low percentage indicates that this phenomenon is restricted to areas of pest pressure.

All additional observations during plant growth are listed in Appendix A, Table A 10.

3.4.3 Disease susceptibility in MON 810 fields (compared to conventional maize)

Farmers assessed MON 810 to be $less\ susceptible$ to diseases in 5.4 % (14/261) of the time (

Table 61, Figure 29).

Table 61: Disease susceptibility in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less susceptible	14	5.4	5.4	5.4
	as usual	247	94.6	94.6	100.0
	more susceptible	0	0.0	0.0	100.0
Total		261	100.0	100.0	

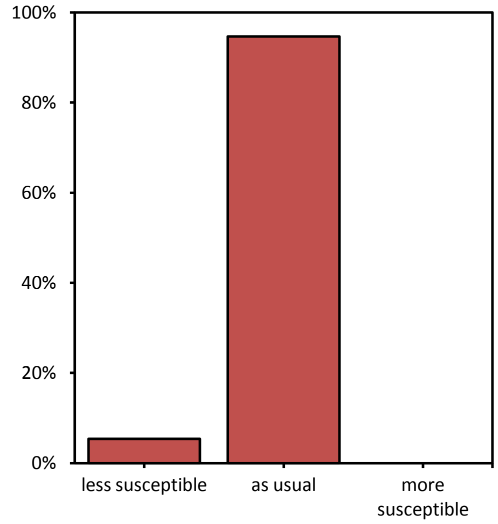

Figure 29: Occurrence of MON 810 volunteers compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ disease susceptibility (94.6 %) is greater than 90 %. The resulting p-value is smaller than the level of significance $\alpha = 0.01$ (Table 62) and therefore, the corresponding null hypothesis $p_{as\ usual} \leq 0.9$ could be rejected with a power of 100 %.

No effect on disease susceptibility is indicated.

Table 62: Results of the binomial tests for disease susceptibility of MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	14 (5.4%)	< 0.01	247 (94.6%)	< 0.01	0 (0.0%)	< 0.01

The 14 farmers that answered different from $as\ usual$ were asked to specify the difference in disease susceptibility by listing the diseases with an explanation. Table 63 lists the reported diseases with an assessment of the disease susceptibility of MON 810 compared to conventional maize. This list shows that the lower disease susceptibility was attributed to a lower susceptibility to *Ustilago maydis* (2.7 %, 7/261), *Helminthosporium* spp. (1.9 %, 5/261), *Fusarium* spp. (1.5 %, 4/261), *Cephalosporium spp.* (1.5 %, 4/261) and *Erwinia* (2.3 %, 6/261).

Table 63: Specification of differences in disease susceptibility in MON 810 compared to conventional maize in 2014

Group	Species	Less
Fungus	*Ustilago maydis*	7
	Helmithosporium spp.	5
	Fusarium spp.	4
	Cephalosporium spp.	4
Bacteria	*Erwinia*	6

Additional comments on disease susceptibility are given in Appendix A,

Table A 11.

Assessment of differences in disease susceptibility in MON 810 fields (compared to conventional maize)

The observed differences in disease susceptibility were not significant. The farmers that did find differences to some fungal species, specified as *Ustilago maydis, Helminthosporium* spp., *Fusarium* spp., and *Cephalosporium spp.,* as well as the bacterium *Erwinia*.

The finding of supposedly less disease susceptible MON 810 varieties is not surprising, as it has been well established that feeding holes and tunnels of the corn borer serve as entry points for secondary fungal infections, especially for *Fusarium* spp. *Ustilago maydis* also has a high incidence especially with stressed plants (water stress, mechanical wounding, insect feeding damage), so that any reduction of a stress factor would immediately result in a lower incidence of disease. Therefore, the observed differences can be explained by corn borer control and confirm previous observations of lower fungal infections in MON 810 reported in the scientific literature [Munkvold, 1999]; [Dowd, 2000]; [Bakan, 2002]; [Hammond, 2003]; [Wu, 2006]. The farmers' testimonies (Appendix A,

Table A 11) corroborate the findings from above.

3.4.4 Insect pest control in MON 810 fields (compared to conventional maize)

The insect pest control of *O. nubilalis* (European corn borer) was assessed to be *very good* or *good* in 100.0 % (261/261) of the cases (Table 64, Figure 30).

Table 64: Insect pest control of *O. nubilalis* in MON 810 in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	weak	0	0.0	0.0	0.0
	good	33	12.6	12.6	12.6
	very good	228	87.4	87.4	100.0
Total		261	100.0	100.0	

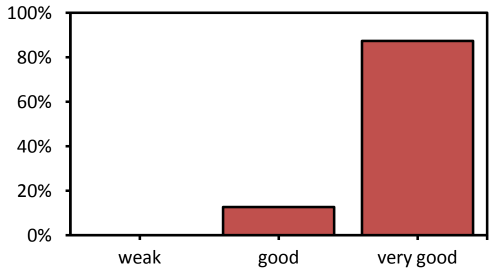

Figure 30: Insect pest control of *Ostrinia nubilalis* in MON 810 in 2014

100.0 % (236/236) of the farmers who gave a valid answer attested a *good* or *very good* control of *Sesamia* spp. (Pink Borer) (Table 65, Figure 31).

Table 65: Insect pest control of *Sesamia* spp. in MON 810 in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	weak	0	0.0	0.0	0.0
	good	33	12.6	12.6	12.6
	very good	228	87.4	87.4	100.0
Total		261	100.0	100.0	

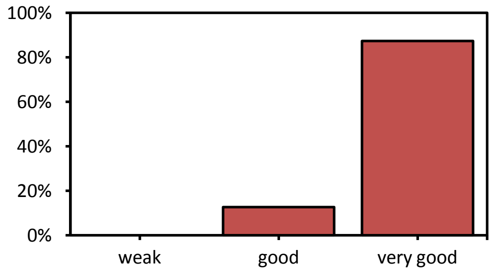

Figure 31: Insect pest control of *Sesamia* spp. in MON 810 in 2014

Additional comments on insect pest control are listed in Appendix A,Table A 12.

Assessment of insect pest control in MON 810 fields (compared to conventional maize)

The results show that both pests (*Ostrinia nubilalis* and *Sesamia* spp.) are effectively controlled by MON 810.

3.4.5 Other pests (other than *Ostrinia nubilalis* and *Sesamia* spp.) in MON 810 fields (compared to conventional maize)

Farmers assessed MON 810 to be $less\ susceptible$ to pests in 16.1 % (42/261) of all cases (Table 66, Figure 32). One farmer (0.4 %) assessed the MON 810 plants to be more susceptible to pests.

Table 66: Pest susceptibility of MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less susceptible	42	16.1	16.1	16.1
	as usual	218	83.5	83.5	99.6
	more susceptible	1	0.4	0.4	100.0
Total		261	100.0	100.0	

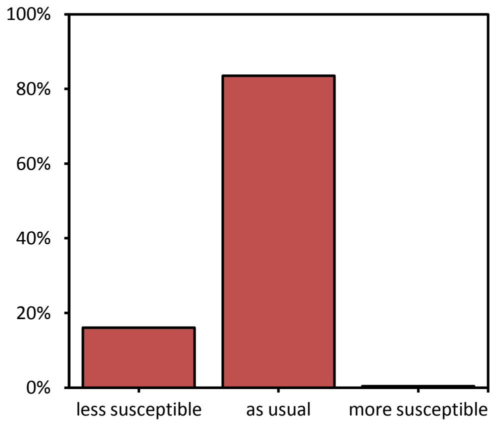

Figure 32: Pest susceptibility of MON 810 compared to conventional maize in 2014

(1) The valid percentage of $as\ usual$ pest susceptibility (83.5 %) is less than 90 %. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 67) and therefore, the corresponding null hypothesis $p_{as\ usual} \leq 0.9$ could not be rejected. The lower 99 % confidence interval limit is 0.78, the upper limit is 0.89.

(2a) The valid percentage of lower pest susceptibility (16.1 %) exceeds the 10 % threshold. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 67) and therefore, the corresponding null hypothesis $p_{less\ susceptible} \geq 0.1$ could not be rejected.

(2b) The valid percentage of higher pest susceptibility (0.4 %) does not exceed the 10 % threshold and the resulting p-value is smaller than the level of significance $\alpha = 0.01$ (Table 67), *i.e.* the null hypothesis $p_{more\ susceptible} \geq 0.1$ could be rejected with a power of 100 %.

An effect on pest susceptibility is indicated.

Table 67: Results of the binomial tests for pest susceptibility in MON 810 compared to conventional maize in 2014

N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
261	42 (16.1%)	1.0	218 (83.5%)	1.0	1 (0.4%)	< 0.01

The 43 farmers that answered different from *as usual* were asked to specify the observed difference in pest susceptibility by listing respective pests with an explanation. Table 68 lists the reported pests with an assessment of the pest susceptibility of MON 810, compared to conventional maize. This list shows that the lower pest susceptibility was predominantly attributed to a lower susceptibility to pests of the order Lepidoptera.

Table 68: Specification of differences in pest susceptibility in MON 810 compared to conventional maize in 2014

Order	Name	N valid	*Minus*	*P* for $p_0 = 0.1$	*As usual*	*P* for $p_0 = 0.9$	*Plus*	*P* for $p_0 = 0.1$
Lepidoptera	*Agrotis ipsilon*	261	40 (15.3%)	1.0	221 (84.7%)	1.0	0 (0.0%)	< 0.01
	Spodoptera frugiperda	261	15 (5.7%)	0.010	246 (94.3%)	< 0.01	0 (0.0%)	< 0.01
	Heliothis	261	1 (0.4%)	< 0.01	260 (99.6%)	< 0.01	0 (0.0%)	< 0.01
	Spodoptera exigua	261	1 (0.4%)	< 0.01	260 (99.6%)	< 0.01	0 (0.0%)	< 0.01
Arachnida	Red Spider	261	1 (0.4%)	< 0.01	260 (99.6%)	< 0.01	0 (0.0%)	< 0.01
Diptera	Mosquitos	261	0 (0.0%)	< 0.01	260 (99.6%)	< 0.01	1 (0.4%)	< 0.01
Hemiptera	Aphids	261	2 (0.8%)	< 0.01	259 (99.2%)	< 0.01	0 (0.0%)	< 0.01

What becomes clear in Table 68 is that for all listed pests except *Agrotis ipsilon*

(1) the valid percentages of $as\ usual$ pest susceptibility in MON 810 compared to conventional maize in 2014 are greater than 90% and the resulting p-value is smaller than the level of significance $\alpha = 0.01$.Therefore, the corresponding null hypotheses $p_{as\ usual} \leq 0.9$ could be rejected with a power of 56.8 %, 100 %, 100%, 100%, 100% and 100% for *Spodoptera frugiperda, Heliothis, Spodoptera exigua*, Red Spider, Mosquitos and Aphids, respectively.

No effect of those pests is indicated.

However, a different result was found for *Agrotis ipsilon*.

(1) The valid percentage of $as\ usual$ pest susceptibility in MON 810 compared to conventional maize in 2014 is smaller than 90% and the resulting p-value is bigger than the level of significance $\alpha = 0.01$ (Table 68). Thus, the corresponding null hypothesis $p_{as\ usual} \leq 0.9$ could not be rejected. The lower 99 % confidence interval limit is 0.79, the upper limit is 0.90.

(2a) The valid percentage of lower susceptibility (15.3 %) exceeds the 10 % threshold. The resulting p-value is greater than the level of significance $\alpha = 0.01$ (Table 68) and therefore, the corresponding null hypothesis $p_{less\ susceptible} \geq 0.1$ could not be rejected.

(2b) The valid percentage of higher susceptibility (0.0 %) does not exceed the 10 % threshold and the resulting p-value is smaller than the level of significance $\alpha = 0.01$ (Table 68), *i.e.* the null hypothesis $p_{more\ susceptible} \geq 0.1$ could be rejected with a power of 100 %.

An effect on the plants' susceptibility to *Agrotis ipsilon* is indicated.

Additional comments on other pest (other than *Ostrinia nubilalis* and *Sesamia* spp.) are given in Appendix A, Table A 13.

Assessment of differences in susceptibility to other pests in MON 810 fields (compared to conventional maize)

The data show that the susceptibility to other pests in MON 810 is unchanged, except for one belonging to the order of Lepidoptera, *i.e. Agriotes* spp.

The reduced susceptibility of MON 810 to Lepidoptera is not surprising, given the numerous scientific studies of laboratory and field experiments showing that the Cry protein expressed in MON 810 does not have a negative effect on any insects other than those belonging to the order for which it specifically has toxic properties [Marvier, 2007]; [Wolfenbarger, 2008]. The monitoring data thus corroborate the conclusions drawn during the environmental risk assessment and ongoing research.

3.4.6 Weed pressure in MON 810 fields (compared to conventional maize)

All farmers (261/261) found the weed pressure to be *as usual* in MON 810 fields compared to conventional fields (Table 69). Additional comments on weed pressure are listed in Appendix A, Table A 14.

Table 69: Weed pressure in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less weeds	0	0.0	0.0	0.0
	as usual	261	100.0	100.0	100.0
	more weeds	0	0.0	0.0	100.0
Total		261	100.0	100.0	

No effect on weed pressure is indicated.

The farmers were asked to name the three most abundant weeds in their MON 810 fields. Weeds that were listed more than 50 times are:

- *Sorghum halepense*
- *Abutilon theophrasti*
- *Chenopodium album*
- *Amaranthus retroflexus*
- *Setaria* spp.
- *Xanthium strumarium*
- *Datura stramonium*

All named weeds and the corresponding frequencies of nomination are listed in Appendix A,Table A 15.

<u>Assessment of differences in weed pressure in MON 810 fields (compared to conventional maize)</u>

It is not surprising that the weed pressure in MON 810 fields has been described as similar to that in conventional maize. In accordance with the observations described in Section 3.4.1, no changes in weed control practices were reported in MON 810 fields compared to conventional maize fields.

3.4.7 Occurrence of wildlife in MON 810 fields (compared to conventional maize)

Occurrence of non target insects

Farmers assessed the occurrence of non target insects in MON 810 fields to be $as\ usual$ in 100.0 % (261/261) of all cases (Table 70).

Table 70: Occurrence of non target insects in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less	0	0.0	0.0	0.0
	as usual	261	100.0	100.0	100.0
	more	0	0.0	0.0	100.0
Total		261	100.0	100.0	

Occurrence of birds

While a single farmer (0.4 %) found the occurrence of birds in MON 810 fields compared to conventional maize fields to be $less$, 99.6 % of the Farmers (260/261) assessed the occurrence of birds in MON 810 fields to be $as\ usual$ (Table 71). The additional comment on the occurrence of birds is listed in Appendix A, Table A 16.

Table 71: Occurrence of birds in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less	1	0.4	0.4	0.4
	as usual	260	99.6	99.6	100.0
	more	0	0.0	0.0	100.0
Total		261	100.0	100.0	

Occurrence of mammals

While a single farmer (0.4 %) found the occurrence of mammals in MON 810 fields compared to conventional maize fields to be $less$, 99.6 % of the farmers (260/261) assessed the occurrence of birds in MON 810 fields to be $as\ usual$ (Table 72). The additional comment on the occurrence of mammals is listed in Appendix A, Table A 16.

Table 72: Occurrence of mammals in MON 810 compared to conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	less	1	0.4	0.4	0.4
	as usual	260	99.6	99.6	100.0
	more	0	0.0	0.0	100.0
Total		261	100.0	100.0	

Assessment of differences in occurrence of wildlife in MON 810 fields (compared to conventional maize)

The occurrence of wildlife in MON 810 is reported to be almost completely unchanged for non target insects, birds and mammals.

Only two farmers stated that they found a reduced number of wildlife animals: one for birds and one for mammals. Their additional comments can be found in Appendix A, Table A 16.

These results again underline the specificity of the expressed Cry protein towards Lepidoptera, exhibiting no effect on other wildlife, especially non target insects. MON 810 thus is substantially equivalent to conventional maize and hosts the same wildlife. Birds are dependent on insects and wild plants in the agricultural landscape, and are a good indicator for larger scale level effects. The same holds true for mammals, although their occurrence in maize fields is limited. Studies have shown that no impact on mammals caused by the consumption of MON 810 is to be expected [Shimada, 2003]; [Shimada, 2006a]; [Shimada, 2006b]; [Stumpff, 2007]; [Bondzio, 2008].

3.4.8 Feed use of MON 810 (if previous year experience with MON 810)

5.7 % (15/261) of the farmers used the harvest of MON 810 to feed their animals (Table 73). These data reflect only the range of feeding; it is assumed that only farmers that cultivate silage maize feed them to their livestock. That could explain why only 5.7 % of the surveyed farmers fed MON 810, however, there are no strong data supporting this assumption.

Table 73: Use of MON 810 harvest for animal feed in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	yes	15	5.7	5.7	5.7
	no	246	94.3	94.3	100.0
Total		261	100.0	100.0	

Out of the 15 farmers who did feed the harvest of MON 810 to their animals, 100 % (15/15) found the performance of them to be *as usual* when compared to the animals fed with conventional maize (Table 74). Additional comments on the performance of the animals fed MON 810 are listed in Appendix A, Table A 17.

Table 74: Performance of the animals fed MON 810 compared to the animals fed conventional maize in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	as usual	15	100.0	100.0	100.0
	changed	0	0.0	0.0	100.0
Total		15	100.0	100.0	

No effect on the performance of animals fed with MON 810 is indicated.

Assessment of differences in feed use of MON 810 (if previous year experience with MON 810)

No farmer found a difference in performance of animals fed with MON 810.

3.4.9 Any additional remarks or observations

In the 2014 season no farmer made a comment on additional remarks or observations, *i.e.* no unexpected (adverse) effects are reported.

3.5 Part 4: Implementation of *Bt* maize specific measures

3.5.1 Information on good agricultural practices on MON 810

97.7 % (255/261) of the farmers reported to have been informed about the good agricultural practices applicable to MON 810 (Table 75).

91.8 % (234/255) of the farmers considered the training sessions to be either *useful* or *very useful* (Table 76). This information indicates that the great majority of the farmers had been exposed to a valuable training concerning MON 810.

Table 75: Information on good agricultural practices in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	yes	255	97.7	97.7	97.7
	no	6	2.3	2.3	100.0
Total		261	100.0	100.0	

Table 76: Evaluation of training sessions in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	very useful	58	22.2	22.7	22.7
	useful	176	67.4	69.0	91.8
	not useful	21	8.0	8.2	100.0
	Total	255	97.7	100.0	
Missing	no statement	6	2.3		
Total		261	100.0		

3.5.2 Seed

The question "was the bag labeled with accompanying documentation indicating that the product is genetically modified maize MON 810" was answered with *yes* in 95.8 % (250/261) of the cases. This indicated that the bags were labeled appropriately and that the label and the accompanying documentation were clear to the farmers.

The great majority of the farmers (95.8 %) reported that they are following the label recommendations on the seed bags (Table 77). 11 farmers (4.2 %) admitted that they did not follow the label recommendations. Six of these farmers explained that they did not read the label recommendations, while five did not plant a refugee. Deviations from the label recommendations are listed in Appendix A, Table A 18.

Table 77: Compliance with label recommendations in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	yes	250	95.8	95.8	95.8
	no	11	4.2	4.2	100.0
Total		261	100.0	100.0	

3.5.3 Prevention of insect resistance

9.2 % (24/261) of the farmers did not plant a refuge because they had less than 5 ha of MON 810 maize planted on their farm (the Insect Resistance Management Plan states that no refuge is required if less than 5 hectares of *Bt* maize are planted). 86.6 % (226/261) did plant a refuge within their farms or were part of “production areas” in Portugal and comply collectively with this requirement (Table 78). 4.2 % (11/261) of the farmers reported that they did not plant a refuge although having more than 5 ha of maize planted on their farm.

Therefore, 95.8 % (250/261) of the farmers followed the label recommendations.

Table 78: Plant refuge in 2014

		Frequency	Percent	Valid percentages	Accumulated percentages
Valid	yes	226	86.6	86.6	86.6
	no, because the surface of *Bt* maize is < 5 ha	24	9.2	9.2	95.8
	no	11	4.2	4.2	100.0
Total		261	100.0	100.0	

All cases of not planting a refuge because of a *Bt* maize planted area < 5 ha occurred in Spain (Table 79).

Table 79: Refuge implementation per country in 2014

		Refuge implementation			
	Country	Yes	No, because the area of *Bt* maize is < 5 ha	No	Total
Valid	Spain	178	24	11	213
	Portugal	48	0	0	48
Total		226	24	11	261

As a result of the continuous and intensive training of farmers with regards to implementing a refuge, the overall compliance this year is high. In Spain 5.8 % (11/189) of the farmers who were required to did not plant a refuge, for which two main reasons were given. The first reason was that the farmer had no or not enough information about the technical guidelines (7/11, 63.6 %), the second reason was that the sowing is complicated by planting a refuge (4/11, 36.4 %). All individual reasons for not planting a refuge are listed in Appendix A, Table A 19. Two farmers in Portugal reported they had not planted individual refuge because they were part of a “production area” and the group of farmers who are members of that production area had organized to ensure refuge compliance. These two cases were integrated in the compliant group because they comply collectively with the refuge requirements as indicated in the Portuguese regulation.

4 Conclusions

The analysis of 261 questionnaires from a survey of farmers cultivating MON 810 in 2014 in two European countries did not reveal any unexpected adverse effects that could be associated with the genetic modification in MON 810. The sample size was proven to be large enough to significantly reject the hypotheses on adverse effects under the specific 2014 conditions.

The statistically significant effects reported in Part 3 were neither unexpected nor adverse. The corresponding observations correlate to the intended insect protection trait present in MON 810.

This set of data is entered in a database, and complements data collected from the 2006 to 2013 growing seasons. Currently, the database contains data of 2,365 valid questionnaires. The survey will be conducted year after year with new entries generated in following season's questionnaires to provide a long term analysis of the effects of cultivation of MON 810 in Europe. As shown in Table 80 and Table 81, the frequency patterns of farmers' answers in 2014 are very similar to those of the previous years. In general the same effects have been observed.

After eight years of farmer questionnaires, no unexpected (adverse) effects have been indicated. Compared to the cultivation practices in conventional maize, farmers use nearly the same practices for cultivating MON 810. The abscence ofdamage caused by corn borers on the MON 810 plants renders the plants healthier and consequently more yield.

In contrast to the data of the monitoring characters, the data of the influencing factors differ between the years.

Table 80: Overview on the frequency of $Minus^4$ answers of the monitoring characters in 2006 - 2014 in percent [%]. Grey-colored boxes mark cases where Hypothesis (2a) $H_0: p_{Minus} \geq 0.1$ could not be rejected.

Monitoring character[1]	2006	2007	2008	2009	2010	2011	2012	2013	2014
Time of planting	1.6	3.4	2.7	2.9	1.8	1.2	0.0	0.0	0.4
Time of harvest	2.4	3.8	3.4	2.1	2.2	0.4	0.0	0.0	0.4
Germination vigor	6.0	4.1	1.7	0.8	0.0	0.0	0.4	0.8	0.0
Time to emergence	6.9	3.1	6.4	5.4	4.1	0.8	0.8	0.0	0.0
Time to male flowering	0.4	1.7	4.7	2.1	3.7	0.0	0.8	0.8	0.0
Plant growth and development	6.5	6.9	9.8	5.9	7.0	0.8	1.6	1.2	0.0
Incidence of stalk / root lodging	58.9	36.2	38.6	31.9	35.1	24.5	28.1	17.2	26.8
Time to maturity	2.0	4.8	4.3	2.9	4.1	0.0	0.0	0.0	0.0
Yield	2.4	3.9	4.4	1.7	1.8	0.0	2.4	2.0	1.5
Occurrence of volunteers	33.9	8.4	11.1	10.8	8.2	6.9	4.2	4.0	1.1
Disease susceptibility	36.1	21.7	34.7	29.3	25.6	19.7	17.3	12.5	5.4
Pest susceptibility	11.1	5.9	18.5	17.2	18.6	17.7	21.3	18.0	16.1
Weed pressure	0.4	2.1	1.7	2.1	4.8	0.0	0.0	0.0	0.0
Occurrence of wildlife[3]	2.9	6.1	7.7	-	-	-	-	-	-
Occurrence of insects[2]	-	-	-	0.9	0.8	0.9	0.0	0.0	0.0
Occurrence of birds[2]	-	-	-	0.4	1.2	0.4	0.0	0.0	0.4
Occurrence of mamals[2]	-	-	-	0.9	1.1	0.4	0.4	0.4	0.4

[1] Monitoring characters and their categories are defined in section 2.2.
[2] These characters are surveyed since the 2009 season.
[3] This character is surveyed since the 2008 season.
[4] The question on wildlife was asked until 2008. In 2009 it was split into three questions (non target insects, birds, mammals).

Table 81: Overview on the frequency of $Plus^5$ answers of the monitoring characters in 2006 - 2014 in percent [%].
Grey-colored boxes mark cases where Hypothesis (2b) $H_0: p_{Plus} \geq 0.1$ could not be rejected.

Monitoring Character[1]	2006	2007	2008	2009	2010	2011	2012	2013	2014
Crop rotation[2]	-	-	-	0.8	1.8	0.8	4.4	5.9	3.8
Time of planting	6.0	3.8	2.7	1.3	4.1	1.6	3.6	5.1	4.2
Tillage and planting technique	0.0	0.7	0.0	0.4	0.4	0.0	2.0	2.0	3.1
Insect control practices	48.0	11.9	22.2	18.3	16.2	24.9	17.3	16.4	16.5
Corn borer control practice[3]	-	-	9.8	22.9	15.5	22.9	18.1	16.0	16.1
Weed control practices	0.4	0.3	0.3	0.0	0.4	0.0	0.0	0.0	1.9
Fungal control practices	0.0	1.1	0.3	0.4	0.0	0.0	0.0	0.0	0.0
Fertilizer Application	0.8	0.3	0.0	0.4	0.4	0.0	0.0	2.3	0.4
Irrigation Practices	1.6	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Time of harvest	24.1	18.6	13.8	7.9	6.6	4.4	4.0	5.1	4.6
Germination vigor	8.0	6.9	11.4	14.6	16.2	5.6	5.6	7.4	11.9
Time to emergence	5.6	3.8	2.0	0.8	0.4	0.0	0.4	0.4	0.0
Time to male flowering	1.6	7.7	3.7	1.7	2.6	2.0	1.2	0.4	0.4
Plant growth and development	1.6	4.8	2.7	2.1	3.7	0.8	2.0	0.8	0.0
Incidence of stalk / root lodging	1.6	0.3	0.3	0.0	2.2	0.0	0.0	0.0	0.0
Time to maturity	30.9	25.9	24.0	14.6	16.2	12.9	16.1	12.5	11.5
Yield	68.7	44.8	52.7	56.9	49.8	43.4	43.0	34.8	36.0
Occurrence of volunteers	0.0	1.7	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Disease susceptibility	2.0	1.0	0.7	0.4	0.4	0.0	0.0	0.0	0.0
Pest susceptibility	1.2	1.4	0.7	1.3	0.0	0.0	0.4	0.4	0.4
Weed pressure	0.0	0.3	0.3	0.0	0.4	0.0	0.0	0.4	0.0
Occurrence of wildlife[4]	2.1	2.9	2.4	-	-	-	-	-	-
Occurrence of insects[2]	-	-	-	0.9	0.4	0.4	0.0	0.0	0.0
Occurrence of birds[2]	-	-	-	0.0	0.8	0.0	0.0	0.0	0.0
Occurrence of mamals[2]	-	-	-	1.3	1.1	0.4	0.0	0.0	0.0
Performance of animals	0.0	6.7	4.9	8.9	12.3	10.5	10.3	7.7	0.0

[1] Monitoring characters and their categories are defined in section 2.2.[2] These characters are surveyed since the 2009 season.
[3] This character is surveyed since the 2008 season.
[4] The question on wildlife was asked until 2008. In 2009 it was split into three questions (non target insects, birds, mammals).

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A Tables of free entries

Table A 1: Specifications for $changed$ crop rotation before planting MON 810 (Section 3.4.1)

Country	Quest. Nr.	Crop rotation	Comments
Spain	4157	changed	I always sow Maize in the YieldGard´s plots and I rotate with Barley in the conventional ones.
Spain	4187		I sow YieldGard after Barley and conventional maize after Maize.
Spain	4234		I sow YieldGard after Ryegrass and conventional maize after Maize.
Spain	4244		I sow YieldGard after Pea and conventional maize after Barley.
Spain	4259		I sow YieldGard after Barley and conventional Maize after Maize.
Spain	4265		I sow YieldGard of short-cycle after Barley and conventional Maize after Maize.
Spain	4267		I sow YieldGard after Barley and conventional maize after Maize.
Spain	4308		I sow YieldGard after Potato and conventional maize after Cotton.
Spain	4310		I sow YieldGard after Potato and conventional maize after other crops.
Spain	4315		YieldGard after Potato and conventional maize after other crop.

Table A 2: Specifications for different time of planting of MON 810 (Section 3.4.1)

Country	Quest. Nr.	Time of planting	Comments aggregate	Comments
Spain	4182	earlier	Logistic	I sow YieldGard 10 days earlier as they are the centre of the Pivot system irrigation.
Spain	4187	later	corn borer resistance	I sow YieldGard later because corn borer affects more in late sowing period.
Spain	4220			I sow YieldGard later because it is resistant to corn borer.
Spain	4234			Because YieldGard is resistant to corn borer and conventional maize is not.
Spain	4232		YieldGard = short-cycle	YieldGard is of short-cycle and I sow it after conventional maize.
Spain	4244			YieldGard is of shorter-cycle than conventional maize.
Spain	4265			YieldGard is of short-cycle.
Spain	4267			Because YieldGard is of short-cycle and conventional maize is not.
Spain	4308			Because YieldGard is of short-cycle and it goes after Potato the same year.
Spain	4310			YieldGard is of short-cycle because it is sowed after Potato the same year.
Spain	4313			YieldGard is of short-cycle and it is sowed later.
Spain	4315			YieldGard of short-cycle after Potato the same year.

Table A 3: Specifications for *changed* tillage and planting technique of MON 810 (Section 3.4.1)

Country	Quest. Nr.	Tillage and planting technique	Comments aggregate	Comments
Spain	4187	changed	YieldGard - Direct Drilling, Conventional - Tillage. Due to less time with YieldGard	In YieldGard I do direct drilling, no tillage. In the conventional maize I do deeper practices because I have more time
Spain	4259			I do direct drilling in YieldGard and conventional drilling with tillage in the conventional Maize.
Spain	4265			I sow YieldGard with direct drilling and the conventional Maize with conventional drilling.
Spain	4267			I do direct drilling in Yieldgard because I do not have time to till. In the conventional Maize I do conventional drilling.
Spain	4308			I do conservation tillage before sowing in YieldGard, and for the conventional Maize I do conventional drilling.
Spain	4310			Conservation tillage for YieldGard and conventional drilling for conventional Maize.
Spain	4313			I do conservation tillage for YieldGard.
Spain	4315			Conservation tillage for YieldGard, conventional drilling in the conventional Maize.

Table A 4: Insecticides applied in MON 810 (Section 3.4.1) differentiated by their use

Active Ingredient	Insecticide as cited by the Farmer	Spain	Portugal	Total
Seed Treatment				
Thiacloprid	Sonido	152	48	200
	Total	152	48	**200**
Sprayed				
Abamectin	Apache	33	0	33
Beta-Cyfluthrin	Bulldock 2.5 SC	3	0	3
Chlorpyrifos	Inaclor 48 EC, Pyrinex 48, Cloripirfos 48	29	0	29
Deltametrin	Decis	0	7	7
Lambda-cyhalothrin	Atrapa, Judo, Karate+, Karate King, Karate Zeon	14	41	55
	Total	79	48	**127**
Granulated				
Chlorpyrifos	Chas 5 G, Cloripirifos 5 GR, Insect 5 G, Piritec 5 GR, Pison, Rimi	65	0	65
	Total	65	0	**65**
Total		**296**	**96**	**392**

Table A 5: Explanations for *changed* insect and corn borer control practice in MON 810 (Section 3.4.1)

Country	Quest. Nr.	Insecticides in conv. maize	Insect control practice in MON 810	Explanation of differences in insect control practice	Insecticides against corn borers in conv. maize	Corn borer control in MON 810	Explanation of differences in corn borer control practice
Spain	4181	yes	changed	I do not treat YieldGard against corn borer, but I do treat the conventional maize.	yes	changed	I do not treat YieldGard against corn borer but I give an insecticide treatment in the conventional maize.
Spain	4182			I do not need to treat YieldGard against corn borer but I do need to treat the conventional maize.			I do not treat YieldGard but I give an insecticide treatment in the conventional maize.
Spain	4220			I treat the conventional maize against corn borer but I do not treat the YieldGard.			I do not treat YieldGard against corn borer but I do treat the conventional maize.
Spain	4244			I treat the conventional maize against corn borer. In YieldGard it is not necessary.			I treat conventional maize against corn borer but I do not treat YieldGard since is resistant to corn borer.
Spain	4264			I treat the conventional maize against corn borer. In YieldGard it is not necessary.			I treat conventional maize against corn borer and I do not treat YieldGard.
Spain	4265			I do not treat YieldGard against corn borer, but I do treat the conventional maize.			I do not treat YieldGard against corn borer since is resistant, I treat the conventional maize with Clorpirifos 48% to control corn borer.
Spain	4285			I treat the conventional maize against corn borer. In YieldGard it is not necessary.			I treat the conventional maize against corn borer, but I do not treat the YieldGard since is resistant to corn borer.
Spain	4302			I treat conventional maize against corn borer and I do not treat YieldGard.			I have treated the conventional maize against corn borer but in YieldGard this is not necessary since it is resistant to corn borer.
Spain	4303			I treat conventional maize against corn borer but in the YieldGard it is not necessary.			It is not necessary to treat YieldGard against corn borer but in the conventional maize it is.
Spain	4304			I treat conventional maize against corn borer and I do not treat YieldGard.			I treated conventional maize against corn borer but it was not necessary in YieldGard since it is resistant.

Spain	4308	yes	changed	I treat conventional maize against corn borer and I do not treat YieldGard.	yes	changed	I do not treat YieldGard against corn borer, but I do treat the conventional maize.
Spain	4310	yes	changed	I treat conventional maize against corn borer and I do not treat YieldGard.	yes	changed	I treat conventional maize against corn borer but it is not necessary in YieldGard since it is resistant.
Spain	4312	yes	changed	I treat conventional maize against corn borer and I do not treat YieldGard.	yes	changed	I treat conventional maize against corn borer but it is not necessary in YieldGard since it is resistant.
Spain	4315	yes	changed	I do not treat YieldGard against corn borer because it is resistant.	yes	changed	It is not necessary to treat YieldGard against corn borer but I would have to use insecticides if it was conventional maize.
Spain	4316	yes	changed	It is not necessary to treat YieldGard against corn borer, but it is necessary in the conventional maize.	yes	changed	YieldGard is resistant and it is not necessary to treat, conventional maize requires insecticide treatments.
Spain	4318	yes	changed	I treat conventional maize against corn borer and I do not treat YieldGard.	yes	changed	YieldGard is resistant to corn borer and it is not necessary to treat, but this treatment is necessary in the conventional maize.
Portugal	4319	yes	changed	The farmer made 1 less insecticide treatments in the Yieldgard maize fields.	yes	changed	The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields.
Portugal	4320	yes	changed	The farmer made 1 less insecticide treatments in the Yieldgard maize fields.	yes	changed	It wasn´t necessary to aplly any kind of treatments to the control of corn borer in the Yieldgard maize fields.
Portugal	4321	yes	changed	The farmer made 1 less insecticide treatments in the Yieldgard maize fields.	yes	changed	The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields.
Portugal	4323	yes	changed	The farmer made less 1 insecticide treatments in the Yieldgard maize fields. It wasn´t necessary to aplly in Yieldgard fields th	yes	changed	The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields because it wasn´t necessary.
Portugal	4324	yes	changed	The farmer made 1 less insecticide treatments in the Yieldgard maize fields. The farmer made the regular seed treatment similar	yes	changed	The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields because it wasn´t necessary.
Portugal	4325	yes	changed	The farmer made 1 less insecticide treatments in the Yieldgard maize fields. Historical and the farmer´s experience on several y	yes	changed	The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields because it wasn´t necessary.

Portugal	4326	yes	changed	The farmer made 1 less insecticide treatments in the Yieldgard maize fields. The farmer made the regular seed treatment similar	yes	changed	The farmer did not make absolutely no treatments for the control of corn borer in the Yieldgard fields.
Portugal	4327			The farmer made 1 less insecticide treatments in the Yieldgard maize fields because it wasn´t necessary to aplly the same number			The farmer didn´t control with any treatments the corn borer in the Yieldgard fields unlike of what he had done in the fields o
Portugal	4328			The farmer made 1 less insecticide treatments in the Yieldgard maize fields. The farmer made the regular seed treatment similar			The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields because it wasn´t necessary s
Portugal	4329			The farmer made 1 less insecticide treatments in the Yieldgard maize fields.			The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields because it wasn´t necessary.
Portugal	4330			The farmer made 1 less insecticide treatments in the Yieldgard maize fields because it wasn´t necessary to apply the same number			The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields, he had no need to make any t
Portugal	4331			The farmer made 1 less insecticide treatments in the Yieldgard maize fields. The farmer made the regular seed treatment similar			The farmer didn´t make any treatments for the control of the corn borer in the Yieldgard fields because had no need for such pr
Portugal	4332			The farmer made 1 less insecticide treatments in the Yieldgard maize fields. The farmer made the regular seed treatment similar			The farmer didn´t make any treatments for the control of the corn borer in the Yieldgard fields because had no need for such pr
Portugal	4333			The farmer made 1 less insecticide treatments in the Yieldgard maize fields.			The farmer didn´t make any treatments for the control of corn borer.
Portugal	4334			The farmer made 1 less insecticide treatments in the Yieldgard maize fields. The farmer made the regular seed treatment similar			The farmer didn´t make absolutely no treatments to control the corn borer, great advantage of the Yieldgard maize.
Portugal	4335			The farmer made the regular seed treatment similar in the Yieldgard maize fields and in the conventional ones. The farmer made 1			Without any treatments for the control of corn borer in the Yieldgard maize fields, had no need to control the corn borer.

Portugal	4336	yes	changed	The farmer made the regular seed treatment similar in the Yieldgard maize fields and in the conventional ones. The farmer made 1	yes	changed	The farmer didn´t make rigorously any treatments for the control of corn borer in the Yieldgard fields of maize.
Portugal	4337			The farmer made the regular seed treatment similar in the Yieldgard maize fields and in the conventional ones. The farmer made 1			Without any treatments for the control of corn borer in the Yieldgard maize fields, had no need to control the corn borer.
Portugal	4338			The farmer made the regular seed treatment similar in the Yieldgard maize fields and in the conventional ones. The farmer made 1			The farmer did not make any kind of treatments for the control of corn borer in the Yieldgard fields.
Portugal	4339			The farmer made 1 less insecticide treatments in the Yieldgard maize fields. Made the regular seed treatment similar in the Yiel			The farmer didn´t make rigorously any treatments for the control of corn borer in the Yieldgard fields of maize.
Portugal	4346			The farmer made the regular seed treatment similar in the Yieldgard maize fields and in the conventional ones. The farmer made 1			Did not make any treatments for the control of corn borer in the GM fields because he had no need for such procediment with the
Portugal	4348			The farmer made 1 less insecticide treatments in the Yieldgard maize fields. The farmer made the regular seed treatment similar			The farmer didn´t make absolutely no treatments to control the corn borer, great advantage of the Yieldgard maize.
Portugal	4351			The farmer made the regular seed treatment similar in the Yieldgard maize fields and in the conventional ones. The farmer made 1			The farmer did not make any kind of treatments for the control of corn borer in the Yieldgard fields because it wasn´t necessa
Portugal	4363			The farmer made 1 less insecticide treatments in the Yieldgard maize fields.			The farmer didn´t make any treatments for the control of corn borer.
Portugal	4364			The farmer made 1 less insecticide treatments in the Yieldgard maize fields because it wasn´t necessary to apply the same number			The farmer didn´t make any treatments for the control of corn borer in the Yieldgard maize fields, he had no need to make any t
Portugal	4365			The farmer made 1 less insecticide treatments in the Yieldgard maize fields.			The farmer didn´t make any treatments for the control of corn borer.
Portugal	4366			The farmer made the regular seed treatment similar in the Yieldgard maize fields and in the conventional ones. The farmer made 1			The farmer did not make any kind of treatments for the control of corn borer in the Yieldgard fields because it wasn´t necessa

Table A 6: Herbicides applied in MON 810 (Section 3.4.1)

Active Ingredient	Herbicides as stated by the farmers	Spain	Portugal	Total
(S)-Metolachlor, Terbuthylazine	Primextra Líquido Gold , Tyllanex Magnum	58	8	**66**
2,4-D, Florasulam	Mustang	4	0	**4**
Aclonifen, Isoxaflutole	Lagon, Memphis	15	0	**15**
Bentazon, Dicamba	Laddok Plus	0	2	**2**
Bromoxynil	Buctril, Bromoxynil 24%, Bromotril 24 EC	21	12	**33**
Dicamba	Banvel D, Inka	55	0	**55**
Dimethenamid-P	Spectrum	3	0	**3**
Flufenacet, Terbuthylazine	Aspect	0	4	**4**
Fluroxypyr	Starane 20, Reminel, Hurler, Tomahawk	27	0	**27**
Foramsulfuron, Isoxadifen-ethyl	Option, Cubix	2	20	**22**
Glyphosate	Roundup, Glyphosate 36%, Roundup Energy Pro	10	0	**10**
Isoxadifen-ethyl, Tembotrione	Laudis	9	6	**15**
Isoxaflutole	Spade Flexx, Adengo, Spade	25	6	**31**
MCPA	Agrocer 40, Herpan 40, U 46 M Fluid 40	5	0	**5**
Mesotrione	Callisto	21	15	**36**
Mesotrione, (S)-Metolachlor	Camix	114	1	**115**
Mesotrione, (S)-Metolachlor, Terbuthylazine	Lumax	0	35	**35**
Nicosulfuron	Elite Plus 6 OD, Samson, Sajon, Nicosulfuron 4%, Elite M, Chaman, Samson, Nico M, Nicozea, Accent 75 WG, Bandera 4 SC, Fornet Extra 6 OD, Nicogan	130	30	**160**
Nicosulfuron, Terbuthylazine	Winner Top, Nicoter	0	9	**9**
Pendimethalin	Stomp Aqua, Pendimentalina 33	5	0	**5**
Pethoxamid	Successor 600, Koban 600	11	0	**11**
Rimsulfuron	Principal, Titus	3	0	**3**
Sulcotrione	Sudoku, Zeus, Pentagon, Decano, Mikado, Sulcotrina	5	12	**17**
Trifluralin	Bonanza	0	4	**4**
Total		**523**	**164**	**687**

Table A 7: Specifications for *changed* fertilizer application in MON 810 (Section 3.4.1)

Country	Quest. Nr.	Fertilizer application	Comments
Spain	4265	changed	In YieldGard maize I use less fertilizers.

Table A 8: Explanations for different harvest time of MON 810 (Section 3.4.1)

Country	Quest. Nr.	Harvest	Comments aggregate	Comments
Spain	4182	earlier	Sown earlier, harvested earlier	I sow a few days earlier the YieldGard and I harvest it also 10 - 15 days earlier than conventional maize.
Spain	4184	later	YieldGard maturates later	Because YieldGard maturates a few later than conventional maize.
Spain	4187			Because I sow YieldGard later and besides it maturates a few later than conventional maize.
Spain	4220			YieldGard is harvested later because it maturates later and I sow it later.
Spain	4232		Sown later, harvested later	I sow YieldGard later and I also harvest it later.
Spain	4234			I sow YieldGard later and I also harvest it later.
Spain	4244			I sow YieldGard later and I also harvest it later.
Spain	4267			I harvest YieldGard later than conventional maize because I sow it later.
Spain	4308			I harvest YieldGard later than conventional maize because I sow it later.
Spain	4316			YieldGard is sowed later and it is harvested later.
Spain	4310		YieldGard = short-cycle	YieldGard is of short-cycle and I sow it and I harvest it later.
Spain	4313			YieldGard is of short-cycle it is sowed later and it is harvested later.
Spain	4315			YieldGard is of short-cycle it is sowed and harvested later than conventional maize.

Table A 9: Explanations for characteristics of MON 810 different from *as usual* (Section 3.4.2)
Grey-colored fields mark answers that are not "as usual".

Country	Quest. Nr.	Germination	Emergence	Male flowering	Plant growth	Stalk/-root lodging	Maturity	Yield	Volunteers	Comments
Spain	4107	as usual	as usual	as usual	as usual	less often	as usual	as usual	as usual	YieldGard maize is resistant to corn borer and it does not fall down, the conventional maize does because of the corn borer damages
Spain	4109	as usual	as usual	as usual	as usual	as usual	as usual	lower yield	as usual	When there is not corn borer, conventional maize produces a few more than YieldGard maize.
Spain	4110	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damage, it does not fall down and produces more than conventional maize.
Spain	4112	as usual	as usual	as usual	as usual	as usual	as usual	lower yield	as usual	When there is no attack by corn borer, YieldGard maize is a few less productive than conventional maize.
Spain	4114	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down and it is more productive than conventional maize because all production is harvested.
Spain	4117	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	YieldGard maize healthier, with no damages by corn borer, produces more than conventional maize.
Spain	4124	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	YieldGard maize produces more kilos than conventional maize because it has no damages by corn borer.
Spain	4126	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize healthier, greener, delays maturation, with no damage by corn borer, it does not fall down and produces more than conventional maize.
Spain	4135	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages does not fall down and produces more than the conventional maize.
Spain	4136	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages does not fall down, it is healthier and produces more than conventional maize.
Spain	4137	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down and produces more kilos than conventional maize.
Spain	4138	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages and produces more than conventional maize.
Spain	4139	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it is healthier and produces more than the conventional maize.
Spain	4140	as usual	as usual	as usual	as usual	less often	delayed	higher yield	less often	YieldGard maize with no corn borer damages, healthier, it does not fall down and there are no volunteers the following season, it maturates a few days later because it is greener and it is more productive than the conventional maize.
Spain	4141	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down and produces more than conventional maize.
Spain	4142	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, it does not fall down, all production is harvested and produces 30 % more than conventionalmaize.
Spain	4143	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	This year the corn borer attack has been very poor so there are no differences between YieldGard and conventional maize.

Spain	4144	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize has no damages by corn borer, it does not fall down and produces more kilos than conventional maize.
Spain	4145	as usual	as usual	as usual	as usual	less often	as usual	higher yield	less often	YieldGard maize with no damages by corn borer, it does not fall down, and there are no volunteers thefollowing season and all production is harvested giving more kilos than conventional maize.
Spain	4146	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, it delays a few days the maturation because it is greener and produces more than conventional maize.
Spain	4147	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize does not fall down as it has no corn borer damages, it is healthier and it more productive than conventional maize.
Spain	4148	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize resistant to corn borer, it does not fall down, all produtcion is harvested and produces more than conventional maize.
Spain	4149	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize with no corn borer damages, greener, maturates later, does not fall down and it is more productive than conventionalmaize.
Spain	4151	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, greener, with no corn borer damages, maturates a few later, it does not fall down and it is more productive than the conventional maize.
Spain	4158	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down, is healthier and produces more than conventional maize.
Spain	4162	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, does not fall down, delays a few the maturation and produces more kilos thanconventional maize.
Spain	4163	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	YieldGard maize is healthier even in years with poor corn borer attacks and produces 200 kg/ha more than conventional maize.
Spain	4165	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, healthier, does not fall down, all production is harvested and it is more productive.
Spain	4167	as usual	as usual	as usual	as usual	less often	as usual	higher yield	less often	YieldGard maize is resistant to corn borer, the plants and ears do not fall down,there are no volunteers the following season and it ismore productive than the conventional maize.
Spain	4181	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages and it produces more kilos than convetional maize even in years like 2014 witha poor attack of the plague.
Spain	4184	as usual	as usual	as usual	as usual	as usual	delayed	as usual	as usual	YieldGard maize is greener, with more humidity and it maturates a few days later than conventional maize.
Spain	4186	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, it delays a few days the maturation because it is greener and produces more than the conventional maize.
Spain	4187	as usual	as usual	as usual	as usual	as usual	delayed	as usual	as usual	YieldGard maize is greener, with more humidity and it maturates a few days later than the conventional maize.
Spain	4192	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, greener, healthier, does not fall down and it is more productive than the conventionalmaize.
Spain	4194	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down and it produces more kilos than the conventional maize.
Spain	4208	as usual	as usual	delayed	as usual	as usual	delayed	as usual	as usual	YieldGard maize flowers two days later and it maturates a few days later than conventional maize.
Spain	4209	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard with no corn borer damages, the plants and ears do not fall down, all yield is harvested and produces more than conventionalmaize.
Spain	4210	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, is healthier, does not fall down and it produces mores kilos than conventional maize.
Spain	4211	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, without corn borer, it does not fall down and produces more than conventional maize.

Spain	4212	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard with no corn borer damages, it does not fall down and it is more productive than conventional maize.
Spain	4213	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard with no corn borer damages, there are no volunteers the following season, it is greener, delays a few days the maturation andit is more productive than conventional maize.
Spain	4214	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, greener , does not fall down, all production is harvested and produces morethan conventional maize.
Spain	4216	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, does not fall down, it is healthier and it produces more than conventional maize.
Spain	4220	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, it is greener, maturates later and it produces morethan conventional maize.
Spain	4223	as usual	as usual	as usual	as usual	as usual	delayed	as usual	as usual	YieldGard maize is always greener even the years with poor corn borer attack like 2014 and it maturates a few days later thanconventional maize.
Spain	4230	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize does not fall down and produces more than conventional maize since it has no corn borer damages.
Spain	4234	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer and it does not fall down, it is healthier and more productive than conventional maize.
Spain	4240	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, all production is harvested and produces more thanconventional.
Spain	4241	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, it does not fall down, all production is harvested and produces more than conventionalmaize.
Spain	4243	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, it is greener, maturates later and it produces morethan conventional maize.
Spain	4245	as usual	as usual	as usual	as usual	as usual	delayed	as usual	as usual	YieldGard maize is greener and maturates later than conventional maize.
Spain	4246	as usual	as usual	as usual	as usual	less often	as usual	as usual	as usual	YieldGard maize is resistant to corn borer and it does not fall down.
Spain	4247	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, it is greener, maturates later and it produces morethan conventional maize.
Spain	4264	as usual	as usual	as usual	as usual	as usual	delayed	higher yield	as usual	YieldGard maize is healthier, greener, maturates a few later and produces more than conventional.
Spain	4265	as usual	as usual	as usual	as usual	less often	delayed	as usual	as usual	YieldGard maize is healthier, it does not fall down, greener and maturates few days later.
Spain	4266	more vigorous	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize with no corn borer damages is more vigorous, healthier, greener and produces more than conventional maize.
Spain	4267	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maizewith no corn borer damages, it does not fall down, delays the maturation and produces more kilos than conventional maize
Spain	4268	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, all production is harvested and it gives more kilosthan conventional maize.
Spain	4269	as usual	as usual	as usual	as usual	as usual	as usual	lower yield	as usual	It has been a year of poor corn borer attac and conventional maize has been more productive than YieldGard maize.
Spain	4270	as usual	as usual	as usual	as usual	as usual	delayed	as usual	as usual	YieldGard maize is greener, with more humidity and it maturates few days later than conventional maize.
Spain	4275	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	YieldGard is healthier and it always produces more than conventional years even in years with poor corn borer.
Spain	4277	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, it does not fall down, all production is harvested and it gives more kilos thanconventional maize.

Spain	4278	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize does not fall down because it is healthier, with no corn borer damages, all production is harvested and it is moreproductive than conventional maize.
Spain	4279	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, it does not fall down, with no corn borer damages and it is more productive than conventional maize.
Spain	4283	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down and it produces 2.000 kg/ha more than conventional maize.
Spain	4284	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down, all production is harvested and it produces more kilos thanconventional maize.
Spain	4285	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize with no corn borer damages, greener, maturates later, does not fall down and it is more productive than conventionalmaize.
Spain	4286	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, it does not fall down and produces 20 % more than conventional maize.
Spain	4287	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize does not fall down because it has no corn borer damages and it produces 500 kg/ha more than conventional maize.
Spain	4288	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, it does not fall down and produces 1.000 kg/ha more than conventional maize.
Spain	4292	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, it is greener, maturates later and it produces morethan conventional maize.
Spain	4293	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer,it is healthier, it does not fall down, all production is harvested and it produces morekilos than conventional maize.
Spain	4294	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is more productive than conventional maize because it has no corn borer damages and the plants and ears do not falldown.
Spain	4295	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down, it is greener, maturates later and it produces morethan conventional maize.
Spain	4297	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, is healthier and produces more than conventional maize.
Spain	4298	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is more productive than conventional maize because it has no corn borer damages, it does not fall down, it is greenerand maturates few days later.
Spain	4300	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize does not fall down as it has no corn borer damages, all production is harvested and it produces more kilos thanconventional maize.
Spain	4301	as usual	as usual	as usual	as usual	less often	delayed	lower yield	as usual	YieldGard maize does not fall down and it is greener. It maturates few days later but produces a few less the years with poorattack of corn borer like 2014.
Spain	4302	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maizewith no corn borer damages, it does not fall down, maturates later and it is more productive than conventional maize.
Spain	4304	as usual	as usual	as usual	as usual	as usual	delayed	higher yield	as usual	YieldGard maize is healthier, greener, with more humidity, maturates later and it is more productive than conventional maize.
Spain	4305	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it does not fall down and it produces mores kilos than conventional maize.
Spain	4306	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize does not fall down as it has no corn borer damages, all production is harvested and it produces more than conventionalmaize.
Spain	4307	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is resistant to corn borer, it is healthier, it does not fall down and it produces mores kilos than conventional maize.
Spain	4308	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize with no corn borer damages, it does not fall down, all production is harvested and it produces more than conventionalmaize.

Spain	4310	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize with no corn borer damages, it does not fall down, it is greener and delays the maturation a week. Besides, it is moreproductive than conventional maize.
Spain	4312	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down and produces more than conventional maize.
Spain	4313	as usual	as usual	as usual	as usual	less often	delayed	higher yield	as usual	YieldGard maize is healthier, greener, maturates a few later, it does not fall down and produces more than conventional.
Spain	4316	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize does not fall down as it has no corn borer damages and it is more productive than conventional maize.
Spain	4318	as usual	as usual	as usual	as usual	less often	as usual	higher yield	as usual	YieldGard maize is healthier, with no corn borer damages, it does not fall down and it is more productive than conventional maize.
Portugal	4319	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	The Yieldgard maize provides a better production safety, greater germination vigour of Yieldgard maize plants. In this last campaign the average yields of 14 100 kg/ha in the Yieldgard maize, dry maize, were similar compared with the conventional maize.
Portugal	4320	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Greater germination vigour of Yieldgard maize plants which provides a better production safety of the Yieldgard maize fields. Inthis last campaign the average yields of 10 000 kg/ha in the Yieldgard maize, dry maize, were similar compared with the conventional maize. The average yields in this campaign were low because of the rainy weather.
Portugal	4321	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Greater germination vigour of Yieldgard maize plants which provides a better production safety of the Yieldgard maize fields anda better quality of the yieldgard maize. In this last campaign the average yields of 14 000 kg/ha in the Yieldgard maize, dry maize, and the average yields of 66 000 kg/ha (40 ha) in the Yieldgard maize, forage maize, were similar compared with the conventional maize.
Portugal	4322	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the agronomical fields characteristics were entirely normal without nothing to report. In the last campaign the average yields of 56 000 kg/ha in the Yieldgard maize fields (forage maize) were similar compared with the conventional maize.
Portugal	4323	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Greater germination vigour, above the average, of Yieldgard maize plants. In this last campaign the average yields of 60 000 kg/ha in the Yieldgard maize, forage maize, were similar compared with the conventional maize.
Portugal	4324	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Good germination vigour and high sanity of the Yieldgard maize. In this last campaign the average yields of 12 000 kg/ha in theYieldgard maize fields, dry maize, were mostly 500 kg/ha higher in Yieldgard maize yields compared with the conventional maize.All the others field features were normal.
Portugal	4325	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Good and strong germination vigour and large sanity of the Yieldgard maize .In this last campaign the average yields were 14 000kg/ha in the Yieldgard dry maize, an average of 400 kg/ha higher compared with conventional maize. All the others field characteristics were perfectly normal.
Portugal	4326	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Good germination vigour and high sanity of the Yieldgard maize. In this last campaign the average yields were 13 075 kg/ha in the Yieldgard dry maize, an average of 400 / 500 kg/ha higher compared with conventional maize. Good quality of the Yieldgard maize.
Portugal	4327	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Excellent vigour of Yieldgard plants and quite quality of the Yieldgard maize. In this last campaign the average yields were 15110 kg/ha in the Yieldgard dry maize, an average of 500 kg/ha higher compared with conventional maize.
Portugal	4328	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Good sanity and quality of Yieldgard maize, great vigour of Yieldgard plants. In this last campaign the average yields were 14 000 kg/ha in the Yieldgard dry maize, an average of 400 - 500 kg/ha higher compared with conventional maize.

Portugal	4329	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	The Yieldgard maize provides a better production safety, greater vigour of Yieldgard maize plants. The average yields of 15 200kg/ha in the Yieldgard dry maize, an average of 500 kg/ha higher compared with conventional maize.
Portugal	4330	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Good sanity of Yieldgard maize associated to a great safety production in the Yieldgard maize fields. In that last campaign thefarmer registed that the average yields of 13 100 kg/ha in the Yieldgard dry maize, were 400 kg/ha higher compared with conventional maize.
Portugal	4331	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	In the last campaign, the average yields of 15 000 kg/ha in the Yieldgard dry maize were an average of 400 - 500 kg/ha higher compared with conventional maize. Great vigour and quality of the Yieldgard maize. All the others field characteristics were similar.
Portugal	4332	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the agronomical fields characteristics were entirely normal without nothing to report. In the last campaign the average yiel
Portugal	4333	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	In that last campaign the average yields of 13 500 kg/ha in the Yieldgard dry maize, were an average 500 kg/ha higher compared with conventional maize. Good vigour of the Yieldgard maize. Great sanity.
Portugal	4334	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Good quality of Yieldgard maize, great vigour of Yieldgard plants. In this last campaign an average yields of 16 200 kg/ha in the Yieldgard dry maize, were an average 600 kg/ha higher compared with conventional maize.
Portugal	4335	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	In that last campaign the farmer obtained an average yields of 12 450 kg/ha in the Yieldgard dry maize, were 300 - 400 kg/ha higher compared with conventional maize. Excelent sanity and vigour of the Yieldgard maize.
Portugal	4336	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Excellent safety production in the Yieldgard maize fields. In that last campaign the farmer registed that the average yields of12 950 kg/ha in the Yieldgard dry maize, were an average 500 kg/ha higher compared with conventional maize.
Portugal	4337	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	The Yieldgard maize provides a greater vigour of Yieldgard maize plants and a better quality and production safety. The averageyields of 15 000 kg/ha in the Yieldgard dry maize, an average of 500 - 600 kg/ha higher compared with conventional maize.
Portugal	4338	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Great safety production, vigour and quality in the Yieldgard maize fields. In that last campaign the farmer registed that the average yields of 14 000 kg/ha in the Yieldgard dry maize, were an average of 500 kg/ha higher compared with conventional maize.
Portugal	4339	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Good vigour and great quality of the Yieldgard forage maize. The average yields of 62 000 kg/ha in the Yieldgard maize, forage maize, were an average of 800 - 1000 kg/ha higher compared with the conventional maize.
Portugal	4340	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the agronomical fields characteristics were normal without nothing to note. In the last campaign the average yields of 62 500 kg/ha in the Yieldgard maize fields (forage maize) were similar compared with the conventional maize.
Portugal	4341	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were completely normal. In this last campaign the average yields were 13 000 kg/ha inthe Yieldgard maize, dry maize, were similar compared with the conventional maize.
Portugal	4342	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	In this last campaign the average yields were 13 000 kg/ha in the Yieldgard maize, dry maize, were similar compared with the conventional maize.
Portugal	4343	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Good vigor and force, excellent sanity of Yieldgard maize associated to a huge safety production in the Yieldgard maize fields.In that last campaign the farmer registed that the average yields of 14 000 kg/ha in the Yieldgard dry maize, were 400 kg/ha higher compared with conventional maize.

Portugal	4344	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Great and impressive safety production and quality in the Yieldgard maize fields. In that last campaign the farmer registed thatthe average yields of 14 000 kg/ha in the Yieldgard dry maize, were an average of 300 - 400 kg/ha higher compared with conventional maize.
Portugal	4345	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	The Yieldgard maize provides a greater vigour of Yieldgard maize plants and a better sanity and production safety of Yieldgard maize fields. The average yields of 13 700 kg/ha in the Yieldgard dry maize, were similar compared with conventional maize.
Portugal	4346	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	The high quality of the forage maize and the high germination vigour were amazing. In this last campaign the average yields of 70 000 kg/ha in the Yieldgard forage maize were similar compared with the conventional maize.
Portugal	4347	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Good germination vigour and good quality of Yieldgard forage maize. In this last campaign the average yields of 60 000 kg/ha inthe Yieldgard forage maize were similar compared with the conventional maize.
Portugal	4348	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Greater germination vigour of Yieldgard maize plants. Also a high sanity and production safety of Yieldgard maize fields. In this last campaign the average yields of 14 500 kg/ha in the Yieldgard maize, dry maize, and the average yields of 54 000 kg/ha inthe Yieldgard maize, forage maize, were similar compared with the conventional maize.
Portugal	4349	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	ll the features in agronomical behaviour were completely normal. In this last campaign the average yields of 14 000 kg/ha in the Yieldgard maize, dry maize, and the average yields of 57 500 kg/ha in the Yieldgard maize, forage maize, were similar comparedwith the conventional maize.
Portugal	4350	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were completely normal. In this last campaign the average yields of 14 000 kg/ha in the Yieldgard maize, dry maize, and the average yields of 55 000 kg/ha in the Yieldgard maize, forage maize, were similar comparedwith the conventional maize.
Portugal	4351	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Greater germination vigour, high sanity, quality and production safety of Yieldgard maize fields. In this last campaign the average yields of 14 750 kg/ha in the Yieldgard maize, dry maize, and the average yields of 60 000 kg/ha in the Yieldgard maize, forage maize, were similar compared with the conventional maize.
Portugal	4352	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were completely normal. In this last campaign the average yields of 65 000 kg/ha in the Yieldgard maize, forage maize, were similar compared with the conventional maize.
Portugal	4353	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were completely normal. In this last campaign the average yields of 75 000 kg/ha in the Yieldgard maize, forage maize, were similar compared with the conventional maize.
Portugal	4354	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were normal. In this last campaign the average yields of 55 000 kg/ha in the Yieldgard maize, forage maize, were similar compared with the conventional maize.
Portugal	4355	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Huge vigor and safety production and great sanity of Yieldgard maize fields. In that last campaign the farmer registed that theaverage yields of 16 500 kg/ha in the Yieldgard dry maize, were 1000 - 1500 kg/ha higher compared with conventional maize.
Portugal	4356	more vigorous	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	Excellent sanity and production safety of Yieldgard maize fields. Greater germination vigour of Yieldgard maize plants. In thislast campaign the average yields of 12 000 kg/ha in the Yieldgard maize (were 500 kg/ha higher compared with the conventional maize), dry maize, and the average yields of 58 000 kg/ha in the Yieldgard maize, forage maize.

Portugal	4357	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Greater germination vigour and a good sanity of Yieldgard maize plants. In this last campaign the average yields of 11 500 kg/hain the Yieldgard maize, dry maize, were similar compared with the conventional maize.
Portugal	4358	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were completely normal. In this last campaign the average yields were 13 750 kg/ha inthe Yieldgard maize, dry maize, were similar compared with the conventional maize. Nothing difference to report.
Portugal	4359	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were completely normal. In this last campaign the average yields of 13 400 kg/ha in the Yieldgard maize, dry maize, and the average yields of 55 000 kg/ha in the Yieldgard maize, forage maize, were similar comparedwith the conventional maize.
Portugal	4360	more vigorous	as usual	as usual	as usual	as usual	as usual	as usual	as usual	Huge safety production of Yieldgard maize plants and a large germination vigour. In this last campaign the average yields of 16800 kg/ha in the Yieldgard maize, dry maize, were similar compared with the conventional maize.
Portugal	4361	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the field characteristics and agronomical behaviour were normal. In this last campaign the average yields of 12 300 kg/ha inthe Yieldgard maize, dry maize, were similar compared with the conventional maize.
Portugal	4362	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	In this last campaign the average yields of 12 000 kg/ha in the Yieldgard maize, dry maize, were similar compared with the conventional maize.
Portugal	4363	as usual	as usual	as usual	as usual	as usual	as usual	higher yield	as usual	In this last campaign the average yields of 13 500 kg/ha in the Yieldgard maize, dry maize, were 400 kg/ha higher compared withthe conventional maize and with an average yields of 55 000 kg/ha in the Yieldgard maize, forage maize. All the others characteristics and agronomical behaviour were normal. Good quality and sanity of the Yieldgard maize plants.
Portugal	4364	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the agronomical fields characteristics were entirely normal without nothing to report. In the last campaign the average yields of 15 000 kg/ha in the Yieldgard maize fields (dry maize) were similar compared with the conventional maize. Excellent sanityof the Yieldgard maize plants.
Portugal	4365	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the agronomical fields characteristics were mostly normal. In the last campaign the average yields of 13 750 kg/ha in the Yieldgard maize fields (dry maize) were similar compared with the conventional maize. Good quality of the Yieldgard maize.
Portugal	4366	as usual	as usual	as usual	as usual	as usual	as usual	as usual	as usual	All the features in agronomical behaviour were completely normal. In this last campaign the average yields were 14 500 kg/ha inthe Yieldgard maize, dry maize, were similar compared with the conventional maize. Huge safety protection in the Yieldgard maize fields.

Table A 10: Additional observation during plant growth of MON 810 (Section 3.4.2)

Country	Quest. Nr.	Comments aggregate	Comments
Spain	4301	Conventional maize has bigger ears and more weight	The conventional maize has bigger ears and weight more than YieldGard's ears.
Spain	4316	corn borer = big problem. YieldGard inevitable	To do late sowing you must use YieldGard because corn borer is a big problem in this area.
Spain	4140	Higher humidity for YieldGard grain	Grain of YieldGard has more humidity than conventional maize.
Spain	4167		Grain of YieldGard has more humidity than conventional maize.
Spain	4186		When harvesting, YieldGard has 1 or 2 grades more of humidity than conventional maize.
Spain	4218		YieldGard has 1 - 2 grades more of humidity when harvesting.
Spain	4247		The grain of YieldGard has 1 grade more of humidity than conventional maize.
Spain	4184	No corn borer in 2014	In 2014 the corn borer attacks were very poor.
Spain	4190		For many years now, there is not corn borer in this area.
Spain	4195		Poor attack of corn borer in 2014.
Spain	4198		There was not corn borer in 2014.
Spain	4203		Poor attack of corn borer in 2014.
Spain	4227		There was not corn borer attack in 2014.
Spain	4228		There was not corn borer attack in 2014.
Spain	4230		Very poor corn borer attack in 2014.
Spain	4231		There was not corn borer attack in 2014.
Spain	4237		There was not corn borer attack in 2014.
Spain	4238		There was not corn borer attack in 2014.
Spain	4245		There was not corn borer attack in 2014.
Spain	4250		There was not corn borer attack in 2014.
Spain	4254		There was not corn borer attack in 2014.
Spain	4271		There was not corn borer attack in 2014.
Spain	4273		Very poor corn borer attack in 2014.
Spain	4279		Very poor corn borer attack in 2014.
Spain	4282		There was not corn borer in 2014.
Spain	4106	YieldGard and conv. maize comparable this year due to low corn borer pressure	When there are poor corn borer attacks there are no differences between YieldGard and conventional maize.
Spain	4107		This year there were not corn borer attacks and there are no differences in the yield between YieldGard and conventional maize.
Spain	4115		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4118		There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4120		If there are no corn borer attacks, there are no differences between YieldGard and conventional maize.
Spain	4121		When there are poor corn borer attacks there are no differences between YieldGard and conventional maize.
Spain	4122		It is been a year of poor corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4123		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4127		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4128		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.

Spain	4130	YieldGard and conv. maize comparable this year due to low corn borer pressure	This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4131		This year there were poor corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4133		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4134		This year there were very poor corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4152		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4153		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4154		When there are no corn borer attacks there are no differences between YieldGard and conventional maize.
Spain	4155		There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4156		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4157		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4160		When there are no corn borer attacks there are no differences between YieldGard and conventional maize.
Spain	4161		There are no differences because there was not corn borer in the season.
Spain	4164		There are no differences between YieldGard and conventional maize when there is not corn borer, like this year.
Spain	4166		This year there were very poor corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4169		Poor attack of corn borer in 2014 and there are no differences between YieldGard and conventional maize.
Spain	4170		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4171		Very poor attack of corn borer in 2014 and there are no differences between YieldGard and conventional maize.
Spain	4173		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4174		In 2014 poor corn borer attack and there are no differences between YieldGard and conventional maize.
Spain	4175		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4177		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4178		no differences between YieldGard and conventional maize becase there was not corn borer attack this year.
Spain	4180		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4182		There are no differences between YieldGard and conventional maize because corn borer attacks have been very poor in 2014.
Spain	4183		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4185		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4187		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4188		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4191		2014 has been a year of poor corn borer attack and there are no differences between YieldGard and conventional maize.
Spain	4193		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4196		This year there were not corn borer attacks and there are no differencesin the yield between YieldGard and conventional maize.
Spain	4197		This year there was not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4199		Poor attack of corn borer in 2014 and there are no differences between YieldGard and conventional maize.
Spain	4200		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4201		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4202		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4204		There are no differences between YieldGard and conventional maize because this year corn borer attacks were so poor.
Spain	4205		There was not corn borer attack in 2014 and YieldGard and conventional maize had the same behaviour.

Spain	4206	YieldGard and conv. maize comparable this year due to low corn borer pressure	There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4207		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4208		Year of very poor corn borer and there is very small difference between YieldGard and conventional maize.
Spain	4215		There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4217		There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4219		There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4221		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4222		Very poor corn borer attacks in 2014 and there are no differences between YieldGard and conventional maize.
Spain	4224		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4225		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4226		There are no differences between YieldGard and conventional maize because this year the corn borer attack has been very poor.
Spain	4229		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4232		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4233		There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4235		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4236		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4239		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4242		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4244		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4246		There are no differences between YieldGard and conventional maize because this year corn borer attacks were so poor.
Spain	4248		Very poor corn borer attack and there are no differences between YieldGard and conventional maize.
Spain	4249		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4251		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4252		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4253		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4255		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4256		No differences between YieldGard and conventional maize as there was not corn borer attack in 2014.
Spain	4257		There was not corn borer attack in 2014. YieldGard has 1 or 2 grades more of humidity than conventional maize.
Spain	4259		When there is not corn borer attack there are no differences between YieldGard and conventional maize.
Spain	4260		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4261		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4262		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4263		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4265		Very poor corn borer attack and there are no differences between YieldGard and conventional maize.
Spain	4270		Very poor corn borer attack in 2014 and there are no differences between YieldGard and conventional maize.
Spain	4272		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4274		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4276		There are no differences because it is been a year of very poor corn borer attack.
Spain	4280		There are no differences between YieldGard and conventional maize because this year there was not corn borer attack.
Spain	4281		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.

Spain	4289	YieldGard and conv. maize comparable this year due to low corn borer pressure	Very poor corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4291		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4296		Very poor corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4299		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4303		Poor corn borer attack and there are no differences between YieldGard and conventional maize.
Spain	4309		Poor corn borer attack in 2014 and there are no differences between YieldGard and conventional maize.
Spain	4311		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4314		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.
Spain	4315		There are no differences between YieldGard and conventional maize because this year corn borer attacks were very poor.
Spain	4317		This year there were not corn borer attacks and there are no differences between YieldGard and conventional maize.

Table A 11: Additional comments on disease susceptibility (Section 3.4.3)

Country	Quest. Nr.	Disease susceptibility	Comments aggregate	Comments
Portugal	4325	as usual	No difference	Did not found differences on diseases susceptibility.
Portugal	4341		No difference due to low disease pressure	Non-existent in the region of production. Impossible and noting to report about the disesases susceptibility.
Portugal	4342			Non-existent in the region of production. Impossible and noting to report about the disesases susceptibility.
Portugal	4346			Non-existent in the region of production. Impossible and noting to report about the disesases susceptibility.
Portugal	4352			Non-existent in the region of production and so it was a factor impossible to analyse.
Portugal	4353			Non-existent in the region of production. Impossible and noting to report about the disesases susceptibility.
Portugal	4354			Non-existent in the region of production. Impossible to report about the disesases susceptibility.
Portugal	4355			Non-existent in the region of production. Impossible to report.
Portugal	4359			Practically non-existent in the region of production. Very difficult to report about disesases susceptibility.
Portugal	4360			Non-existent in the region of production. Impossible to report.
Portugal	4361			Non-existent in the region of production. Nothing to report.
Portugal	4363			Difficult to analyse because was practilly non existent in the region of production.
Portugal	4364			Non-existent in the region of production.
Portugal	4348		No disease pressure	Non-existent in the region of production.
Portugal	4319	less susceptible	YieldGard less susceptible in general	The Yieldgard maize provides a better production safety wich was a good example for the largest sanity of Yieldgard maize and made Yieldgard maize plants more resistant to the others diseases (less susceptible to diseases).
Portugal	4320			High presence in the local / region of production of different diseases. Yieldgard maize plants had a better indirect capacityresistant to the diseases (less susceptible to diseases).
Portugal	4321			Yieldgard maize plants were more resistant to the diseases (less susceptible to diseases). The local / region of production hadan history of high presence of diseases.
Portugal	4322			In this last campaign the presence in the region of production of different diseases were lower. However the Yieldgard maize plants had a better indirect capacity resistant to the diseases (less susceptible to diseases).
Portugal	4323			Yieldgard maize plants were more resistant to the diseases (less susceptible to diseases), the farmer justified the less susceptibility on diseases because the greater vigour and the great sanity of the Yieldgard maize.

Portugal	4332	less susceptible	YieldGard less susceptible in general	In this last campaign the presence in the region of production of different diseases were lower. However the Yieldgard maize plants had a better indirect capacity resistant to the diseases (less susceptible to diseases).
Portugal	4336			Yieldgard maize plants were more resistant to the diseases (less susceptible to diseases), the farmer justified the great answerand the less susceptibility on diseases because the greater vigour and the great sanity of the Yieldgard maize.
Portugal	4343			In this last campaign the presence in the region of production of different diseases were lower. However the Yieldgard maize plants had a better indirect capacity resistant to the diseases (less susceptible to diseases).
Portugal	4344			The Yieldgard maize plants had a better indirect capacity resistant to the diseases (less susceptible to diseases). Despite thatin this last campaign the presence in the region of production of different diseases were lower.
Portugal	4345			Yieldgard maize plants were more resistant to the attack of diseases (less susceptible to diseases). The farmer justified the less susceptibility on diseases because the greater vigour and the huge sanity of the Yieldgard maize.
Portugal	4327		YieldGard less susceptible to Cephalosporium spp.	The farmer noted an indirectly less susceptibility on diseases of the Yieldgard maize in this campaign mainly in the "Cefalosporium.spp". Historical high presence in the region of production of Cefalosporium.
Spain	4182		YieldGrad less susceptible to Fusarium	YieldGard maize does not have damages of Fusarium and conventional maize does.When there are problems of Fusarium they only affect conventional maize and never YieldGard maize.
Spain	4165		YieldGrad less susceptible to Ustilago	YieldGard maize does not suffer the attack of Ustilago and the conventional maize does.YieldGard maize is healthier and it does not suffer Ustilago's attack. Conventional maize suffers Ustilago's attack.
Spain	4293			YieldGard maize is healthier and it has less attack of Ustilago than the conventional maize.YieldGard maize with no damages of corn borer and it resists better Ustilago's attacks than conventional maize.

Table A 12: Additional comments on insect pest control (Section 3.4.4)

Country	Quest. Nr.	Ostrinia nubilalis	Sesamia spp.	Comments
Portugal	4324	very good	very good	Very good and overall effectiveness
Portugal	4333			Excellent control of the corn borers.
Portugal	4335			Excellent
Portugal	4340			Fantastic Control
Portugal	4360			Fantastic Control!

Table A 13: Additional comments on pest susceptibility (Section 3.4.5)

Country	Quest. Nr.	Pest susceptibility	Order of insect pest	Comments aggregate	Comments
Portugal	4347	less susceptible	Agrotis Ipsilon	YieldGard had better sanitation	The sanity of Yieldgard maize was the key factor.
Portugal	4321			YieldGard had better vigour and sanitation	It was justified for the greater vigour and sanity of the Yieldgard maize plants fields.
Portugal	4346	as usual		YieldGard more resistant in general	Although the Yieldgard event was specific for the control of corn borer and not for other pests, indirectly the Yieldgard plants were less susceptible (more resistant) from the attacks of other pests. The sanity of Yieldgard maize was impressive.
Portugal	4319	less susceptible			Another good example of the Yieldgard maize high production safety was the Yieldgard maize plants more resistant to the othersdiseases (less susceptible to diseases). However the plots of Yieldgard maize were also attacked by other pests (Agrotis Ipsilon) but the Yieldgard maize plants were more resistant to the attack.
Portugal	4320				Yieldgard maize high production safety provides to the Yieldgard maize fields more resistant and better protection to the attackof others pests.
Portugal	4322				Maybe have occurred, in farmer´s opinion, less susceptible to pests. The Yieldgard maize plants were a little more resistant tothe attack.
Portugal	4323				Yieldgard maize plants were more resistant to the others pests (less susceptible to diseases), the farmer justified the less susceptibility on other pests also because the greater vigour and sanity of the Yieldgard maize.
Portugal	4332				Despite the plots of Yieldgard maize were also attacked by other pests the Yieldgard maize was a little more resistant from theattack of those other pests because the fantastic sanity of the yieldgard maize.
Portugal	4339				The sanity of the Yieldgard maize provided more resistant from the attack of the diferent other pests like Agrotis Ipsilon.
Portugal	4341				Although the Yieldgard event was specific for the control of corn borer and not for other pests, indirectly the Yieldgard plants were less susceptible (more resistant) from the attacks of other pests.
Portugal	4342				The Yieldgard maize was a little more resistant (less susciptable) to the attack of the diferent other pests despite the regionof production had a lower incidence of pests attack.
Portugal	4343				The sanity of the Yieldgard maize was impressive and provided more resistant from the attack of the diferent other pests like Agrotis Ipsilon. The fact that the Yieldgard maize was resistant to the attack of the corn borer pest made indirectly the Yieldgard plants less susceptible (more resistant) from the attacks of other pests.
Portugal	4344				The excellent sanity and amazing safety production of the Yieldgard maize fields provided a little more resistant from the attack of the diferent other pests.
Portugal	4345				One more time the amazing sanity of the Yieldgard maize provided a little more resistant from the attack of the diferent other pests. It was a great advantage of the Yieldgard maize fields.
Portugal	4348				The fact that the Yieldgard maize was resistant to the attack of the corn borer pest made indirectly the Yieldgard plants lesssusceptible (more resistant) from the attacks of other pests like Agrotis Ipsilon.

Portugal	4352	less susceptible	Agrotis Ipsilon	YieldGard more resistant in general	It was also a factor almost impossible for the farmer to analyse differences also in others pests susceptibility because the region of production had a very low incidence of others pests. However the farmer knows that the Yieldgard maize fields were a little more protected against the attack of other pests.
Portugal	4355				The fact that the Yieldgard maize was resistant to the attack of the corn borer pest made indirectly the Yieldgard plants lesssusceptible (more resistant) from the attacks of other pests. The sanity of the Yieldgard maize provided more resistant from theattack of the diferent other pests like Agrotis Ipsilon.
Portugal	4356				Despite the plots of Yieldgard maize were also attacked by other pests the Yieldgard maize was a little more resistant from theattack of those other pests.
Portugal	4358				Despite the region of production had a lower incidence of pests the plots of Yieldgard maize were also attacked by other pests but in same cases the Yieldgard maize was more resistant to the attack of different other pests.
Portugal	4359				The region of production had a lower incidence of pests on this last campaign. However the fact that the Yieldgard maize was resistant to the attack of the corn borer pest made indirectly the Yieldgard plants less susceptible from the attacks of other pests like Agrotis Ipsilon.
Portugal	4360				Another example of the amazing sanity and safety production of the Yieldgard maize provided a little more resistant from the attack of the diferent other pests.
Portugal	4363				Despite the region of production had a lower incidence of pests the plots of Yieldgard maize were also attacked by other pests but in same cases the Yieldgard maize was less susceptible to the attack of different other pests.
Portugal	4364				The sanity of the Yieldgard maize provided more resistant from the attack of the diferent other pests.
Portugal	4365				The Yieldgard maize was a little more resistant (less susciptable) to the attack of the diferent other pests despite the regionof production had a lower incidence of pests attack.
Portugal	4366				All the amazing safety production and high sanity of the Yieldgard maize plants provided a little more resistant (less susceptibile) from the attack of the diferent other pests like Agrotis Ipsilon.
Portugal	4324		Agrotis Ipsilon, Spodoptera Frugiperda		Yieldgard maize was average more resistant to the attack of the different other pests. The greater germination vigour and the better sanity of the Yieldgard maize are the reasons for that resistant.
Portugal	4357				The sanity of the Yieldgard maize provided more resistant from the attack of the diferent other pests.
Spain	4285		Aphids, Spodoptera exigua	YieldGard more resistant to Aphid & Spodoptera	YieldGard´s plants are healthier and have less attack of Aphid and Spodoptera exigua than conventional maize.
Spain	4162		Heliothis	YieldGard more resistant to Heliothis	There is less Heliothis In YieldGard's ears than conventional maize's ears.
Spain	4178		Mosquitos	More Mosquito with YieldGard	YieldGard has more attack of Mosquito than conventional maize.
Spain	4301		Red Spider, Aphids	YieldGard more resistant to Red Spider & Aphid	There is more presence of Red spider and Aphid in conventional maize than in YieldGard.
Portugal	4325		Spodoptera Frugiperda, Agrotis Ipsilon	YieldGard more resistant in general	Although the Yieldgard event was specific for the control of corn borer and not for other pests, indirectly the Yieldgard plants were less susceptible (more resistant) from the attacks of other pests. The sanity of Yieldgard dry maize made all the difference
Portugal	4326				Indirectly the Yieldgard plants were less susceptible (more resistant) from the attacks of other pests because the Yieldgard event was specific for the control of corn borer and so was more protected for the others pests attacks.

Portugal	4327	less susceptible	Spodoptera Frugiperda, Agrotis Ipsilon	YieldGard more resistant in general	The plots of Yieldgard maize were also attacked by other pests but in same cases the Yieldgard maize was mostly more resistant to the attack of different other pests.
Portugal	4328				Yieldgard maize high production safety provides to the Yieldgard maize fields more resistant and better protection to the attackof others pests.
Portugal	4329				The fact that the Yieldgard maize was resistant to the attack of the corn borer pest made indirectly the Yieldgard plants lesssusceptible (more resistant) from the attacks of other pests. Good sanity of the Yieldgard maize plants.
Portugal	4330				The fact that the Yieldgard maize was resistant to the attack of the corn borer pest and the good sanity of the Yieldgard maizeplants made indirectly the Yieldgard plants less susceptible (more resistant) from the attacks of other pests.
Portugal	4331				The sanity of the Yieldgard maize provided more resistant from the attack of the diferent other pests also as the Yieldgard maize high production safety provides to the Yieldgard maize fields more resistant and better protection.
Portugal	4333				The fact that the Yieldgard maize was resistant to the attack of the corn borer pest made indirectly the Yieldgard plants a little less susceptible (more resistant) from the attacks of other pests.
Portugal	4334				The excellent sanity of the Yieldgard maize provided a little more resistant from the attack of the diferent other pests.
Portugal	4335				Although it was not specific in the Yieldgard maize plant, the yieldgard maize was more resistant to the attack of different other pests.
Portugal	4336				The amazing sanity of the Yieldgard maize provided a little more resistant from the attack of the diferent other pests. It was agreat advantage of the Yieldgard maize fields.
Portugal	4337				Despite the plots of Yieldgard maize were also attacked by other pests the Yieldgard maize was a little more resistant from theattack of those other pests.
Portugal	4338				The fact that the Yieldgard maize was resistant to the attack of the corn borer pest made indirectly the Yieldgard plants lesssusceptible (more resistant) from the attacks of other pests.
Portugal	4340	as usual	-	-	Nothing to report.
Portugal	4353			No pest pressure	Nothing to report because the region of production had a quite lower incidence of pests attacks.
Portugal	4361				The region of production had a quite lower incidence of pests attacks. Nothing to report.

Table A 14: Additional comments on weed pressure (Section 3.4.6)

Country	Quest. Nr.	Weed pressure	Comments
Portugal	4319	as usual	Exactly equal
Portugal	4340	as usual	Nothing to report.

Table A 15: Weeds that occurred in MON 810 (Section 3.4.6)

Name of weed	Frequency
Sorghum halepense	153
Abutilon theophrasti	125
Chenopodium album	79
Amaranthus retroflexus	60
Setaria spp.	59
Xanthium strumarium	57
Datura stramonium	54
Cyperus spp.	32
Echinochloa spp.	28
Solanum nigrum	22
Digitaria sanguinalis	19
Portulaca oleracea	18
Echinochloa crus-galli	17
Phragmites australis	16
Raphanus raphanistrum	12
Cynodon dactylon	8
Xanthium spinosum	7
Polygonum convolvulus	4
Polygonum persicaria	3
Amaranthus spp.	3
Amaranthus blitoides	1
Avena fatua	1
Malva spp.	1
Polygonum aviculare	1
Rumex spp.	1
Diplotaxis erucoides	1
Bromus spp.	1

Table A 16: Additional comments on occurrence of wildlife (Section 3.4.7)

Country	Quest. Nr.	Occurence of insects	Occurence of birds	Occurence of mammals	Comments on occurence of insects	Comments on occurence of birds	Comments on occurence of mammals
Spain	4180	as usual	as usual	less	-	-	Wild boar prefers conventional maize, harming it. In YieldGard there are no damages caused by wild boars.
Spain	4286	as usual	less	as usual	-	Birds prefer conventional maize rather than YieldGard, they like more the conventional maize.	-

Table A 17: Specifications for the performance of animals fed MON 810 (Section 3.4.8)

Country	Quest. Nr.	Performance of the animals fed MON 810	Comments on animal performance
Portugal	4322	as usual	Completelly normal the growth and development of animals fed with Yieldgard maize.
Portugal	4323		
Portugal	4339		
Portugal	4340		
Portugal	4346		
Portugal	4347		
Portugal	4349		
Portugal	4350		
Portugal	4352		
Portugal	4353		
Portugal	4354		
Portugal	4366		

Table A 18: Motivations for not complying with the label recommendations (section 3.5.2)

Country	Quest. Nr.	Compliance	Reasons
Spain	4252	no	I did not read the recommendations.
Spain	4288		I did not sow refuge.
Spain	4296		I only left the 10 % for the refuge.
Spain	4297		I did not sow refuge plot.
Spain	4306		I have not read the recommendations of the label.
Spain	4311		I have not read the recommendations.
Spain	4313		I did not sow refuge.
Spain	4315		I have not read the recommendations.
Spain	4316		I did not sow refuge because it loses yield.
Spain	4317		No, because I did not read the recommendations.
Spain	4318		I have not read the recommendations.

Table A 19: Motivations for not planting a refuge (section 3.5.3)

Country	Quest. Nr.	Plant refuge?	Reasons
Spain	4252	no	I do not know the technical guidelines because I did not read them.
Spain	4288		It complicates me the sowing.
Spain	4296		I thought that leaving the 10% of surface for the refuge was enough.
Spain	4297		I have small plots and it complicates me the sowing.
Spain	4306		I do not have information about the refuge plots.
Spain	4311		I do not know the technical guidelines, I am not informed.
Spain	4313		corn borer produces me lots of harvest losses since it is late sowing.
Spain	4315		I am not informed, I do not know the technical guideliness and I do not know about refuge plots.
Spain	4316		I lose lot of harvest sowing conventional maize varieties in late sowing.
Spain	4317		I do not know the technical guidelines, I do not have information about refuge plots.
Spain	4318		I am not informed about refuges, I do not know the technical guidelines.
Portugal	4340		The Farmer didn't plant a refuge because the field of production was "in a production area" and opted to do not plant a refuge.The farmer had no need requirement to do.
Portugal	4360		The farmer had no legal requirement to do. Didn´t plant a refuge because the field of prodution was "in a production area " and opted to do not plant a refuge.

B Questionnaire

2	0	1	4	-	0	1	-	M	A	R	-	E	S	-	0	1	-	0	1	-	0	1

Year - Event - Partner - Country -Interviewer- Farmer - Area

EuropaBio Monitoring WG

Farmer Questionnaire

Product: insect protected YieldGard® maize

Farmer personal and confidential data

Name of farmer: ____________________________________

Address of farmer: ____________________________________

City: ____________________________________

Postal code: ____________________________________

Name of interviewer: ____________________________________

Date of interview (DD / MM / YYYY):_____/______/_________

The personal data of the farmer will be handled in accordance with applicable data protection legislation. The personal data of the farmers may be used for the purpose of interviews necessary for the survey if the farmers have authorised this use as per the data protection legislation.

The questionnaires will be encoded to protect farmers' identity in the survey and confidentiality agreements will be put in place between the different parties (i.e. authorisation holders, licensees, interviewers and analyst) to further enforce this. The identity of a farmer will only be revealed to the authorisation holders if an adverse effect linked to their trait has been identified and needs to be investigated.

Furthermore, the agreements between the different parties will also ensure that any information collected in the questionnaires will not be improperly shared or used.

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2	0	1	4	-	0	1	-	M	A	R	-	E	S	-	0	1	-	0	1	-	0	1

Year - Event - Partner - Country -Interviewer- Farmer - Area

Code:

Year ☐☐☐☐ Event ☐☐ Partner ☐☐☐ Country ☐☐ Interviewer ☐☐

Farmer ☐☐ Area ☐☐

Coding explanations:

2	0	1	3	-	0	1	-	M	A	R	-	E	S	-	0	1	-	0	1	-	0	1

Year | Event Code | Partner[1] Code | Country Code | Interviewer[2] Code | Farmer Code | Area Code

Codes:

Event: 01 MON 810
02 ...

Partner[6]: MON Monsanto
MAR Markin
AGR Agro.Ges
... ...

Country: ES Spain
PT Portugal
RO Romania
…

Interviewer[7]: 01 A
02 B
03 …

Farmer: incremental counter within the interviewer

Area: incremental counter within the farmer

---

[6] Partner is the organization that implements the survey
[7] Interviewer is the employee from the Partner that is contacting the farmers

2	0	1	4	-	0	1	-	M	A	R	-	E	S	-	0	1	-	0	1	-	0	1

Year - Event - Partner - Country -Interviewer- Farmer - Area

1 Maize grown area

1.1 Location:

Country: ____

County: ____

1.2 Surrounding environment:

Which of the following would best describe the land usage in the surrounding of the areas planted with YieldGard® maize

O Farmland
O Forest or wild habitat
O Residential or industrial

1.3 Size and number of fields of the maize cultivated area:

Total area of all maize cultivated on farm (ha) ________________

Total area of YieldGard® maize cultivated on farm (ha) ________________

Number of fields cultivated with YieldGard® maize ______________

1.4 Maize varieties grown:

List up to five YieldGard® maize varieties planted this season:

1. __________________________
2. __________________________
3. __________________________
4. __________________________
5. __________________________

List up to five conventional varieties planted this season:

1. __________________________
2. __________________________
3. __________________________
4. __________________________
5. __________________________

Are you growing any other GM maize varieties this season?[8]

O Yes O No

[8] Note: This question does not need to be asked in the 2013 season.

1.5 Soil characteristics of the maize grown area:

Mark the predominant soil type of the maize grown area (soil texture):

- O very fine (clay)
- O fine (clay, sandy clay, silty clay)
- O medium (sandy clay loam, clay loam, sandy silt)
- O medium-fine (silty clay loam, silt loam)loam)
- O coarse (sand, loamy sand, sandy loam)
- O no predominant soil type (too variable across the maize grown area on the farm)
- O I do not know

Characterize soil quality of the maize grown area (fertility):

- O below average - poor
- O average - normal
- O above average -good

Organic carbon content (%) ___________________

1.6 Local pest and disease pressure in maize:

Characterize this season's general pest pressure on the maize cultivated area:

Diseases (fungal, viral)	O Low	O As usual	O High
Pests (insects, mites, nematodes)	O Low	O As usual	O High
Weeds	O Low	O As usual	O High

2 Typical agronomic practices to grow maize on your farm

2.1 Irrigation of maize grown area:

O Yes O No

If yes, which type of irrigation technique do you apply:

O Gravity O Sprinkler O Pivot O Other

2.2 Major rotation of the maize grown area:

previous year: ________________________

two years ago: ________________________

2.3 Soil tillage practices:

O No O Yes (mark the time of tillage: O Winter O Spring)

2.4 Maize planting technique:

- O Conventional planting
- O Mulch
- O Direct sowing

2.5 Mark all typical weed and pest control practices in maize at your farm:

O Herbicide(s)

O Insecticide(s)
If box checked, do you treat against maize borers? O Yes O No

O Fungicide(s)
O Mechanical weed control
O Use of bio control treatments (e.g. Trichogramma)
O Other, please specify: ______________________

2.6 Application of fertilizer to maize grown area:

O Yes O No

2.7 Typical time of maize sowing range (DD:MM – DD:MM):

_________/_________ -- _________/__________

2.8 Typical time of maize harvest range (DD:MM – DD:MM):

Grain maize: _________/_________ -- _________/__________
Forage maize: _________/_________ -- _________/__________

3 Observations of YieldGard® maize

3.1 Agricultural practices in YieldGard® maize (compared to conventional maize)

Did you change your agricultural practices in YieldGard® maize compared to conventional maize? If any of the answers is different from «As usual», please specify the change.

How did you perform your crop rotate for YieldGard® maize compared with conventional maize?

O As usual O Changed, because (*describe the rotation*): ______________

____

____

Did you plant YieldGard® maize earlier or later than conventional maize?

O As usual O Earlier O Later, because: __________________________

Did you change your soil tillage or maize planting techniques to plant YieldGard® maize?

O As usual O Changed, because: __________________________________

2	0	1	4	-	0	1	-	M	A	R	-	E	S	-	0	1	-	0	1	-	0	1

Year - Event - Partner - Country -Interviewer- Farmer - Area

Full commercial name of insecticides you applied in YieldGard® maize field, including seed treatments:

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

Full commercial name of herbicides you applied in YieldGard® maize field:

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

Full commercial name of fungicides you applied in YieldGard® maize field:

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

In 2013, how were the weed and pest control practices in YieldGard® maize when compared to conventional maize?

Insecticides: O Similar O Different, because:____________________

Herbicides: O Similar O Different, because:____________________

Fungicides: O Similar O Different, because:____________________

In 2013, did you change maize borer control practices in YieldGard® maize when compared to conventional maize?

O Similar O Changed, because:____________________

In 2013, how were the fertilizer application practices in YieldGard® maize when compared to conventional maize?

O Similar O Changed, because:____________________

In 2013, how were the irrigation practices in YieldGard® maize when compared to conventional maize?

O Similar O Changed, because:________________________________

Did you harvest YieldGard® maize earlier or later than conventional maize?

O Similar O Earlier O Later Because:________________________

3.2 *Characteristics of YieldGard® maize in the field (compared to conventional maize)*

Germination vigour	O As usual	O More vigourous	O Less vigourous
Time to emergence	O As usual	O Accelerated	O Delayed
Time to male flowering	O As usual	O Accelerated	O Delayed
Plant growth and development	O As usual	O Accelerated	O Delayed
Incidence of stalk/root lodging	O As usual	O More often	O Less often
Time to maturity	O As usual	O Accelerated	O Delayed
Yield	O As usual	O Higher yield	O Lower yield
Occurrence of volunteers from previous year planting (if relevant)	O As usual	O More often	O Less often

If any of the answers above is different from «As usual», please specify:
____
____
____
____

Please detail any additional unusual observations regarding the YieldGard® maize maize during its growth:____
____
____

3.3 Characterise the YieldGard® maize susceptibility to disease (compared to conventional maize)

Overall assessment of disease susceptibility of YieldGard® maize compared to conventional maize (fungal, viral diseases):

O As usual O More susceptible[9] O Less susceptible[4]

If the above answer is different from «As usual», please specify the difference in disease susceptibility in the list and the commentary section below:

1. *Fusarium* spp O More O Less
2. *Ustilago maydis = U. zeae* O More O Less
3. xxx O More O Less
4. xxx O More O Less
5. xxx O More O Less
6. Other: ____________________________ O More O Less

Additional comments: ____

____

____

3.4 Characterise the INSECT pest control in YieldGard® maize fields (compared to conventional maize)

On the two insects controlled by YieldGard® maize, overall efficacy of the GM varieties on:

1. European corn borer (Ostrinia nubilalis):

   O Very good O Good O Weak O Don't Know

2. Pink borer (Sesamia spp):

   O Very good O Good O Weak O Don't Know

Additional comments: ____

____

____

3.5 Characterise the YieldGard® maize susceptibility to OTHER pests susceptibility (compared to conventional maize)

Except the two insects mentioned above, overall assessment of pest susceptibility of YieldGard® maize compared to conventional maize (insect, mite, nematode pests):

O A usual O More susceptible O Less susceptible

[9] More susceptible than conventional maize or Less susceptible than conventional maize

If the above answer is different from «As usual», please specify the difference in pest susceptibility in the list and the commentary section below:

1. ________________________ O More O Less
2. ________________________ O More O Less
3. ________________________ O More O Less
4. ________________________ O More O Less
5. ________________________ O More O Less

Additional comments: ____

____

3.6 *Characterise the weed pressure in YieldGard® maize fields (compared to conventional maize)*

Overall assessment of the weed pressure in YieldGard® maize compared to conventional maize:

O As usual O More weeds O Less weeds

List the three most abundant weeds in your YieldGard® maize field:

1. ______________________________________
2. ______________________________________
3. ______________________________________

Were there any unusual observations regarding the occurrence of weeds in YieldGard® maize? ____

____

3.7 *Occurrence of wildlife in YieldGard® maize fields (compared to conventional maize)*

General impression of the occurrence of wildlife (insects, birds, and mammals) in YieldGard® maize compared to conventional maize fields:

Occurrence of insects (arthropods):

O As usual O More O Less O Do not know

If the answer above is «More» or «Less», please specify your observation:

____

Occurrence of birds:

O As usual O More O Less O Do not know

If the answer above is «More» or «Less», please specify your observation:

____

____

Occurrence of mammals:

O As usual O More O Less O Do not know

If the answer above is «More» or «Less», please specify your observation:

____

____

3.8 Feed use of YieldGard® maize (if previous year experience with this event)

Did you use the YieldGard® maize harvest for animal feed on your farm?

O Yes O No

If "Yes", please give your general impression of the performance of the animals fed YieldGard® maize compared to animals fed conventional maize.

O As usual O Different O Do not know

If the answer above is «Different», please specify your observation:

____

____

____

3.9 Any additional remarks or observations [e.g. from fields planted with event xxxx that were not selected for the survey]

____

____

____

____

____

4 Implementation of Bt-maize specific measures

4.1 Have you been informed on good agricultural practices for YieldGard® maize?

O Yes O No

Only if you answered "Yes", would you evaluate these technical sessions as:

O Very useful O Useful O Not useful

4.2 Seed

Was the seed bag labelled with accompanying specific documentation indicating that the product is genetically modified maize YieldGard® maize?

O Yes O No

Did you comply with the label recommendations on seed bags?

O Yes
O No, because:____
____
____
____

4.3 Prevention of insect resistance

Did you plant a refuge in accordance to the technical guidelines?

O Yes
O No, because the surface of YieldGard® maize planted on the farm is < 5 ha
O No, because ____
____
____
____