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Accompanying document to the

Proposal for a

COUNCIL REGULATION

amending Regulation (EC) No 1782/2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers, as regards the support scheme for cotton

Cotton Impact Assessment

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LIST OF ACRONYMS

| | |
|---------|---|
| AWU | Annual Work Unit |
| CAP | Common Agricultural Policy |
| CMO | common market organisation |
| DG AGRI | Directorate-General for Agriculture and Rural Development |
| EAGF | European Agricultural Guarantee Fund |
| EAFRD | European Agricultural Fund for Rural Development |
| EU | European Union |
| FADN | Farm Accountancy Data Network |
| FNVA | Farm Net Value Added |
| ISG | Inter-Service Steering Group |
| MS | Member States |
| NGQ | National Guaranteed Quantity |
| RD | Rural Development |
| SFP | Single Farm Payment |
| SPS | Single Payment Scheme |
| UAA | Utilised Agricultural Area |
| WTO | World Trade Organisation |

1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

Work on the impact assessment for the reform of the cotton regime was carried out by a European Commission Inter-Service Steering Group (ISG) set up by DG AGRI in October 2006. The first meeting of the ISG took place on 20 December 2006.

Thirteen Directorates-General (DGs) of the European Commission were invited to participate in the work of the Group¹, and the following DGs were actively involved in the exercise: the Secretariat-General (SG), Environment (ENV), Development (DEV), Budget (BUDG), Employment, Social Affairs and Equal Opportunities (EMPL), Economic and Financial Affairs (ECFIN), Trade (TRADE) and the European Anti-Fraud Office (OLAF).

The work on the impact assessment was carried out between October 2006 and October 2007, during which the ISG held a number of meetings². First, the current situation of the cotton sector was analysed in depth and the main problems arising from the cotton regime were assessed. The group then identified the objectives of the cotton regime and alternative policy options to achieve those objectives. Finally, the economic, environmental and social impacts of the policy options were carefully evaluated.

In conducting this Impact Assessment account has been taken of ideas and opinions put forward by stakeholders in the course of the consultations outlined below³.

In addition to regular monthly meetings with MS representatives in the framework of the Management Committee for Natural Fibres, as well as meetings with the Cotton Advisory Group on 2 June 2006, 27 October 2006, 27 April 2007 and 3 July 2007, the Commission services organised a series of consultations.

Workshops on specific issues were organised in cooperation with Commission DGs:

- on 25 May 2007, DG DEV organised a meeting with development NGOs, to present possible scenarios for the future reform. Questions raised by NGOs included the implications of the reform for the WTO negotiations and the consequences of different policy measures for farmers and ginners;
- on 21 June 2007, DG EMPL organised a meeting on cotton, during which workers' representatives highlighted the main concerns of employees in the sector;
- on 10 July 2007, DG AGRI organised a stakeholder meeting on environmental issues related to cotton production, discussing questions such as water availability, fertiliser and pesticide use, rotation systems and agri-environmental support.

For the purpose of the Impact Assessment two independent studies were commissioned from external consultants. On 2 February 2007 a contract was signed with *LMC International Ltd* (LMC) to prepare a report on the socio-economic situation of the cotton sector; the final report was submitted on 2 July 2007. The contract for the second study, concerning the environmental aspects of cotton production, was signed with *Alliance Environnement* (regrouping the *Institute for European Environmental Policy* and *Oréade Brèche*) on 20 February 2007; the final report was submitted on 27 July 2007.

¹ See Annex 1.

² Idem.

³ Full details of the stakeholder consultations are given in Annex 2.

On 17 April 2007, a delegation from the Junta de Andalucía presented their position on the future reform of cotton market to members of the ISG. On 8 June 2007, Professor Stelios Rozakis from the University of Athens presented the results of a quantitative analysis of Greek cotton production.

On 8 May 2007, in order to gather contributions from a broad range of individuals and organisations with an interest in the EU cotton policy, DG AGRI launched an Internet consultation. This included various types of questions, aimed at a general public as well as at a more specialised, expert community. The results of this consultation⁴ have been treated as a supplementary source of information.

A number of submissions on the cotton reform were received directly from stakeholders. These included, in particular, Spanish associations of ginners, farmers and cooperatives⁵ and the Greek Panhellenic Union of Cotton Ginners and Exporters.

On 7 September 2007 the Impact Assessment Board issued its opinion (see Annex 12) on the draft text of this document. In order to take account of their remarks a number of modifications were introduced.

2. PROBLEM DEFINITION

When Greece acceded to the EC, they requested that support should be given for cotton, as this had an important role in the agricultural economy of some regions. As cotton was not considered an agricultural product (and therefore not listed in Annex I of the EC Treaty), a specific support regime for cotton was written into the Greek Treaty of Accession as Protocol No 4. This was later extended to Spain and Portugal when they joined the EC.

As the support scheme for cotton was so favourable, it led to a large increase in cotton areas, even in regions where cotton had previously not been grown. Since 1980, while the CAP gradually evolved towards a market-orientated approach, based on income support, the cotton support regime remained largely unchanged.

For this reason, in 2004 the Commission decided to review the regime and align it with the principles of the new CAP, while respecting the Protocol. As a result, aid was partly (65%) decoupled. A coupled part (35%) was maintained to respect the provisions of the Accession Protocol. However, the 2004 cotton reform, with the ratio 35% – 65%, was contested by Spain and the Court of Justice annulled it.

The central issue addressed by this Impact Assessment is the need to find an appropriate balance between respect for the Protocols⁶ agreed when the cotton-producing Member States acceded to the EC and the progressive move to decoupled support initiated by the reform of the common agricultural policy in 2003. In doing so, the Impact Assessment will answer the points raised by the Court of Justice in its ruling.

⁴ See Annex 2 and the full results, provided in a specific report.

⁵ A joint position paper from ADESUR AEDA, COAG and CCAE, transmitted to the Commission on 22 June 2007 and a separate submission from ASAJA dated 27 July 2007.

⁶ Protocol 4 on cotton annexed to the Act of Accession of Greece, OJ L 291 of 19.11.1979 p. 174; extended to Spain and Portugal by Protocol No 14 annexed to the Act of Accession (OJ L 302, 15.11.1985, p. 436). For Bulgaria, although support for cotton is included in the SAPS regime currently applied, Article 110a of Regulation (EC) No 1782/2003 provides for a base area and amount for the crop-specific payment for Bulgaria.

The EU Cotton Sector

Cotton Production

Until 2006, cotton was produced in four Member States - Greece, Spain, Portugal and Bulgaria.

The EU-15 cotton area grew steadily until the end of the 1990s, peaking at almost 540 000 hectares in 1999/2000. Since then it has stabilised at 450 000 hectares.

Greece is the largest producer in the Community (381 586 ha in 2006) with 79 700 cotton farmers, mainly in three regions (Makedonia, Thessalia and Sterea Ellada). Cotton accounts for 9.1% of final Greek agricultural output. Most farmers grow between 2 and 5 hectares of cotton.

Cotton is grown on good arable land. Over 99% of Greek cotton uses irrigation.

In **Spain** cotton is grown mainly in Andalucia by about 9 500 farmers. Within Andalucia cotton accounts for 4.9% of final agricultural output. In 2006 aid was claimed for 62 839 ha.

Most Spanish farmers grow less than 10 hectares of cotton, but 5% cultivate over 50 hectares. Over 95% is grown with the help of irrigation.

The main competing crops are cereals, particularly wheat and maize; also sunflowers.

In both countries, cotton mainly uses family labour and requires slightly more labour per hectare than the alternative crops.

Cotton Ginning

Given the relatively high cost of transport, the ginning industry is only interested in locally grown unginning cotton. In both Greece and Spain, ginners are specialised and derive most of their income from ginning. In Greece, some ginners also crush cottonseed to produce oil and meal.

73 ginning mills were active in Greece in 2005/06; this suggests that total employment in the sector is around 3 000 workers (730 full time and 2 200 part time).

27 ginning mills were active in Spain in 2005/06. Total employment in the Spanish ginning industry is estimated at 1 350 jobs – 290 permanent and 1 060 seasonal employees.

2.1. The cotton regime⁷ and its reform

The first common cotton regime was set up with the accession of Greece to the EC in 1980, then extended to Spain and Portugal in 1986 and, most recently, to Bulgaria. Protocols annexed to the Accession Treaties state, *inter alia*, that the Community shall ensure the support of cotton production in the regions where it is important for the agricultural economy, by the "*grant of an aid to production*".

⁷ A presentation of the main features of the EU's economic policy for cotton is provided in Annex 4.

Originally, the regime was based on a "deficiency payment", comprising an aid per tonne of unginning cotton, granted to processors who paid a minimum price to the farmers that supplied them. The aid and minimum price were fixed periodically on the basis of the difference between an internal target price, "the guide price", and the world market price.

Since accession, Greece has experienced a 165% increase in its cotton area, while cotton production more than tripled. Spain has seen a relatively smaller increase, with a 45% growth in cotton area and a 62% increase in cotton production. So it is clear that the regime did more than ensure the continuation of cotton production; it prompted a substantial expansion of the cotton area, cotton production and the processing activity.

The regime was complex to manage and control. More importantly, it was out-of-line with the ongoing process of CAP reform, whose main guiding principle is to move away from price and production support to income support.

In April 2004, in order to bring it in line with other sectors, the Council adopted a new regime for cotton, based on a decoupled income aid and a crop specific (area) payment. The total aid of € 803 million for cotton growers was split into four elements:

- 65% for the decoupled payment (approximately €562 million)
- 35% for the crop specific area payment (approximately €275 million)
- €22 million for the rural development of the regions concerned
- €4 million for the creation of Inter-branch Organisations.

Payments are no longer made via the ginning industry but directly to the farmer. The coupled payment is subject to a base area and payable on the opening of the boll, rather than linked to a selling obligation.

Member States can also decide to deduct up to 10% of the decoupled payment and redistribute it as an additional crop-specific payment for cotton that meets a minimum quality standard⁸.

2.2. The annulment of the 2004 reform

On 7 September 2006, the European Court of Justice annulled the 2004 cotton reform⁹, following a legal challenge made by the Spanish Government.

In its ruling, the Court did not question the nature of the reform, but it did query the way it was prepared and adopted. As the Court considered that the Council had failed to take into account all the relevant factors and circumstances when deciding the reform, the Court annulled it. In particular, it ruled that the Council had not given sufficient consideration either to the labour costs linked to cotton growing or to the viability of the ginning industry following the reform. The Court ruled that the new regime should continue to apply until a new regulation was adopted, "within a reasonable time".

⁸ Article 69 of Regulation (EC) No 1782/2003.

⁹ Established by Chapter 10a of Title IV of Council Regulation (EC) No 1782/2003, amended by Article 1(20) of Council Regulation (EC) No 864/2004.

The ruling of the European Court of Justice was based on the infringement of the proportionality principle, in that:

- the EC failed to carry out an impact study;
- the EC failed to consider family labour costs in the evaluation and decision process¹⁰;
- The EC failed to take into consideration the impact of the new regime on the ginning industry, which, although not included in the Protocol, is directly linked to the business of cotton production.

Consequently, particular attention was paid to the latter two questions in the course of the impact analysis.

2.3. Considerations for the new regime

The objective of the Impact Assessment is to allow a coherent decision to be made for the future of the cotton regime. This must strike a fair balance between the Community's obligations under the Accession Protocols – to support cotton production in the regions where it is important for the agricultural economy, by granting production aid – and the need to integrate cotton into the CAP reform process, which is oriented towards decoupled payments that support farm incomes rather than any particular production.

Any change in the cotton regime will have an impact on cotton farmers, ginners and labourers (including seasonal labour).

As cotton production is concentrated in a few regions of the EU, the social and economic impact of the reform are limited to those areas.

Given that EU cotton production is very small, its global impact is very limited.

¹⁰ The Spanish government's contention was that, in calculating the viability of cotton production, on the revenue side only the coupled portion of the aid should be considered and, in the calculation of production costs, direct labour costs should be included.

Table 1: The cotton economy of the European Union

| | Year | Volume/Value | Trend ↓ → ↑ |
|---|-------------|--|-----------------------|
| Cotton production as % of the value of EU agriculture output | 2006 | 0.15% | |
| EU cotton production of which Greece | 2006 | 1.20 mio tonnes unginning cotton | ↓ |
| Spain | | 1.05 mio tonnes unginning cotton | ↓ |
| as % of world production | | 0.15 mio tonnes unginning cotton 2% | ↓ |
| Apparent consumption | 2006 | 0.52 mio tonnes | ↓ |
| Trade | 2006* | | |
| imported into EU | | 0.42 mio tonnes of ginned cotton | → |
| exported by EU | | 0.29 mio tonnes of ginned cotton | ↓ |
| World average price (CIF North Europe) | 2006 | 1050 €/tonne of ginned cotton | |
| Area: | 2006 | 445 000 ha | |
| Greece | 2006 | 382 000 ha | ↑ |
| Spain | 2006 | 63 000 ha | ↓ |
| Portugal | 2005 | 400 ha | ↓ |
| Bulgaria | 2006 | 2 000 ha | ↓ |
| as % of total UAA of EU | | 0.00% | ↓ |
| as % of world cotton area | | 1.3% | |
| Number of holdings | | | |
| Greece | 2005 | 79 700 farms | |
| Spain | 2005 | 9 500 farms | |
| Average yield | | 3.14 tonne/ha unginning cotton | → |
| Greece | 2001–2006 | 3.01 tonne/ha unginning cotton | → |
| Spain | 2001–2006 | 3.66 tonne/ha unginning cotton | → |
| Average cotton area per farm | | | |
| Greece | 2005/2006 | 4.5 ha | |
| Spain | 2005/2006 | 11 ha | |
| Number of ginners | | | |
| Greece | 2005/2006 | 73 | ↓ |
| Spain | 2005/2006 | 27 | ↓ |
| Turnover of ginning sector | 2006 | Greece – € 412 million Spain – € 62 million | ↓ ↓ |
| EAGGF budget for cotton | 2000–2002 | € 803 million | → |

N.B. the conversion ratio of unginning to ginned cotton is 0.3.

Source: DG AGRI.

3. GENERAL OBJECTIVES OF THE COTTON REGIME

3.1. Origins of the cotton regime

As cotton was not produced by the founding Member States, it was not included in Annex 1 to the Treaty of Rome and so did not form part of the original CAP.

A support regime for cotton production was introduced when Greece acceded to the EC in 1980. It was extended to Spain and Portugal when they joined the EC in 1986 and, recently, to Bulgaria.

Recognising the great importance that cotton production represents for the economies concerned, the Protocol annexed to the respective Acts of Accession includes the following provisions:

1. *This Protocol concerns cotton [...]*
2. *A system shall be introduced in the Community particularly to:*
 - *support the production of cotton in regions of the Community where it is important for the agricultural economy,*
 - *permit the producers concerned to earn a fair income,*
3. *The system referred to in paragraph 2 shall include the grant of an aid to production.*

In the context of the "Agenda 2000" reform of the CAP in March 1999, the Council of the European Union decided, *inter alia*, to maintain the cotton support system, but gave the Council the possibility to make adjustments to it. Council Regulation (EC) No 1050/2001 states, in Article 1(1):

"The Council, acting by a qualified majority on a proposal from the Commission and after consulting the European Parliament, shall decide on the adjustments necessary to the system introduced pursuant to this Protocol and shall adopt the general rules necessary for implementing the provisions of this Protocol."

The Council emphasised that the system should include the granting of an aid to production.

3.2. CAP reform

In recent years the CAP has undergone a fundamental reform that reflects the general and specific objectives of Community policy, including the Lisbon Strategy and the Sustainable Development Strategy.

Agenda 2000 aimed at increasing competitiveness, food safety and quality, stabilising farm incomes, integrating environmental concerns into agricultural policy, developing the vitality of rural areas, simplification and strengthening decentralisation.

Subsequently, the 2003 CAP reform aimed to contribute to sustainable development by increasing the CAP's emphasis on healthy, high quality products, environmentally sustainable production methods, including organic production, renewable raw materials and the protection of biodiversity.

This was the context for the reform of the cotton regime, which was adopted by the Council in April 2004 and came into force in January 2006.

3.3. The objectives of the reformed cotton regime

In accordance with the EU's overall agricultural policy approach, the reform should encourage a competitive, sustainable and market-driven cotton sector, while safeguarding the Protocol commitments. With this perspective, the different reform options have been assessed on the basis of the following criteria:

- The continuation of agricultural activity as a component of the sustainable development of the cotton-producing regions
- The compatibility of the support options for cotton producers with the principles of the reformed CAP
- The compatibility of the support options for cotton producers with the EU's WTO commitments and the limitation of any negative impact on developing countries
- The stability and control of the EU budget
- The competitiveness and market orientation of the cotton sector
- The reduction of the impact of cotton production on the environment
- Simplification of the management of the support regime for cotton producers

4. POLICY OPTIONS

Taking into account the ruling of the Court of Justice, the aims of the CAP reform and the specific objectives of the cotton regime, and following extensive consultation with interested stakeholders, three options will be assessed:

- **Production Aid Option (Pre-Reform scenario)**
- **Mainly Decoupled Option (2004 Reform scenario)**
- **Full Decoupling Option.**

These three options can be seen as representing three distinct policy choices. Any alternatives or variations will fall into one of these "families" of option.

4.1. Production Aid Option (Pre-Reform scenario)

This option returns to the regime in place before the 2004 reform. It provides for a "deficiency" payment to be made to the processor (ginner) on condition that a minimum price is paid to cotton growers for the unginned cotton. The deficiency payment represents the difference between an institutional price (the "guide price", previously set by the Council) and the world market price, in order to protect farmers from world price fluctuations. This allowed ginners to market cotton at world market prices.

The aid was subject to a ceiling at Member State level, the National Guaranteed Quantity (NGQ) which, if it was overshot, triggered a proportionate reduction in the deficiency payment.

Variants on this option would be technically feasible, including the proposal by the Spanish cotton industry. This argues for a 20% decoupling of the payment, “with the remaining 80% linked to the final production of cotton [...] with the obligation to sow, harvest and deliver to the ginning industry”. These central features would be supplemented by a quality premium, recognition of the role of the inter-professional organisations and a restructuring scheme for the ginning industry, as part of the cotton regime (i.e. not under rural development).

While the pre-reform regime was not subject to cross-compliance, cotton production aids were linked to the observation of certain agronomic and environmental conditions.

Moreover, as most but not all cotton producers are beneficiaries of the Single Farm Payment (SFP) due to their other farming activities, most but not all cotton producers are subject to cross-compliance, since SFP beneficiaries are subject to such requirements on the whole farm.

4.2. Mainly Decoupled Option (2004 Reform scenario)

This option continues the regime put in place by the Council in April 2004, as part of the CAP reform. It has been in force since 1 January 2006.

The previous "deficiency" payment is replaced by:

- a decoupled payment,
- a crop specific area payment limited to a MS base area,
- a supplementary aid, depending on the region.

Of the national envelopes for cotton, 65% is paid to cotton farmers as a decoupled aid.

To meet the objective of supporting the production of cotton in the regions concerned, as provided for in the Accession Protocols, 35% of the national envelope is paid to cotton farmers as a cotton-specific area payment. This specific area aid for cotton is limited to maximum areas defined at national level.

Both the coupled and decoupled payments are subject to cross-compliance. In addition, for environmental and quality reasons, the land on which cotton can be grown and the varieties that can be sown must be authorised by the Member States.

The remainder of the Community budget for the cotton sector is allocated to financing rural development measures in the regions affected by the reform. These measures may include restructuring of the industry and marketing.

Under this regime, Member States also have the possibility¹¹ of using part of the decoupled aid to put in place measures that target specific goals.

In 2006 only Spain has used this possibility, paying a supplementary aid for quality characteristics, such as maximum impurity of 5%, humidity below 12% and yield higher than a locally fixed threshold.

While not specifically part of the cotton regime, in 2006 cotton producers in Spain and one Greek cotton-producing region had access to agri-environmental programmes. These permit

¹¹ Article 69 of Regulation (EC) No 1782/2003.

farmers to benefit from additional payments, on condition that they significantly reduce their chemical inputs (particularly the use of plastics and nitrates) and apply frequent rotation with non-irrigated crops.

For this option, the question of the advisable level of coupling was in particular addressed.

While the decoupling rate agreed by the Council in 2004 has been taken as the starting point, consideration was given to the impact of different levels of coupling, in particular whether a higher or lower level should be retained

A further issue that is addressed is the question of boll opening. Under the 2004 reform, the crop-specific payment is subject to the cotton being kept until the stage of boll opening. The impact assessment looks at the possible alternative of introducing an obligation to harvest, together with a minimum quality standard.

4.3. Full Decoupling Option

This option contemplates the full decoupling of all payments to cotton producers, including the current crop-specific area payment. If they choose to continue growing cotton, farmers are no longer subject to area or variety restrictions. They can also choose to grow other crops without financial penalty.

The cross-compliance and other horizontal requirements applying to other decoupled payments would apply.

Under this option a more or less substantial part of the previously coupled aid could be earmarked for rural development measures in the regions affected by the reform. These could include restructuring of the industry, diversification and innovation measures.

ASAJA, which represents young farmers in the region, would support this option¹², although their submission is not precise on the share of funding they would want allocated to rural development measures.

5. ANALYSIS OF IMPACTS

5.1. Economic impact

5.1.1. Methodological considerations

The farmer's decision to abandon cotton will not be based simply on the profitability (or not) of growing cotton, but on the greater (or lower) profitability of growing cotton compared with that of the alternative crops.

To ascertain the relative profitability of cotton and the most likely alternatives, the Gross Margin over Variable Costs was used, defined as Output (revenue, coupled aid included) minus Intermediate Consumption & Wages¹³.

¹² Submission from ASAJA to the Commission dated 27 July 2007.

¹³ For details see schema in Annex 6 and footnote 10 in section 2.2.

An analysis was made for each of the 3 options, comparing the Gross Margin of cotton grown using different production methods (traditional method, low input-low yield, under agri-environmental schemes) followed by a comparison with the Gross Margin of the alternative crops.

In order to calculate the Gross Margin FADN data was used.

The FADN model allows the allocation of working time and production costs between cotton and other crops. While the results obtained provide a reliable indication, it should be borne in mind that the economic behaviour of a farmer is equally determined by other factors such as age, the size of the farm, its structure, access to capital, equipment and availability of water, etc.

For this reason, the quantitative analysis was completed by a qualitative assessment carried out in the context of the external LMC study, based on questionnaires.

As the level of coupled aid influences the Gross Margin, in the specific case of Option 2 a sensitivity analysis was carried out showing the effect on cotton area and production of different levels of coupled aid (e.g. 30%, 25%, etc). This gives an indication of the the optimal coupling rate.

As Gross Margin over Variable Costs does not take into consideration the remuneration of family labour, this first step is complemented by an analysis of the total income of the agricultural holding. The cost of the family (unpaid) labour is estimated by using Family Farm Income¹⁴, which represents the remuneration of the family (unpaid) labour. It was analysed for each option.

The farmer's decision is a complex process that takes into account the totality of the farm's production system. The Gross Margin analysis alone cannot reflect this composite reality. Family Farm Income, as an indicator of the overall farm income, better captures the whole economic logic of the farm and gives an explicit answer to the issue raised by the Court of Justice in its ruling.

The analysis made shows that the higher the Gross Margin, the higher the Family Farm Income. In addition, this economic relationship was verified statistically.

As concerns cotton, the key factors considered by farmers are similar in Spain and Greece: the coupled payment, agri-environmental and supplementary payments when available, and the price paid for cotton. The availability or not of agri-environmental payments has a significant role in influencing the farmer's planting decision. Although not part of the cotton regime, agri-environmental payments have therefore been taken into account in this analysis.

The crops considered as possible alternatives to cotton are wheat (soft and durum), maize and, in Spain, sunflowers.

Although present in cotton-growing regions, fruit and vegetables and sugar beet are not viewed as major viable alternatives. A switch to fruit and vegetables would require considerable new expertise and long-term investment. The two most likely competitors are citrus fruit and tomatoes for industry. Low prices for citrus and the quota regime for sugar beet would seem to preclude major investments in these sectors.

¹⁴ For more details see schema in Annex 6.

Compared with cotton, maize would require more water and a change in irrigation system¹⁵. While it may represent an alternative, it would have to be combined with other crops such as non-irrigated cereals.

This economic analysis at farm level is completed by an analysis of the profitability of the ginning industry under each option.

In this way, we have taken into account the ruling of the Court of Justice as concerns the family labour costs in the farmer's decision-making process, and the impact of the options on the ginning industry.

5.1.2. *Economic assessment of the Production Aid Option (Option 1)*

5.1.2.1. Farm level

Under this option, the gross margin generated by cotton production is extremely high, as most – if not all – of the support is coupled to production.

Cotton would be far more profitable than growing any alternative crop: the gross margin and income from cotton would be considerably higher than for maize, durum wheat, or sunflower in Spain (Table 2).

Spanish farmers benefit from a partial coupling in the cereals sector and, for durum wheat, a supplementary premium (71.3 €/ha) on top of the quality premium (40€/ha).

In Greece, all direct payments in the grain sector have been fully decoupled. The only additional premium is the quality premium for durum wheat (40 €/ha).

Therefore, while this high incentive to produce cotton responds well to the objective of ensuring the continuation of cotton production, a coupled payment regime for cotton would represent an anomaly, as aid for the competing crops is now mostly decoupled.

In this context, coupled support would have major implications for cotton farmers and seriously hamper mobility in the sector. It would act as a disincentive to move out of the sector: any switch from cotton to grain would result in an income loss of over € 1 500 per ha in Spain (Table 2) and from € 700–1 000 per ha in Greece (Tables 3 and 4).

¹⁵ In Greece sprinkler irrigation is used more frequently than in Spain by cotton growers. However, in Greece the use of irrigation over the past five years was more seriously affected by water availability.

Table 2: Spain – Gross margin under a Deficiency Payment System¹⁶ (€ per ha)

| | Cotton | Durum Wheat | Maize | Sunflower |
|--|--------|-------------|-------|-----------|
| Revenue | | | | |
| Price per tonne (€/t) | 908 | 159 | 114 | 233 |
| Yield (t/ha, unginned) | 4.1 | 3.4 | 12.3 | 2.0 |
| Coupled Payment (€/ha) | | 59.9 | 115.0 | 59.9 |
| Durum Wheat zone supplement (€/ha) | | 71.3 | | |
| Quality premium (€/ha) | | 40.0 | | |
| Total Revenue | 3,751 | 711 | 1,512 | 514 |
| Variable Costs (excluding Family Labour) | | | | |
| | 1,733 | 346 | 1,185 | 317 |
| Gross Margin | | | | |
| | 2,018 | 365 | 327 | 197 |
| Unpaid Labour (hrs) | 182 | 134 | 103 | 60 |
| Return to unpaid labour (€/hour) | 11.1 | 2.7 | 3.2 | 3.3 |

Table 3: Makedonia – Gross margin under a Deficiency Payment System (€ per ha)

| | Cotton | Durum Wheat | Maize |
|--|--------|-------------|-------|
| Revenue | | | |
| Price per tonne (€/t) | 839 | 149 | 147 |
| Yield (t/ha, unginned) | 3.1 | 2.5 | 11.8 |
| Coupled Payment (€/ha) | | 0.0 | 0.0 |
| Durum Wheat zone supplement (€/ha) | | 0.0 | |
| Quality premium (€/ha) | | 40.0 | |
| Total Revenue | 2,639 | 413 | 1,739 |
| Variable Costs (excluding Family Labour) | | | |
| | 1,169 | 381 | 1,013 |
| Gross Margin | | | |
| | 1,470 | 31 | 726 |
| Unpaid Labour (hrs) | 195 | 79 | 194 |
| Return to unpaid labour (€/hour) | 7.6 | 0.4 | 3.7 |

Table 4: Thessalia – Gross margin under a Deficiency Payment System (€ per ha)

| | Cotton | Durum Wheat | Maize |
|--|--------|-------------|-------|
| Revenue | | | |
| Price per tonne (€/t) | 867 | 149 | 147 |
| Yield (t/ha, unginned) | 3.6 | 3.9 | 11.6 |
| Coupled Payment (€/ha) | | 0.0 | 0.0 |
| Durum Wheat zone supplement (€/ha) | | 0.0 | |
| Quality premium (€/ha) | | 40.0 | |
| Total Revenue | 3,164 | 621 | 1,703 |
| Variable Costs (excluding Family Labour) | | | |
| | 1,177 | 429 | 1,049 |
| Gross Margin | | | |
| | 1,987 | 191 | 653 |
| Unpaid Labour (hrs) | 220 | 98 | 194 |
| Return to unpaid labour (€/hour) | 9.0 | 2.0 | 3.4 |

NB: Return to unpaid labour covers the remuneration of family (unpaid) labour, also depreciation, rent and the cost of capital

¹⁶ Tables 2, 3 and 4 are based on FADN data and LMC calculations.

As a result of this disproportionately high incentive to produce cotton, the National Guaranteed Quantities (NGQ) would be likely to overshoot and the aid per tonne would be reduced, significantly reducing the gross margin of cotton producers. In the longer term, this would, notably, harm the most vulnerable farmers.

Under this option, the main source of income instability would derive from yield variations, in particular linked to weather conditions.

5.1.2.2. Ginning industry

On the basis of the US average length of season¹⁷ capacity utilisation is estimated at about 70% in Greece and 41% in Spain. These levels show that, even before the implementation of the 2004 reform, the industry was operating with considerable over-capacity. This was built up in the earlier context of higher world prices, good market prospects (in particular due to expanding demand from the Turkish textile industry).

Under this option it could be expected that cotton supply and capacity utilisation would not be significantly lower than 2000–2005 average levels. Any increase in production prompted by this option would only improve capacity utilisation and reduce costs per unit of processed cotton.

In addition, if this option includes the aid (€53/t) paid to ginners for administrative expenses, as under the pre-2004 regime, ginners would be guaranteed an additional source of revenue.

Overall, this option would discourage any reduction in processing capacity and restructuring of the ginning industry.

On the basis of the average ginning capacity of each Member State and the 2005/2006 unginning cotton production, the optimal number of mills would be 50 in Greece (against 73 at present) and 11 in Spain (against 27 at present).

5.1.3. *Economic assessment of the Mainly Decoupled Option (Option 2)*

5.1.3.1. Farm level

This option, which corresponds to the regime in place since 2006, led in 2006 to a drop in gross margins for cotton producers. The effect was different in Spain and Greece. In Spain, the cotton area fell back to pre-accession levels, while yields dropped by about one third. In Greece, which has much lower production costs than Spain, the area planted to cotton increased slightly and yields fell by only 20%. In Spain the reductions seem mainly due to the effect of regime change, while in Greece the adverse weather conditions seem to have been the predominant factor in the lower yield.

Under this option, cotton producers can choose whether to continue their traditional “high-input, high-yield” production system or to move to a “low-input, low-yield” approach. In addition, they may choose to participate in agri-environmental programmes where these are available, and so comply with stricter requirements on inputs and agronomic practices.

In Spain, as shown in Table 5, the “low-input, low-yield” production system generates a higher gross margin than the traditional “intensive” production method. This explains the

¹⁷ US parameters: 81 day season based on two shifts (average operating day 17.5 hours).

general fall in yields seen in Spain in 2006. Farmers taking part in agri- environmental programmes benefited from ever higher gross margins. None of the major alternative crops achieve comparable results.

It is worth emphasising that these results are achieved while, in Spain only, sunflower and competing cereals still benefit from a certain percentage of coupled payment, which has to be included in the gross margin calculation. The possible removal of this residual coupled payment would further increase the relative competitiveness of cotton, by decreasing the gross margin of the alternative cereals.

For Greece, a separate micro-analysis was made for the two cotton-producing regions (see Tables 6 and 7) to reflect the policy variations in each.

Gross margin and return to unpaid labour from cotton are higher than those for durum wheat.

In contrast, cotton is apparently more profitable than maize only when agri-environmental schemes are available. Where agri-environmental payments are not made and there are no resource constraints, a shift to maize might be expected. However, a significant shift is not likely, at least in the short term; maize requires, in particular, different skills, higher water volumes and different irrigation equipment.

A distinction can be drawn between older farmers, who are unlikely to invest in the new know-how needed to grow maize, or make investments in planting and harvesting machinery, or switching from drip to sprinkler irrigation. Younger farmers with good farm structures and the possibility to invest are more likely to make the switch from cotton production to maize. As maize requires more water than cotton, a long-term switch to maize alone is unlikely; where water resources permit it, farmers would aim to maximize the area planted to maize and supplement this with durum wheat.

In Greece, agri-environmental measures have been implemented mainly in Thessalia; about half the local cotton producers participated. Despite lower yields and a 25% set aside obligation, cotton recorded higher gross margins than maize in this context. It can be concluded that, particularly where agri-environmental programmes are available, cotton remains the most profitable crop¹⁸. In Spain, even when no agri-environmental payments are made, cotton is more profitable than the alternatives. This position would be reinforced by the removal of residual coupled payments to the alternative cereal crops. In Greece, there is a greater potential for the cotton area to fall in the long term and be replaced by maize and, to a lesser extent, durum wheat. However, it is unlikely that the area planted to cotton would fall – in either country – far below the accession level.

The “Mainly Decoupled” option gives cotton producers the freedom to remain in the cotton sector or choose alternatives, while keeping their decoupled payment entitlements.

¹⁸ The LMC survey confirms that, in the farmers’ view, cotton remains the most profitable crop.

Table 5: Spain – returns following reform of cotton regime (€ per ha)

| | Cotton (trad) Supplementary payment | Cotton (agri- env payments) Supplementary payment | Cotton (no agri-env payments) Supplementary payment | Cotton (low input- low yield) | Durum Wheat | Maize | Sunflower |
|--|---|--|---|-------------------------------------|----------------|-------|-----------|
| Price per tonne (€/t) | 244 | 244 | 244 | 244 | 139 | 129 | 233.0 |
| Yield (t/ha, unginned) | 4.1 | 2.6 | 2.6 | 1.0 | 3.4 | 12.3 | 2.2 |
| Coupled Payment (€/ha) | 1,039.0 | 1,039.0 | 1,039.0 | 1,039.0 | 59.9 | 115.0 | 59.9 |
| Agri environmental (€/ha) Supplementary Payment (€/ha) | 191.0 | 350.0 191.0 | 191.0 | | | | |
| Durum Wheat zone supplement (€/ha) | | | | | 71.3 | | |
| Quality premium (€/ha) | | | | | 40.0 | | |
| Total Revenue | 2,238 | 2,206 | 1,856 | 1,283 | 643 | 1,695 | 565 |
| Variable Cost (excluding Family Labour) | 1,733 | 1,328 | 1,328 | 833 | 346 | 1,185 | 317 |
| Gross Margin | 505 | 878 | 528 | 450 | 297 | 510 | 248 |
| Unpaid Labour (hrs) | 182 | 153 | 153 | 127 | 134 | 103 | 60 |
| Return to unpaid labour (€/hour) | 2.8 | 5.7 | 3.4 | 3.5 | 2.2 | 4.9 | 4.1 |

Source: LMC.

Notes: Cereal prices are based on average prices for the past three years. This is to reflect farmers' price expectations. Costs for "low-input low-yield" are based on the assumption that input costs fall by 75%, irrigation costs by 60%, and other costs by 50%; labour costs fall by 25% from the 2005 average.

Table 6: Thessalia – returns following reform of cotton regime (€ per ha)

| | Cotton | Cotton (agri-environ payments) | Durum Wheat | Maize |
|---|--------|-----------------------------------|-------------|-------|
| Price per tonne (€/t) | 309 | 309 | 147 | 143 |
| Yield (t/ha, unginned) | 3.4 | 2.5 | 3.9 | 11.6 |
| Coupled Payment (€/ha) | 528.6 | 528.6 | 0.0 | 0.0 |
| Durum Wheat zone supplement (€/ha) | | | 0.0 | |
| Quality premium (€/ha) | | | 40.0 | |
| Agri-environmental payment | | 542.0 | | |
| Total Revenue | 1,567 | 1,843 | 611 | 1,655 |
| Variable Cost (excluding Family Labour) | 1,177 | 1,127 | 429 | 1,049 |
| Gross Margin | 390 | 716 | 182 | 605 |
| Unpaid Labour (hrs) | 220 | 230 | 98 | 194 |
| Return to unpaid labour (€/hour) | 1.8 | 3.1 | 1.9 | 3.1 |

Source: LMC

Table 7: Makedonia – returns following reform of cotton regime (€ per ha)

| | Cotton (normal yields) | Cotton (2006) | Durum Wheat | Maize |
|---|---------------------------|---------------|-------------|-------|
| Price per tonne (€/t) | 317 | 317 | 147 | 143 |
| Yield (t/ha, unginning) | 3.1 | 2.5 | 2.6 | 11.8 |
| Coupled Payment (€/ha) | 528.6 | 528.6 | 0.0 | 0.0 |
| Durum Wheat zone supplement (€/ha) | | | 0.0 | |
| Quality premium (€/ha) | | | 40.0 | |
| Agro-environmental payment | | | | |
| Total Revenue | 1,511 | 1,320 | 418 | 1,690 |
| Variable Cost (excluding Family Labour) | 1,188 | 1,188 | 381 | 1,013 |
| Gross Margin | 323 | 132 | 37 | 677 |
| Unpaid Labour (hrs) | 195 | 195 | 79 | 194 |
| Return to unpaid labour (€/hour) | 1.7 | 0.7 | 0.5 | 3.5 |

Source: LMC

Notes: Cereal prices are based on average prices for the past three years. This is to reflect farmers' price expectations.

5.1.3.2. Ginning industry

As production support under the previous regime was channelled through the ginning industry, which had to pay a minimum price to cotton farmers, the turnover figures of ginners were artificially inflated by the amounts in fact transferred to the cotton growers. Under this option, as support is no longer paid through the ginning industry, a side effect is an automatic fall in the turnover of ginning plants.

The main impact that the ginning industry faces under this option is the reduced supply of locally grown raw material, due to the decrease in yields. As it is not economically viable to substitute local unginning cotton by imports, this option leads to a reduction in ginning capacity utilisation.

In addition, ginners no longer receive the aid previously given for administrative costs (53€/t).

In **Spain**, the fall in local supply resulted, in 2006, in a decline of average capacity utilisation from 41% to 17% (based on US length of season averages¹⁹). 6 out of 27 ginning plants did not open and one closed permanently.

The Spanish ginning industry is made up primarily of private enterprises that tend to be highly specialised, with 80% of their income deriving from cotton ginning. Consequently, the industry is particularly exposed to policy changes.

The fall in capacity utilisation has triggered a 24% increase in variable costs and a 68% increase in fixed costs per tonne of unginning cotton. The industry has responded by making cut-backs, especially in casual and skilled labour. Permanent staff has so far been largely unaffected.

¹⁹ US parameters: 81 day season based on two shifts (average operating day 17.5 hours).

The average gross margin of the companies surveyed by LMC fell by about 27% in 2006 compared with 2005 and their profitability turned negative (Table 8). An optimal utilisation of the processing capacity would lead to a reduction of 75% (from the current 27 ginning plants to 7 or 8).

Table 8: Spanish Ginning Industry Profitability, 2004–2006
(€ per tonne, unginning cotton, unless otherwise stated)

| | 2004 | 2005 | 2006 |
|--|----------|----------|----------|
| Revenue | | | |
| Ginned cotton | 819.84 | 863.10 | 925.37 |
| Cotton seed price | 147.32 | 149.08 | 168.51 |
| Ratio cotton seed to ginned cotton | 164% | 160% | 164% |
| Cotton seed revenue | 240.93 | 239.00 | 276.64 |
| Aid to cover administration (€ per tonne ginned cotton) | 160.31 | 160.31 | . |
| Revenue | 1,221.08 | 1,262.41 | 1,202.01 |
| Costs | | | |
| Unginned Cotton Purchase (€ per tonne, unginning cotton) | 835.17 | 863.10 | 282.56 |
| Aid (€ per tonne, unginning cotton) | 607.00 | 621.00 | . |
| Net Cost of Unginned Cotton Purchase to Ginner | 228.17 | 242.10 | 282.56 |
| Processing coefficient | 33% | 33% | 33% |
| Net Cost of Unginned Cotton (€ per tonne ginned cotton) | 691.41 | 733.64 | 856.25 |
| Gross Margin | 529.67 | 528.77 | 345.76 |
| Transport (€ per tonne, ginned cotton) | 56.06 | 56.06 | . |
| Gross Margin (Excluding Transport Costs) | 473.60 | 472.71 | 345.76 |
| Production Costs (€ per tonne, ginned cotton) | 300 | 312 | 451 |
| Of which: Variable costs | 148 | 164 | 203 |
| Fixed costs | 152 | 148 | 248 |
| Profit | 173.60 | 160.71 | -105.24 |

Source: FADN and LMC calculations

In **Greece**, as the fall in cotton production was small in 2006, the effect on the ginning industry has so far been less pronounced.

The capacity utilisation of the companies surveyed by LMC fell from 70% in 2003–2005 to 56% in 2006.

The impact may have been attenuated by the fact that the ginning industry is mainly organised in multi-activity cooperatives, for which ginning represents only one third of their income. Almost 75% of the Greek cotton producers surveyed belong to these cooperatives.

The fall in capacity utilisation has triggered a 8% increase in variable costs and a 24% increase in fixed costs per tonne of unginning cotton.

Unlike in Spain, in 2006, the Greek industry's lower dependency on cotton, coupled with the modest drop in production, resulted in a reduction mainly in unskilled and casual labour.

The average gross margin of the companies surveyed by LMC was reduced by 50% in 2006 compared with 2005 and their profitability turned negative (Table 9). Optimal utilisation of the processing capacity would see the closure of over 20 of the present 73 ginning plants, with about 50 remaining operational.

Table 9: Greek Ginning Industry Profitability, 2004–2006
(€ per tonne, unginning cotton, unless otherwise stated)

| | 2004 | 2005 | 2006 |
|--|----------|----------|----------|
| Revenue | | | |
| Ginned cotton | 944.94 | 1,010.49 | 955.68 |
| Cotton seed price | 105.08 | 118.16 | 137.88 |
| Ratio cotton seed to ginned cotton | 148% | 150% | 146% |
| Cotton seed revenue | 155.20 | 177.27 | 200.83 |
| Aid to cover administration (€ per tonne ginned cotton) | 160.31 | 160.31 | . |
| Revenue | 1,260.45 | 1,348.07 | 1,156.51 |
| Costs | | | |
| Unginned Cotton Purchase (€ per tonne, unginning cotton) | 260.98 | 298.93 | 313.73 |
| Aid (€ per tonne, unginning cotton) | . | . | . |
| Net Cost of Unginned Cotton Purchase to Ginner | 260.98 | 298.93 | 313.73 |
| Processing coefficient | 34% | 34% | 34% |
| Net Cost of Unginned Cotton (€ per tonne ginned cotton) | 767.58 | 879.22 | 922.74 |
| Gross Margin | 492.87 | 468.85 | 233.78 |
| Production Costs (€ per tonne, ginned cotton) | | | |
| Of which: Variable costs | 215 | 223 | 241 |
| Fixed costs | 129 | 126 | 156 |
| Profit | 148.87 | 119.85 | -163.30 |

Note: The unginning purchase price quoted by ginners in the questionnaires did not include the aid

Source: FADN and LMC calculations

A comparison with the US ginning industry shows the EU industry has scope for improving its competitiveness²⁰. While US processing costs are around € 65 per tonne of unginning cotton, in Greece they are around € 135 per tonne and € 150 per tonne in Spain.

The EU industry has a far bigger capacity than the US, but this capacity is inadequately used. The disproportionately high capacity leads to higher costs and lower profitability. In order to extend the processing period and so cut per unit processing costs, the EU industry built large warehouses to store raw cotton. In the US the raw cotton is baled and left at the edge of the field until it is processed.

The EU ginning industry has started to react to its declining profitability by making changes to the work process. However, under this option the reduction of local supply will require the industry to substantially reduce its over-capacity, to reduce costs and so improve its profitability. The process will be more marked in Spain, which has a greater over-capacity and where there are fewer cooperatives.

The impact on the industry in both countries, although likely to be substantial, necessitating major restructuring and consolidation, is not expected to put the whole ginning industry at risk. More concretely, the reform will entail a reduction of cotton production and, as a consequence, ginning capacity will have to be reduced. Part of the ginning industry will cease activity, while the remaining part will have to increase its capacity utilisation rate, in order to improve its profitability.

²⁰ See Annex 7.

5.1.3.3. Sensitivity analysis of Partial Coupling

In this section an analysis²¹ is made of the impact on cotton production of different degrees of coupling, compared with the level decided by the Council in April 2004, namely 35%. The issue is explored on the basis of the responses given by cotton producers to the LMC survey carried out in the regions concerned.

This sensitivity analysis is based on the change in gross margin of cotton grown under different production systems, compared with alternative crops. This allows the construction of a production function that reflects the likely change in land use between cotton and competing crops, as well as expected levels of cotton production.

As shown in Table 10, with the current level of coupled payment (€ 529 per ha) the cotton area in Greece will decrease slightly (-4%) in the long term, compared with the pre-reform situation. With a 40% coupled payment (€ 605/ha) the cotton area and production would be quite similar compared with the pre-reform situation. In this case the optimal number of mills would be about 55 against 73 at present.

With a 30% coupled payment (€ 453/ha) both the cotton area and production would fall by about 18% compared with the pre-reform situation. The theoretically optimal number of ginning plants would be 43.

Reducing the coupled payment to 25% (€ 370 per ha) results in the cotton area and production falling by about 30%. In this case, the theoretically optimal number of ginning plants would be 36.

Table 10: Unginned Cotton Production as Coupled Payments Change – Greece

| Coupled Payment | Coupled Payment | Total Area | Change in area | Total Production | Change in Production | Optimal number of mills (1) |
|------------------------|------------------------|-------------------|-----------------------|-------------------------|-----------------------------|------------------------------------|
| €per ha | % | 000 ha | % | 000 tonnes | % | number |
| 794 | 53% | 494 | 32% | 1554 | 35% | 71 |
| 741 | 49% | 470 | 25% | 1473 | 28% | 67 |
| 688 | 46% | 445 | 19% | 1394 | 21% | 63 |
| 635 | 42% | 411 | 10% | 1280 | 11% | 58 |
| 605 | 40% | 387 | 3% | 1203 | 4% | 55 |
| 582 | 39% | 379 | 1% | 1178 | 2% | 53 |
| 529 | 35% | 362 | -4% | 1123 | -2% | 51 |
| 476 | 31% | 321 | -14% | 989 | -14% | 45 |
| 453 | 30% | 308 | -18% | 949 | -17% | 43 |
| 423 | 28% | 295 | -21% | 908 | -21% | 41 |
| 370 | 25% | 262 | -30% | 798 | -31% | 36 |
| 317 | 21% | 241 | -36% | 729 | -37% | 33 |
| 265 | 18% | 220 | -41% | 660 | -43% | 30 |

* Compared with 2005, last year of the pre-reform regime

(1) on the basis of the average ginning capacity = 22 000 tonnes per mill

Source: LMC estimates.

²¹ For the detailed results see the LMC study.

In Spain, as shown in Table 11, with the current level of coupled payment (€ 1 039 per ha) the long-term impact will be more marked. If the cotton area levels out at about 65 000 ha production will stabilise at around 165 000 tonnes, with the generalisation of low yields.

With a 40% coupled payment (€ 1187/ha) the change in area would be –17% and production would fall by almost 48% compared with the pre-reform situation. However, at about 185.000 tonnes, production would return to about the same level as at the time of Spain's accession to the Community in 1986. The theoretically optimal number of ginning plants would be 6, against the current 27.

With a 30% coupled payment (€890 per ha) the cotton area would fall by almost 37% and production by 61%, compared with the pre-reform situation. The theoretically optimal number of ginning plants would be 4.

Reducing the coupled payment to 25% (€727 per ha) results in the cotton area falling by 50% and production falling by 69%, compared with the pre-reform situation. In this case the optimal number of mills would be 3.

Table 11: Unginned Cotton Production as Coupled Payments Change – Spain

| Coupled Payment | Coupled Payment | Total Area | Change in area | Total Production | Change in Production | Optimal number of mills (1) |
|------------------------|------------------------|-------------------|-----------------------|-------------------------|-----------------------------|------------------------------------|
| €per ha | % | 000 ha | % | 000 tonnes | % | number |
| 1559 | 53% | 84 | -3% | 218 | -39% | 7 |
| 1455 | 49% | 82 | -5% | 213 | -41% | 7 |
| 1351 | 46% | 79 | -8% | 206 | -43% | 6 |
| 1247 | 42% | 75 | -13% | 195 | -46% | 6 |
| 1187 | 40% | 71 | -17% | 185 | -48% | 6 |
| 1143 | 39% | 70 | -19% | 182 | -49% | 6 |
| 1039 | 35% | 64 | -26% | 166 | -54% | 5 |
| 935 | 32% | 57 | -33% | 149 | -59% | 5 |
| 890 | 30% | 54 | -37% | 140 | -61% | 4 |
| 831 | 28% | 50 | -41% | 131 | -64% | 4 |
| 727 | 25% | 43 | -50% | 111 | -69% | 3 |
| 623 | 21% | 34 | -61% | 88 | -76% | 3 |
| 520 | 18% | 24 | -72% | 63 | -83% | 2 |

* Compared with 2005, last year of the pre-reform regime

(1) on the basis of the average ginning capacity = 32 000 tonnes per mill.

Source: LMC estimates

The results of the 2004 reform (35% coupled aid) at least in the short term, are somewhat different in Greece and in Spain. In Spain the area under cotton went back close to its pre-accession level (–14%), while in Greece it remained stable, mainly due to the slow structural change in Greek agriculture. This suggests that it is not necessary to set the coupled payment at 40% in order to maintain a significant level of cotton production in Spain and Greece, while a further reduction of coupled payment to 30% or 25% could trigger a big reduction in cotton production.

If the coupled aid is changed from its current level, it will be necessary to recalculate the level of decoupled aid granted to each cotton farmer. In effect, increasing the coupled aid from 35% to 40% would entail reducing the amount of decoupled aid from 65% to 60%. The funds generated by the reduction of the decoupled aid would then have to be reattributed to the coupled aid, to ensure that the overall effect of the adjustment is budget neutral.

Any adjustment of the coupling rate would inevitably be complicated from an administrative point of view, especially if it were to be put in place already in 2008, only the third year of implementation of the reformed cotton regime. Difficulties could in particular arise where payment rights have transferred from one farmer to another since 2006, as the decoupled payment is calculated on the basis of historical production levels or the number of eligible hectares farmed during the first year of implementation of the scheme.

For each of these cases modalities would have to be analysed by the Commission and implemented by the Member State, entailing a case by case treatment of each file. If possible it would seem advisable that this extra administrative burden should be avoided, at least in the short term. It could therefore be concluded that 35% appears to be the optimal level for the coupled payment.

5.1.3.4. Quality and the obligation to harvest²²

During the consultation process, various stakeholders raised the question whether the current regime is affecting the quality of cotton harvested. In this context two specific issues were raised: low yields and harvesting practices.

Currently used varieties of cotton, usually preferred for their higher yields, are highly input sensitive. For these varieties, high inputs result in good quality. The use of lowered inputs results, in particular, in shorter fibres i.e. lower quality cotton. Other lower yield varieties would offer a good quality standard with a low level of inputs.

Under the present system, the coupled payment is granted only to farmers who keep the cotton crop at least until the stage of "boll opening".

This condition may induce farmers to grow cotton only up to boll opening for the purpose of getting the coupled payment. Abandonment is likely if harvesting costs are higher than the expected revenue from the sale of the harvest. In this respect, the yield level is critical in the decision whether to harvest. Yields²³ would need to fall under 1.3 tonnes per hectare before harvesting becomes uneconomical

There is no clear evidence that the boll-opening condition affects the final quality of the harvested cotton. There are indications that harvesting practices that increase impurities in the fibres have been used more widely in 2006. However, it is inconclusive whether, and to what extent, the boll opening condition is influential in altering harvesting practices or lowering inputs.

The harvesting obligation should have little or no impact on the level of cotton production. It could simplify the control procedure, compared with the boll opening requirement. It would

²² See also Annex 9.

²³ It should be noted that no abandonment of production in the field was recorded in 2006. Assuming the lowest world price (199 €/tonne) in the last 12 years and average net harvesting costs (255 €/hectare) yields should fall below 1.3 tonne per hectare to make harvesting uneconomical. See Annex 6.

also facilitate the definition and implementation of quality standards by inter-branch organisations.

Thus, the objective of higher quality might effectively be achieved by combining a minimum quality standard with a harvesting obligation.

5.1.4. Economic assessment of the Full Decoupling Option (Option 3)

5.1.4.1. Farm level

The full decoupling of the crop-specific area payment for all crops would reduce the relative profitability of cotton. Gross margins for cotton would fall well below those for other crops and become negative in all instances, except for cotton grown under agri-environmental programmes in Thessaly (see tables 12, 13, 14).

If there is no longer any specific incentive to produce cotton, under this option there is a strong risk that cotton areas would decline dramatically, at least in the short term²⁴. In Spain it would be expected that the cotton area would fall to zero.

In Greece there would be a decline in the cotton area; only cotton grown extensively under agri-environmental programmes would be expected to continue (at present 93 000 hectares in Thessaly).

Table 12: Spain – returns under full decoupling (€ per ha)

| | Cotton (trad) | Cotton (agri-env payments) | Cotton (no agri-env payments) | Cotton (low input-low yield) | Durum Wheat | Maize | Sunflower |
|---|-----------------------|----------------------------|-------------------------------|------------------------------|-------------|-------|-----------|
| | Supplementary payment | Supplementary payment | Supplementary payment | | | | |
| Price per tonne (€/t) | 244 | 244 | 244 | 244 | 139 | 129 | 233 |
| Yield (t/ha, unginned) | 4,1 | 2,6 | 2,6 | 1 | 3,4 | 12,3 | 2,2 |
| Coupled Payment (€/ha) | 0 | 0 | 0 | 0 | 59,9 | 115,0 | 59,9 |
| Agri environmental (€/ha) | | 350 | | | | | |
| Supplementary Payment (€/ha) | 191 | 191 | 191 | | | | |
| Durum Wheat zone supplement (€/ha) | | | | | 71,3 | | |
| Quality premium (€/ha) | | | | | 40 | | |
| Total Revenue | 1.199 | 1.167 | 817 | 244 | 643 | 1.695 | 565 |
| Variable Cost (excluding Family Labour) | 1.733 | 1.328 | 1.328 | 833 | 346 | 1.185 | 317 |
| Gross Margin | -534 | -161 | -511 | -589 | 297 | 510 | 248 |
| Unpaid Labour (hrs) | 182 | 153 | 153 | 127 | 134 | 103 | 60 |
| Return to unpaid labour (€/hour) | - | - | - | - | 2,2 | 4,9 | 4,1 |

²⁴ See Annex 6.

Table 13: Thessalia – returns under full decoupling (€ per ha)

| | Cotton | Cotton (agri-environ payments) | Durum Wheat | Maize |
|---|--------|--------------------------------|-------------|-------|
| Price per tonne (€/t) | 309 | 309 | 147 | 143 |
| Yield (t/ha, unginned) | 3,4 | 2,5 | 3,9 | 11,6 |
| Coupled Payment (€/ha) | 0 | 0 | 0 | 0 |
| Durum Wheat zone supplement (€/ha) | | | 0 | |
| Quality premium (€/ha) | | | 40 | |
| Agri-environmental payment | | 542 | | |
| Total Revenue | 1.038 | 1.314 | 611 | 1.655 |
| Variable Cost (excluding Family Labour) | 1.177 | 1.127 | 429 | 1.049 |
| Gross Margin | -139 | 187 | 182 | 606 |
| Unpaid Labour (hrs) | 220 | 230 | 98 | 194 |
| Return to unpaid labour (€/hour) | - | 0,8 | 1,9 | 3,1 |
| Source: | LMC | | | |

Table 14: Makedonia – returns under full decoupling (€ per ha)

| | Cotton (normal yields) | Cotton (2006) | Durum Wheat | Maize |
|---|------------------------|---------------|-------------|-------|
| Price per tonne (€/t) | 317 | 317 | 147 | 143 |
| Yield (t/ha, unginned) | 3,1 | 2,5 | 2,6 | 11,8 |
| Coupled Payment (€/ha) | 0 | 0 | 0 | 0 |
| Durum Wheat zone supplement (€/ha) | | | 0 | |
| Quality premium (€/ha) | | | 40 | |
| Agro-environmental payment | | | | |
| Total Revenue | 982 | 791 | 418 | 1.690 |
| Variable Cost (excluding Family Labour) | 1.188 | 1.188 | 381 | 1.013 |
| Gross Margin | -206 | -397 | 37 | 677 |
| Unpaid Labour (hrs) | 195 | 195 | 79 | 194 |
| Return to unpaid labour (€/hour) | - | - | 0,5 | 3,5 |
| Source: | LMC | | | |

5.1.4.2. Ginning industry

As a consequence of the considerable loss of production, the ginning industry would no longer have access to sufficient raw cotton to remain operational. Most ginning plants would therefore be forced to close, or look for viable supply channels outside the EU.

While the full decoupling of cotton support is in line with the ongoing CAP reform process, it does not respond to the objective of supporting the production of cotton. As it also includes no specific aid for production, this option is unlikely to be in compliance with the Accession Protocols.

The provision for rural development measures made under this option would support the restructuring of the industry and its diversification into new activities.

5.1.5. Assessment of the impact of each option on Family Farm Income

Using micro-economic data from the FADN for the period 2002–2004, a calculation was made of the income generated by cotton in Greece and Spain on different types of holding: <5 ha of cotton, from 5–10 ha of cotton, >10 ha of cotton. This corresponds to the income of cotton farmers under Option 1 (Production Aid regime).

For Option 2, a simulation was made on the basis of the same FADN data for farms switching to *low-input, low-yield* production systems (cf section 5.1.3.1). The following assumptions were made as concerns cotton yield: 2.6 tonnes/ha for Spain and 3.1 tonnes/ha for Greece. However, the variable costs have not been adjusted downwards to reflect the lower-yield production system. Therefore the calculations may underestimate income.

For Option 3, total abandonment of cotton production was assumed, with a switch to maize and durum wheat.

The results for the three Options are shown in Table 15, for each size of farm and Member State. In addition, the table gives the results for Options 2 and 3 in percentage terms, compared with Option 1.

The higher Family Farm Income under the old regime (Option 1) is mainly because:

- in accordance with comments put forward by colleagues in DG ENV during the inter-service consultation, agri-environmental payments are not taken into account;
- under Option 2 farmers switching to the low-input, low-yield production system attained a lower return from the market;
- under Option 3 the coupled aid is no longer paid.

Table 15: Impact on Family Farm Income of the three Options

| Member State | Region | Cotton area | Option 1 | Option 2 | Option 3 | FFI | |
|--------------|--------------------------------|---------------|---------------|---------------|--------------|---------------|---------------|
| | | | FFI | FFI | FFI | 2/1 | 3/1 |
| | | | € per farm | € per farm | € per farm | % | % |
| Greece | Macedonia-Thraki | 1-5 | 5.784 | 5.654 | 6.006 | -2,3% | 3,8% |
| | | 5-10 | 10.306 | 9.791 | 10.673 | -5,0% | 3,6% |
| | | >=10 | 20.080 | 18.549 | 20.455 | -7,6% | 1,9% |
| | | Total | 7.835 | 7.514 | 8.096 | -4,1% | 3,3% |
| | Thessalia | 1-5 | 5.970 | 5.270 | 5.434 | -11,7% | -9,0% |
| | | 5-10 | 12.076 | 9.263 | 9.690 | -23,3% | -19,8% |
| | | >=10 | 20.246 | 13.016 | 13.967 | -35,7% | -31,0% |
| | | Total | 10.441 | 7.865 | 8.257 | -24,7% | -20,9% |
| | Total Average for Greece | 1-5 | 5.843 | 5.532 | 5.825 | -5,3% | -0,3% |
| | | 5-10 | 11.137 | 9.543 | 10.211 | -14,3% | -8,3% |
| | | >=10 | 20.179 | 15.251 | 16.588 | -24,4% | -17,8% |
| | | Total | 8.839 | 7.649 | 8.158 | -13,5% | -7,7% |
| Spain | Andalucia | 1-5 | 18.109 | 17.152 | 17.241 | -5,3% | -4,8% |
| | | 5-10 | 45.922 | 41.606 | 41.393 | -9,4% | -9,9% |
| | | >=20 | 125.061 | 115.814 | 114.843 | -7,4% | -8,2% |
| | Total Average for Spain | 46.914 | 43.427 | 43.225 | -7,4% | -7,9% | |

*Maize (80%) and durum wheat (20%)

In Greece, under Option 2, if no agri-environmental payments are available, Family Farm Income will fall by between 11.7% and 35.7% in Thessalia, while the drop will be minimal in Makedonia. Under Option 3 the fall in income is slightly lower in Thessalia and even positive for Makedonia.

In Spain, the fall in incomes is less pronounced, with an average drop of about 7.4% for Option 2 and 8% for Option 3.

In the simulation of the options results show that income changes are dramatic only for Thessalia, where agri-environmental payments play a crucial role. When these payments are excluded from the income calculation, the impact is particularly severe for large farms. On average, the income change is biggest in Greece for cotton farmers with more than 10 ha and in Spain for farmers with 5–10 ha of cotton.

As explained in the methodology (Section 5.1.1) a correlation analysis was carried out between the Gross Margin and the remuneration of the family labour (FFI). This analysis was based on the FADN sample of farms specialised in cotton production in Greece and Spain. The positive correlation was found to be high between the two economic indicators²⁵.

The results of the Gross Margin analysis are mirrored by the results of the Family Farm Income analysis. In other words, the higher the Gross Margin of a crop, the higher the income generated by the farm for the family.

While these analyses give a robust indication of the likely economic response of farmers, experience shows that their decision will not depend exclusively on the evolution of income, but will be quite sensitive to other factors such as water availability, their age and access to capital, and the simplification that might be represented by a switch to growing cereals, especially wheat. These elements are difficult to capture.

5.2. Environmental Impact²⁶

5.2.1. Environmental impact of cotton production

Cotton can be grown using different techniques and at different levels of intensity. The intensive production of cotton is associated with the following negative impacts on environmental resources, in order of importance:

- *Impact on water quantity*: almost all of the EU's cotton area is irrigated. In Greece, some groundwater sources are significantly over-used. Cotton is grown in areas where water is a limited resource. The use of different technologies has an impact on water use. In Greece more sprinklers are used than in Spain, where drip irrigation is more widespread. Neither country applies water pricing, as provided for in the Water Framework.
- *Impact on water quality*: the high input of pesticides, herbicides, plant growth inhibitors and defoliant²⁷ required for growing cotton, made worse when associated with

²⁵ See Annex 6.

²⁶ This chapter is based on studies carried out by *Alliance Environnement* and the *Institute for European Environmental Policy*, supplemented by information from Prof. Vlahos (University of Athens) and C. Giourga (University of Aegean) at the recommendation of WWF. Details of the development of input use in the Greek and Spanish cotton sectors are provided in Annex 8.

monoculture, leads to the degradation of ground and surface water quality. In addition, the high use of fertilisers leads to eutrophication, as well as increasing contamination of aquatic ecosystems. In both Spain and Greece the cotton areas are concentrated in Nitrate Vulnerable Zones (Nitrates Directive). 1 ha of cotton uses about 5 000m³ of water, 150–200 kg of N, 1.5–3 litres of commercial phytosanitary products and 1–2 litres of commercial pesticide products, depending on the number of treatments.

- *Impact on soil*: high input use, irrigation and monoculture represent high risks of soil contamination and deterioration of soil quality (compaction, reduction of soil organisms and organic matter, salination). In addition, post-harvest residues for cotton contain less organic matter compared with cereals.
- *Impact on biodiversity and habitats*: high input use, water consumption and monoculture have a negative impact on biodiversity, loss of habitats and biological stability of species. Cotton monoculture fosters crop parasites that require an increased use of agro-chemicals, which also have an impact on non-targeted organisms. Some pesticides²⁸ used on cotton are very toxic and cause damage to fauna and flora. Defoliants have a similar impact. The lack of field margins and hedges in cotton fields has a negative effect, mainly on the presence of bird species, but also on the landscape. Water use and the frequent over-consumption of groundwater result in additional pressures to riparian and lake ecosystems in the vicinity, mainly due to fluctuations in the requirements of water within the cotton cultivation cycle. Some indirect effects to biodiversity include an impact on neighbouring areas resulting from water transfer projects for irrigating cotton.
- *Impact on waste production*: problems arise from packaging used for inputs and plastic coverage for growth acceleration.

The importance of these risks varies according to farming practice, the degree of intensiveness and site-specific vulnerability.

5.2.2. *Environmental impact of alternative crops*

- *Winter cereals, sunflowers* and soya in general require fewer inputs and less irrigation. Rotation is more varied. Lower inputs means less packaging; plastic cover is not an issue.
- *Irrigated fodder crops* require fewer inputs (no nitrogen). Most crops are more soil-friendly. Rotation is systematically more varied. Fewer inputs mean less packaging and plastic coverage is not an issue.
- *Maize* requires slightly less pesticides but more fertilisers than cotton; like cotton, maize is grown as a monoculture and requires even more water. Its impact on the landscape represents no visual improvement. All the impacts on biodiversity and habitats associated with cotton apply equally to maize. Waste problems are lower and there is no use of plastic.
- *Vegetables* are grown with comparable or higher input levels than cotton. The need for irrigation is the same or higher. The use of plastic cover is more frequent, as is the level of packaging waste.

²⁷ Cotton represents 2.4% of the world's total agricultural area, accounts for 11% of the world pesticide demand and 24% of the world demand for insecticides. 33 out of 46 products used are toxic to extremely toxic.

²⁸ These include endosulfan, phorat, deltamethrine, trifluraline and fluometuron.

Table 16: Environmental impact of alternative crops to cotton

Relative environmental impact, where ☺☺☺, ☺☺, ☺ stand for less, (0) for neutral and ☹, ☹☹, ☹☹☹ for bigger impact

| | Relative environmental impact on | | | | |
|---|----------------------------------|----------------|-----------|---------------------------|--------|
| | water quality | water quantity | soil | biodiversity and habitats | waste |
| Non-irrigated crops: durum wheat, soft wheat, other dry cereals and sunflower | ☺☺ | ☺☺☺ | ☺☺ | ☺☺ | ☺☺ |
| Irrigated fodder (alfalfa, clover, vetch etc.) | ☺☺ to ☺☺☺ | ☹☹ to ☺ | ☺☺ to ☺☺☺ | ☺☺ to ☺☺☺ | ☺☺ |
| Maize | ☹ | 0 to ☹☹ | 0 to ☺ | 0 to ☺ | ☺ |
| Vegetables | 0 to ☹☹ | 0 to ☹☹ | 0 to ☹☹ | 0 to ☹☹ | 0 to ☹ |
| Cotton | Reference | | | | |

Source: Alliance Environnement

5.2.3. Environmental assessment of the Production Aid Option (Option 1)

Price support has the effect of encouraging intensive cultivation practices. In Greece, rotation is hardly practised, while in Spain it is compulsory only for farms growing more than 10 ha of cotton. Monoculture of cotton is, therefore, prevalent.

Under this option, therefore, the environmental impact would be particularly marked. The problems related to intensive cotton production, as described in section 5.2.1, would be most evident, with a strong negative impact on water quantity and quality, soil, biodiversity and waste production.

The biggest problem is water pollution, as cotton is grown mainly in areas designated as Nitrate Vulnerable Zone under the Nitrate Directive. In particular, the lowering of ground water levels has an impact on water quality too, as the remaining water resources are becoming more vulnerable to pollution from pesticides and fertilisers.

In the period 2000–2005 Spain achieved water economies by supporting the replacement of sprinklers by drip-irrigation systems, which combine fertilisation with irrigation and use water in a more rational way. In Greece, where sprinkler irrigation continued to be the main system, higher water use was recorded.

When the cotton production aid ("deficiency payment") regime was in place, prior to the reform, agri-environmental measures attracted a limited number of participants. The high prices paid for cotton made the respect of environmental constraints, especially fertiliser use, economically unattractive for farmers. In this context, the only viable agri-environmental programme for cotton would have been support for organic cotton production. Before 2000, neither country had put programmes in place for their Nitrate Vulnerable Zones, imposing restriction in fertiliser use.

However, under the SPS, all direct payments are subject to cross-compliance rules. Good Agricultural and Environmental Conditions (GAEC) ensure compliance with EU environmental standards, which would to some extent mitigate some of the environmental

damage possible under this option. In addition, agri-environmental programmes may now prove more attractive to cotton farmers in some regions.

5.2.4. *Environmental assessment of the Mainly Decoupled Option (Option 2)*

The environmental impact for this option is based mainly on observations from the first year of implementation of the reformed regime.

In Greece in the first year of implementation a slight tendency towards intensification was noted. A small expansion of cotton area was accompanied by an increased use of inputs. It is expected to take some time for Greek farmers to switch to alternative crops. While a change to wheat would have environmental benefits compared with cotton, a switch to maize would see no significant environmental gains, and water needs would be higher. Alternatives could be sunflower or soya.

In Spain, the cotton area and yields fell in 2006, resulting in a reduction in input use. 75% of farmers used fewer inputs and less water and the use of defoliants has dwindled. This option has improved the attractiveness of integrated production²⁹, which saw a big increase in participation rates in 2006; it now covers 79% of Spain's cotton area.

While it is difficult to quantify improvements after only one year of implementation, in Spain a trend towards extensification is visible; the use of water for irrigation fell by 250 million m³ and plastic covering is no longer used.

Under this option, both coupled and decoupled payments are subject to cross-compliance. In addition, for environmental and quality reasons, the land on which cotton can be grown and the varieties that can be sown must be authorised by the Member States.

5.2.5. *Environmental assessment of the Full Decoupling Option (Option 3)*

Under this option, cotton production would no longer be economically viable in Spain, where it would probably cease completely.

In Greece, it could be limited to the 93 000 hectares of cotton grown under agri-environmental programmes, for which farmers receive an additional premium. However, continuing support from this Rural Development measure would have repercussions for Greece's agri-environmental programme, as the resources committed will not be available for resolving environmental problems in other regions and for contributing to better land management. Agri-environmental measures should not become a hidden support for cotton production. These payments will anyway have to be re-calculated and this may result in a change in the contribution now made to the income of cotton farmers.

It would therefore seem probable that, under this option, the EU's remaining cotton production would be extensive, which would have a lower environmental impact.

The main alternative crops replacing cotton would be wheat, maize and possibly sunflower and soya. While a change to wheat would have environmental benefits compared with cotton, a switch to maize would see no environmental gains and water needs would be even higher.

²⁹ For details of agri-environmental schemes for cotton in Spain and Greece, see Annex 8.

5.2.6. Environmental impact of the ginning industry

The ginning industry is a seasonal industry, which generates relatively few environmental problems except organic waste, some noise and dust. However, for technical and quality reasons the ginning industry favours the use of defoliant. Under the current regime (Option 2) their use has been widely reduced.

5.3. Social Impact

5.3.1. Employment in the cotton sector

In the producing regions, cotton plays a central role in the local economy.

In Greece (mainly Makedonia, Thessalia and Sterea) 79 700 farmers are engaged in cotton farming. In Andalusia, where 98% of Spain's cotton production is concentrated, there are 9 500 cotton farmers.

On farms³⁰ specialised in cotton production, most of the income is derived from farming activities.

Cotton production is relatively more labour-intensive than the main alternative crops, and in particular uses family labour. In Greece family labour accounts for 97.8% of the total regular labour force, while in Spain the equivalent figure is 78.6%.

Table 17: Hours of family labour (2004)

| | Cotton | Maize | Durum wheat | Sunflower |
|---------------|---------------|--------------|--------------------|------------------|
| GREECE | | | | |
| Macedonia | 195 | 194 | 79 | – |
| Thessaly | 220 | 446 | 98 | – |
| SPAIN | | | | |
| Andalusia | 182 | 103 | 134 | 60 |

Source: FADN

In Greece (Macedonia) the cultivation of maize and cotton requires the same number of hours of family labour (195), while in Spain cotton requires more family labour (182 hours) than maize (103), durum wheat (134) and sunflower (60). This implies that a switch from cotton to alternative crops would free family labour hours in this Member State.

Labour is an important element in production costs. In **Greece**, assuming as opportunity cost the paid wage, family labour alone makes up about a quarter to one fifth of the total production costs per hectare. The importance of family labour compared with total costs should also be noted.

Similarly, in **Spain**, labour is an important element in cotton production costs. Family labour constitutes about one third of the total production costs per hectare.

³⁰ Some details of the structure of EU cotton-producing farms are given in Annex 5.

Table 18: Labour costs in 2004 (€/ha)

| GREECE - Macedonia | Cotton | Maize | Durum wheat | Sunflower |
|----------------------------|---------------|--------------|--------------------|------------------|
| Contracted labour/services | 263 | 129 | 55 | - |
| Labour paid | 83 | 46 | 13 | - |
| Total family labour | 593 | 591 | 240 | - |
| Total | 939 | 766 | 308 | - |
| Labour cost/Total cost | 35% | 37% | 34% | |
| GREECE - Thessaly | | | | |
| Contracted labour/services | 247 | 167 | 70 | - |
| Labour paid | 30 | 35 | 25 | - |
| Total family labour | 682 | 1.381 | 303 | - |
| Total | 960 | 1.584 | 399 | - |
| Labour cost/Total cost | 39% | 55% | 42% | |
| SPAIN | | | | |
| Contracted labour/services | 465 | 215 | 33 | 59 |
| Labour paid | 77 | 118 | 13 | 50 |
| Total family labour | 990 | 560 | 729 | 325 |
| Total | 1.532 | 892 | 775 | 434 |
| Labour cost/Total cost | 50% | 42% | 67% | 59% |

Source: FADN

In 2005/06 the **cotton ginning industry**³¹ employed about 3 200 people in Greece and 1 350 in Spain. Much of the employment is seasonal (from one third to a quarter)³².

An overview of the social impact of the three different options, at farm and industry level, is given at the end of this section, in Table 19.

5.3.2. *Social Assessment of the Production Aid Option (Option 1)*

As it encourages more intensive production which requires a higher use of inputs, including labour, this option would be likely to boost seasonal employment in the ginning industry, at least in the short term.

In the long term, however, the continued erosion of competitiveness in the sector could trap workers in low value added, poorly paid employment, so endangering the social sustainability of the regions concerned.

As noted in Section 5.1.2.2, the deficiency payment system led to over-capacity in the ginning industry. Therefore, even under this option, a restructuring process with a down-sizing of the industry's workforce would be necessary in order to provide sustainable, long-term rural

³¹ Information on the structure of the EU cotton ginning industry is provided in Annex 7.

³² See details in Annex 7 – Tables A7.2, A7.6 and A7.8.

employment. A restructuring could lead to a loss of about 900 work units in Greece and 800 work units in Spain.

5.3.3. *Social Assessment of the Mainly Decoupled Option (Option 2)*

Data for 2006 indicate that the regime change has resulted in a reduction of inputs, including labour, in the cotton sector. This decrease was mainly in paid and/or contracted labour, while the number of hours worked by family members remained practically the same.

At farm level, however, it is not sure that there was a drop in the total labour employed, as labour no longer used for growing cotton may have been re-employed on alternative crops. Spain could be more sensitive to this fall in labour demand, as maize and wheat require one third fewer working hours than cotton.

As shown in 2006, job losses in the ginning industry could be relatively large, due to the reduced supply of ginned cotton, the acceleration of the restructuring process and reduction of over-capacity.

While losses would be at the same level as mentioned in Option 1 for Greece, 1 120 work units would be lost in Spain.

In the long term, the consolidation and restructuring of the industry and consequent gains in competitiveness could allow the industry to create jobs in higher value added activities. However, the overall employment balance in the cotton sector should be expected to be negative.

Rural development measures funded under this option will help to create rural employment in the regions affected and complementary sources of income for family farm members.

5.3.4. *Social Assessment of the Full Decoupling Option (Option 3)*

This option could have a relatively big impact on employment.

At farm level, it can be assumed that labour no longer required for cotton would be employed in growing alternative crops. As the use of unpaid labour is higher for cotton than for maize, wheat or sunflowers, some labour could be released for more profitable alternatives, particularly in Spain.

As Spain's cotton area would entirely disappear under this option, the ginning industry would also close down, as it not economically viable to import raw cotton. This would result in the loss of all jobs (1 350) in Spain and an estimated 2 500 in Greece.

5.3.5. *Social impact and rural development*

Analysis shows that any decoupling rate will ensure the maintenance of farm income. However, the coupled/decoupled regime directly influences cotton production levels. In 2006 in Spain some producers switched to other crops and others reduced their yields, which resulted in an overall reduction of cotton output. The decoupling rate has an impact on both the farmer's production choice and on the ginning industry.

Table 19: Summary of social impacts

| | Option 1 | Option 2 | Option 3 |
|--------------------|--|---|--|
| GREECE | | | |
| Farm level | Normal trend of reduction in agricultural holdings | Slight additional impact: a small reduction in hours needed per ha | Slight additional impact: a reduction in hours needed per ha |
| Ginning industries | Some impact due to over-capacity (loss of 230 permanent and 690 seasonal workers) | Same impact as in Option 1 (loss of 230 permanent and 690 seasonal workers) | Loss of 620 permanent and 1 860 seasonal workers |
| SPAIN | | | |
| Farm level | Normal trend of reduction in agricultural holdings | Slight additional impact: a small reduction in hours needed per ha | Slight additional impact: a reduction in hours needed per ha |
| Ginning industries | Greater impact due to over-capacity (loss of 175 permanent and 640 seasonal workers) | Loss of 240 permanent and 880 seasonal workers | Loss of 290 permanent and 1 060 seasonal workers |

The current Rural Development programmes have enabled cotton production to continue in the Nitrate Vulnerable Zones of regions like Andalucía and Thessaly, where restrictions are imposed on fertiliser use. This is also beneficial for the ginning industry, whose supply of raw cotton has continued.

Axis I of the Rural Development measures can be used to maintain the competitiveness of agricultural activities and to support re-orientation to other crops. Similarly, these measures can be used to help restructure or re-direct the ginning industry to other processing and/or marketing activities.

Axis III measures can be used for investment and training for economic diversification towards non-agricultural on-farm and off-farm activities, and in particular to support the retraining of the ginning industry work force where necessary.

In 2004 the Commission proposal earmarked a specific additional amount of €103 million within the Rural Development programmes to finance the restructuring process in cotton-growing regions. Subsequently, in April 2004, the Council decided to reduce this envelope to €22 million. In the framework of 2007–2013 Rural Development programmes a total of €154 million has been allocated to cotton-growing regions as additional Community support.

5.4. Impact on International Relations

5.4.1. Background

- Global cotton production in the 2006/2007 marketing year was 25.4 million tonnes. The main producers are China, the US and India which together account for over 60% of the world's cotton production³³.
- EU production represents only 2% of global output and 2% of world consumption. EU trade in cotton is completely free: no import duties or quantitative restrictions apply and no refunds are paid on exports.

Cotton remains an internationally sensitive issue. A number of developing countries and NGOs have criticised the trade-distorting policies of some developed countries and/or main cotton producers, which they claim damage their domestic production. However, a clear distinction should be made between the EU and the US.

The EU both imports and exports cotton (lint), but in net terms, it is an importer. Its trade has declined and it is a relatively small actor on world markets. By contrast, US exports have greatly increased in recent years and the US has consolidated its position as the world's leading exporter of cotton.

In the context of the WTO's Doha Development Agenda (DDA) it has been agreed that the aim should be to make ambitious, rapid cuts in trade-distorting domestic subsidies for cotton production.

The EU's 2004 reform of its cotton regime replaced price support by a system based mainly on decoupled income payments, so moving the regime from the amber box to the green and blue boxes. US support for cotton remains largely amber box and so subject to reduction.

The "box" classifications given for each option refer to the system currently in place.

5.4.2. Impact of the reform options

A return to deficiency payments would contradict the EU's negotiating position in the "Doha Round". Production aid for cotton would be classified as amber box.

The 2004 reform reduced the trade-distorting effect of EU subsidies granted to cotton. The decoupled aid paid as farm income support is classified as green box. The coupled aid granted per hectare of cotton, limited to a fixed base area, is a blue box payment.

A higher level of decoupling would increase the green box element and reduce the blue box element.

A fully decoupled support regime would be consistent with the EU's negotiating position in the "Doha Round". The decoupled payments would be classified as green box.

³³ Further details of the EU and world cotton economy are provided in Annex 5.

5.5. Impact on the EU budget³⁴

Under the 2004 reform the annual budget for cotton was set at €803 million, which was equivalent to average annual expenditure for the cotton regime in the 2001–2003 reference periods. The final decision allocated this amount as follows: €502 million for decoupled aid, €275 million for coupled aid, €22 million for rural development measures in the cotton growing regions, and €4 million for inter-branch organisations. None of the aid is allocated directly to ginners.

The three options assessed are all budget neutral compared with current expenditure.

Aside from the additional cost of controls, the *Production Aid Option* implies high variability in Community spending. Under the "deficiency payment" system, aid changed every year on the basis of the highly variable world market price. In the period 1995–2005 Community spending varied annually between € 740 million and € 952 million.

Spending under the *Mainly Decoupled Option* is far more stable, as the decoupled part of the aid is fixed. The only variable element is the area payment, which could only decrease, if the area under cotton falls.

While in the Commission's 2004 proposal, the amount for rural development was set at € 103 million and the decoupled payment was reduced by the corresponding amount, the Council finally decided to earmark only € 22 million for rural development measures, preferring to further increase the decoupled payment budget.

Given the high stability of the decoupled payment, the *Full Decoupling Option* is the most stable and predictable from the point of view of EU expenditure.

5.6. Impact on Administrative Costs³⁵ and Simplification

The *Production Aid Option* implies the establishment of a deficiency system similar to that in place before the 2004 reform. A return to this system would entail significant adjustment costs, not only for the Commission administration, but also for national and regional authorities that have now implemented the new regime for almost two years, and for businesses that have adapted to the new system.

For the ginning industry, the granting of deficiency aid required information on production volumes of ginned and unginned cotton. Associated with this, an advance payment system required a guarantee system. This went hand-in-hand with a complex system of contracts between farmers and ginners, and a system of aid applications to be completed by the ginner.

Member States and/or regions would have to carry out checks on areas sown, on contracts between ginners and farmers, on the production of ginned cotton and on the cotton ginning rate. In addition they would have to define, implement and control specific environmental rules for cotton.

For the Commission administration this regime required the constant monitoring of world prices, which were the basic element for fixing the level of aid. Other important elements for

³⁴ See also detailed expenditure tables in Annex 9.

³⁵ Detailed tables for each Option are provided in Annex 11.

determining aid payments concerned production levels; these were provided by the interested parties and were difficult and costly to verify.

In summary, this option is extremely complex and burdensome for both beneficiaries and public administrations.

Table 20: List of measures currently entailing administrative costs

| OPTION 1 | | | | | | |
|---|-----------|---------|---------------|------------|-----------------------|----------------------|
| Information to be notified or tasks to be fulfilled | Producers | Ginners | Member States | Commission | Timing/ Frequency | Compulsory/ Optional |
| Quality of unginned cotton | | X | | | every delivery | O |
| World market price of unginned cotton | | | | X | every 10 days | C |
| World market price of ginned cotton | | | | X | every day | C |
| Estimated unginned production | | | X | X | twice a year | C |
| Determination of actual unginned production | | | X | X | once a year | C |
| Reduction of guide price | | | | X | three times a year | C |
| Total budget expenditures | | | | X | once a year | C |
| Calculating and fixing aid | | | | X | once a year | C |
| Determination of the total eligible quantity | | | | X | once a year | C |
| Aid application | | X | | | every delivery | C |
| Security referred to aid application | | X | | | every delivery | C |
| Application of supervised storage | | X | | | every delivery | C |
| Notification of quantity of ginned cotton | | X | | | once a year | C |
| Granting advances on the aid | | | X | | every aid application | C |
| Establishing security for advance on the aid | | X | | | every delivery | C |
| Provisional reduction of the guide price | | | | X | twice a year | C |
| Payment of advance on minimum price | | X | | | twice a year | C |
| Application for area aid under IACS | X | | | | once a year | C |
| Submission of contracts | | X | | | several times a year | C |
| Stock records | | X | | | continuous process | C |
| Checks: areas and productions | | | X | | once a year | C |
| Penalty scheme | | | X | | once a year | C |
| Communications Reg.1591/2001 (Art 15) | | | X | | several times a year | C |
| Report on environmental situation | | | X | | before end 2004 | C |
| OPTION 2 | | | | | | |
| Information to be notified or tasks to be fulfilled | Producers | OIA | Member States | Commission | Timing/ Frequency | Compulsory/ Optional |
| Objective criteria for approval of eligible areas | | | X | | once | C |
| Authorisation of varieties for sowing | | | X | | once | C |
| Fixing the minimum plant density | | | X | | once | C |
| Agronomic practices | | | X | | once | O |
| Calculating the amount of aid | | | X | | once per year | C |
| Authorisation of inter-branch organisations | | | X | | once per year | C |
| Operating rules for inter-branch organisations | | X | | | once | C |
| Aid differentiation (scale) | | X | | | once | O |
| Classification of cotton parcels for the scale | | X | | | once per year | O |
| Communications | | | X | | once per year | C |
| OPTION 3 | | | | | | |
| Information to be notified or tasks to be fulfilled | Producers | | Member States | Commission | Timing/ Frequency | Compulsory/ Optional |
| Calculating producer's entitlement to aid | | | X | | once | C |
| Aid application | X | | | | once per year | C |
| Cross-compliance Annex IV of Reg. 1782/2003 | | | X | | once per year | C |
| Cross-compliance Good agronomic practices | | | X | | once per year | C |
| Administrative controls: - cross-check | | | X | | once per year | C |
| Administrative controls spot-check | | | X | | once per year | C |

The *Mainly Decoupled Option* would establish a support system similar to the post-reform regime, which has now been operational for nearly two years. Adjustment costs would therefore be minor.

Compared with the management of deficiency payments, the administration of direct payments is lighter and derives mainly, if not exclusively, from the decoupled and coupled payment system.

The coupled payment requires the control of areas, but these are comparatively simple and can be carried out together with controls for other crops.

The decoupled payment benefits from the mechanisms put in place for the Single Farm Payment and so the marginal cost for its implementation is fairly low.

Overall, this option is administratively simpler than Option 1 and entails lower costs.

Although the *Full Decoupling Option* entails a change to the regime now in force, adjustment costs would be relatively light. As the system would be close to that for other reformed sectors, no major modification to administrative mechanisms would be necessary.

The management of this option is lighter than for the other two. The absence of any crop specific payment reduces both the costs and the risks related to controls.

This option has the further advantage of being in line with the reformed CAP, whose central element is the decoupling of income support. Under this option, cotton production would be subject to the common rules for direct support.

5.7. Governance and Participation

There is little participation by beneficiaries in the governance of the *Production Aid Option*. Management is carried out by central authorities and the mechanism for fixing and granting aid is quasi-automatic.

The *Mainly Decoupled Option* implies a higher degree of subsidiarity:

- decisions concerning the purpose and content of supplementary aid payments and agri-environmental measures require cooperation between stakeholders and public authorities;
- for the coupled part of the aid, the definition of eligibility criteria, such as land and varieties, necessitates close interaction with the sector;
- the conception and application of rural development programmes calls for consultation and collaboration, to ensure that the needs of the regions affected by the reform of the cotton regime are met.

The effect on good governance and participation of the *Full Decoupling Option* should be similar to Option 2.

This option offers total subsidiarity to the farmer, who will have greater flexibility and freedom as to the choice of farming activity, without any loss of direct income support.

Rural development programmes for the ginning industry would require maximum collaboration from the sector, within the region and/or Member State.

6. COMPARISON OF OPTIONS

Option 1 complies fully with the provisions of the Accession Protocol and ensures the highest employment levels in the cotton industry, at least in the short term. However, it diverges from the mainstream of the CAP reform process, as well as the overall thrust of EU policy towards simplification, subsidiarity and budget control. Its approach has the effect of undermining the long-term competitiveness of the sector. It does little to meet public concerns regarding the environment and sustainable development. On the international front, this option is contrary to the EU's negotiating position in the DDA and may appear inconsistent with the EU's development policy, in particular *vis-à-vis* less developed cotton-producing countries.

Option 3, which is fully in line with the objectives of the CAP reform process and simplification, fails to comply with the provisions of the Accession Protocols regarding the support of cotton production in the relevant regions. It would therefore require a modification to these Protocols. Implementation of this option would seriously threaten the existence of the EU cotton sector. This option has the advantage of stabilising farm incomes. It allows farmers greater freedom of choice and would be positive for the EU's international relations. Although there are risks associated with the most probable replacement crop, maize, in the long term this option could be environmentally positive.

Finally, *Option 2* strikes a balance between Options 1 and 3. It brings the cotton regime into the mainstream of the CAP reform process and responds to the goal of simplification, while also respecting the provisions of the Accession Protocols regarding support for cotton production. It provides momentum for the cotton sector to move in the direction of long-term viability and promotes the sustainable development of the cotton-producing regions. It ensures a fair income to farmers, enhances the competitiveness of the sector and goes a long way to meeting public concerns regarding the environment. On the international front this option, while not perfect, is quite acceptable, especially in view of the small scale of the EU cotton sector. Overall, this option best meets the different objectives of the reform, particularly if it is linked with a minimum quality standard and harvesting obligation.

A comparative overview of the extent to which the three options would be likely to achieve the different objectives of the reform is given in Table 21.

Table 21: Comparison of likely impact of the Options

☺☺☺, ☺☺, ☺ for positive impacts ☹☹☹, ☹☹, ☹ for negative impacts

| Likely impact on | Option 1 Production aid | Option 2 Mainly Decoupled | Option 3 Full Decoupling |
|-----------------------------|---|---|---|
| Production of cotton | Expanding area, yields and production. ☺☺☺ | 35% coupled payment allows continuation of cotton production although at lower yields. A further decrease to coupled area payment could lead to a serious fall in production. The introduction of a harvesting obligation associated with a minimum quality requirement would guarantee quality. ☺☺ | Alternative crops are more profitable than cotton. Cotton production likely to collapse with knock-on effect on ginning industry. ☹☹☹ |
| Income | The expansion of production beyond a certain NGQ triggers the reduction of the aid. This is more harmful for the most fragile areas and small producers. Lower stabilisation of income than with decoupled payments. ☺☺ | Income support goes directly to farmers and stabilises their income more, while allowing them to react to market by switching to other crops. RD measures help reorientation process of agricultural holdings. ☺☺☺ | Decoupled income support directly benefits farmers and leaves them to choose the most profitable farming activity. Provides good income stability. ☺☺☺ |

| | | | |
|---|---|--|--|
| <p>Market orientation</p> | <p>Price support weakens entrepreneurial initiative along the whole chain. Possible rent-seeking behaviour.</p> <p>Necessary restructuring process and consolidation slowed down, so keeping competitiveness of the industry at relatively low level.</p> <p>☹☹</p> | <p>Ginning industry competitiveness strengthened by rural development measures.</p> <p>😊</p> | <p>Only profitable and quality production will continue.</p> <p>😊😊</p> |
| <p>Simplification</p> | <p>Very complex and burdensome for both beneficiaries and administrations; controls costly and difficult; regime partly based on data provided by beneficiaries.</p> <p>☹☹☹</p> | <p>Relatively simple; administrative burden moderate.</p> <p>😊😊</p> | <p>Simple; administrative burden low, in common with other reformed sectors.</p> <p>😊😊😊</p> |
| <p>Subsidiarity</p> | <p>Very low level of subsidiarity</p> <p>☹☹☹</p> | <p>Good agricultural and environmental conditions, together with supplementary aid, environmental and rural development measures to be defined at MS level.</p> <p>😊😊😊</p> | <p>Good agricultural and environmental conditions, together with supplementary aid, environmental and rural development measures to be defined at MS level.</p> <p>😊😊😊</p> |
| <p>International commitments</p> | <p>In contradiction with EU negotiating position in DDA; open to criticism from developing countries.</p> <p>☹☹☹</p> | <p>Consistent with EU negotiating position in DDA. Low criticism from developing countries.</p> <p>😊😊</p> | <p>Consistent with EU negotiating position in DDA. No negative impact for international relations.</p> <p>😊😊😊</p> |

| | | | |
|--------------------|---|--|---|
| Social | Normal trend of reduction in agricultural holdings; some long-term reduction in ginning industry employment, due to over-capacity. ☹ | Slightly higher impact than Option 1; switch to relatively less labour-intensive production systems and crops, in addition to down-sizing of ginning industry. ☹☹ | Slightly higher impact than Option 2; switch to relatively less labour-intensive crops, in addition to closure of most ginning plants. ☹☹☹ |
| Environment | Incentive to expand areas, yields and production. Negative impact on environment ☹☹ | Some possible environmental risk associated with replacement of cotton by maize. Encourages low-input low-yield production system. Cross-compliance applies. ☺ / ☹ | Environmentally positive, although risks associated with probable replacement by maize. Cross-compliance applies. ☺ / ☹ |
| Budget | Highly variable despite stabilising mechanism ☹ | Rather stable ☺☺ | Absolutely stable ☺☺☺ |

7. MONITORING AND EVALUATION

Monitoring and assessing the economic, social and environmental effects of EU public policies has become a standard part of the political process, in order to propose further action or redirection of the measures, if necessary.

The reformed cotton policy will be monitored in respect of the whole range of potential impacts identified in section 5 of this report. Progress towards meeting the objectives listed in part 3 will also be assessed.

The new cotton regime will be included in the multi-annual evaluation programme for CAP policies.

7.1. Monitoring in the cotton sector

Many of the procedures necessary for the application of the cotton regime have been developed by Member States and relevant stakeholders. Considerable experience in monitoring exists in the Commission services and in the Member States. However, existing statistical systems covering cotton production, market trends, micro- and macro-economics, the evolution of regional patterns and the environment represent a complex framework that needs to be simplified, adapted and reshaped to provide adequate information.

Table 22: Indicators for monitoring cotton

| | <i>International analysis</i> | <i>Source</i> |
|--------------------------|---|------------------------------|
| | Main world producers and consumers: current situation and trends | FAO, FAPRI, USDA outlook |
| | Main traders by products and regions | COMTRADE |
| | Net-trade | FAO/COMTRADE/ICAC |
| | Prices | UNCTAD/FAO/WB/Cotton Outlook |
| Proposed: DG AGRI | Border protections: comparison of tariffs and quotas (e.g. EU versus US) | WTO/AMAD/OECD |
| | Internal support: comparison of price and budget support (e.g. EU versus US) | WTO/WB/ICAC |
| | International issues | WTO /FAO/OECD/NGOs |
| | <i>Domestic analysis</i> | <i>Source</i> |
| | Economic importance of cotton in the producing region | MS/EUROSTAT |
| | MS producing cotton: volumes, areas and yields – current situation and trends | EUROSTAT |
| | Structural analysis of the EU cotton holdings | EUROFARM |
| | Income of cotton farm | FADN |
| | The cotton system and the reform | DG AGRI |
| | EAGF expenditure | EU Budget |

The Commission is responsible for monitoring the proper implementation of the provisions that apply to the cotton-specific aid. In this context, Member States are required to transmit information, in particular regarding the implementation of cross-compliance and respect of good agricultural and environmental conditions (e.g. statutory management requirements, agronomic practices, rotation and soil maintenance).

The Commission services have already defined a series of indicators that cover economic and social dimensions. These will be completed by relevant indicators referred to in the Communication on the development of agri-environmental indicators for monitoring and integration of environmental concerns into the common agricultural policy³⁶.

Table 16 lists the core elements that DG AGRI will keep under review, in respect of the EU situation and its linkage with world markets. The potential sources of information are also indicated.

Given the relevance of the family labour in the cotton sector and the importance of this sector in certain areas of Greece and Spain, supplementary indicators will be used to capture the main effects of the cotton regime. Specifically:

Relevance of cotton in terms of area (%) in Macedonia and Thessaly (Greece) and Andalusia (Spain):

$$\frac{\text{Agricultural area utilised for growing cotton (ha)}}{\text{Total utilised agricultural area (ha)}} * 100$$

Family labour in the cotton sector compared with the total agricultural sector (%)³⁷:

$$\frac{\text{Family labour/regular labour for cotton sector}}{\text{Family labour/regular labour for agricultural sector}}$$

The variables used to monitor the impact of EU cotton policy on local production systems in developing countries, in particular Benin, Burkina Faso, Mali and Chad, are listed in Table 17.

Table 23: Indicators for monitoring cotton in developing countries

Production in Developing Countries

Importance of cotton in the producing countries

Production volumes

Production yield and quality

Labour use in cotton production

Structural analysis of the cotton production

Environmental impact of cotton production

Markets and Prices in Developing Countries

Domestic prices

Export prices

Export (Volume and Value) by destination

Commercial infrastructures: structure and ownership

These monitoring activities will provide the information needed to meet the commitment made by the Commission in the Agricultural Council of 22 April 2004, to prepare a report for submission to the Council and the European Parliament by the end of 2009. The monitoring has already been initiated by DG AGRI.

³⁶ COM(2006) 508 final published on 15.9.2006.

³⁷ Values higher than 1 show a relatively greater family labour specialisation for cotton compared with the whole agricultural sector, vice versa for values lower than 1.