

THE ROLE OF “INTEGRATED PRODUCTION” SCHEME IN THE NEW FRUIT AND VEGETABLE CMO: A TOOL FOR COMPETITIVENESS, SUSTAINABILITY OR OLIGOPSONY BY LARGE RETAIL CHAINS?

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Rete di informazione
della Commissione Europea

Paper prepared for the 109th EAAE Seminar " THE CAP AFTER THE FISCHLER REFORM: NATIONAL IMPLEMENTATIONS, IMPACT ASSESSMENT AND THE AGENDA FOR FUTURE REFORMS".

Viterbo, Italy, November 20-21st, 2008.

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Abstract

The new Common Market Organization (CMO) for the fruit and vegetable sector approved in 2007, continues to include sustainability and competitiveness of the sector among its most important goals.

The key role of the new (as well as the old) CMO is still played by Producers Organizations (POs): among other things, they should help farmers to organize and to concentrate supply in order to satisfy the old and new requests by large retailers in Europe as well as in other foreign markets. On the other side POs should also help farmers to apply the best available growing, preserving and packaging technologies, in order to become more competitive but also sustainable from an environmental point of view.

In order to satisfy these requests POs have been traditional supporters of new production systems like “Integrated Pest Management” (IPM) and later “Integrated Production” (IP); they have generally offered to their farmers technical assistance for its application in the fruit and vegetable sectors. The main stated objective of IP schemes is to reduce the use of pesticides, and therefore to increase the environmental sustainability of these productions.

However differently from the case of organic products, in the case of IP no EU regulation or standard exists. The absence of this common standard has allowed regional authorities to introduce different definitions of IP. Moreover large retail chains, the most important buyers for these products, apply chain-specific requirements, again based on the “idea” of IP and perhaps also on regional IP scheme, to some extent, but always with differences quite important.

The actual result is that farmers producing vegetables and fruits must often apply, for the same product grown on the same farm, different technologies in order to obtain different certifications (i.e. regional IP scheme and possibly few different retailers’ scheme) all of them theoretically based on the “common idea” of IP but with quite different interpretations.

These different certifications schemes imply, at the farm level, a relevant increase in costs of production and commercialization, without generating any positive economic effect, on one side, and with a large degree of uncertainty in terms of effect on environmental sustainability of these production technologies.

The paper starting from the case of fruit production in Emilia-Romagna region, discusses these negative implications together with the possibility for large retail chains to exercise some oligopsony power with respect to POs also using IP schemes.

Few implications are drawn with respect to the potential benefits of a common IP scheme defined by EU regulation, and few considerations are made about the main characteristics that this certification should have in order to be (at least theoretically) efficient.

1. From Integrated Pest Management (IPM) to Integrated Production (IP).

Since their introduction in the market, chemical products used for pest control (the so-called pesticides or agro-chemicals and now also agro-pharmaceuticals) have played a major role in the increase of productivity of land, labor and other agricultural inputs. The importance of these inputs is relevant especially in the fruit and vegetable sector, and their use is generally more intense in this sector than in others.

Over time the increased awareness of consumers about possible health risks due to residues in these fresh products has pushed over time researchers, extension services as well as farmers, to try to reduce the use of agro-chemical products.

Conventional production typically rely on a number of applications of agro-chemicals based on the calendar (“calendar approach”), i.e. the applications of these inputs occur every fixed number of days in order to prevent any growth of pests. This approach does not consider the effects of fluctuations of climatic conditions on the growth of pests and therefore on the probability of a meaningful damage.

At the opposite extreme of the calendar approach, we have organic production where almost any use synthetic pesticides is forbidden in order to eliminate the possibility of harmful residues in the final product and to reduce or eliminate negative effects on the environment. In this case, however, crop yields are generally much lower while labor requirements are generally higher, resulting in a necessarily higher production cost and market price.

In the last few decades, a different approach has been developed, the Integrated Pest Management (IPM), implying a more rational and scientifically based approach to pest control and to the decisions about when, how and how much agrochemicals should be applied to crops. It is quite clear that IPM has been developed and introduced both in order to address health (residues) and environmental concerns of consumers and citizens, and with the aim of reducing the use of these agrochemicals (and possibly the overall production cost).

IPM utilizes a number of different approaches and tools for controlling pests: from the use of natural substances and application of biological enemies to control pest growth, to specific mechanical intervention as a substitute for some applications of agrochemicals, to the application of sophisticated prediction models based on biological pest data and meteorological information in order to simulate pest growth and identify more precisely when a specific chemical application is really required.

Over time IPM has evolved in different directions, and for many different reasons; in general from the “simple” IPM approach new attention has been paid to issues like soil management, (e.g. reduce soil erosion, maintain or increase the percentage of organic matter), water management, biodiversity protection, but especially reduction of the level of residues of agrochemicals even well under the Maximum Residue Level (MRL) defined by law.

All these different approaches, which are partial modification and integration of the more traditional IPM scheme, have been generally defined as Integrated Production (IP) schemes in order to differentiate them from the IPM approach which is focused only on the management of pest control activities.

It must be noticed that these IP schemes, as well as IPM do not rely on any public regulation at the EU level, differently from the case of organic production. The absence of this common and public standard, has allowed, if not pushed, regional/national authorities first, private certification bodies and retailers later, to introduce different definitions and certification schemes for the IP.

In particular a key role has been played, at the European level, by the possibility to support specific cropping techniques aiming at reducing the use of chemical inputs, among the agri-environmental measures introduced for the first time with EU Regulation n. 2078 on 1992. Since then, each EU member country has had the possibility, and (political) need, to define what it consider to be a “relevant” reduction of the use of pesticides and chemical fertilizers”, and therefore to define (one or more) IP schemes.

In table 1 the last data available at the EU level about the application of these policy tools, i.e. support of production techniques requiring less chemical inputs, are presented. From the total amount of money spent and from information about the agricultural area committed to these techniques, we have eliminated organic production in order to obtain an estimate of EU support to IP schemes.

Table 1. Agri-environmental measures for crops, organic production excluded, in EU25 member countries (2005).

	Total amount committed (000 €)	Number of hectares under contract	Average amount per hectare (€)
Austria	554.446	5.857.487	95
Belgium	32.642	264.632	123
Cyprus	76	5.623	14
Czech Republic	100.436	944.621	106
Denmark	21.107	250.830	84
Estonia	17.796	442.574	40
Finland	273.295	2.074.226	132
France	393.793	7.572.723	52
Germany	516.147	4.987.870	103
Greece	38.758	199.012	195
Hungary	166.287	N.A.	N.A.
Ireland	251.418	1.695.000	148
Italy	209.464	1.362.346	154
Latvia	2.571	19.672	131
Lithuania	0	0	-
Luxembourg	12.236	144.793	85
Malta	277	N.A.	N.A.
Netherlands	37.973	162.014	234
Poland	1	74.178	0
Portugal	93.033	630.181	148
Slovakia	20.513	274.043	75
Slovenia	25.727	194.420	132
Spain	157.318	2.712.678	58
Sweden	190.330	2.554.749	75
United Kingdom	40.149	273.533	147
EU25	3.155.793	32.640.102	97

Source: EU Directorate General for Agriculture and Rural Development, Rural Development in the European Union, Statistical and Economic Information - Report 2007.

Overall more than 32,6 millions of hectares have been involved by these commitments, i.e. more than 20% of EU utilized agricultural land, and the average amount paid per hectare has been 97 euro.

As already mentioned, the sector where IP schemes are absolutely more important is the one of fruit and vegetable (F&V). In order to analyze the effects of the application of these different IP schemes in this sector in Italy as a case study, we must summarize, first, the most important characteristics of the Common Market Organization for these products, as well as some key characteristics of the F&V sector. Secondly with reference to the Italian case, we will identify some issues arising from the actual use of different IP schemes in order to draw some conclusions about possible useful developments.

2. The Common Market Organization for fruits and vegetables and IP schemes

The fruit and vegetable sector in the European Union accounts for 17% of the value of agricultural output and EU27 produces about 8.3% of total world production (average 2003-

2005). At the EU25 level, more than 1,4 millions of farms produce fruit and vegetable (over a total of 9.7 millions) and about 660,000 of them are specialized in these productions. In Spain, Greece and Italy the role of this sector is particularly relevant: its share on the value of total output is respectively equal to 31%, 28% and 25% (average 2003-2005). With respect to quantities, however, Italy is the most important producer with 16 millions of tons of products, on average, in the period 2003-2005 (Canali, 2007).

The new Common Market Organization (CMO) for the fruit and vegetable sector was approved in June 2007 (EU Reg. n. 1182/2007, published on 26 September 2007), as a partial substitution and modification of previous regulations (especially n. 2200, 2201 and 2202/1996).

This reform has introduced few major changes in the CMO, like the inclusion of this sector, with some specific provisions, in the Single Payment Scheme (SPS), and full decoupling for all aids previously granted to producers of few processed F&V (like tomatoes, peaches and plumes, for example).

However it has continued to address as crucial the objectives of competitiveness of the sector and sustainability through many intervention tools which were already present in previous Regulation, and especially the support of Producer Organizations (POs). Among other things, they should help farmers to organize and to concentrate their supply of fresh products in order to better satisfy the increasing requests of services by large retailers in Europe as well as in other foreign markets, and to have some possibility to bargain with them from a less unfavourable position.

This has been also clearly stated by EU Commissioner for Agriculture during the presentation of the reform proposal:

“It is no secret that the retail sector, now highly concentrated, has an astonishing power to set prices. ... the supermarkets seem to have the fruit and vegetable sector in a particularly strong arm-lock.

It is through Producers Organisations that individual producers can stand up to the retail giant.” (Fischer Boel, 2007).

On the other side, POs should also help farmers to apply the best available growing, preserving and packaging technologies, also with the aim of becoming more competitive but also increasingly sustainable from an environmental point of view.

With reference to these objectives, again, the Commissioner has been explicit:

“... my central aims with this reform plans are as follows:

- I want to help make the sector more competitive and market oriented, for the sake of sustainable production.
- I want to help reduce the income problems caused by crisis.
- I want to encourage people in the European Union to eat more fruit and vegetables.
- I want to help extend the sector's efforts at caring for the environment.
- And I want to simplify policy where possible.” (Fischer Boel, 2007).

Therefore competitiveness, sustainability and care of the environment are among the most important objectives of the reform, together with the traditional one of farmers' income protection, and with the (relatively) new ones of encourage consumption of fresh F&V and simplification of the policy.

With respect to other policy tools, it must be noticed that as a consequence of the adoption of the SPS also in this sector, another provision has been introduced with the reform of the CMO, i.e. “cross compliance”, or the respect of mandatory environmental standards which becomes compulsory for farmers receiving direct payments.

Moreover, POs must also spend at least 10% of their expenditure in each Operational Programme, the technical tool for obtaining public support from the CMO, for environmental measures.

Really, since 1992, i.e. since the introduction of specific support measures (Reg. 2078/1992) for low-impact agriculture, i.e. the adoption of IPM or IP schemes (as well as organic production), POs have started to promote and support with technical assistance, these new production technologies in the fruits and vegetable sector. And of course, with the new CMO they will probably continue to do so, even without any specific gain in terms of market recognition by final consumer through higher prices. In other words, since the possibility to distribute income support to F&V growers via agri-environmental measures contained has been maintained also in the new 2007-2013 rural development programme, and since POs still have an incentive to promote this adoption, there are good reasons to believe that “some sort” of IP will remain in place at least in this sector.

What remains to be demonstrated is if this approach is coherent with the objectives of CMO of the F&V sector, and with the more general ones of the CAP; in particular:

1. are these *different IP schemes* the best way to help consumers to be more confident in F&V quality, and therefore to promote consumption?
2. Are these *different IP schemes* useful in order to promote competitiveness of the F&V sector?
3. And in particular, are these *different IP schemes* useful in order to shift, at least to some extent, market power from large retail chain to farmers through POs?
4. Is there any other way to apply IP technology without increasing too much production costs?
5. Are these *different IP schemes* useful in terms of simplification?
6. What are the real effects of these *different IP schemes* on sustainability?

In order to try to answer to these questions, in the following paragraph we try to illustrate the case of application of these tools in the F&V sector in a specific region of Italy, Emilia-Romagna, where the production of fruit and vegetable is absolutely relevant.

3. The application of IP schemes in the F&V sector

3.1. The case of Emilia-Romagna

In Italy there has been a fairly widespread use of IP schemes in many regions especially with reference to the production of vegetables and fruits, both for processing and for consumption as fresh products.

In Italy, the implementation of IPM has started in few leading regions, Emilia-Romagna and Trentino-Alto Adige, under a strong push by local authorities and with a strong support by public technical assistance services (Bertazzoli et. Al., 2004). In Emilia-Romagna, in particular, according to recent estimates (Galassi and Mazzini) 65% of the area used for cropping fruits and vegetable, is managed according to the regional IP scheme.

Moreover, Emilia-Romagna has also introduced a regional law (n. 28, 1999) with the aim of supporting and promoting the use of this regional IP standard identifying products obtained according to it with a specific label “Qualità Controllata” (Controlled Quality), and supporting them with public money, with promotion activities. The regional IP scheme requires that products must be obtained following detailed production and especially pest management rules which are generally quite strict. The objective are to promote more environmentally friendly farming systems, reduce exposure to risk due to residues of

pesticides, and to promote consumption of these products with positive effects on the sector and on competitiveness.

However, after almost a decade, results of this approach are mixed, even in this region which plays a leading role with respect to this issue, at the national level. With reference to the fruit sector, for example, in 2006 the total production obtained respecting the regional IP production scheme has been equal to 623,000 tons, i.e. about 40% of total regional production of fruit. But even more interesting, and controversial, is the fact that only 1/3 of this amount has been commercialised using the label QC. The same percentage for vegetables is slightly more than 14% (Fanfani and Pieri, 2008).

This data shows quite clearly that F&V growers, even with the availability of good services of technical assistance, and with the direct income support granted by agri-environmental measures of Rural Development policies, apply only on a relatively limited share of their land *this* regional IP scheme. Moreover, even the possibility to identify these products with a specific label doesn't seem to work properly: the adoption percentage seem to be very low, after all.

In order to identify possible causes of this situation few other information can be useful. First of all this region has reached a share of 10% with respect to the Italian export of fruit in 2007; the value of regional export has been 486 millions of euro in the same year, compared with a value of the regional production of fruit, evaluated at farm prices, of 680 millions of euro. In other words, a very large share of regional production of fruit is exported; in that case, of course, a "regional" label does not seem the more appropriate tool in order to obtain any recognition by final consumers and therefore some positive effect in terms of value added. Moreover, it seems clear that any communication activity on these different (foreign) markets would be to costly and probably not so effective. Really even at the national level it is very difficult to realize any effective communication and promotion activity, also because over time almost every region has introduced its own IP certification scheme, and sometimes its own label. Final consumers, also at the national level, know very little these regional IP schemes and their (regional) label.

One could argue that another possible positive effect of this certification could be to grant a better access to large retail chains, in Italy as well as in other European countries. From interviews to buyer of retail chains and to cooperatives of F&V producers, emerges clearly that retailers simply "use" this certification as a prerequisite, without any possibility for farmers or POs, to obtain any price premium. Moreover they use to consider these certification not even sufficient for any specific differentiation strategy, and almost no use has ever been made of the QC label at the retail level for fresh products.

3.2. The interactions between different IP schemes: issues and implications

In this paragraph we compare different approaches to IP standards: regional/local standards, standards defined by large retail chains, national IP standard and an hypothetical common IP standard defined at the EU level. In all four cases we describe possible positive and negative effects on farmers, retailers, consumers and protection of the environment; a synthetic comparison is presented in table 2.

Starting from the experience of regional IP schemes, also large retail chains have developed new chain-specific IP standards, based on the common "idea" of IP but with quite different requirements. In general these private standards differ from the regional ones because of their requirements in terms of MRL: they tend to require that residues of pesticides will be limited to a percentage (e.g. 50%) of the legal MRL. In other words retailers seem to work simply and

only on the MRL and in general they label these products with their own brand, i.e. they use them for their *private label* (PL).

In order to differentiate their products in this way, however, retail chains need to develop many new activities inside their structure, as, for instance, their own control systems, which can be completely internal to the firm or partly external. The reduction of health risks (i.e. food safety) through the reduction of residues and the increased intensity of control activity, is by far the most important content that they try to communicate to consumers (“we control strictly our producers”, “we have made so many thousands of analysis of our products” etc.), in order to obtain more value added and/or to increase total sales through their PL products.

But at the farm level, all these different IP schemes generate a relevant increase in costs of production and commercialization, without bringing any economic benefit for farmers beside, to some extent, market access. In fact farmers need to comply, contemporaneously, with many quite different IP schemes for the same product; every IP scheme require a different technological approach, which implies different pest management approaches, different documents, etc..

Moreover F&V growers must also satisfy, in order to enter different retail chain in different EU markets, an increasing number of other private standards like EurepGap (created in 1997), BRC (in 1998) and IFS (in 2001), just to make few examples (Duponcel, 2006).

As a result, not only production costs tend increase quite a lot at the farm level, but also products obtained in the same farm cannot be sold to indifferently to different customers simply based upon price and other commercial conditions, since these different IP schemes (and other private standards) do represent, really, barriers to entry in specific marketing channel without any specific and clear benefit for final consumers.

Since the application of different standards is widespread, they also represent, indirectly, barriers to change customer: once the farmer has chosen to fulfil one specific IP scheme, it is quite probable that if at the end of the production process the farmer decides to change customer, i.e. to sell to another retail chain, this will not be possible since he/she will not have the possibility to obtain the required different certification(s). Therefore these conditions clearly contribute to generate and/or reinforce some oligopsonistic power by large retailers. And this is exactly the opposite of one of the main objectives of the CAP for the F&V sector and in general.

If farmers wants to maintain the possibility to sell their products to different buyers up to the end of the production process, they must apply on the entire production the more restrictive rules of all different IP and other private standards they may want to apply. This choice, of course, generates both an increase in production costs and a strong limitation on available technologies with the possibility of a reduction in quantity and/or quality of the products obtained in the fields.

Finally, some regional and private IP schemes introduce also relevant limitation with respect to pesticides that can be used; so even if according to national and EU laws and regulation a specific pesticide can be legally used for pest control in a specific crop, it is possible that the same input cannot be used because of “some” evaluations by others, regional authorities and/or retailers. In many case this implies that in order to control some specific pest on specific crop, only very few, and sometimes only one pesticide(s) can be used.

Of course this is another major problem for farmers from the point of view of market power as well as technical feasibility of some production process in economic terms: without, or with very limited possibility to protect crops from some pests, some production activities, at least in some geographical areas, could not be possible anymore.

As already mentioned, large retailers try to differentiate their PL products by pushing almost exclusively on the issue of increased control activity on the production process and on reduction of health risk due to residues of pesticides. However it is very difficult to transfer

this message to consumers without possible (even strong) negative effects on consumption of products obtained with conventional agriculture which are sold at the same time in the same shop.

From the point of view of consumers, the adoption of different IP standards makes it more difficult to understand what are the real contents of these different IP, and therefore what is their value. Therefore these different IP schemes tend to become useless if the final objective is to communicate important characteristics to consumers and to have them recognised and properly valued.

From the point of view of the effectiveness in reducing the negative impact of intensive agriculture on the environment, it is very hard to say what can be the final output. These IP schemes focus especially on the level of residues at the end of the production process but do not necessarily deal with other issues which can be even more relevant from an environmental point of view in specific areas, like, for example, soil and fertility management, water management, CO₂ emission and/or immobilization, preservation of biodiversity. Moreover different standards deal with these different issues in different ways, increasing the difficulty for final consumers to understand what is at stake and what to buy.

With the recent CAP reform started in 2003, a new possibility has been granted to Single Member Countries of the EU: to define and introduce new quality system (and label) at the national level (the new art. 24-ter of Reg. 1257/1999 as modified by Reg. n. 1783/2003), and to support farmer switching to production of products satisfying the requirements of the new quality system.

The Italian Ministry of Agriculture, together with regional authorities, have started to develop a possible new IP national scheme as a “national quality system”, which will be followed by a new specific label. It is quite clear that this could be a good move in terms of simplification if this new national IP scheme will be successful in substituting other regional IP scheme, and if the real contents will be clearly stated, not only with respect to application by farmers but also with respect to communication to consumers.

Interestingly, large retail chain are starting to understand, according to statements made recently by many buyers of F&V, that their approach to PL based upon private IP scheme is not working: it does not seem to be able to positively differentiate their product, while their cost is quite high, not only for farmers, but also for themselves. For this reason they seem to be very interested, now, to accept the introduction of a new national IP standard as a tool for simplification and reduction of transaction costs. This new position support the idea that retail chains may have realised that their oligopsony power with respect to F&V growers is by far less important if compared to the possibility to reduce transaction costs and/or to improve their competitiveness through an improved chain integration and through product differentiation strategies that in the F&V sector could be based, more successfully, on other quality characteristics.

4. Towards a new EU certification scheme?

The implementation of a national IP scheme will contribute to simplification, reduction of production and transaction costs for famers, reduction of transaction costs also for retail chains, increase in competitiveness of the food chain, with respect to the present situation.

However it is clear that when farmers, alone or through their cooperatives and/or POs, sell their products to retailers or other economic agents in other EU markets, the problem of different IP and private standards remains, even if partly simplified.

Therefore it seems clear that a new certification scheme defining a common “integrated production” standard at the EU level, like what has been made in the case of organic

productions, would be a more reasonable solution, given the evolution of the idea of “integrated production”, and the effective use of several different certification schemes all of them more or less closely related to it, and given all the implications of the present situation on the effectiveness of the EU agricultural policy, and especially the CMO for fruit and vegetables.

Also according to evidence on these issues (i.e. Boccaletti, forth.; Govindasamy et al., 2001; Grolleau and Caswell, 2006; Ventura-Lucas et al. 2002; Weaver et al. 1992), this IP quality scheme should have, at least, the following characteristics:

- a. a certification scheme defined at the EU level;
- b. the certification should be based upon clear principles, priorities and limitations, but it should also allow some specified flexibility in technical application to different crops in different geographical areas;
- c. this quality system should imply the use of a specific label;
- d. this certification should be easy to communicate to consumers, as well as retailers and other economic agents of the food chains;
- e. there should be a clear distinction, both in principles and in practice, between environmental cross-compliance measures, and “sustainable production” ones.

Among other positive implication, this new quality system would allow also the possibility for large retailers, to further differentiate their PL products using other characteristics of interest for consumers.

With specific reference to the possibility and need to introduce a new “name” for identifying and communicating the real contents of this production management system, one possibility would be to define it as “sustainable production” or “green production”, as compared with the conventional or traditional production on one side, and the “organic production” on the other extreme.

This name would be quite easy to understand for consumers, even if the proper definition from a technical point of view would be more difficult and crucial.

Starting from the evolution from IPM to the IP, it seems fairly clear that the following issues must be addressed in order to define a “sustainable product”, even if this is far from enough for the specific definition:

1. sustainable use of agro-chemical products for crop protection;
2. sustainable use of water;
3. soil management: crop rotation, fertilization, prevention of erosion, conservation of organic matter, etc.;
4. sustainable use of machinery and energy;
5. complete and verifiable documentation of the whole production process;
6. efficient and independent monitoring and control system;
7. clear and effective system of safety measures for workers.

The “Green Paper on agricultural product quality: product standards, farming requirements and quality schemes” published by the Commission of the EU last October 15, 2008, in order to open the discussion on these topics with all stakeholders of the EU, could be a very good opportunity for starting to elaborate and share a possible positive solution for this issue.

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Table 2. Main positive and negative effects of alternative approaches to IP standards.

Effects on:	Regional IP standards	Retailers' standards (vs. regional IP only)	National IP standard substituting regional/PL standards	EU IP standard
Farmers	(+) access to income support measure (agri-environmental measures of the Rural Development policy). (+) possible positive effect in terms of market access (-) increase in production cost because of the need to apply different IP schemes (-) limitation of pesticides available with negative effect on production costs (-) no price premium	(+) market access to large retail chain (-) further loss of market power (also because of barriers to entry in different chains) (-) increase of production costs (-) increase of production uncertainty	(+) grant market access (+) great simplification of production activity (+) decrease of production cost (w.r.t. different IP schemes for different costumers) (+) greater possibility to obtain some price premium	(+) simplification of production activity (+) decrease of production cost (only one standards) (+) fair competition among products from different country of origin (+) greater possibility to obtain some price premium
Retail chains	(+) with respect to conventional production, lower risks (in terms of MRL) (-) impossibility to use this tool for differentiation strategies between retail chains (-) impossibility to communicate to consumers	(+) increase in market power w.r.t. farmers and POs. (+) better control over farmers and reduction of risk (-) increase of costs also for control activities (-) very limited possibility to stress, in communication, the reduction of health risks (-) limited role for product differentiation based on IP	(+) reduction of transaction costs and cost for product control activities (+) increased possibility to differentiate successfully, at least at the national level, IP products from conventional and organic ones (-) (limited) loss of market powers vs. farmers (and POs)	(+) reduction of transaction costs and cost for product control activities (+) increased possibility to differentiate successfully IP products from conventional and organic ones (-) (limited) loss of market powers vs. farmers (and POs)
Consumers	(+) less risks with respect to conventional products (-) higher price	(+) less risks with respect to conventional products (-) higher price	(+) clearness and uniformity of IP contents (national products) (+) greater competition for IP products	(+) clearness and uniformity of IP contents (ALL EU products) (+) greater competition for IP products
Environment	(-) lower adoption of these IP schemes due to their inefficiency w.r.t. unique IP scheme	(+,-) uncertain effects of the restrictions (-) lower adoption of these IP schemes due to their inefficiency w.r.t. unique IP scheme	(+) positive effects if IP schemes are scientifically based (-) lower adoption of these IP schemes due to their inefficiency w.r.t. unique IP scheme	(+) increase of the probability of a scientifically based approach (+) increased diffusion of this IP scheme due to its effectiveness.