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Executive Summary

This report discusses the role of a selected number (17) of the most important voluntary standards used in Dutch agriculture. The report is structured as follows:

Firstly, a description of the main institutional characteristics and peculiarities of standards is given. Issues dealt with are the certificate holder, the system of accreditation, the role of certification and inspection bodies, etc. Separate attention is given to the (potential) interaction of standards with respect to the requirements (SMRs and GAECs) as included in the cross-compliance package.

Secondly, a more detailed description of the standards is provided. Particular attention is paid to the issues which are also relevant from the viewpoint of the SMRs and GAECs. Besides requirements also some indicative statements are made about the degree of farmer participation.

Thirdly, the distinguished voluntary certification schemes are explicitly compared with the SMRs and the GAECs included in cross-compliance. This is done and discussed in a theme-wise way.

The following concluding observations were made:

- A lot of commonalities exist between cross-compliance and voluntary standards. A difference is that whereas cross-compliance is obligatory and affects the whole sector, voluntary standards are usually not sector wide but involve specific subgroups of producers.
- The additional costs of cross-compliance depend on farmers' participation on voluntary standards. They could already perform at cross-compliance requirement levels for long because of previous standards-adoption.
- As far as there are commonalities synergies could be created with inspection and monitoring. There are a lot of possibilities, but they seem to be underutilized. A drawback of that is that the transaction costs of the schemes are relatively high due to inefficiencies in the monitoring. An advantage might be that the farm inspection regime is much more intensive than the sampling requirements imposed by the EU would do expect.
- Standards open perspective on benefit side as perceived by sector or consumers. As they are freely established they should be welfare enhancing. This needs further research.
- Since in a number of cases the voluntary standards were not yet having full coverage of the SMRs and GAECs and the standards were seen to follow a dynamic adjustment process, it is likely that in these cases their requirements might be extended over time, such as to integrate the cross-compliance standards. A voluntary standard, which usually pretends to deliver more value, not satisfying the basic requirements as taken up and specified in the cross-compliance package might be easily loose credibility.

Contents

Executive Summary	2
1 National institutional framework	2
2 Dutch certification schemes: general description	2
2.1 <i>EurepGAP</i>	2
2.2 <i>IKB schemes</i>	2
2.3 <i>Milieukeur schemes</i>	2
2.4 <i>Dairy farm certification</i>	2
2.5 <i>PROduCERT schemes</i>	2
2.6 <i>Arable farm certification (KPA)</i>	2
2.7 <i>Certification of organic agriculture</i>	2
2.8 <i>Concluding remarks</i>	2
3 Standards and cross-compliance	2
3.1 <i>Financial issues</i>	2
3.2 <i>Environment</i>	2
3.3 <i>Identification and registration</i>	2
3.4 <i>Public, animal and plant health</i>	2
3.4.1 <i>Plant protection products</i>	2
3.4.2 <i>Food traceability systems</i>	2
3.4.3 <i>Notification of diseases</i>	2
3.5 <i>Animal welfare</i>	2
3.5.1 <i>Housing of calves</i>	2
3.5.2 <i>Housing of pigs</i>	2
3.6 <i>Good agricultural and environmental practice</i>	2
4 Conclusions	2
Literature	2

1 National institutional framework

Farmers are increasingly involved in certification schemes in order to provide assurance about the quality and the safety of their products and the environmental sustainability of their production techniques. These certification schemes might interact with the cross-compliance requirements, which also specify certain minimum standards on often related fields.

The development of certification schemes is fuelled by developments in consumer markets and in the food chain. The food chain is recognized more as key to fulfilling consumer expectations for improved quality, provenance with regard to products as well as desired guarantees about the nature friendly and animal welfare securing way of production. Food chains play important communication roles, embodying among others sustainability and food related discourses.

As a consequence downstream industries have a clear interest in schemes enhancing and guaranteeing quality and safety of agricultural products. Several food crises occurring in Europe only increased the urgency and consumer concern. Each year new schemes are entering the market, which are often overlapping and not always consistent with each other. The initiative to certify products and production techniques may come from producers' organisations, from the processing industry, from multiple retailers or from regional public authorities.

The aim of this Deliverable is to describe the main certification standards relevant for Dutch agriculture in terms of their definition, purpose and requirements, as well as their relatedness to the cross-compliance requirements.

Following Meuwissen et al, (2003, 172) certification is defined as the (voluntary) assessment and approval by a (accredited) party on a (accredited) standard. Key elements according to this definition are 'assessment' and 'approval of some standard'. Certification schemes in general differ from the activities by national surveillance and control systems. The main activity of the later is to check and evaluate whether the systems implemented at the farm (and company) levels fulfil the regulatory standards and do not go any further. The 'approval of good practice' by the certification schemes is likely to go beyond the requirements imposed by the regulatory system.

Figure 1 provides a general overview of the private (or public-private) certification schemes (see left part), the certifiable parties in the supply chain (see middle) and the regulatory standards (see right part). The regulatory standards taken into account are the SMRs and GAECs requirements as they are part of the cross-compliance package. For a detailed description of this part, its implementation in the Netherlands and its impact on the supply chain (degree of compliance, costs, etc.) is discussed in detail in Deliverable D5.

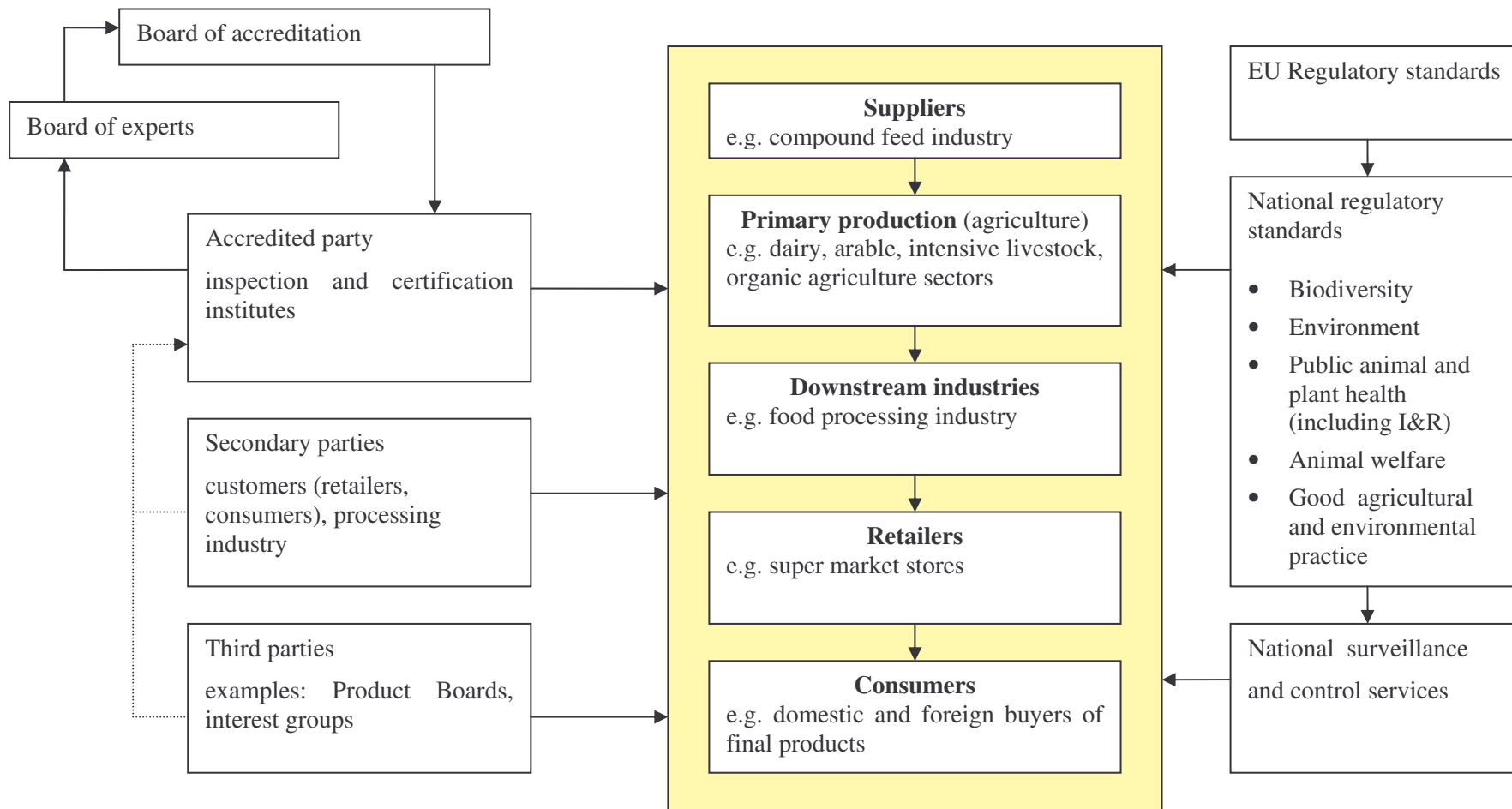


Figure 1 Supply chain, certification schemes and regulatory standards

(Source: adapted from Meuwissen et al, 2003, pp.170 and 173)

Certification systems can be set up with different purposes in mind. They can be used to increase transparency and to reach defined performance and practice standards in the supply chain and by this improving consumer trust and competitive advantage, to reduce risk liability claims, to enhance the control of livestock epidemics, to improve recall efficiency, etc¹.

Certification schemes can be ranked according to the criteria they impose. Certification schemes comprise several criteria, among which:

- Special quality and food safety standards
- Cooperation in the supply chain
- Environmental and nature friendly character of product
- Organic production method
- Small scale production
- Touristical values
- Products coming from certain origin or region.

The certifiable parties are potentially all parties in the supply chain. Certification schemes can focus on specific groups (e.g. organic farmers, compound feed industry) within the supply chain, as well as encompass several groups at the same time (e.g. traceability systems and meta management schemes). As such the certification schemes can be ranked according to their scope or degree of encompassing supply chain activities. Certification schemes relevant for this Report can be focusing on:

- Feed companies (suppliers)
- Farms (primary production)
- Processing companies (downstream industry)
- Chain (any chain participant)

Certification schemes may also be classified according to the certifying parties (see left side of Figure 1). Certification schemes may arise due to the initiative of any individual or group of stakeholders. It are these certifying parties which ultimately formulates the standards used for certification. This might be done in more or less close cooperation with the supply chains partners. If an accredited standard is used, the certification procedure needs to be carried out by an accredited party. All other types of (non-accredited) certification can be certified by either accredited parties or other secondary (e.g. interest groups, clients) or third (product boards, branch organisations, semi-governmental organisations) party organisations. Secondary and third parties may thus choose for schemes inspected and monitored by themselves or own surveillance agencies, or for management of the scheme by an accredited party. Increasingly, they choose for accredited certification, because this improves the credibility of the scheme to outsiders. Accordingly, certification schemes can be

¹ This deliverable has an explorative-character and will not focus on a detailed analysis of costs and benefits. For a theoretical study see Leland (1979) and for more applied studies discussing (some) costs and benefits see Meuwissen et al (2003), Caswell et al (1998), Unnevehr and Jensen (1998), and Roberts et al (1996). The costs and benefits, as well as the impact on competitiveness will be the subject of the second phase of this research project.

ordered based on the accreditation procedure. The following three-way classification can be made:

- first degree schemes: accreditation is granted by independent certification agencies, that are acknowledged by the Dutch Raad voor de Acreditatie (RvA);
- second degree schemes: accreditation is granted by a branche organisation;
- third degree schemes: certification and quality schemes of individual producers: they link own label to own products.

In case of accredited standards, chain certification implies that each participant acquires the certification scheme under consideration. For non-accredited standards chain certification generally implies that specific requirements are specified for subsequent stages in the chain.

Finally, the certification schemes can be distinguished with respect to the kind of inspection. As for the accredited standards, schemes linked to ISO39/EN45004, are inspection schemes, based on a checklist, and in principle only valid on the day of inspection. Other schemes, based on ISO65/EN45011 norms, are product certification schemes in which not only processes, but also products are tested on specified standards. They enable visible claims on the end products (e.g. organic product or eco-labels). Lastly, there are certification schemes aimed at evaluating complete management systems, the so-called system certification schemes. The latter ones are based on ISO62/EN45012 (ISO9001:2000).

The certification bodies in charge of controlling compliance with the certification schemes are primarily private. The work of private control bodies is usually surveyed by the organisation responsible for the certification scheme, i.e. either by government or by private institutions. In particular since product and system certification schemes do not use straightforward checklists, individual auditors' interpretations of the standards are of utmost importance. For example, an auditor has to judge when a farmer fulfils or fulfils not the specified requirements. In order to prevent large interpretation differences between auditors, accreditation of the inspection agencies has to be carefully crafted. The Board of Accreditation (Dutch: Raad voor de Acreditatie, RvA) takes care of this, and certifies the inspection and certification institutes.

The basis for collaboration of farmers is always voluntary and is considered to be a way to facilitate and improve the marketing of agricultural products. As such participation in certification schemes not only involves costs but might also generate benefits. Sometimes they might be called quasi-voluntary as the downstream industries make compliance with their quality schemes obligatory and don't accept delivery without compliance (Caswell et al, 1998, 555). For example, 90 percent of the pig meat traded in the Netherlands satisfies the IKB-Pig standard. Meat not having this standard will face obstacles hindering smooth trade. The Dutch anti-trust agency (NMA) follows the increasing role and obligatory character of standards and one time dismissed a nation-wide quality assurance scheme in the dairy sector (KKM) for violation of the competitiveness-laws.

Based on a survey of the existing schemes and their estimated relevance and impact in this report the following certification schemes as presented in Table 1 are considered.

Table 1 Considered certification schemes.

Certifying organisation	Description of certification scheme
Eurep-GAP	Certification schemes made up by several multiple retailer companies, which has developed standards and procedures for the global certification of Good Agricultural Practices.
Product Board, IKB-schemes	Certification schemes aimed at integral chain management with specific arrangements for pigs, poultry and beef. Schemes developed in cooperation with other branch organisations.
Milieukeur	usually demand driven certification schemes, i.e. based on demands of various stakeholders. Schemes are developed for several sectors, among which dairy, beef, pigs and poultry
Organisatie Certificering Melkveebedrijven	Certification schemes for the dairy sector used by the dairy industries
Kwaliteits Project Akkerbouw	certification schemes for the arable sector following from standards developed by KPA-group
PROduCERT	certification schemes mainly focusing on alternative products which attach high value to animal welfare (not necessarily organic)
SKAL Association for BD-agriculture	certification schemes associated with organic farming: concerns the so-called EKO-label (SKAL) and the DEMETER-label (Association for BD-agriculture)

No effort was done to come up with a complete list². Several more local schemes (usually of a third-degree or firm level character) are ignored. The selected certification schemes are however the most important ones. In the following section they will be further discussed. It will not be tried to cover all details of these schemes. The focus will be on their comparative properties as regards to the requirements (SMRs and GAECs) of cross-compliance.

As the mentioned above list of standards that will be considered in this Deliverable illustrates the supply chain (in particular the farmers) has to potentially met a large number of requirements. However, instead of introducing customer-specific standards for each individual certification scheme, most certification schemes adhere to a number of common standards, which might be already implemented and monitored by other schemes. Moreover, certification schemes often take over adherence of parties to existing legislation and regulatory standards. This establishes the linkage between the (private) certification schemes (see left side of Figure 1) and the regulatory standards, like the ones included in cross-compliance (see right side of Figure 1).

² According to and estimate of the Raad voor het Landelijk Gebied (a Dutch think-tank on rural policy; URL http://www.rlg.nl/adviezen/013/013_3_3.html) there are about 250 different certificates in Dutch agriculture and food sector.

The linkage might be exploited in several ways. For example private certification schemes might use the regulatory standards as part of their package and communicate them to consumer and in that way commercially valorise them. This might be in particular relevant in case regular standards differ over countries (e.g. between the EU and the US). In that case claims to compliance with national regular standards might be used to create a competitive advantage compared to competing imports or exports (Lohr, 1998, 1128). Moreover, by taking up (legal) requirements which are subject to legal sanctions they might buy credibility. Another possibility is that private monitoring and inspection agencies implicitly outsource part of their control-tasks to the governmental control and inspection services (for the common requirements) and thereby save on costs. Another alternative is that private and public parties cooperate on inspection and control activities, which might lead to cost savings, intensified inspection regimes, and increased compliance. As far as the regulatory standards that are part of cross-compliance were already part of private certification schemes this has implication for the cost estimate of cross compliance. Depending on the degree of participation in the private certification scheme, the estimate of additional costs associated with the introduction of cross compliance might be reduced. But also the opportunity costs of participating in private certification schemes might be reduced to the introduced obligatory regulatory standards. Whereas the legal regulatory standards have to be complied with anyway, the additional costs of satisfying the requirements of certification schemes which go beyond this level might decline relative to the monetary benefits participation generates.

As already indicated before, in principle the commonalities between private certification standards and public regulatory standards create potential synergies between private certification schemes and regulatory standards. The Dutch government is in principle op to consider these synergies and make use of the linkages. As such she formulated a fifteen-point list, which specifies the criteria (private) certification systems have to satisfy in order to be (partly) acknowledged. If a certification scheme is acknowledged it gets the label “ketengarantiesysteem”. Acknowledgement implies that the government reduces their own control and relies on surveillance of the certifying organisation and its monitoring system and no longer directly inspects and monitor supply chain parties. Among the criteria for public acknowledgement are (MDW, 2000):

- it should be a privately organised system (no involvement of Product Boards);
- All partners in the supply chain have to participate;
- As a minimum requirement all partners in the supply chain satisfy the legal requirements of public, animal and plant health law, as well as those on animal welfare;
- There is a closed product stream (parties only use products coming from other participating parties in the supply chain, of if not they keep these separated from the certified product stream);
- The certification scheme is carried out by an independent private non-profit agency, that satisfies certain quality requirements (e.g. ISO9004-2 and EN45011);

- All participants sign written agreements with each other and the certification agency in which they promise at least to comply with the public regulatory standards;
- Inspection and monitoring is carried out by an independent accredited inspection agency, which satisfies the EN45004 criteria;
- The certification scheme has an adequate and well-described system of sanctions;
- The Minister of Agriculture, Nature and Food Quality is fully informed and has access to the administrations of the control and inspection bodies, as well as to the records kept of the imposed sanctions.

At this moment no acknowledged private certification systems are known. However, some certification schemes are coming close to the requirements for acknowledgement and there is a clear tendency of private schemes to strive for acknowledgements.

The certification schemes or standards relevant for the Dutch supply chain do not necessarily have to be country specific. As Figure 1 shows, the final products produced by the supply chain might go to domestic as well as foreign destinations (exports). A Dutch pig farmer who wants to deliver to a German slaughterhouse or the German consumer market, might have a German Quality and Safety certification, issued by the German Board of Accreditation. Likewise, German dairy farmers, who want to deliver milk to the Dutch dairy industry, can have a Chain Control Milk (KKM)-certification issued by a Dutch certification party. In this Report only Dutch certification schemes will be analysed. Here knowledge is available about participation in foreign certification schemes this will be mentioned. For more information about content and design of these foreign certification schemes (which are mostly European) one is referred to the other country specific D6-Deliverables.

2 Dutch certification schemes: general description

In this section the certification schemes as denoted in Table 1 of the previous section will be more extensively discussed. Thereby a general standard format is chosen. For each scheme subsequently the certifying organisation, purpose and requirements will be discussed.

Details about the relationships of the discussed certification schemes with the regulatory standards covered by the cross-compliance is discussed in the following chapters.

It was not possible to get precise numbers on the number of participants. Where they were available or easy to recover they are presented. In a number of cases the list of wholesalers and retailers participating is readily available, but not the list of participating farmers. It was often also not possible to get an exact estimate of the membership costs (which might depend on various criteria; see some further remarks in next section).

2.1 EurepGAP

EurepGap is an initiative of retailers belonging to the Euro Retailer produce Working Group (EUREP). Many of the EurepGAP members are global players in the retail industry and obtain food products from around the world. So the network has an international membership and international scope. Dutch retail and food service members of EurepGAP are Ahold and CBL (Centraal Bureau Levensmiddelenhandel). The initiative, which started in 1997 and has further developed since then, was driven by the desire to reassure consumers. As such it was a response to the food scares (BSE and others), pesticide concerns and the rapid spread of GM foods, all factors which increased consumer uncertainty about the safety of food, his desire for independent information and his interest in sustainable food production.

EurepGAP, which include as members retailers, producers/farmers and associate members for the input and service side of agriculture, now is an equal partnership between agricultural producers and their retail customers. Its mission is to develop widely accepted standards and procedures for the global certification of Good Agricultural Practices (GAPs), where these GAPs should have a clear consumer focus. Included are into the GAP definitions are issues like food safety, the environment, workers welfare and the welfare of animals.

By adhering to good agricultural practices EurepGAP aims at reducing the risks in agricultural production. EurepGAP provides tool to objectively verify best practices in a systematic and consistent way, throughout the world. The scope of EurepGAP is concerned with practices on the farm. Once products leave the farm they come under the control of other Codes of Conduct and certification schemes relevant to food packing and processing. Combined, these schemes guarantee that the whole chain is assured right through to the final consumer.

Governance of the EurepGAP scheme is by sector specific steering committees, which are chaired by an independent chairperson. The standard and certification

scheme is approved by the so-called Technical and Standard Committees working in each product sector. These committees consists of both retail and producer members. Another aim of EurepGAP is to provide a forum for continuous improvement of quality and safety standards. Therefore the technical and standards committees, has as a formal agenda to review emerging issues and carry-out risk assessments. This is a rigorous process following the principles of HACCP³. It involves experts in their field and leads to revised versions of the protocol.

The EurepGAP certificates belong to the accredited standards category. This means that all certification bodies have received full ISO Guide 75 (EN 45011) accreditation. Only accredited certifiers are allowed to use the EurepGAP logo on their certificates, and only they can allow growers to do the same according to their certification agreement. Accredited certification body in the Netherlands are Control Union Certifications BV (former Skal International), which is approved for the sub-scopes cattle and sheep, dairy, pigs, poultry and combinable crops. FoodCert BV is provisionally approved.

The protocols of EurepGAP recognize three levels of compliance criteria: 'major must', 'minor must', and recommended. For the 'major must' criteria hundred percent compliance of all applicable major must control points is compulsory. For the 'minor must' criteria ninety percent compliance of all the applicable minor must control points is compulsory. For the 'recommendations' no minimum percentage of compliance is set. Verification includes annual farmer internal self-inspection and external verification by certification body. Farmers can apply individually or as a group. They can apply directly for EurepGAP schemes, or also (indirectly) apply for EurepGAP benchmarked schemes.

Wherever a non-conformance is detected in a 'base' module, this will also affect all livestock specific modules. Non-conformance in one sector specific module will affect only that module, and no others. Within EurepGAP three types of sanctions exists: warning (allows some time for correction), suspension (EurepGAP logo suspended for some time) and cancellation (cancellation of contract and prohibition to use license or certificate).

If non-compliance is detected with respect to a 'major must' immediate complete certificate suspension follows (for a minimum of 6 month). If repetition occurs in subsequent audits the certificate is cancelled. If a farmer or a group of farmers notificate non-compliance with a 'major must' in advance, before externally detected by a certification body, and puts in place suitable corrective actions, than immediate partial suspension of the certificate is imposed. If more than 10% of the applicable minor musts are not complied with a deferred suspension of the certificate is imposed.

Alongside the general EurepGAP standard there is the integrated farm assurance IFA program (EurepGAP, 2005). The EurepGAP integrated farm assurance or IFA Steering Committee defined the following general objectives and mission for IFA. Farm assurance is found important because it provides a controlled and more efficient production of agricultural raw materials, a farmer's response to globalisation, and

³ HACCP is a widely recognized tool to establish good production, sanitation, and manufacturing practices that produce safe food. HACCP establishes process control through identifying point is the production process that is most critical to monitor and control (see e.g. Unnevehr and Jensen (1998) for more details).

reassures and improves confidence in agricultural products. The main objectives of the IFA program are:

- To facilitate mutual recognition through transparent benchmarking;
- To boost world wide participation in farm assurance;
- To encourage continuous improvement; and
- To provide performance and integrity measurement for assurance schemes (e.g. certification and accreditation).

One wants to reduce duplication of audits at farm level, and also to see IFA becoming the preferred global reference standard for farm assurance. The large number of assurance schemes which currently prevail in the market are found confusing both to consumers and the industry.

The IFA protocol has a ‘base’ module, which applies to all participating farms, all crops and all livestock on those farms. In addition, sector-specific IFA protocols are developed for combinable crops, fruit and vegetables, cattle and sheep, dairy, pig and poultry. It is not possible to certify the sector module without verifying the applicable base module. Additional sub scopes such as feed, livestock transport, etc. are covered through recognition of schemes via a benchmarking process. Out of these protocols here only the ones on combinable crops (including cereals), dairy, cattle and sheep (including beef) and pigs will be considered⁴. Below the main characteristics of the protocols (including the relevant base criteria) are described⁵.

The criteria with respect to combinable crops follow from the ‘base’-module on crops and the sector-specific module on combinable crops. With regard the ‘base’-module they regard the following issues:

- The product should be traceable to the farm where it is grown (requires documented traceability register);
- In case of GMO plantings one should comply with all applicable legislation in the country of production;
- It is recommended to use techniques that are proven to improve or maintain soil structure, and avoid soil compaction;
- It is a minor must to apply field cultivation techniques which reduce the possibility of soil erosion;
- Fertilizers should be used by farmers which can show their own competence and knowledge or their reliance on competent advisers;
- All fertilizer (chemical, organic) applications should be kept record of;
- Storage facilities for fertilizers (chemical, organic) should be in proper condition;
- No sewage sludge should be used at farm;
- The protection of crops against pests, diseases and weeds should be achieved with the appropriate minimum of crop protection product input;
- Crop protection products should be properly stored, in well ventilated facilities and in accordance with local regulations;

⁴ Selection based on listing as supplied in Deliverable D4.

⁵ For a complete description see the detailed specified criteria in the accompanying documents at the website of EurepGAP.

- All crop protection product applications are kept record of.
- The registered pre-harvest intervals have to be observed and satisfied.
- The farmer or supplier should provide evidence of residue testing according to accepted testing procedures;
- All application equipment of fertilizers and plant protection products must be kept in good condition.

From the combinable crops module the following additional criteria are relevant:

- Farmers should inform their direct clients about the GMO status of their products;
- Any application of fertilizers in excess of national limits should be avoided;
- Fertilizers applications should be done in such a way that surface and ground-waters are protected from excessive nitrate and phosphate contamination;
- All national restrictions on crop protection product application should be complied with;
- Hygiene of harvested crop storage is respected (clean storage facilities, where appropriate washed and insecticide treated prior to use).

The criteria with respect to livestock follow firstly from the general 'base'-module on livestock. With regard the 'base'-module the following issues are mentioned:

- All farms with livestock enterprises maintain a movement record;
- All livestock should be individually identified by individual or batch (poultry) identification;
- All livestock should have access to sufficient clean water;
- Used feeds and industry by-products should have been manufactured by a source approved by EurepGAP;
- All purchased stock feed materials should be traceable to the supplier;
- All home mixers of feeding stuffs should be registered with, or approved by a relevant and competent authority;
- The forage fed on the farm should be derived from crops that were produced and certified according the relevant EurepGAP standard;
- Records, as detailed as available, should be kept for purchased feeds;
- Feeds should be properly stored in conditions which prevent deterioration and contamination;
- The floor space available should be sufficient to allow appropriate stocking densities;
- Ventilation (natural or artificial) should be effective and appropriate to the livestock type in order to maintain suitable temperature, atmosphere and to prevent condensation;
- Floors should be maintained so as to avoid slippage and to prevent stress to animals;
- All housing, races and enclosures should be free from sharp projections, corners, machinery etc. that may cause stock to injure themselves;
- Farmers should keep record of routine veterinary visits by a surgeon or a practice and should have a written veterinary plan, covering the required areas (disease prevention, vaccination, parasite controls, feed-water medication, etc.);

- Livestock suffering from ill health or injury should receive immediate adequate attention and if necessary be kept in suitable isolated facilities;
- Livestock should at all times be treated in such a way as to protect them from pain, injury and disease;
- Farmers should only use medicine that are approved by the relevant competent authority, follow the labelled instructions, and not use medicines that have past their expiry date;
- No growth promoters should be used (should be evidence by regular sample tests);
- All farmers must maintain up to date and legal medicine purchase and administration records;
- Medicines should be properly stored;
- Fallen stock disposal should be done adequately and promptly.

The ‘base’-module for livestock contains the largest number of criteria, to which a more limited number is added in the sector specific modules, or more detailed extensions are given of criteria earlier mentioned in the ‘base’-module.

With respect to the sector specific cattle and sheep module (which include beef) the following criteria are mentioned:

- Livestock entering into EurepGAP registered farms coming from non-EurepGAP registered farms should undergo a period of residency of at least 90 days at an approved farm before being qualified as EurepGAP stock;
- Farmer should describe what factor influence his choice of bulls and keep record of calving difficulty/mortality;
- Newborn calves should receive colostrums ideally within 1 hour of birth and receive full milk within the first three days after birth whether from their dam or an alternative source;
- Sufficient milk should be available until their intake of concentrates and hay is sufficient for a calf’s growth;
- Muzzling of calves is not allowed;
- Calf areas are clean in order to minimize risk of infection;
- Calves receive a nutritionally sound diet, appropriate to the calf’s development, fed twice daily;
- The farmer must follow a stock inspection routine (preferably once daily when stock is outside; twice daily when stock is housed);
- Housed stock have lighting throughout the hours of normal daylight;
- All stock should be provided with a well-drained, dry lying area;

Except for the first and the last three criteria (which are ‘major musts’) all other sector specific criteria are belonging to the category of ‘minor musts’ or ‘recommended’ criteria.

The sector-specific dairy module contains a number of ‘major must’ criteria with respect to milking and dairy health treatment, where the other criteria belong to the categories ‘minor must’ or ‘recommended’. It should be realized that when the dairy sector module is applicable, at the same time also the previously discussed cattle and sheep-module is applicable or presupposed to hold. The following criteria with respect to dairy are worth mentioning:

- Farmers are recommended to have a written feed plan which demonstrates an adequate nutritional feeding regime for the dairy cows;
- Housing may not have slatted lying areas;
- To minimise the risk of injury to cows, all access ways should be maintained in a sound condition;
- Kennel and cubicle accommodation should allow cows to behave normally when lying down, ruminating and getting up, and contain a dry and comfortable bedding area;
- There should be a veterinary health plan for routine prevention treatments such as foot care, mastitis, vaccinations, and worming;
- Records are kept of the herd health monitoring, which identify cows at individual level;
- Cows should be milked regularly in well-facilitated milking parlours, which cause no welfare problems to cows when they are being milked;
- Adequate facilities should be available to ensure that milk from cows within the withdrawal period for any medicine is disposed of and does not enter the food chain;
- Milk from individual cows might not enter the collection system until it has been inspected for abnormalities from infection;
- A milking routine should be in place which ensures that udders are clean and dry prior to milking. Clean running water must be available for cleaning of dirty cows and potable water for the cleaning of milking machines
- The milking equipment must be tested and serviced at least once per year and records of servicing reports and replacement of material should be kept;
- The milking parlours and the milk collection storage should be in proper order (sound doors and windows, no rubbish, sound and regular cleaning, adequate cooling of collected and stored milk).

With respect to pigs the following sector-specific criteria (on top of the 'basic'-livestock module) are relevant:

- Approved pigs may not have been procured from, or passed through a livestock auction market;
- All pigs should be checked to ensure their permanent identification is in place prior to dispatch for slaughter;
- Castration without anaesthetics is only allowed within 7 days of birth. After this period it is only allowed with anaesthetic and when carried out by a vet;
- Tooth clipping or grinding in newly born piglets is acceptable only in accordance with legislation and with the recommendation of the farm's attending veterinary surgeon;
- If tail docking is done there must be a written veterinary/farm advisor recommendation to do so, which has to be revised quarterly. Moreover, authorized workers have to be competent;
- Piglets are not weaned under 28 days unless there is a veterinary or outstanding welfare reason for doing so;
- If pigs are restricted fed, the troughs should be sufficiently long to allow all pigs to feed at the same time;
- All feeds should be traceable and feed delivery records should be retained for 3 years;

- Pigs over two weeks of age should have sufficient supply of clean, fresh potable water;
- In order to prevent tail biting and other vices and also to enable them to satisfy their needs, all pigs (taking into account their stocking density) should have access to straw and other material/objects suitable to satisfy these needs;
- Pigs should have access to a clean dry lying area;
- Temperature and ventilation equipment in pig housing should be properly functioning and adjustable to the age, weight and stocking density of the pigs housed (detailed temperature and ventilation levels are described);
- Minimum total space allowances for weaning, growing and finishing pigs should comply with legislation;
- All pigs should be able to freely turn around, have a dry lying area, and lie down all at the same time;
- Lying areas should satisfy the additional EurepGAP standards (solid floor area must meet certain stocking rate criteria);
- Outdoor pigs keeping should satisfy certain ‘housing’ and stocking rate criteria.

2.2 IKB schemes

IKB stands for integrated chain management. The IKB scheme is a national scheme which regulates production and distribution of meat, which started to be developed in 1990. There are schemes for pigs, poultry and calves. They were initiated with the Product Board for meat, poultry and eggs in cooperation with business and research institutes. More recently (since 2004) the schemes are privately organized and got a more independent character⁶.

The purpose of the schemes is to encourage a more close cooperation between the different chains of the supply chain. In principle each link of the supply chain from the down stream compound feed industry to the wholesaler is involved. The aim of the cooperation is to improve the meat product’s image and to produce products which are better tailored at consumer’s wishes and achieve a stronger competitive position.

All chains in the supply chain can participate. Pig farmers who want to participate have to conclude a contract with the VERIN, an accredited quality standards verification institute. Where formerly the slaughterhouses had the main responsibility in inspecting and controlling the farmers, now this is also done by the VERIN, who has delegated this to the CBD (central bureau of slaughter animal-services). In case of detected non-compliance the VERIN imposes a sanction.

The scheme distinguishes announced and non-announced inspection visits. Announced visits are primarily focused on checking the administration. Non-announced visits the farm and inspects the animals, housing, etc. and includes the sampling of urine from pigs. Within the IKB scheme participants can get several qualifications. Status IKB-1 implies that there is full compliance or at least no more than ten light deviations from the norms. If there is one ‘medium’-deviation and no

⁶ Another change, which took place in 2003, is that the Skovar quality certification system was fully integrated in the IKB-pigs scheme.

more than 10 light deviations a participant gets status IKB-2. If there is one serious deviation of the norm and/or non improvement from earlier notifies deficits under IKB-2 status, the participant gets status IKB-3. If there is non-compliance with respect to illegal medicines or growth stimulators a participant get status IKB-4 and the certificate is suspended for a period of three months. The dominant part (estimated 90%) of farmers and slaughterhouses participate in the IKB schemes. In this study only the certification scheme for pigs will be taken into account. The certification criteria are determined by a commission of experts. Some selected requirements are⁷:

- The requirements imposed by the law on contagious diseases should be satisfied;
- The requirements as specified in Annex IV of EU directive 2377/90;
- Feed should come from GMP-certified compound feed factories;
- Space requirements (animal welfare) follow the criteria as they are specified in the national Varkensbesluit-directive with exception of those which are evaluated to be not feasible from an economic point of view;
- Each farmer has an agreement with a veterinary surgeon which secures the animal health status (by regular checks, etc.) of the farm;
- Each pig farmer needs to have followed the course 'Adequate vaccination';
- Extended set of requirements to guarantee hygiene should be satisfied;
- Identification of pigs should be in proper order;
- The use of veterinary medicines should be kept record of;
- No non-allowed veterinary medicines might be present on the farm;
- The use of growth stimulators is prohibited
- Requirements with respect to transportation of pigs (desinfection means of transport, etc.).

The animal welfare requirements are below what the Dutch government is demanding from pig farmers (allowed adjustment time for farmers to achieve the government standards is January 1, 2013), but are still higher than those imposed in the SMRs.

2.3 Milieukeur schemes

The directives included in the Milieukeur schemes consist of general and specific criteria, that have a strong product or crop focus. The aim of this Milieukeur institute (Stichting Milieukeur, SMK) is to encourage sustainable and environmental friendly agricultural production. They aim at increasing transparency and clarity with respect to environmental claims and to stimulate the unity between various environmental certificates.

In general it can be stated that the production process has to satisfy the legal environmental and quality requirements. Product and packaging have to satisfy certain food safety criteria. Likewise the EurepGap standards, also the IKB-schemes undergo annual updates.

⁷ A complete set of requirements could be found in the document Voorschriften Regeling IKB Varkens voor varkenshouders, which is freely downloadable from the website of the VRIN (URL <http://www.verin.nl/home.htm>).

If the organisation requesting a Milieukeur certificate is a downstream industry or represents a group of growers, this agency can itself play a role in the control (collecting data, doing administrative checks, provide supportive advice to members). However, the final control and inspection is in the hands of an accredited independent certification body (KIWA, SGS, ECAS, KCB). The inspection consists of administrative checks, biannual on-farm inspections, and product sampling (checks on illegal residuals). The surveillance and inspection system is in accordance with European standards (EN 45011).

In case of non-compliance there are three types of sanctions: warning, fine, and cancellation of scheme. The inspection body determines after which period one can than again successfully apply for the scheme. The controls are independent of those of governmental checks (although they also partly check for legal criteria).

In this study the Milieukeur-schemes for the arable sector are discussed (see for more details the discussion of the KPA-project below).

2.4 Dairy farm certification

Together with the Dutch farmers union LTO, the Dutch Dairy Organisation (NZO) developed a quality scheme known under the label KKM (keten kwaliteit melk=chain quality milk). The main focus of the KKM integral chain management scheme is quality and food safety. This scheme got widely accepted and tended to become a country-wide standard for any milk deliverance transaction. The Dutch antitrust agency NMA concluded that this was conflicting with the requirements of fair and sufficient competition. As a consequence a main Dutch dairy (Campina) developed his own quality system, which is formally different but in a material sense very close to the KKM certification system. So the milk quality schemes are more closely linked to the dairies as compared to the previous situation.

Monitoring takes place by an independent body. If the milk fails to satisfy the required standards, the dairy farmer in question may be prohibited from supplying the dairy factory in the future. The main emphasizes in the inspections seems to be on medicine use. Although an issue like identification and registration is also part of KKM, it seems that the inspection bodies spent relatively less time on checking this, not because they find it unimportant, but because they know it is already checked by others (AID inspection on cross-compliance requirements)⁸.

The criteria dairy farmers have to satisfy include⁹:

- Identification and registration of animals according to the legal rules;
- Animal health should be secured through a compulsory certificate of good health for each cow and a disease control program based on continuous monitoring;
- Feeds are made from natural ingredients and contain no antibiotics, milk yield enhancer, or other synthetic additives;

⁸ This remark is based on anecdotic information we gathered in the side stream of the questionnaire on cross-compliance among Dutch farmers (see Deliverable 5). So it reflects the way farmers perceive the monitoring and inspection, rather than being based on any formal indications.

⁹ A detailed specification of the requirements can be obtained from the OCM, the organisation handling the certification of dairy farms (URL <http://www.ocmonline.nl/>). See for example the manual Handboek Ketenkwaliteit Melk (protocol).

- Only companies with GMP certificate may supply mixed feeds to the dairy farm;
- Milk of animals that have received medication is not supplied to the factory during an established suspension period;
- A sample is taken from each batch of farm milk delivered. Quality of the milk is tested with respect to various criteria (cell count (mastitis), freezing point (water content, pH value, purity, harmful substances, etc.).

In general the standards specified are more stringent than those described by Dutch or EU legislation.

Participation in the KKM scheme or (its equivalent) is obligatory for deliverance of milk to dairy factories. So there effectively is still a dairy sector-wide coverage of a nearly fully uniform standard. This is irrespective of the efforts to break the monopoly-standard in dairy by the Dutch anti-trust agency.

2.5 PROduCERT schemes

The PROduCERT organisation has a number of certification schemes and carries out on-farm inspections, among others for the IKB-pigs scheme mentioned before. PROduCERT is holder of a number of schemes concerning free range animal farming. The schemes in particular distinguish themselves on the issue of animal welfare requirements. With that respect they are going far beyond the requirements of the EU cross-compliance regulations. An important aim of these schemes is to distinguish the products coming from free-range farming and by that valorising this type of farming. Specific consumer groups are prepared to pay a premium for products coming from free-farming origin.

The PROduCERT certification scheme for free range cattle exists for about 10 years. It was created because of a request of suckler cow farmers and speciality butchers. The animals should be kept in groups, have to possibility to graze outside, and be fed with natural feeds satisfying good feed criteria. Farmers participating are checked twice a year. Butchers and meat processing firms are checked six times a year. Currently there are about 45 wholesaler and retailer participants.

The PROduCERT certification scheme for free range pigs dates from 1985 and was initiated to create a meat alternative for consumers. Among the initiating parties were Animal Defense, The Ministry of Agriculture, and the consumer interest organisation. Participating farmers are inspected at least twice a year and participating butchers and meat processing firms at least six times per year. There are about 40 wholesale and retailer participants.

The PROduCERT certification scheme for free range laying hens dates from 1991. It distinguishes for types of chicken farming: three with free range outside for the chickens and 1 type in which there is no possibility for the chickens to go outside. Only those farming types allowing chickens to go outside can qualify for the certification scheme. Monitoring and inspection is done by Controlebureau Pluimvee en Eieren (CPE, Control Bureau Eggs). There are about 15 wholesaler and retailer participants.

Alongside these schemes PROduCERT holds some other schemes among which one associated with Limousin breed meat production and a very recent one labelled as “Koeien in de wei” (Keeping the cow outside) which seems to be rather popular.

2.6 Arable farm certification (KPA)

The aim of the Quality Project Arable sector (KPA), which started in 1999, is to create a central registration of all relevant information about the production process in the arable sector in a system which is under control and ownership by the arable sector itself. The initiator of the KPA project was the Dutch farmers union LTO. So it are the arable farmers which themselves determine who get access to their registration system and who not. Arable farmers can certify their farm under three different schemes. Firstly, there is a base certificate. Secondly there is an Environmental certificate (Milieukeur) associated with a single product (also called a product-certificate). Thirdly, there is an environmental certificate which regards the whole arable farm (Milieukeur akkerbouw), also labelled a farm-certificate. All schemes have a control and sanction paragraph.

The exact criteria were not directly accessible. However, they have a strong focus on the use of plant protection products. Only allowed means might be used. Good plant protection practice criteria should be satisfied. This fits in with the general purpose of this scheme, which is food safety and environmental sustainability.

2.7 Certification of organic agriculture

The EU took care that from 1991 Europa had a recognizable and credible label for organic agriculture: the Eco-label (EKO-keurmerk). Skal is the holder the Dutch EKO-label. Although the EKO standard is voluntary there is a high degree of public authority involvement. In that sense this standard differs from standards like EurepGAP and IKB pig that are privately developed, and also free to be adjusted in accordance with the wishes and desires of private parties.

In order to qualify for this label farmers have to satisfy the EU standards for organic agriculture and sometimes additional country specific requirements. In 2005 the total area of the certified amounted 48765 hectares (2.5% share of total agricultural area; +600ha as compared to 2004). The total number of organic farms was 1468 of which 13777 were certified. About 16.000 cows at 325 certified organic dairy farms were included.

The requirements of the EKO schemes follow the EU standards, as provided in EU Directive 2092/91 and imply (among others) the following requirements:

Plant production

- For all forms of organic production it holds that the use of genetically modified organisms (GMOs) is strictly prohibited;
- For arable production soil fertility should be preserved or improved by means of the use of legume crops, green manure crops, deep rooting crops and a wide crop rotation scheme;
- Problems with diseases, weed, etc. need to be reduced by appropriate variety choice, mechanical weeding, protection by natural predators;
- Plant protection products are in general not allowed, except in very extreme cases;
- No parallel crop growing of organic and non-organic crops is allowed;
- Before being recognized as organic the proper transition procedure should be followed (transition time of 2-3 years);

Animal production

- For animal production it should be secured that animals can follow species-specific behaviour;
- In case diseases occur homeopathic are preferred. If they are not satisfactory a limited number of regular medicines may be used. If regular medicines are used products should not be delivered to factories before taking into account an intermediate period which has two times the length as the minimum length specified for the medicine;
- Animals should be registered, but also grassland use;
- Only organically grown feeds are allowed for animals.

The difference between the EKO label and the Environmental certificate (Milieukeur) is that in organic agriculture no any chemical fertilizers and plant protection products are allowed, whereas under the Milieukeur this is allowed, but under strict criteria. The criteria with respect to GMO's are more strict in the Netherlands than is specified in the EU standards.

A second certificate linked with organic agriculture is the Demeter label. This certificate is associated with biological-dynamic (BD) agricultural production. This approach to agriculture emphasizes the need for respecting balances and taking into account relatedness and connectedness in agricultural production, which it sees as an organism. From this several things follow:

- ✓ The balances-concept implies for example that agricultural production should be mixed: arable production and animal production should be combined, because they are dependent on each other (animals need forage from plants, arable land needs manure from animals). Mixed production could be realized either at farm level, or through close cooperation of neighbouring farms.
- ✓ The soil is seen as a living organism, where soil-life should be encouraged. From this a number of restrictions follow with respect to the application of manure. Chemical fertilizers are not allowed, just like in organic agriculture in general. Organic manure, may and should be applied, but in such a way that it encourages soil life. This implies no application of 'fresh' manure, but only of manure made into compost.
- ✓ With the process of making compost special BD-preparates should be added to structure and direct the transformation process and increase the vitality of the resulting compost.
- ✓ There is a complete philosophy about the togetherness of soil, plants and animals. Preserving nature, natural habitats, plant species and wild life, i.e. to create a natural embeddedness of agricultural production in the natural environment and respecting the ecological conditions and of life-cycles is self-evidently included in the requirements.
- ✓ There are requirements with respect to the crop and breed varieties used, with a strong preference for using local varieties and (old) animal breeds, which originate from the own farm.

The Dutch Demeter certificate is based on the international Demeter production standards¹⁰. Concluding, the Demeter-certificate distinguishes BD agriculture from standard organic

¹⁰ A more detailed overview of the requirements can be found in Demeter (2006), which is also downloadable from the Demeter website.

production. The Demeter label includes all requirements as specified in the previously discussed EKO, but goes beyond this.

2.8 Concluding remarks

In this section the following seventeen certification schemes are discussed, be it at different level of detail:

- 1) EurepGAP base certificate arable sector
- 2) EurepGAP combinable crops
- 3) EurepGAP base certificate animal sector
- 4) EurepGAP cattle and sheep
- 5) EurepGAP dairy
- 6) EurepGAP pigs
- 7) IKB-pigs
- 8) KKM-milk
- 9) PROduCERT free range cattle
- 10) PROduCERT free range pigs
- 11) PROduCERT free range laying hens
- 12) KPA-base certificate
- 13) KPA-product specific product Environmental label (Milieukeur product)
- 14) KPA-farm Environmental label (Milieukeur bedrijf)
- 15) EKO label arable production¹¹
- 16) EKO label animal production
- 17) Demeter-label

Some of the discussed schemes were aiming to satisfy consumer concerns (EurepGAP, some focused on product differentiation with the aim to realise a price premium for the distinguished product (organic agriculture). Others had a more defensive character. They originated from the supply sector (primary agriculture and downstream industries) and aimed at restoring consumer confidence (IKB, KPA).

Lack of information exists for both the number of farmers participating in these certification schemes and/or with respect of the share of production which is certified. Some certification schemes had sector wide coverage for others it was much more limited. Nearly sector wide schemes are IKB-pigs, KKM and the organic produce certificates.

Also with respect to the costs involved with the voluntary certification schemes information is lacking. Some further details will be given in the next section.

¹¹ Although there is factually only one EKO-standard in practice the requirements are splitted up over animal production and arable production. It is for convenience sake that we followed this artificial separation of the scheme into two parts.

As already mentioned in the previous section (See Figure 1) standards and cross-compliance are related to each other. In the next chapter that linkage is further explored.

3 Standards and cross-compliance

In this section the standards discussed before are related to the cross-compliance requirements. Subsequently the following themes are discussed: environment, identification and registration, public, animal and plant health, animal welfare, and good agricultural and environmental practice. Alongside the information provided in the previous section also the information about the details of the Dutch cross-compliance as discussed in Deliverable 5 are taken into account. Also some remarks about overlapping standards will be made.

The relatedness between standards and cross-compliance will be shown using overview tables which link all standards discussed before to the SMRs and GAECs. The legend used in these overview tables is given in Table 2.

Table 2 Degrees of linkage

code	Description
0	SMRs or GAECs not covered
1	SMRs or GAECs minor coverage
2	SMRs or GAECs substantially covered
3	SMRs or GAECs fully covered
4	standard goes beyond cross-compliance

It should be noted that using such a coding system requires estimation. Sometimes the standards explicitly refer to cross-compliance, but more often they do not. In other cases standards have a phrase like ‘all legislation should be respected’ which is rather general, but in principle includes the cross-compliance constraints. There are cases in which the standard goes (far) beyond the cross compliance requirements. This is indicated with code 4.

Sometimes standards are layered. For example a farmer who wants to get an EurepGAP dairy certification needs also to satisfy the EurepGAP basic livestock certificate requirements as well as those of the EurepGAP cattle and sheep certificate. In the tables below upper layer standards will be presented in a so-called cumulative way. It is presupposed that the underlying standards are also satisfied (so an upper layer standard can never score lower than the underlying standards).

3.1 Financial issues

As already indicated before lack of information remains about the costs of participation in the various certificates. Some schemes were developed or at least co-developed by the government (EKO), where others are subsidized by the government (KPA). In that case farmers don’t have to any the set-up costs, but usually pay a fee covering the operational

costs. There is even more uncertainty with respect to the monetary benefits. This section provides some of the anecdotic evidence that could be found.

With respect to the IKB pig scheme the annual costs a farmer has to pay to the certificate-holder is estimated to be about €215 (2006). This is excluding the costs for self-evaluation. This is usually done by the farmer himself and is estimated to amount about €2000 per annum. For IKB pig certified meat there exists an agreement according to which the slaughterhouses pay the participating farmers a premium of €0,045 per kg of meat. So farmers can make a clear cost-benefit evaluation.

For the environmental label (Milieukeur) the access costs are €235 per farm or €470 per group of farms. After that an invoice is sent for the annual operation costs, which depends on the number of hectares (crop specific certificate) or on turnover (firm specific certificate). The minimum annual costs are €370, with a maximum of €25.000. With respect to the Environmental labels there are two fiscal regulations which may lead to cost reduction. Participating farmers can get an environmental investment deduction for investments in environmental friendly technology. Moreover, there is a regulation which opens certain depreciation scheme options which are attractive to farmers from a fiscal point of view.

The annual costs associated with the KKM certificate (or its equivalents) are estimated to be somewhere in the range of €50-€100 per farm. Likewise in the case of the IKB pig scheme, also with KKM (and equivalents) participating farmers receive a benefit in terms of a price premium for milk. However, since being certificated is a requirement in order to deliver to dairies it cannot be stated that farmers can make a free cost benefit evaluation and decide on participation. The scheme is formally quasi-voluntary, but factually obligatory. This might also change the impact of the price premium. Farmers no longer perceive it as something which can be gained in case of participation, but rather as something which can be lost in case of non-compliance or non full compliance (sanction). The lost premium or sanction can amount €0,10 to €0,15 per kilogram of milk delivered, which is roughly one third of the raw milk price.

The annual costs associated with the PROduCERT schemes for free range cattle and pigs amount €450 per annum (excluding VAT). The amount does not depend on farm scale (personal information, June 13, 2006).

As can be seen from reviewing the details of the schemes there is sometimes overlap between them (see also the Tables provided below). So farmers are expected to not participate in all possible schemes at the same time. Costs might play a role in this selection process, but also benefits do. Unfortunately within the available time it was not possible to explore the benefit side any further. However, the benefit question will be further dealt with in the second phase of the project.

3.2 Environment

Table 3 provides an overview about the relationship of the standards discussed in this Deliverable and the cross-compliance constraints (expressed at SMR-level)¹². As can be seen from Table 3 the degree of coverage of environment SMRs differs with the origin and purpose of the distinguished standards. For example, standards focusing on pig production, which is no form of land-based agriculture, are expected to show less attention to environmental SMRs.

¹² For a detailed discussion of the content of each of the SMRs see Deliverable 5.

In general it appears that the distinguished standards are 'weak' with respect to preserving wildlife and habitats. An exception are the standards related to organic agriculture (EKO and Demeter), which perform well on all environmental SMRs taken up in cross-compliance.

Table 3 Standards and environment

Standards	SMRs and GAECs	Environment				
		wild birds	groundwater	sewage sludge	nitrates	habitats
1	EurepGAP base certificate arable sector	1	1	3	2	1
2	EurepGAP combinable crops	1	1	3	3	1
3	EurepGAP base certificate animal sector	1	1	3	2	1
4	EurepGAP cattle and sheep	1	1	3	2	1
5	EurepGAP dairy	1	1	3	2	1
6	EurepGAP pigs	0	1	3	2	0
7	IKB-pigs	0	0	0	0	0
8	KKM-milk	0	0	0	0	0
9	PROduCERT free range cattle	0	0	0	0	0
10	PROduCERT free range pigs	0	0	0	0	0
11	PROduCERT free range laying hens	0	0	0	0	0
12	KPA-base certificate	0	0	0	0	0
13	KPA-product specific product Environmental label (Milieukeur product)	0	1	0	2	0
14	KPA-farm Environmental label (Milieukeur bedrijf)	0	1	0	2	0
15	EKO label arable production	0	3	3	3	2
16	EKO label animal production	0	3	3	3	3
17	Demeter-label	3	3	3	4	3

3.3 Identification and registration

With regard to identification and registration EU Regulation 1760/2000 provides the possibility for the design of *voluntary* certification schemes where producer organisations, processing industry or multiple retailers may guarantee specific product quality attributes concerning the production techniques followed by livestock farmers which adhere to the scheme.

Although some certification schemes specify their own identification and registration requirements without directly referring to the SMR they will recognize the SMR standard as sufficient. As can be seen from Table 4, which provides an overview of the scores of the distinguished certification schemes on the SMRs on identification and registration, nearly all schemes follow similar requirements (with EKO as an exception). Other schemes might not explicitly or extensively mention identification and registration requirements because they presuppose the existing legislation on this issue and only pays attention if requirements beyond the legal requirements are involved (e.g. the PROduCERT schemes, for which no reference to identification and registration was found). This latter issue could also be relevant with respect to the EKO label. However, because the notified requirements did not explicitly state this, but mention the issue in vague terms we decided to give it a score of 2 (rather than 3).

Table 4 Standards and identification and registration

Standards	Identification and registration			
	SMRs and GAECs	identification and registration, eartags, passport	bovine animals and beef products	ovine and caprine animals
1 EurepGAP base certificate arable sector		0	0	0
2 EurepGAP combinable crops		0	0	0
3 EurepGAP base certificate animal sector		3	0	0
4 EurepGAP cattle and sheep		3	3	3
5 EurepGAP dairy		3	3	3
6 EurepGAP pigs		3	0	3
7 IKB-pigs		3	0	3
8 KKM-milk		3	3	0

9	PROduCERT free range cattle	0	0	0
10	PROduCERT free range pigs	0	0	0
11	PROduCERT free range laying hens	0	0	0
12	KPA-base certificate	0	0	0
13	KPA-product specific product Environmental label (Milieukeur product)	0	0	0
14	KPA-farm Environmental label (Milieukeur bedrijf)	0	0	0
15	EKO label arable production	0	0	0
16	EKO label animal production	2	2	2
17	Demeter-label	3	3	3

3.4 Public, animal and plant health

Table 5 provides an overview of the scores of the distinguished schemes with respect to the SMRs covering public, animal and plant health.

Table 5 Standards and public, animal and plant health

SMRs and GAECs	Public, animal and plant health						
	plant protection products hormonal, ... substances	food safety	transmissible spongiform	footh and mouth disease	swine veicular disease	Bluetongue	
Standards							
1 EurepGAP base certificate arable sector	2	0	2	0	0	0	0
2 EurepGAP combinable crops	3	0	3	0	0	0	0
3 EurepGAP base certificate animal sector	0	3	2	2	2	2	0

4	EurepGAP cattle and sheep	0	0	3	2	2	2	0
5	EurepGAP dairy	0	0	4	2	2	0	0
6	EurepGAP pigs	0	3	3	0	0	2	0
7	IKB-pigs	0	3	2	0	0	3	0
8	KKM-milk	0	3	4	2	2	0	0
9	PROduCERT free range cattle	0	0	0	0	0	0	0
10	PROduCERT free range pigs	0	0	0	0	0	0	0
11	PROduCERT free range laying hens	0	0	0	0	0	0	0
12	KPA-base certificate	2	0	2	0	0	0	0
13	KPA-product specific product Environmental label (Milieukeur product)	3	0	2	0	0	0	0
14	KPA-farm Environmental label (Milieukeur bedrijf)	3	0	2	0	0	0	0
15	EKO label arable production	4	0	2	0	0	0	0
16	EKO label animal production	4	4	2	0	0	0	0
17	Demeter-label	4	4	2	0	0	0	0

3.4.1 Plant protection products

The absence of residues of pesticides and herbicides has been for a long time object of certification. The integrated control of weeds has been first propagated on a voluntary basis as a strategy of differentiation. Table 5 shows which of the distinguished voluntary schemes comes close or creates an overlap with the obligatory requirements of Regulation 91/414/EEC.

As Table 5 shows the KPA base certificate seems to be less demanding than the SMR on plant protection products. The same holds for the EurepGAP base certificate arable sector. However, the EurepGAP base certificate has to be combined with the combinable crop certificate, and together they are similar to the SMR requirement. With respect to the KPA schemes a farmer is not enforced when participating to satisfy both the base-certificate and the Milieukeur at the same time.

As can be also seen from Table 5, there are some certificates, notably EKO and Demeter, which score a 4, indicating that they go beyond the SMR requirements. For

these schemes this is due to the (nearly) full prohibition of the use of chemical plant protection products.

3.4.2 Food traceability systems

An important objective of voluntary certification schemes is to assure food safety by means of checks along the food supply chain. Often this is done by referring to a HACCP scheme for the food chain. With the advent of the Regulation 178/2002 issued after the big food scandals in the years before the implementation of food traceability systems has become obligatory.

With respect to food safety (including food traceability) the EurepGAP dairy and KKM schemes are estimated to go beyond the SMR requirements. (In EurepGAP references are made to HACCP but this is not discussed here since we mainly focus here on the requirements for primary agricultural production). For most other schemes a substantial coverage was found. An exception was the PROduCERT schemes, where we could not find an explicit reference. However, like indicated before, this could be due to the schemes' focus on extraordinary requirements or themes (free range allowances).

3.4.3 Notification of diseases

The immediate notification of contagious diseases was often not directly mentioned in the distinguished voluntary schemes. Even in those schemes which had an explicit and extended paragraph on animal health. The law to directly notify contagious diseases is already old, which might make this issue self-evident in the eyes of the scheme developers. However, when not explicitly mentioned, but related remarks were made we labelled a scheme as showing significant coverage of the SMRs. As such the SMRs and the standards seem to be complementary. It is likely that when the SMRs (or pre-existing legislation) would not have covered this issue, it would have been explicitly noted in the voluntary schemes.

3.5 Animal welfare

Well before the introduction of the animal welfare Directives in the Netherlands voluntary certification schemes have been launched to improve the well being of animals. Moreover, animal welfare got attention in public legislation, which raised the standards significantly.

Table 6 gives an overview of the animal welfare scores of the distinguished voluntary certification schemes.

Table 6 Standards and animal welfare

Standards	SMRs and GAECs	Animal welfare		
		housing calves	housing pigs	protection of animals
1 EurepGAP base certificate arable sector		0	0	0
2 EurepGAP combinable crops		0	0	0
3 EurepGAP base certificate animal sector		2	2	2
4 EurepGAP cattle and sheep		2	2	2
5 EurepGAP dairy		2	2	2
6 EurepGAP pigs		2	2	2
7 IKB-pigs		0	4	3
8 KKM-milk		2	0	2
9 PROduCERT free range cattle		0	0	4
10 PROduCERT free range pigs		0	4	4
11 PROduCERT free range laying hens		0	0	4
12 KPA-base certificate		0	0	0
13 KPA-product specific product Environmental label (Milieukeur product)		0	0	0
14 KPA-farm Environmental label (Milieukeur bedrijf)		0	0	0
15 EKO label arable production		0	0	0
16 EKO label animal production		4	4	4
17 Demeter-label		4	4	4

3.5.1 Housing of calves

Where references were made about the appropriate housing of cows and calves, but without making an explicit reference to the SMR standards, we gave a scheme a performance indicator of 2 (substantial coverage). The organic agriculture labels (EKO and Demeter) have animal welfare standards which go (far) beyond the requirements as specified in the SMRs. This is non-surprising since these schemes are aimed at preserving an animal husbandry system that fits in as much as possible with the natural wants and desires of the animals.

The PROduCERT schemes have a similar focus. However, we could not find very explicit specified requirements on calves (at least not for the very young ones, where the free range allowance does not yet make much sense).

3.5.2 Housing of pigs

With respect to the housing of pigs the Netherlands has a policy which is in advance of the EU's average. This might be partly due to the strong reliance of the Dutch sector on export possibilities, which increases the competitive pressure on Dutch products and makes it rather important to satisfy the wishes of the final consumers as much as possible (consumer market orientation). With Dutch legislation (Varkensbesluit) requiring standards which are going significantly beyond the SMR requirements one would expect a lot of 4 indicators. However, it should be recognized that the relatively high legal Dutch standards will become obligatory in 2013. So farmers still have a 7-year adjustment time to reach these standards.

The IKB pigs and PROduCERT pigs schemes and the organic agriculture schemes (EKO and Demeter) are scoring a level which indicates beyond SMR-level performance. The IKB pig scheme, although outperforming the SMR requirement, is at the same time less strict than Dutch national legislation. However, due to the allowed adjustment time for farmers, the IKB-pigs scheme does not really conflict, at least at this moment, with national legislation. It would be non-surprising if over time the IKB pig scheme will further involve as to include all the national requirements.

3.6 Good agricultural and environmental practice

Whereas the main part of the cross-compliance requirements regarded pre-existing legislation (SMRs), the new part introduced were the standards of good agricultural and environmental practice (GAECs). The Commission specified a general framework and let it to the member states to detail specific requirements, thereby giving them the opportunity to tailor legislation to national specific circumstances. Table 7 provides an overview about how the distinguished voluntary standards relate to the Dutch GAEC requirements.

As Table 7 shows the EurepGAP standards, the Environmental labels (Milieukeur) and the organic labels (EKO and Demeter) have references to good agricultural practice. In general they are less restrictive than the GAECs. An exception is the organic agriculture labels. They are performing far beyond Dutch and EU standards and often have detailed requirements specified with respect to a careful treatment of the soil and preserving its fertility level.

Table 7 Standards and good agricultural and environmental practice

Standards	Good agricultural and environmental practice			
	SMRs and GAECs	soil erosion	soil organic matter	soil structure soil maintenance
1 EurepGAP base certificate arable sector		2	2	2
2 EurepGAP combinable crops		2	2	2
3 EurepGAP base certificate animal sector		0	0	0
4 EurepGAP cattle and sheep		0	0	0
5 EurepGAP dairy		0	0	0
6 EurepGAP pigs		0	0	0
7 IKB-pigs		0	0	0
8 KKM-milk		0	0	0
9 PROduCERT free range cattle		0	0	0
10 PROduCERT free range pigs		0	0	0
11 PROduCERT free range laying hens		0	0	0
12 KPA-base certificate		0	0	0
13 KPA-product specific product Environmental label (Milieukeur product)		2	2	2
14 KPA-farm Environmental label (Milieukeur bedrijf)		2	2	2
15 EKO label arable production		4	4	4
16 EKO label animal production		0	0	0
17 Demeter-label		4	4	4

4 Conclusions

The previous analysis showed that there is sufficient reason to link up the issue of cross-compliance with this of voluntary standards. As this investigation shows there are a lot of shared requirements in the SMRs and GAECs on the one hand, and the voluntary standards on the other hand.

Commonalities do not necessarily mean that cross-compliance is superfluous. Whereas cross-compliance affects the whole sector, voluntary standards are usually not sector wide but involve specific subgroups of producers. Moreover, as it appeared with the KKM scheme case in the Netherlands, when a voluntary scheme tends to become a sector wide standard it might get into trouble because of antitrust reasons.

The additional costs of cross-compliance depend on farmers' participation on voluntary standards. They could already perform at cross-compliance requirement levels for long because of previous standards-adoption.

As far as there are commonalities synergies could be created with inspection and monitoring. There are a lot of possibilities, but they seem to be underutilized. A drawback of that is that the transaction costs of the schemes are relatively high due to inefficiencies in the monitoring. An advantage might be that the farm inspection regime is much more intensive than the sampling requirements imposed by the EU would do expect. In case of KKM there was some anecdotic evidence that the private inspection bodies paid relatively less attention to check on identification and registration because they knew this is already checked by the governmental inspection agency.

Standards open perspective on benefit side as perceived by sector or consumers. As they are freely established they should be welfare enhancing. This holds in general since they increase information and therewith market transparency. This has a welfare benefit to consumers. In addition they should be profitable for the groups that initiated them because they are primarily governed by striving for private profitability and still find making the associated costs worth the efforts.

Whereas consumers can get confused because of the growing number of voluntary certification schemes, cross-compliance could be helpful to introduce a unified standard with respect to the basic requirements as applied in voluntary schemes. However, this possibility is not yet seen since no explicit references to the set of cross-compliance standards were found. However, this could be done more in the future when cross-compliance get more established in the sector.

Since in a number of cases the voluntary standards were not yet having full coverage of the SMRs and GAECs and the standards were seen to follow a dynamic adjustment process, it is likely that in these cases their requirements might be extended over time, such as to integrate the cross-compliance standards. A voluntary standard, which usually pretends to deliver more value, not satisfying the basic requirements as taken up and specified in the cross-compliance package might be easily loose credibility.

This is likely to be avoided. As such cross-compliance can have a positive impact on the general standards-level of the voluntary schemes.

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