

Quarantine: an Important Control Measure for Preventing New Pest Problems

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Abstract

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For a good quarantine system it is required to have a quarantine legislation and an official organization. The quarantine legislation, should specify all prohibitions and requirements for import of plants or plant material. Transparent quarantine legislation consists of: a) a list of quarantine organisms, b) a list of special requirements, listed per product, c) a list of prohibited products and d) a list of products which require a health certificate. The required organization is the Plant Protection Service (PPS) with plant health inspectors to monitor the pest situation inside the country and to inspect imports. In this paper we describe the Dutch approach to quarantine. It is similar to the approach utilized to protect from the threat of flooding. For optimal safety you need more than one dyke. In the Netherlands we use three. The first dyke is the import inspection. The second dyke is the so called "Phytosanitary control farms". The third dyke is the quality inspection system for propagating material. In the first dyke, plants are inspected by Plant Protection Service inspectors at the place where the consignment is unpacked. This can be done at the border but also at the importers premise. If inspection takes place at the importers premise, the importer gets special permission to bring the consignment via the most direct route to his firm. Before the inspector has done the inspection the consignment has to be kept separate and

may be moved or sold. The second dyke corresponds to the phytosanitary control of farms (this dyke keeps out the water that escaped the first dyke). Some diseases are very difficult to detect at the moment of import inspection because they are present in forms difficult to detect, e.g. eggs. All firms who grow plants that have been imported are known at the district office of the Plant Protection Service. All crops at these firms are inspected each month. If at import inspection a quarantine pest was not noticed, it will be more easily detected during the farm inspection. The outbreak is then still at an early stage and eradication is relatively easy. Fortunately, we only have to rely on this dyke in rare occasions. The third dyke consists of a quality control system for propagating material of important crops grown in the Netherlands. The quality control is concerned with quality pests and diseases and also trueness to type and other physical characters. Because of this system of quality control, farmers are more focused to plant pest problems. The Plant Protection Service keep an eye on (new) quarantine pests. The Netherlands quarantine system is giving best results when the exporting country also uses the three dykes system: 1: international quality control system, 2: monitoring system for pests present and 3: the export inspection by the PPS.

Key words: quality control, quarantine, phytosanitation.

Aim of a quarantine system

The aim of a good quarantine system is to facilitate the safe movement of plants and plant products in international trade. This is not an easy task to put into practice, because quarantine regulations pose restrictions for international trade. On the other hand to be safe, these quarantine restrictions are necessary. Sometimes it is even necessary to prohibit imports of certain plants, that pose a risk of introducing harmful exotic plant pests, thus making international trade virtually impossible. There is always a tension between the two goals: trade (movement) and safety. For an optimum solution a compromise should be found (1, 2).

History of some quarantine organisms

In the second half of the 19th century the serious effects of long distance spread of harmful plant diseases were experienced. A number of plant pests and diseases, which we would now call quarantine pests were

introduced in new areas where they had not occurred previously. Examples are the introduction in 1842 or 44 into Europe, of a fungus, probably originating from Mexico; *Phytophthora infestans*. This introduction caused enormous problems for potato growing in Ireland in 1845 and other parts of Europe.

Another example is *Quadraspidiotus perniciosus*. this pest originates in an area in the North East of China enclosed by excellent natural barriers: To the North and west lies the Gobi desert. In the South and Southeast lies the vast aluvial plane of the Yellow River, where fruit growing is not practised and cereals have been grown for a long time. This scale insect has long been restricted to this area, until the second half of the 19th century. Since then it started to move around the world via unknown routes. It arrived in the USA around 1870 and caused problems in the San Jose Valley. From the North American continent it spread to Central and South America, North Africa, the Near East, and was first

found in Europe in 1928 (Hungary).

Another example is a pest of grape vines: *Phylloxera vitifoliae* that was introduced into Europe in 1859, with infested grape cuttings. Phylloxera is native to North America.

A possible explanation for this sudden increase of problems with exotic plant pests all over the world in the second half of the 19th century is that at that moment fast means of transport became available, e.g. engine powered ships. Before 1850, transport around the world was relatively slow, so only plant pests that could survive long journeys were able to spread worldwide. Others, as seen in the examples above, were limited in their distribution by natural barriers such as mountain ranges, oceans, rivers etc.

To protect agriculture from the negative effects of introduction of exotic plant pests, countries started making quarantine legislation prohibiting or regulating certain plant materials. Among the oldest quarantine legislation in Europe are Acts against the introduction of *Leptinotarsa decemlineata*, e.g. a German act dating from 1873 prohibiting the import of plants from North America.

Very soon it was felt that international cooperation needed. Therefore in 1881, a number of European countries signed an international convention to take quarantine measures against Phylloxera.

International Cooperation

History tells us that Quarantine measures are more effective when there is international coöperation. Therefore FAO has tried to help countries in setting up plant quarantine infrastructures and facilitation of international harmonisation of plant quarantine systems (1).

At 6 December 1951 FAO drafted the IPPC, The International Plant Protection Convention. This Convention was amended in 1979 and today some 100 countries are part of the convention. This convention has the following philosophy:

- a) quarantine is a joint responsibility of all countries
- b) countries should have appropriate infrastructure to protect themselves and other countries
- c) quarantine measures may be an impediment to trade only if these are biologically sound and economically justified
- d) measures should not be excessive
- e) a uniform certification procedure should be followed
- f) quarantine measures should be formalized: regulation or legislation
- g) there should be access to information on regulations, pest occurrences, etc.

In the international field GATT also took the initiative to take into account quarantine measures. In 1986 the Uruguay round was started with the main objective to break down non-tarif barriers to trade. An exemption was made for measures to protect human, animal or plant life or health. This means that countries have the right to take e.g. phytosanitary measures.

The two key principles applied by GATT are transparency and non-discrimination. The Agreement on Sanitary measures, in short called the SPS paragraph of GATT, lays down the rules for setting up sanitary and phytosanitary measures. GATT recognizes the importance of the IPPC and the obligations put forward therein. In addition to the IPPC commitments, GATT added two new elements; 1) countries should not be discriminative in their measures and 2) the measures taken should commensurate with the risk.

FAO, in particular the IPPC secretariat, have been appointed to develop international standards to achieve international harmonisation and to determine equivalency. FAO has already produced a Glossary and a standard on Plant Quarantine principles. At the moment standards on Pest Risk Assessment, Pest Free Area, and others are being developed.

Basic needs for a quarantine system

The International Plant Protection Convention (IPPC), including the amendment of 1979, and the SPS paragraph of GATT describe the international agreements on how quarantine systems should be set up.

For a good quarantine system several things are needed: quarantine legislation and an official organization.

The required organization is the Plant Protection Service (PPS) with plant health inspectors to monitor the pest situation inside the country and to conduct import and export inspections.

The quarantine legislation should specify all prohibitions and requirements for import of plants or plant material. Transparent quarantine legislation consists of:

- a) a list of quarantine organisms,
- b) a list of special requirements, listed per product,
- c) a list of prohibited products
- d) a list of products that require a Plant Health Certificate.

It is important to inform other Plant Protection Services, what specific quarantine requirements there are for import into the country. Also it is important to inform countries of the quarantine organisms listed. Only then it is possible for the PPS of the exporting country to take the listed concerns into account when issuing a Plant Health Certificate. This is most important because the

inspection in the country of origin provides the most safeguards. The decision of the inspector is based on the pest situation in the country of export and on knowledge of the concerns of the importing country.

The system of import permits is not very transparent. The concerns of the importing country are not known sufficiently in advance and are generally not very clear. It is very difficult then for inspectors to do a proper import inspection because the concerns of the importing country are not sufficiently clear.

Dutch approach towards quarantine

Information

On a regular basis the Dutch Plant Protection Service produces a summary of the actual quarantine legislation in force. This is sent to all other Plant Protection Services worldwide. The summary lists all quarantine organisms, import prohibitions, special requirements, and the products for which a Plant Health Certificate is required.

Import inspection systems

The basic quarantine system that is required according to international agreements, consists of an export inspection and an import inspection. In the Netherlands we have set up a more extensive system.

The Dutch approach quarantine as they approach the threat of flooding; for optimal safety you need more than one dyke. In the Netherlands we use three. In quarantine the first dyke is the import inspection. The second dyke is the so called "phytosanitary control of farms". The third dyke is the quality inspection system for propagating material. These dykes are explained below.

The first dyke - import inspection. Next to the export inspection in the country of origin, the import inspection is the second most important safeguard. Plants are inspected by Plant Protection Service inspectors at the place where the consignment is unpacked. This is the best place to inspect because you can have a look at the entire consignment and take a proper sample for inspection. This can be at the border but also at the importer's premise. Agreements have been made with the customs that they notify the plant Protection Service, on all incoming consignments requiring phytosanitary inspection. If the consignment is not unpacked at the border, e.g. transported in containers, the inspection takes place at the importer's premise. In these cases the importer gets special permission to bring the consignment via the most direct route to his firm. Before the inspector has done the inspection the consignment has to be kept separate and may not be moved or sold.

The second dyke - phytosanitary control of farms using imported material. This dyke keeps out the water

that escaped the first dyke. Some diseases are very difficult to detect at the time of import inspection because they are present in stadia difficult to notice, e.g. eggs. All firms who grow imported plants, are known at the district office of the Plant Protection Service. All crops at these firms (whether of national origin or imported plants) are inspected each month. If at import inspection a quarantine pest was overlooked, it will be more easily detected when inspection is done at the farm. The outbreak is then still at an early stage and eradication is then relatively easy. Fortunately, we only have to rely on this dyke in rare occasions.

The third dyke - quality control system for propagating material. The third dyke consist of a quality control system for propagating material of important crops produced in the Netherlands. Propagating material presents in general a much higher risk in spreading diseases than consumption material. Therefore controls requiring propagating material to be practically free from pests, will help to prevent spreading of harmful pests. The quality controls concern quality pests and diseases and also trueness to type and other physical characters. Because of this system of quality control, farmers are more focussed to plant pest problems. The Plant Protection Service has asked the inspectors of the General Netherlands Inspection Service to keep an eye on (new) quarantine pests.

Export inspection

The best safeguard is the export inspection in the country of origin. At import inspection a picture is obtained from the consignment at that particular point in time. Export inspection is not like a polaroid photograph because it is possible to use information gathered on the plants during the time previous to export. In the country of origin the inspector is well informed on the local pest situation and the agricultural practice. Also he is informed on the quarantine pests of the Netherlands.

It would be very effective if a system similar to the dyke system is also used in the country of export. The phytosanitary farm control and/or a quality control system that is operated, gives an excellent picture of the occurrence of pests. In that way the inspector in charge of export inspections usually has more and better information to determine whether the consignment is suitable to be exported e.g. to the Netherlands. Figure 1 explain the situation in the two countries.

Conclusion

The system of dykes can be used in two directions; for import and for export.

The system of dykes assures that we have a good system for preventing the entry of quarantine pests. Also

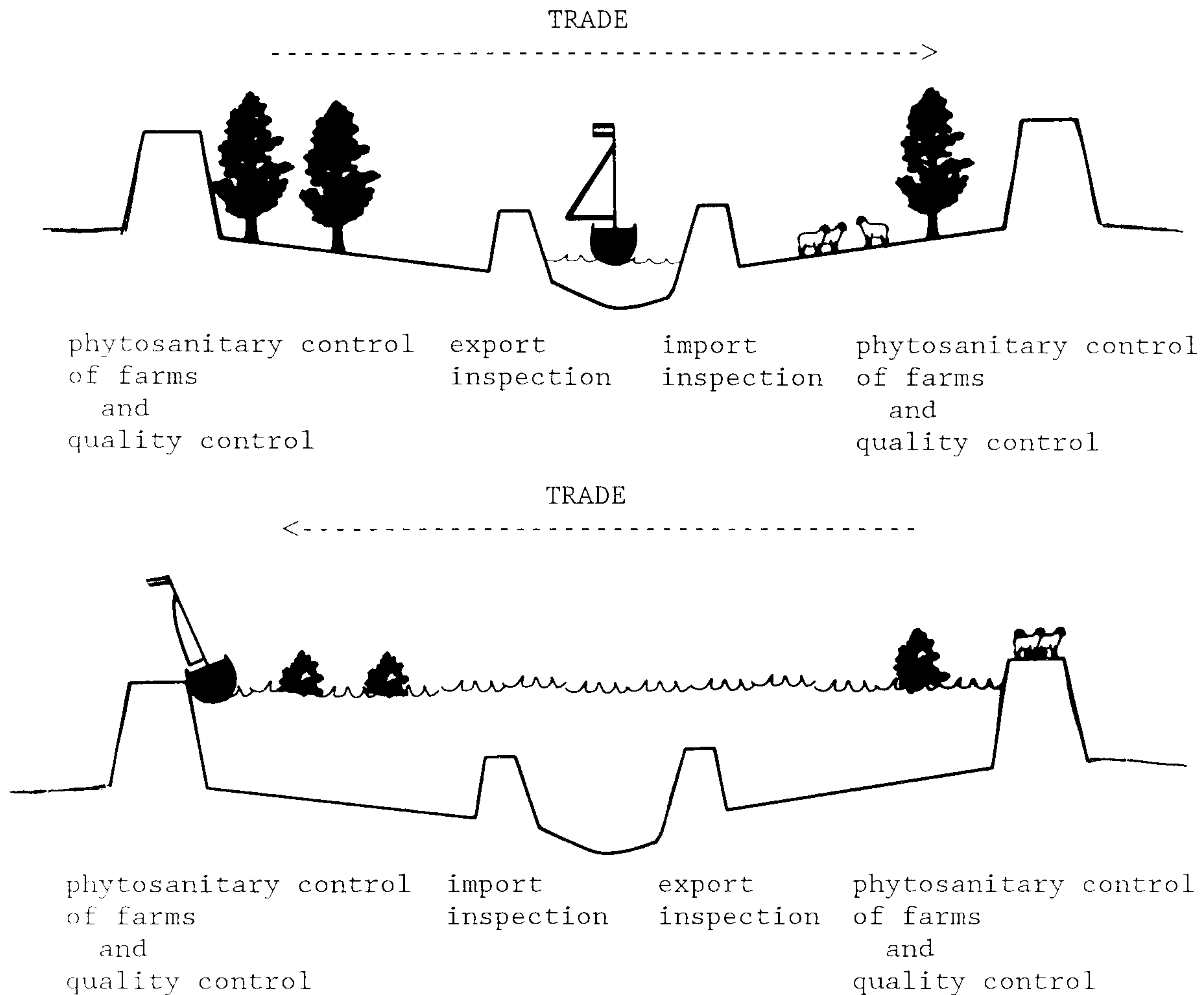


Figure 1. The Dutch dyke system of plant quarantine applied at the export and import countries.

we have a good knowledge of the presence or absence of quarantine organisms in the Netherlands. If a new quarantine organism manages to pass import inspection unnoticed, we are confident that it will be detected in a very early stage.

The best results are obtained when the country uses the three dyke system: 1: internal quality control system, 2: monitoring system for pests present and 3: the export inspection by the PPS.

For export inspections in the Netherlands we use the system of dykes also. We have a good knowledge of the pest situation in our country, because of the phytosanitary control of farms and the quality inspection system. Therefore we can give optimal guarantees for exporting consignments, on the condition we know the importing countries quarantine legislation.

The system of dykes is not a very rigid, trade restrictive system, yet it is a very safe system. It proves to be a good compromise between trade and safety. Production of plants and plants products benefit from the safety provided and result in the production of high quality products. This in return, positively influences trade including imports and export.

Although the system of dykes may seem complicated, it is easy to start building from the two dykes already existing: import inspection and export inspection. The construction of a system with dykes in quarantine should also be regarded as a process of growth; already small adaptations from the basic scheme of two dykes will give some profits. Do not forget that it took the Dutch several centuries to construct their dykes in defense against their rivers and the sea.

الملخص

فان دير ولك، س. 1995. الحجر الزراعي: طريقة مكافحة هامة لمنع حدوث مشكلات آفات جديدة. مجلة وقاية النبات العربية. 13(1): 36-40

مستوى المزرعة للمواد التي لم يمكن الكشف عنها في المرحلة الأولى حيث يصعب كشف بعض الأمراض لحظة تفتيش المستوردات لكونها في أشكال صعبة الكشف، كالبيوض. وجميع المزارع التي تزرع النباتات المستوردة معروفة على مستوى المحافظة، من قبل مفتشي مصلحة وقاية النباتات. ويتم فحص كافة المحاصيل في هذه المزارع على نحو دوري، شهرياً. وهذا يسمح بالكشف عن آفات حجر زراعية محتملة، لم يكشفها التفتيش الأولي. وستكون الإصابة بهذه الآفات مازالت محدودة وبالإمكان استئصالها بسهولة. ومن حسن الحظ، أنه يتم الإعتماد على هذه المرحلة في حالات استثنائية فقط. أما المرحلة الثالثة فهي مرحلة مراقبة النوعية لمواد الإكثار الخاصة بالمحاصيل الرئيسية في هولندا. وهي تشمل الآفات والأمراض، ونقاوة الصنف، وبعض المواصفات الفيزيائية. ونظراً لهذا النظام من مراقبة النوعية، يركز الزراع أكثر على مشكلات آفات النبات. وعلى مصلحة وقاية النباتات أن ترصد أي آفة حجرية جديدة. ويعطى نظام الحجر الهولندي أفضل النتائج عندما تستخدم الدولة المصدرة المراحل الرئيسية الثلاثة: (1) النظام الدولي لمراقبة النوعية؛ (2) نظام رصد للآفات المنتشرة و (3) فحص الصادرات من قبل مصلحة وقاية النباتات.

كلمات مفتاحية: مراقبة النوعية، حجر زراعي، صحة نباتية.

حتى يؤدي الحجر الزراعي مهامه على نحو فاعل، لابد من وجود تشريعات ومنظمات رسمية. وعلى تشريعات الحجر أن تحدد المتطلبات التي يجب أن تتوفر في النباتات والمواد النباتية المستوردة وكذلك تحديد المواد الممنوعة من الدخول. وتتضمن التشريعات الواضحة للحجر الزراعي: (1) قائمة بالكائنات المحجورة؛ (2) قائمة بالمتطلبات الخاصة، لكل مادة مستوردة؛ (3) قائمة بالمنتجات الممنوعة؛ (4) قائمة بالمنتجات التي تتطلب شهادة صحية. والمنظمة الرسمية هي مصلحة وقاية النباتات وموظفيها من مفتشي صحة النباتات لرصد حالة الآفة داخل الدولة، وللقيام بتفتيش السلع المستوردة. وتصف المقالة منهجية الحجر الزراعي في هولندا، التي تتضمن ثلاثة مراحل رئيسية: (1) التفتيش على المستوردات؛ (2) الرقابة الصحية النباتية على المزارع؛ (3) نظام التفتيش على نوعية مواد الإكثار. ويتم في المرحلة الأولى تفتيش النباتات فن قبل مفتشي مصلحة وقاية النباتات في النقطة التي يتم فيها تفريغ الشحنة، سواء على الحدود أو في مستودعات المستورد. وفي الحالة الأخيرة، يمنح المستورد سماحاً خاصاً لإيصال الشحنة إلى مستودعاته عبر أقصر طريق ممكن. ويجب أن تبقى الشحنة مفصولة، قبل إجراء التفتيش، ويمكن نقلها أو بيعها. وفي المرحلة الثانية، يتم الفحص الصحي النباتي على

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