THE DEVELOPMENT AND VALIDATION OF A COMPUTERISED EXPERT SYSTEM FOR IMPORT RISK ANALYSIS

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Abstract

Since the establishment of the World Trade Organization, and the need to base trade restrictions that exceed those recommended by the relevant international organisations on a scientific assessment of the risks to human, animal or plant health, import risk analysis has been recognised as a discrete scientific discipline. As such, import risk analysis has seen the trends in methodologies typical of an emerging scientific discipline. The OIE International Animal Health Code chapter on import risk analysis has recently been revised, and the changes made reflect an international move toward a closer adherence to the requirements of the WTO Agreement on the Application of Sanitary and Phytosanitary Measures, the so-called SPS Agreement.

This thesis examines the SPS Agreement and other pertinent components of the current regulatory environment for trade in animal products. The thesis also examines risk analysis methodologies. Fifty-five sample qualitative and quantitative import risk analyses were obtained for review. Methodologies reported in these analyses were evaluated in conjunction with those advocated in the current and previous OIE Code chapters on import risk analysis. The OIE International Aquatic Animal Health Code was also included in the review, since many of the sample analyses were carried out for aquatic animals or products. These evaluations led to a synthesis of existing methodologies for import risk analysis, and the identification of key areas for continued research and development.

An expert system was designed and implemented to enable the results of the evaluations to be conveyed to risk analysts. It was envisaged that delivering these results by way of an expert system would enable analysts to carry out risk analyses efficiently and in a structured manner. The expert system was designed in a modular format and by using the object-orientated paradigm. This approach enabled expert knowledge to be stored efficiently, and meant that the system could be easily updated as research in the specified areas continued. The design also meant that the system could be extended to pest risk analysis, or to non-biological disciplines such as actuarial and project risk analysis.

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