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The Role and the Responsibility of the Plant Pathologist in Plant Quarantine

International quarantine in Australia is a Federal matter administered by the Department of Health. Interstate and intrastate quarantine matters, as they relate to plants, are administered by the designated Chief Quarantine Officers (Plants) in the various States. They are normally the Chief Horticulturalists and must rely on advice from agronomists, entomologists and plant pathologists in administering the various Acts and Proclamations relating to matters of plant quarantine.

Administration of Federal Acts relating to plant quarantine, while in the hands of the Department of Health, depends on the advice which is passed on from practising plant pathologists through the Chief Quarantine Officers. Thus the advice of the practising plant pathologist is sought and heeded in matters of plant quarantine, and we have a very positive role and responsibility in the administration of plant quarantine matters. It is this role and responsibility which I want to discuss in my address tonight.

In his booklet entitled "Introduction to Plant Quarantine" published by the Commonwealth Department of Health, Mr. Morschel lists five fundamental pre-requisites, or principles, on which the establishment of plant quarantine measures should rest:

First and foremost the quarantine measure must be based on sound biological grounds. The pest(s) or disease(s), which the measure is designed to keep out of the country or an area, must be of such a nature as to offer expected threat to substantial interests.



GRAEME EVANS
A.P.P.S. PRESIDENT
1975

So far as Australian quarantine is concerned, any material of plant origin likely to carry diseases is subject to quarantine. However, over the years the service has worked to assess the risk of introducing new and exotic diseases that could pose a threat to our agricultural industries. Many materials of plant origin are judged not to offer a threat and pass into the country quite freely. The introduction of commodities, such as fresh fruits, and other materials, such as rooted plants, seeds, plant parts and pollen involve some element of risk, as plant diseases can be carried with them. Pollen is a relatively safe way of introducing genetic material, but it is least in demand. Seeds are the safest way of introducing propagating material, while rooted cuttings offer the greatest threat of introducing new diseases. Seeds are relatively safe because many diseases are not seed borne, and of those that are, many can be readily removed by treatment with fungicides or heat therapy, but even then many seeds still offer some threat of introducing new diseases.

The Quarantine service has attempted to look at the situation and assess the risk to Australian agriculture of importing seed borne diseases. When the seed is judged to offer a threat of importing new diseases, it is placed on a restricted list and the importer must have the approval of the Department of Health to import. As an additional safeguard, the authority to import usually restricts the quantity of seed that may be brought in and, in addition, the approval may prescribe certain mandatory treatments, such as heat therapy and a period of post entry quarantine. Release from post entry quarantine is only permitted after the authorities are satisfied that no disease risk is present.

Seed not on the restricted list has been judged to offer little or no threat to substantial interests and, if imported legally, it is subject to inspection for purity and may be quarantined if found to contain sclerotia, galls, etc., or other bodies produced by potential plant pathogens. I believe that much of this material, which has been judged to offer little or no threat and passes into the country without a period of post-entry quarantine, offers a greater threat than seeds on the restricted list. This is particularly so if seed is of a crop of potential economic importance. Take the chickpea for example, the crop is not of any economic importance in Australia and seed of it has not been on the restricted list. Today there is considerable interest in the potential of chickpeas in areas judged to be marginal for wheat in southern New South Wales. Many thousand of hectares could be cultivated to chickpea which could return large quantities of high quality protein. As it is, several potentially important diseases have been brought in with the seed.

We might have taken a little more care with the introduction of seed of chickpea in the first place and, if the crop does have some economic potential, future crops might have been free of diseases. The presence of even one disease could mean the difference between success and failure of this crop.

The point that I want to make is that we cannot be too careful in judging whether or not the introduction of certain diseases offers an expected threat to substantial interests. I believe there is some need for a general tightening of restrictions on the importation of seed not classed as restricted, particularly seed of crops that are of economic importance elsewhere. People involved in plant quarantine matters should see that colleagues in plant pathology and our plant breeders and agronomists are better aware of the need for a little care when introducing seed, not only from overseas, but from one State to another and even from one geographic region to another.

Frequently I refer requests to import commodities of one sort or another to other members of staff for comment. The first thing that we do is to check on the diseases which could be introduced from the country of origin, and whether or not we have the diseases. Sometimes we find that we have all of the diseases of potential economic threat and the question is immediately raised that different strains of the pathogens could be introduced from overseas. If we are talking about the possibility of a strain being better adapted to one environment than another, then we should look at these possibilities and try to objectively assess the risk. If we are talking about the possibility of introducing a strain with different genetic capabilities to our own pathogens, and therefore capable of attacking genes for resistance existing in our cultivars, then this risk needs to be assessed objectively in the interests of making a judgment on sound biological grounds.

Often I am presented with an international phytosanitary certificate and asked to state that Australia is free from one disease or another, so that the seed or commodities can be shipped out, but is this a quarantine restriction based on sound biological grounds when there are many geographic areas in the country and some are free from quarantinable diseases while others are not. In other cases, through the use of good quality seed and modern agricultural technology, individual crops may be completely free of disease. It would be asking a lot for an importer to accept entirely without question a phytosanitary certificate to the effect that the seed was free from one disease or another when neighbouring areas were not free, especially as in many parts of the world phytosanitary certificates are endorsed with little or no regard to the requirements of the importer.

In Australia we take a more flexible approach to quarantine than some countries and will allow in seed if we have investigated the centres of production and found them to be free from potentially important diseases. For example, bean seed of the genus *Phaseolus* is on the restricted list. Large importations of bean seed are permitted, however, if accompanied by a phytosanitary certificate, from three areas of the United States of America where State Department of Agriculture officers inspect crops and issue phytosanitary certificates which are accepted as satisfactory by Australian quarantine authorities.

I think in the interests of international trade, we should all be looking at the possibility of relaxing quarantine restrictions to allow in seed and commodities from areas known to be free of quarantinable diseases and other countries might well take a closer look at Australia as a producer of seed.

I want to raise now the question of whether, in the case of some diseases, the potential threat to Australian agriculture is so great that we should refuse to consider the import of commodities likely to introduce the diseases. The example I have in mind is the importation of pome fruits from areas known to have fireblight. The importation of apples into Australia from fireblight infected countries is prohibited under a 1941 proclamation. In the years following there have been many requests for Australia to relax the ban, notably from Canada, European countries, New Zealand, the United Kingdom and the U.S.A. In 1971 a group of Canadian agriculturalists visited Australia to present a case for the importation of Canadian apples. The outcome of this visit was that a list of Australian requirements for the import of apples from Canada was negotiated, and more or less agreed to by all

States, although there were misgivings about the whole question of importing these apples.

At this point it looked as though Canadian apples would be shipped to Australia; we had negotiated a set of conditions for export of apples from Canada to Australia and these had been agreed to by Canada, but the matter was then to be referred to a meeting in 1975 at which the Commonwealth and States were represented. As a result of this meeting, and the reservations of a number of people about the wisdom of allowing these apples into the country, the Canadian proposal was rejected.

The question is, did we act responsibly in this matter? Did we in fact pursue the matter of plant quarantine on sound biological grounds? The Canadians probably don't think so, and doubtless felt we were acting to restrict trade to protect the marketing of our own fruit. This was a case where it was very difficult for us to be right; on the one hand we could not be so unscientific as to reject any discussion or investigation of the proposal, but having later proposed a set of conditions for the import of Canadian apples, which was agreed to by the Canadian authorities, we were to reject the evidence provided. I don't propose to say whether we acted responsibly or not — I will let you, the Plant Pathologists of Australia, be the judges. On the other hand, had we allowed Canadian apples in, and had there been some subsequent outbreak of fireblight, we would have been judged irresponsible.

Another aspect which requires a responsible approach by plant pathologists and which should be considered here, is the importation of micro-organisms for research, especially if the organisms are known pathogens. Each year the Commonwealth Department of Health receives a number of requests to import micro-organisms of one type or another. Some, of course, are for non-pathogenic organisms and present no difficulties at all. Other requests are for various strains of pathogens known to be in the country and, if handled with care, do not pose a threat to agricultural crops. The third category of requests to import micro-organisms relates to the import of pathogens not known to exist in the country, and obviously such requests have to be considered very carefully indeed. The reasons for these requests vary, and my attitude would normally be to reject such requests except in very rare and special circumstances, such as the biological control of weeds.

Here the plant pathologist has to exercise great care and responsibility. Firstly, we never know the full host range of the biological control agents being introduced and, even if we did, there is still the danger of a pathogen being more devastating when it is introduced into a new environment than in its place of origin. Moreover, if we don't have a pathogen in the country, even one with a very limited host range, we have no idea of knowing how damaging it might be on some of our native flora. It is not hard to envisage a whole chain of disastrous events following the introduction of new pathogen into the country. We cannot be too careful in matters of quarantine and when it comes to introducing known or potential plant pathogens, all of us have a responsibility not to be carried away on a wave of enthusiastic scientific research designed to rid this country of weeds and other noxious plants. Let the research go on by all means, and when we are satisfied beyond reasonable doubt that we understand the consequences of introducing and releasing disease organisms, only then should we be prepared to endorse requests to release pathogens.

Before moving on to consider very briefly the other four pre-requisites or principles on which plant quarantine

measures should be based, I want to emphasise the role and responsibility of the plant pathologist in recording the occurrence of plant diseases. As a plant pathologist who is frequently consulted on matters closely associated with the administration of plant quarantine, my judgement can only be as good as the records available to me of the occurrence of the diseases within Australia and elsewhere. The decision to import commodities, propagating material, etc., is based on our knowledge of the occurrence of plant diseases in Australia and elsewhere. We have a very important responsibility here to see that accurate records are kept, and we should be doing as much as we possibly can to see that herbaria, such as the one we have at Rydalmere, and the Department of Primary Industries Herbarium at Indooroopilly, do receive adequate support and recognition. It is not good enough that such herbaria should depend on the interest and dedication of one or two scientists. The maintenance of these records and continued support for them is the responsibility of all of us and the institutions we represent.

If I can move then to what Mr. Morschel refers to as his second pre-requisite on which plant quarantine measures should rest, he states:

Quarantine must be established only for the prevention of introduction or the control of a pest or disease and not for the furtherance of trade or the attainment of some other objective.

As scientists we must rise above the pressures which will be applied to use our quarantine service as a barrier to trade, and it is simply not good enough to say that others are using quarantine restrictions on our commodities as weapon of trade to justify a decision not based on sound biological grounds. Because there is always suspicion that plant quarantine restrictions are being used as barriers to trade, we must be very sure that we can explain our decisions on sound biological grounds. We have a very real responsibility here to make decisions for the protection of our own agricultural enterprises, but we must also act as responsible scientists and let the politicians negotiate matters affecting trade. We must be very wary here that we are not enticed into negotiating our quarantine barriers, even though other countries may be prepared to negotiate theirs. This surely would undermine the whole purpose of plant quarantine and make a mockery of our regulations.

I have been talking a great deal about the responsibility of the plant pathologist in matters of plant quarantine, and while some may feel remote from these matters, or that advice won't be heeded, let me say that it has been my experience for the Commonwealth Department of Health to act quickly on sound suggestions which come from practising plant pathologists. Moreover, when advice is sought, and given to Canberra, it is heeded, and I cannot emphasise too strongly the responsibility of plant pathologists in these matters.

The third pre-requisite listed by Mr. Morschel is as follows:

Before a quarantine prohibition or restriction is recommended to the Government, the subject requires to be carefully and thoroughly investigated and the advice of competent authorities sought.

I would have thought that it ought to be just the reverse and that we should place a barrier to the importation of all commodities, seed, etc., and then remove the barriers when we consider it safe to do so. In fact this is the way international quarantine does work and restrictions have been established first, and relaxed later. On the other

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A.P.P.S. COUNCIL

The following office-bearers were elected, unopposed, to serve the Society for the next two years (one year in the case of the President, and the President-Elect):

President:	Dr. R. C. Close
President-Elect	Dr. C. J. Shepherd
Vice-President:	Professor A. A. Holland
Honorary Secretary:	Dr. P. R. Merriman
Honorary Treasurer:	Dr. A. W. Kellock
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Aust. Capital Territory	Dr. K. M. Harrower
Northern Territory	Mr. R. Pitkethley
New Zealand	Professor F. Newhook
Papua New Guinea	Mrs. G. Cartledge

Mr. R. H. Brown (P. R. I., Burnley) has accepted an invitation to act as Editor of Society publications for the term of the next executive.

President's Message

It is indeed an honour to become President of the A.P.P.S. This privilege brings with it responsibilities which I will do my best to fulfil. Since its beginnings in 1967 I have supported the Society and, during my four visits to Australia, benefited considerably from the mutual sharing of ideas and information.

This Society has a very vital role to play in encouraging research, teaching and extension in plant pathology in the South Pacific. As plant pathologists our efforts should be directed towards the goal of ensuring that plants reach their full growth potential. We are 'doctors' of plants and our responsibility is to promote practices which will ensure plant health from seed germination to maturity. This aspect must now receive the emphasis and not the disease or causal organism. In addition we should become less emotionally involved with disease, and should not make people unduly alarmed about or afraid of a plant disease, especially if there is a lack of evidence about its relative importance. In other words, we should avoid 'overselling' the importance of a disease, for the profession will not gain in stature if the disease turns out to be not as severe as we predicted. In this respect, we must be careful not to translate preconceived ideas or overseas information on diseases directly to the local scene. However, appeals for action sometimes are needed to overcome complacency and apathy about what appear to be dangerous situations.

As plant pathologists we must present a balanced view of plant diseases and their importance, and must stress our positive role in finding solutions to disease problems, and in maintaining plant health.

Ronald C. Close

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hand, interstate and intrastate quarantine regulations have only been established after potential dangers have been recognised. Nevertheless, I can't emphasise too strongly the need for real care in moving commodities and propagating material within the country, and I have already pointed out the dangers of introducing diseases into new geographic regions. I am not advocating further barriers to the movement of commodities within the country, but those of us in agriculture might exercise more care in moving propagating material about.

The fourth point raised by Mr. Morschel, is that *Quarantine must derive from adequate law and authority and must operate within the provisions of such law.*

I don't wish to add much to this point other than to say that if the law is not adequate, it will undermine the work of plant pathologists and make a mockery of plant quarantine, in much the same way as quarantine restrictions based on unsound biological grounds make a mockery of plant quarantine legislation and will invite people to avoid quarantine restrictions.

Of course there are always people who knowingly break the law in relation to quarantine restrictions. This is really inexcusable in Australia today, for while the validity of some of our restrictions may be challenged as being based on unsound biological grounds, it is possible to legally import nearly any propagating material through the appropriate channels. Commodities in quantity, on the other hand, are another matter, but the quarantine legislation is always amenable to change. If an importer or exporter feels the restrictions are unreasonable, the quarantine service will always take another look at the legislation or restriction.

This brings me to Mr. Morschel's last point which states: *As conditions change, or as further facts become available, quarantine should be modified, either by inclusion of restrictions necessary to its success or by removal of requirements found not to be necessary. The obligation to modify quarantine as conditions develop, is a continuing obligation and should have continuing attention.*

I have already mentioned the responsibility we have to be aware of the need for change in plant quarantine legislation, and I have no wish to labour the point. Looking to the future, I think that we will see a general relaxation of quarantine restrictions, especially on commodities, as we satisfy ourselves that these are coming from areas that offer little threat to the importation of diseases. I think too, we will see some relaxation on the import of seeds as modern agricultural technology, crop hygiene and good plant protection services allow farmers to produce crops free from diseases.

In my address, I could have said a great deal more about the mechanics of the quarantine service or specific plant quarantine legislation and I have deliberately avoided being controversial in talking about plant quarantine, which can be a very emotional and controversial subject. However, by avoiding what could be very emotional and controversial issues, I hope I have been able to present some of my thoughts on the role and responsibility of the plant pathologist in matters of plant quarantine. I hope I have been able to impress on you that you do have a very real role to play, and if you have something to say you will not necessarily be a voice in the wilderness to be ignored, and since you won't be ignored, I hope you will exercise your role and responsibility as scientists.

Graeme Evans