employed by the Queensland Department of Primary Industries. Leaf samples were examined by us at Indooroopilly.

The results of the surveys in the Torres Strait and northern Cape York Peninsula are presented in Figure 1. Black Sigatoka was detected on Murray, Badu, Moa and Thursday Islands in the Torres Strait and in the Bamaga area on the mainland. Freckle was more widespread and in addition to the above locations was recorded on Darnley, Stephen, Boigu, Saibai, Mabuiag and Hammond Islands in the Torres Strait and at Lockhart River on the east coast of Cape York Peninsula.

Wind dispersal of ascospores may have been responsible for the spread of black Sigatoka and freckle from Papua New Guinea to islands in the Torres Strait and to northern areas of Cape York Peninsula. An alternative explanation is that the diseases were introduced by man. Fruit and planting material, which could have had associated leaf trash, are known to have been moved in the past from Papua New Guinea to islands in the Torres Strait. Close ties between people in the islands and the Bamaga area have undoubtedly led to the movement of plantain or banana sword suckers and fruit to the mainland. The fungi could also have been disseminated on banana leaves, which are sometimes used by islanders to wrap food on journeys.

The absence of black Sigatoka south of Bamaga could be attributed to its recent introduction to the region. However, the disease may have been present for some time, the natural barrier of bush in Cape York Peninsula preventing further spread. It has been suggested that the dissemination of black Sigatoka by windblown ascospores from small areas of infection to new areas may be restricted if distances exceed 50 km (7). Distances between the isolated aboriginal communities and cattle stations on Cape York Peninsula, most having only small stands of bananas, are usually more than 50 km. In addition, prevailing north west winds in the wet season may blow ascospores, which would be released at this time, off the coast. Lack of cultural ties between the island people at Bamaga and aborigines in the rest of Cape York Peninsula would have restricted the movement south of planting material and fruit.

The presence of freckle at Lockhart River is a little puzzling especially as the disease is not found at Heathlands cattle station, Moreton Telecom Station or Weipa (see Figure 1). Although the distribution of banana types on most of Cape York Peninsula indicates a movement of planting material from the south, a transfer of planting material from Bamaga to Lockhart River may have occurred under the auspices of the Queensland Department of Aboriginal and Islanders Advancement. It is possible that ascospores may have been carried down the coast by cyclonic winds, but bananas in a few back gardens at Lockhart River would have presented a very small target.

The role that native bananas found in pockets of rain forest on the east coast of Cape York Peninsula would play in the dissemination of the disease is unknown. However, *Musa banksii* F. Muell. has been recorded as a host of *M. musicola* (5) and therefore may be susceptible to *M. fijiensis* var. *difformis*.

An attempt is being made to eradicate black Sigatoka and freckle from mainland Australia because there is a danger that the diseases may spread to a banana plantation at Weipa South and later to commercial growing areas in north Queensland. All bananas in the Bamaga area and in back gardens at the Lockhart River settlement have been destroyed. After a suitable host-free period, clean planting material is to be introduced from the south. It has been recommended that the movement of bananas and plantains from the Torres Strait islands to mainland Australia be strictly controlled in the future.

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Winter Leaf Spot on Borage Caused by *Nigrospora oryzae*

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Borago officinalis L. commonly known as borage is an attractive blue-flowered garden herb. It can grow to about one metre in height given optimal growing conditions. The leaves are oblong to ovate in shape; the largest basal leaves reaching about 25cm in length.

The blue flowers which are borne in racemes have a rotate corolla about 2.5cm in diameter bearing a cluster of exserted black anthers. All green parts of the plant are hairy.

Leaves, stems and flowers are used in salads and stems can be used to flavour beverages. Flowers are an excellent source of nectar and borage is one of the best "bee plants" known.

The species is native to the Mediterranean region but is grown world-wide and frequently becomes a garden weed or garden escape.

In Melbourne, winter-grown borage plants have frequently been observed with leaf spots. (Figure 1). Basal rosette leaves show symptoms of brown necrotic spots. Spots enlarge, coalesce and leaves close to ground level

may become totally necrotic. As plants begin to produce inflorescences and the central stem elongates, the disease spreads upward to the cauline leaves which have longer petioles and smaller blades. Smallest leaves and flower sepals are frequently attacked. Under wet, shaded conditions, stems become necrotic and turn black. Affected plants flower poorly, are heavily spotted and suffer premature death.

Diseased plants from Box Hill, Camberwell and Glen Waverley have been investigated over the last four winters and several fungi have been extracted from larger lesions. These included species of *Nigrospora,, Alternaria, Epicoccum, Ulocladium, Cladosporium, Stemphylium. Penicillium and Ascochyta.*

Smallest lesions on youngest leaves have yielded pure cultures of a *Nigrospora* species in approximately 60% of isolation attempts.

In culture, *Nigrospora* produces a light grey to black mycelium becoming progressively darker as more conidia form. Solitary, single celled jet black conidia are produced readily in culture. They are smooth surfaced, sub-globose and borne on short pedicels which are at right angles to vegetative hyphae. Pedicels are broader at the base and taper toward the attachment point of the spore. (Figure 2).

Nigrospora species are separated on the basis of spore diameter (2). As conidia obtained from cultures derived from borage leaves were in the range of 10-14 μm diameter, this small-spored species was identified as *Nigrospora oryzae* (Berk. and Br.) Petch (1).

Nigrospora spp. are generally considered to be weak necrotrophs with wide host ranges. On borage plants studied, *N. oryzae* initiates the leaf spots and other fungi enter the primary lesions. Pathogenicity tests using conidial suspensions on young, healthy plants growing in the home garden, have shown that *N.oryzae* was capable of disease initiation. The other fungi isolated were not.

It seems probable that *Nigrospora oryzae* "leads the way" up the borage plant. Webster (3) showed that conidia of *N. sphaerica* could be forcibly discharged laterally to a maximum distance of 6.7 cm. and a vertical distance of about 2 cm. Spore projection was shown to be due to a sudden discharge of liquid through a fine opening in the pedicel apex. Presumably the smaller spored *N. oryzae* has a similar discharge mechanism.

Although the disease on borage is of no economic importance, it must be considered of nuisance value to home gardeners, herb growers and apiarists, during the winter months.

Suggested methods of control are (i) not to grow borage in winter months (ii) the removal of all plant debris, and (iii) applications of either Bordeaux powder, copper oxychloride dust or benlate. Serious fungicide screening is not warranted.

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Bacterial Wilt of Potato in South Australia

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During a survey of Potato diseases in the major potato districts of South Australia, bacterial wilt caused by *Pseudomonas solanacearum* (E.F. Smith) E.F. Smith, 1914, was detected. The bacterium was isolated from infected Red Pontiac tubers, and its pathogenicity established. The isolate has been identified as Biotype 11 (2), corresponding to Race 3 (1). Since this is the first report of bacterial wilt in South Australia, (3), field inspection of commercial crops and seed crops is currently being conducted.

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Endothia havanensis on Jarrah

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Endothia havanensis Bruner was described from Cuba in 1916 where it occurred on the dead bark and twigs of several *Eucalyptus* spp. and other trees (1); Bruner thought that it was a saprophyte, and suggested that it was native to Cuba. As pointed out by Hodges (2). *E. havanensis* has been confused with *Cryphonectria cubensis* (Bruner) Hodges (≡ *Diaporthe cubensis* Bruner), the cause of eucalypt canker is Surinam (3), Brazil, Hawaii, Florida and Puerto Rico (4).

During the course of a general investigation of the pathology of jarrah (*Eucalyptus marginata* Sm.) which is being conducted jointly by the W.A. Department of Conservation and Environment and Murdoch University, the *Endothiella* state of *Endothia havanensis* was found on jarrah, marri *(Eucalyptus calophylla* R.Br. ex Lindl.) and wandoo *(E. wandoo* Blakely) in the Northern Jarrah Forest of W.A. This is believed to be the first time it has been recorded in Australia (J. Walker, pers. comm.). It has also been found on *E. camaldulensis* Dehnh. in W.A. (B.L. Shearer, pers. comm.) and on *E. maculata* Hook in the A.C.T. (K.M. Old, pers. comm.)

In jarrah, *Endothia havanensis* was associated with twig, branch, and trunk cankers, and was readily isolated from the margin of lesions in the phloem (Table 1). Although *E. havanensis* was frequently isolated by itself from twigs less than 5mm diameter, it was usually isolated in association with *Cytospora eucalypticola* van der Westhuizen and other as yet unidentified coelomycetes from larger branches and trunks. Pathogenicity tests are being conducted at present.