PEST AND DISEASE (NEW) INFORMATION BULLETIN

New pest record - Acrospeira mirabillis Berk. & Br.

SUMMARY

While conducting a post-harvest fungicide dipping trial on stored chestnuts with the aim of collecting data on efficacy of different chemicals to control post-harvest pests, a private agricultural research organisation isolated this disease.

Several known fungi were identified however, an unknown fungus was detected, requiring further testing. Chestnut samples were sent to the Department of Primary Industries, Parks, Water & Environment (DPIPWE) and a post-harvest fungus, *Acrospeira mirabillis* Berk. & Br., not previously identified in Australia was found.

The fungus is a common storage mould of chestnuts and can be controlled with chemicals.

The project was funded by Horticulture Innovation Australia Limited (HIAL) and Chestnuts Australia Inc (CAI).

PEST DETAILS

Common name: *Acrospeira mirabillis* Berk. & Br, Shell moulds

Scientific name: *Acrospeira mirabillis* Berk. & Br

KNOWN OR SUSPECTED HOSTS AND DISTRIBUTION

Distribution: Worldwide - predominantly America, Italy and the United Kingdom. Plus Chile and New Zealand.

Host range: Various Castanea sp., Acer rubrum (maple) and Cornus florida (flowering dogwood).

Pathway: Unknown

OCCURENCE AND SPREAD WITHIN AUSTRALIA

A. mirabillis is a common storage mould of chestnuts. This is the first time that this species is recorded in Australia. There are no previous records of this fungus on any host plants in Australia. A species of *Acrospeira*, known as *A.* sp., was recorded in Meningie, South Australia on an undermined host dating back in 1957 (APPD). A specimen of *A. mirabillis* from Italy lodged with Victoria Plant Pathology Herbarium (VPRI 12331b) is recorded causing chestnut rot (APPD).

The fungus is widely distributed in America, Italy and the United Kingdom with reports on *Castanea sativa* in America and Italy, and on *Castanea* sp. in United Kingdom. It is also recorded on *Acer rubrum* (maple) and *Cornus florida* (flowering dogwood) in America. In addition, it has also been reported from Chile and New Zealand on introduced *Castanea* spp. (Sieber et al., 2007).

It is not on the following databases suggesting it is unlikely to be important from a biosecurity view point: CABI, Plant Health Australia, A1 and A2 lists of EPPO (European and Mediterranean Plant Protection Organisation), nor the USA invasive and exotic pathogen lists.

Sieber T. N., Jermini M., Conedera M. (2007). Effects of the harvest method on the infestation of chestnuts (*Castanea sativa*) by insects and moulds. Journal of Phytopathology. 155 (7-8) 497-504.

DAMAGE

Symptoms: Nuts covered with grey to dark brown or black moulds superficially (Figures 1-2) Kernel rot (Figure 4)

Part of host affected: Fruit (from storage)

Incidence: Unknown

Severity: Several fungal species were found colonising the two nuts submitted, and chestnuts had grey, brown to black mould symptoms. These included *Cladosporium sp., Alternaria sp, Epicoccum purpurascens Ehrenb.* Ex Schlecht, and a fungus with large, pigmented, globose and roughly warted conidia. The fungus was identified as *Acrospeira mirabillis* Berk. & Br. by further examinations of the characterised conidia which are consisted of three cells, with the two basal cells much smaller and paler to even almost non-pigmented (Figure 3).

FUNGUS ACROSPEIRA MIRABILIS

Identification of microorganisms colonizing the kernel of chestnuts in Michigan and their associated symptoms

Microorganisms infecting chestnut kernels primarily included *Penicillium* spp. (*P. griseofulvum, P. expansum, P. chrysogenum*), *Acrospeira mirabilis, Botryosphaeria ribis, Sclerotinia sclerotiorum, Botryotinia fuckeliana* (anamorph *Botrytis cinerea*) and *Gibberella* sp. (anamorph *Fusarium* sp).

Acrospeira mirabilis appeared as dark-brown spots (conidia) filling the space between the kernel cotyledons and kernel cracks. Whitish, web-like mycelia developed around these spots. Brown necrotic spots were observed around the colonies, which sometimes enlarged, turned light-brown and finally dark-brown. The infection sometimes penetrated deep into the kernel, softening the tissue and resulting in opaque brownish kernel decay (Figure 4c).

Extract from the paper titled *Quantification and identification of microorganisms found on shell and kernel of fresh edible chestnuts in Michigan.* Irwin R Donis-González, Daniel E Guyera and Dennis W Fulbright. J Sci Food Agric 2016; 96: 4514–4522. March 2016.

PHOTOGRAPHS

Figure 1: Chestnuts showing shell moulds due to a range of fungal species

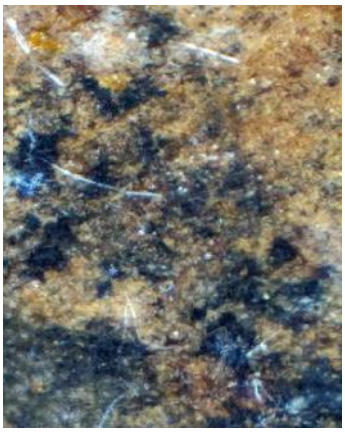

Figure 2: Moulds of *A. mirabilis*

Figure 3: Three celled conidia of *A. mirabilis* from specimen (left) and in cultures (right) (Scale bar = 20 um)

Figure 4: Chestnuts showing kernel decay due to (c) *Acrospeira mirabilis*,

CHEMICALS FOR POSTHARVEST TREATMENT OF SURFACE MOULD ON CHESTNUTS

SCHOLAR FUNGICIDE Plus other REGISTERED PRODUCTS
Containing: 230 g/L FLUDIOXONIL as their only active constituent.
Permit PER83635 - 17 March 2017

ROVRAL LIQUID FUNGICIDE Plus other REGISTERED PRODUCTS
Containing: 250 g/L IPRODIONE as their only active constituent.

ROVRAL AQUAFLO FUNGICIDE Plus other REGISTERED PRODUCTS
Containing: 500 g/L IPRODIONE as their only active constituent.
Permit PER83636 - 17 March 2017

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Hort Innovation Strategic levy investment | CHESTNUT FUND

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