



primefacts

FOR PROFITABLE, ADAPTIVE AND SUSTAINABLE PRIMARY INDUSTRIES

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SECOND EDITION

Testing albus lupins for bitter seeds

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Plant biosecurity

Proclamation P129 under the *Plant Diseases Act 1924* regulates the importation or bringing into NSW of lupin plant material, used agricultural equipment and used packaging, as these could introduce the disease lupin anthracnose. The items may only be brought into NSW after written approval has been given by the Director, Animal and Plant Biosecurity, Industry & Investment NSW (I&I NSW).

Any enquiries concerning the importation of these items should be directed to the Regulatory Compliance Manager on 02 6391 3384.

Background

The success of the Australian albus lupin (*Lupinus albus*) industry depends on the ability to supply **100% sweet seed**. Sweet seed has low alkaloid content. Sweetness is controlled by a single recessive gene. The bitter form of the gene causes seeds to have high alkaloid content – about 1000 times greater than the alkaloid content of sweet seed. The bitter form has escaped into commercial crops of both the Kiev-mutant and Ultra varieties and is causing low-level contamination. It threatens new varieties, such as Luxor and Rosetta, which can become contaminated by pollen movement between crops. If bitter-contaminated seed lots are sown then contamination will increase with each generation. This is due to:

- albus crops being able to cross-pollinate; and
- bitter plants producing more seeds.

If bitter seeds approach a frequency of 1%, then the average alkaloid level of the seed lot could exceed the maximum threshold acceptable for food and feed use (200 mg alkaloid per kilogram of dry seed).

It is important that the whole albus industry adopts an alkaloid management strategy so that

any contaminated crops are removed and do not compromise the efforts of neighbours and the industry as a whole.

The level of contamination must be measured in all albus seed lots destined for sowing. This is achieved through the use of a quick test using an ultraviolet (UV) lamp which causes any bitter seeds to fluoresce pink.

Results from the 2005–2009 crops

Testing at Wagga Wagga of commercial albus lupin seed samples from the 2005–2009 harvests showed that contamination remains widespread in NSW, with both of the old varieties (Kiev-mutant and Ultra) and all regions affected to some degree. In the past three years, less than half of all the samples tested had zero contamination. This emphasises the need for continued industry-wide testing.

The old albus varieties Magna, Minibean and Hamburg are known to be contaminated. They have been withdrawn from the industry and should not be grown.

The new varieties Luxor and Rosetta are 100% sweet but are still at risk of contamination by pollen from other varieties or by admixture during sowing, harvesting, storage or transport.

Sowing threshold remains at zero for 2010 season

All seed lots intended for sowing in 2010 should be tested again the following year. Consultation with industry, GRDC and Pulse Australia has led to the contamination threshold for sowing in 2010 remaining at zero (the same since 2005). The aim is to reduce the contamination level over time until the problem is eliminated. The adoption of new, disease-resistant, high-yielding varieties, such as Luxor and Rosetta, will assist this process.

Any crops sown from potentially contaminated seed must be kept as isolated as possible – 2 km from all other albus crops is desirable. Isolation prevents contamination spreading to other crops via pollen-carrying bees.

NSW albus lupin traders participating in the UV testing scheme

Growers who sell their albus seed through a trader should contact that company to arrange UV testing. All albus traders in New South Wales are equipped to conduct the test.

Trader	Location	Phone
Agrigrain	Narromine, NSW	(02) 6889 2200
Gilgandra Marketing Co-Op	Gilgandra, NSW	(02) 6847 1116
MC Croker	Wagga Wagga, NSW	(02) 6934 4000
Wilson Bros Seeds	Balldale, NSW	(02) 6035 1222

These traders will be able to assist albus growers so that any seed lots that may be contaminated can be exchanged for clean seed before sowing.

Due to the closure of the Albus Breeding Program in 2009, NSW DPI is no longer conducting Bitterness Testing.

Testing by Futari Grain Technology Services

Any growers in NSW who keep their albus lupins on-farm, or sell them directly to neighbours or other users, may have their seed tested for a fee of \$30 (at the time of writing) by Futari Grain Technology Services, 34 Francis Street, Narrabri 2390, tel. (02) 6792 4588, contact Tracey Warren.

Certified Seed

Certified Seed is the best way to ensure clean seed stocks for sowing

Certified Seed of albus lupins is available from the following sources.

Variety	Grower or company	Phone
Luxor	ABB Seeds	1800 018205
Rosetta	ABB Seeds	1800 018205
Kiev-mutant	Hart Bros Seeds, Junee	(02) 6924 7206
	Evan Moll, Gerogery	(02) 6026 0580
	Premier Seeds, Forbes	(02) 6851 5573
Ultra	N & S McCauley, Parkes	(02) 6862 2674

In the long term, it is advisable to periodically replace farmer-produced seed with new Certified Seed. This ensures the genetic integrity of the variety, maintains a 100% sweet (low alkaloid) content, and ensures good agronomic characteristics such as:

- high germination
- good seedling vigour
- low weed seed levels
- low virus infection levels.

If you are buying any albus seed for sowing, before purchase **check that UV testing for bitter seed has been carried out.**

Narrow-leaf lupins are not affected by bitter contamination

The narrow-leaf lupin species (*L. angustifolius*) does not cross-pollinate with albus lupins and is not affected by contamination. However, lupini bean albus crops are 100% bitter. They do not require testing but they **should never be grown in sweet albus lupin areas** (see Primefact 682 [Lupini Bean — a bitter contamination risk for sweet albus lupins](#)).

Further information

For further information contact:

- Your local NSW Department of Primary Industries District Agronomist
- Mark Richards
Lupin Evaluation, NSW Department of Primary Industries, Wagga Wagga
Phone: (02) 6938 1831
email: mark.richards@industry.nsw.gov.au
- Peter Matthews
District Agronomist, NSW Department of Primary Industries, Temora
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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (February 2010). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Industry & Investment NSW or the user's independent adviser.

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