1-1-1969

Dehulling and scarifying serradella seed

J R. Weeldenburg

R. W. Smith

Follow this and additional works at: https://researchlibrary.agric.wa.gov.au/journal_agriculture4

Part of the Other Plant Sciences Commons, Plant Biology Commons, and the Plant Pathology Commons

Recommended Citation

Available at: https://researchlibrary.agric.wa.gov.au/journal_agriculture4/vol10/iss5/10

This article is brought to you for free and open access by Research Library. It has been accepted for inclusion in Journal of the Department of Agriculture, Western Australia, Series 4 by an authorized administrator of Research Library. For more information, please contact jennifer.heathcote@agric.wa.gov.au, sandra.papenfus@agric.wa.gov.au.
IMPORTANT DISCLAIMER

This document has been obtained from DAFWA’s research library website (researchlibrary.agric.wa.gov.au) which hosts DAFWA’s archival research publications. Although reasonable care was taken to make the information in the document accurate at the time it was first published, DAFWA does not make any representations or warranties about its accuracy, reliability, currency, completeness or suitability for any particular purpose. It may be out of date, inaccurate or misleading or conflict with current laws, polices or practices. DAFWA has not reviewed or revised the information before making the document available from its research library website. Before using the information, you should carefully evaluate its accuracy, currency, completeness and relevance for your purposes. We recommend you also search for more recent information on DAFWA’s research library website, DAFWA’s main website (https://www.agric.wa.gov.au) and other appropriate websites and sources.

Information in, or referred to in, documents on DAFWA’s research library website is not tailored to the circumstances of individual farms, people or businesses, and does not constitute legal, business, scientific, agricultural or farm management advice. We recommend before making any significant decisions, you obtain advice from appropriate professionals who have taken into account your individual circumstances and objectives.

The Chief Executive Officer of the Department of Agriculture and Food and the State of Western Australia and their employees and agents (collectively and individually referred to below as DAFWA) accept no liability whatsoever, by reason of negligence or otherwise, arising from any use or release of information in, or referred to in, this document, or any error, inaccuracy or omission in the information.
DEHULLING AND SCARIFYING SERRADELLA SEED

By J. R. WEELDENBURG and R. W. SMITH

YELLOW FLOWERED SERRADELLA is growing in popularity as a pasture legume on coastal sandy soils in Western Australia, and its use may increase further when new selections become available. However, its rate of entry into commerce has been limited by the poor germination of the seed available.

The pod of serradella (Ornithopus compressus L.) consists of a number of single-seeded segments, which break apart spontaneously at maturity. Commercial "seed" has consisted of such segments. Because of the presence of dormancy-inducing substances in the pod walls (Barrett-Lennard and Gladstones, 1964), together with the hardness (impermeability to water) of the seed coats, which are protected by the pod from scarification during threshing, the germination of commercial seed has often been as low as 2 to 10 per cent.

Laboratory tests have shown that germination can be increased to nearly 100 per cent by removing the seeds from the pod-segments (dehulling), followed by scarification, but a successful commercial method for achieving this has not hitherto been reported. The present note describes a mechanical method which dehulls and scarifies successfully some 60 lb. of unhulled seed per hour, and raises germination to over 70 per cent.

Dehulled seeds (left) and single-seeded pod segments of yellow serradella, enlarged about six times

The authors: J. R. Weeldenburg, Technician, Agronomy Department, Institute of Agriculture, University of Western Australia, Nedlands, W.A. 6009.

The machine used is a modification of one designed by Mr. J. V. Ellis, of the South Australian Department of Agriculture, for scarifying legume seeds generally. This consists essentially of two opposing sandpaper-covered discs, one of which revolves. The gap between discs is adjusted according to seed size. Seeds fed from above pass between the discs, and in doing so are scarified by the sandpaper surfaces.

We have found that this machine will dehull and scarify serradella seed, but because of the extra mechanical force needed for dehulling, wear of the sandpaper is too rapid for practical use. If however, the sandpaper covering of the discs is replaced by emery paper, or if solid emery discs are used, the rate of wear is reduced to the point where only occasional adjustment of the disc gap, with infrequent replacement of the emery paper, is required.

Tests with one of the modified machines have shown that where the initial sample is clean and perfectly dry, 70 to 75 per cent. dehulling can be achieved. The remainder of the sample is usually found to have split or cracked pod walls. The dehulled seeds are simultaneously scarified. This process increases germination to 70 to 80 per cent., and also the speed of germination. With the model used, about 60 lb. of unhulled serradella seed can be handled per hour.

A greater rate of passage of seed has proved inadvisable where emery paper is used because of excessive wear, and consequent reduced efficiency in dehulling. Solid emery discs may overcome this problem.

In any case, we believe that with further development of the method, including larger machines of increased capacity, it should become feasible to dehull and scarify yellow-flowered serradella seed on a commercial scale. This would have a considerable impact on both the cost and the ease of serradella establishment.

Reference