

Author: [ADVANCED](#)Volume Page Keyword: 

[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1349-1008

PRINT ISSN : 1343-943X

Plant Production Science

Vol. 11 (2008) , No. 3 278-282



[\[PDF \(472K\)\]](#) [\[References\]](#)

Pod Dehiscence in Relation to Chemical Components of Pod Shell in Soybean

[Jutamas Romkaew](#)¹⁾²⁾, [Yuichi Nagaya](#)¹⁾, [Masakazu Goto](#)¹⁾, [Kenya Suzuki](#)³⁾ and [Teruhisa Umezaki](#)¹⁾

1) Graduate School of Bioresources, Mie University

2) Faculty of Agriculture, Kasetsart University

3) Faculty of Bioresources, Mie University

(Received: July 2, 2007)

Abstract: The relationship between chemical components of pod shell and pod dehiscence was investigated using 25 soybean cultivars; 16 with easily dehiscing pods (susceptible cultivars) and 9 with hardly dehiscing pods (resistant cultivars). After air-drying for about three weeks, the pod shells were ground and analyzed for the contents of neutral detergent fiber (NDF), acid detergent fiber (ADF), acid detergent lignin (ADL), hemi-cellulose (HCe), cellulose (Ce), uronic acid and calcium. The correlation of the contents of chemical components with the percentage of pod dehiscence (%PD) was examined by principal component analysis. The first principal ingredient score was given by the formula; $\text{score} = -0.421[\text{ADF}] - 0.038[\text{ADL}] + 0.821[\text{HCe}] - 0.382[\text{Ce}] + 20.556$, where, [ADF], [ADL], [HCe] and [Ce] are percentage of each component in dried pod shell. This score gave an eigenvalue of 30.2 and contribution rate of 97.1%, and the score was higher in the susceptible cultivars than in the resistant cultivars on the average. The multiple regression analysis of the relationship between %PD and the content of chemical components also showed that %PD was best predicted by the regression equation with two chemical components, [HCe] and [Ce]. Water retention capacity and cellulose crystallinity of the pod shell were less different between the susceptible and resistant cultivars. The results in this study suggested that the chemical analysis of dry pod shell may provide useful information on breeding and selection of the resistant cultivars.

Keywords: [Acid detergent fiber](#), [Acid detergent lignin](#), [Cellulose](#), [Chemical component](#), [Hemi-cellulose](#), [Neutral detergent fiber](#), [Pod dehiscence](#), [Soybean](#)



[\[PDF \(472K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

[RIS](#)

[BibTeX](#)

To cite this article:

Jutamas Romkaew, Yuichi Nagaya, Masakazu Goto, Kenya Suzuki and Teruhisa Umezaki:
“Pod Dehiscence in Relation to Chemical Components of Pod Shell in Soybean”. Plant
Production Science, Vol. **11**, pp.278-282 (2008) .

doi:10.1626/pp.s.11.278

JOI JST.JSTAGE/pp.s/11.278

Copyright (c) 2008 by The Crop Science Society of Japan



[Japan Science and Technology Information Aggregator, Electronic](#)

