

# “Lubricant Base Oils From Oilseeds” Project Explained

(As listed on page six chart)

This project is conducted by Dr. Martin Reaney at the University of Saskatchewan. Dr. Reaney writes: “Most commercial lubricants are produced as a combination of a viscous hydrocarbon base stock which contributes over 70% of, the lubricant mass. Additives that improve the lubricants performance and stability make up the remainder of the composition.

Vegetable oil base stocks are often superior lubricants when compared with petroleum equivalents but have notable poor performance under certain conditions. In a recent breakthrough AAFC and the U of S scientists have discovered that the bulk of lubricity of vegetable oils is contributed by minor components present in the oil.

In this proposal, the lubricity enhancing components of canola and mustard oil will be analyzed to further understand the mechanisms of these unusual plant compounds.

It is likely that the research will lead to further improvements in lubricating compounds and the development of lubricant additives that are less toxic and more biodegradable than those currently produced by industry.

The lubricity additives and vegetable oils base stocks will be tested for their performance in experimental conditions and real world tests. The ability of the lubricants to protect wear surfaces will be conducted at the Canadian Light Source where wear surfaces will be mapped and characterized. The goal will be to develop the knowledge of those methods that may be used to produce functional bio-lubricants to compete with petroleum based products. It is hoped that the knowledge gained will lead to adventitious chemistry that can be applied to canola and mustard oils and uses by Canadian manufacturers to produce lubricity additives and base oils.” ❀

## Straight Combining Story Sheds Light on Shatter Loss in Matter

By: **Adrian Ewins**

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**H**arvest timing and method are key factors in limiting shattering losses in some varieties of mustard, according to preliminary data from a three-year study on pod shattering.

Van Ripley, a plant breeder from the Agriculture Canada research centre in Saskatoon, said data from the first year of the three-year study showed a correlation between harvest techniques and shattering losses.

“The major recommendation would be to harvest oriental and brown mustard by straight combining as close to full maturity as possible to minimize the chance for yield loss due to pod shatter,” he said in an interview after speaking to the annual meeting of the Saskatchewan Mustard Development Commission.

Of the three brown and oriental mustards tested, two varieties showed a yield gain of roughly two percent when direct combined. The third variety showed a three percent yield reduction. For yellow mustard, the single variety tested exhibited a six percent higher yield when straight combined at maturity.

### **Economic Losses**

The yield impact of shattering has been well understood among canola growers, with estimated losses ranging from \$2 to \$8 a bushel. It has been generally accepted that mustard is more resistant to pod shattering, but there was no good data on the subject. Ripley’s study, funded by the Saskatchewan Mustard Development Commission, is aimed at filling that information gap for producers.

Measuring the number of seeds lost from pod shatter is a challenging task. Ripley’s team set up three separate trials, differentiated by harvest method. In one trial, all entries were swathed at the proper stage and then combined. In another, all entries were straight combined at full maturity. In the third, all entries were straight combined one month after maturity.

### **Evaluation Method**

The yield from the swathed crop was used as the baseline to measure potential yield loss from shattering. The trial that was harvested one month after maturity was used as an estimate of a “worst case scenario” for potential seed loss due to shattering and was not intended to reflect a commercial situation. For the crop harvested one month after maturity, the yield losses averaged 15 percent for the three oriental and brown and slightly higher for the one yellow cultivar.

In addition to yield loss, the plants were also evaluated for any relationship between shatter losses and a variety of other traits, including plant height, number of branches, stem size, days to maturity and seed quality.

“The only actual physical plant trait that can be related to shattering is pod length,” said Ripley. Longer pods are more prone to shatter. Another preliminary conclusion from the study is that the green seed and chlorophyll content was higher in swathed versus direct combined crops for all mustard types.

*EDITOR’S NOTE: For further information on this study, go to the SMDC website at [www.saskmustard.com](http://www.saskmustard.com) ❀*