Camelina Response to Harvest Time and Sources of Seed Yield Loss

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Introduction

- Camelina (*Camelina sativa* L. Crantz) is an oilseed crop suitable for dryland production.
- Uneven ripening of camelina pods (Fig. 1) results in harvest problems.
- Right harvest time needs to be determined because of the trade-off between seed loss and seed quality.

Objectives

- Determine the effects of different harvest time on camelina yield and quality.
- Quantify potential sources of seed yield loss during camelina harvest.

Materials and Methods

Site: Univ. of Wyoming Sheridan Res. Ext. Center, Wyarno, WY (Fig. 2A).

Overview: Nested on an established wheat-camelina rotation trial (Fig. 2B)

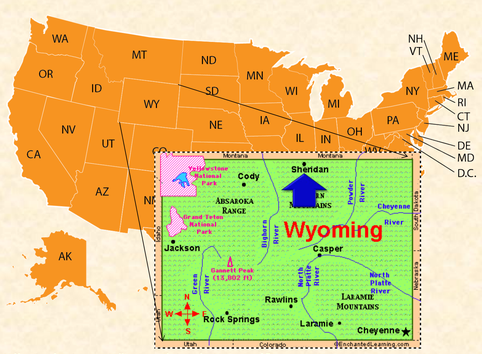
Cultivars: Blaine Creek (spring cultivar) and BX WG 1 (winter cultivar)

Harvest times: At 50, 75, and >90% ripe pods for early, mid, and late harvests, respectively.

Harvest methods: Performed at late harvest.

- ✓ *Harvest 1; direct combine harvest*
- ✓ *Harvest 2; Harvested with pruners and threshed with a combine using same settings as Harvest 1.*
- ✓ *Harvest 3; Harvested with pruners and threshed with a portable thresher.*

Fig. 1. Camelina showing uneven ripening of pods.



(http://aptselector.com/images/state/wy-map.gif)

Fig. 2. Map showing experiment location in the US.

Fig. 3. Field plots showing camelina and wheat in rotation.

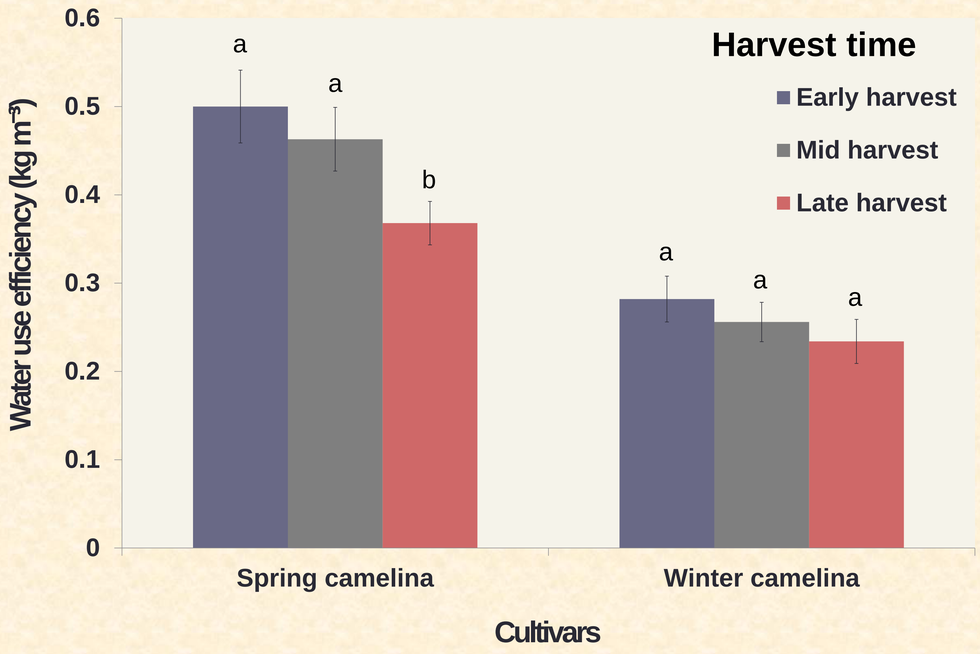


Fig. 4. Water use efficiency of camelina as affected by cultivar and harvest time.

Table 1. Harvest time effects on harvest index, seed moisture, protein and oil content, and biodiesel yield of camelina.

Harvest time	Harvest index	Seed moisture (%)	Protein content (g kg^{-1})	Oil content (g kg^{-1})	Biodiesel yield (L ha^{-1})
Early	0.26a	14.2a	298a	336b	155a
Mid	0.27a	9.8b	304a	347b	148a
Late	0.24b	6.7c	303a	333a	121b
P-value	<0.001	<0.001	0.524	<0.001	<0.001

Within columns, means followed by the same letter are not different at $P < 0.05$.

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Results

Harvest times:

- ✓ *Early harvest increased water use efficiency of the spring cultivar, but had no effect on the winter type (Fig. 4).*
- ✓ *Delaying harvest reduced the seed yield (Fig. 5), harvest index, and biodiesel yield, but increased the oil content. (Table 1).*
- ✓ *There were no effects of harvest time on the seed protein content.*

Harvest methods:

- ✓ *Compared with Harvest 3, seed yield of Harvests 1 and 2 were 11.7% and 4.33%, respectively lower.*
- ✓ *Seed yield loss was to due to mechanical disturbance imposed on the pods and the combine settings such as the fan speed, concave adjustment, and sieve size.*

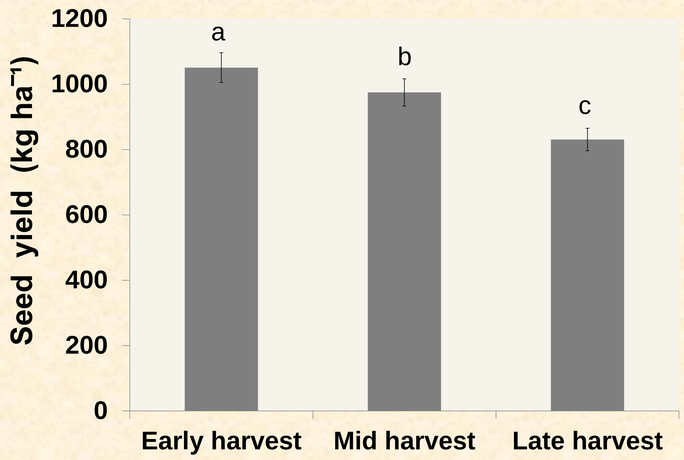

Fig. 5. Harvest time affects camelina seed yield.

Conclusion

Direct combining when 75% of camelina pods are ripe will provide a balance between seed yield loss and seed quality.

Acknowledgement

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