

# Spring Oilseed Planting Method

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## Summary

Stand establishment was favored by hoe drill in both 2005 and 2006; the earliest 50% bloom dates also occurred in plots planted with a hoe drill. Among spring oilseed crops studied, *Brassica napus* had the best emergence in 2005, and *Camelina sativa* had the poorest emergence and latest 50% bloom dates in both years. The best yield in 2005 was from *B. napus* planted with the direct drill method. In 2006, dry and hot conditions limited yields.

## Introduction

Spring oilseed crops such as canola (*B. napus*) offer diversity to grain-based cropping systems, but small seed size and shallow seed placement can hamper stand establishment for spring oilseed crops. In semiarid regions, inadequate moisture can limit germination, and when emerged, seedlings can be vulnerable to dry conditions. Alternative types of grain drills can alter seed placement, soil conditions, and growing conditions; these factors can affect crop establishment and seed yield.

The objective of these field studies was to determine effects of planting method on stand formation, bloom date, and yield of spring oilseed crops under semiarid conditions.

## Procedures

Seed from three cool-season oilseed species—*B. juncea* 'Arid', *B. napus* 'Hyola 401', and *C. sativa* 'Boa'—was planted in replicated plots (5 ft × 35 ft) on Mar. 30, 2005, and Apr. 18, 2006, with a seed drop equivalent to 1,200,000 seeds/a (*B. juncea* and *B. napus*) or 1,900,000 seeds/a (*C. sativa*). The direct seeding method used a Great Plains 1005 drill (7.5-in. spacing with press wheels at a ¾ in. depth). The Great Plains drill also was used for broadcast seeding; however, hoses were disconnected from shanks, and drag chains (18 in. length) attached to shanks provided surface incorporation. The hoe drill seeding method used an International Harvester 150 drill (10-in. spacing with standard press wheels at a ¾ in. depth). One day before planting, glyphosate (Roundup UltraMax, 24 oz/a) was applied in a tank mix of 60 lb/a nitrogen (28-0-0) in 2005 or 90 lb/a nitrogen (28-0-0) and 30 lb/a phosphorus (10-34-0) in 2006. Plots were hand weeded on June 9, 2005. The insecticide Capture (1.3 oz/a) was applied both 14 and 21 days after planting to control flea beetles. Field observations included emergence and stand ratings (1 = poor, 5 = complete), 50% bloom date, and maturity date. Seed was harvested and analyzed for water content, test weight, and yield.

## Results

In 2005, seeding with the hoe drill provided superior stand ratings for all three oilseed crops and three observation periods (Table 1). Ratings tended to be poorest for the broadcast seeding method and equivalent or intermediate for the direct drill method. The *B. napus* and *C. sativa* lines had the best and poorest emergence ratings and greatest and least yields, respectively; emergence ratings and yields of *B. juncea* were intermediate. *B. napus* yields were greatest with the direct drill method, *C. sativa* yields were

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favored by broadcast planting, and *B. juncea* yields were similar for all planting methods (Figure 1).

In 2006, greater stand ratings and the earliest 50% bloom date occurred with the hoe drill method; the broadcast and direct drill methods had the poorest and intermediate stand ratings, respectively (Table 2, Figure 2). Stand ratings were similar for *B. napus* and *B. juncea* but lower for *C. sativa*, and *C. sativa* generally required 5 to 15 more days for flowering than *B. napus* or *B. juncea*. Dry and hot spring conditions limited seed set and yields.

**Table 1. Effect of planting method on emergence, time required for flowering, and oilseed yield for spring *Brassica napus*, *Brassica juncea*, and *Camelina sativa* planted on Mar. 30, 2005, Colby, KS**

| Effect           | Emergence rating <sup>1</sup> |        |        | 50% bloom<br>DAP | Yield<br>lb/a at 8% |
|------------------|-------------------------------|--------|--------|------------------|---------------------|
|                  | 19 DAP <sup>2</sup>           | 27 DAP | 34 DAP |                  |                     |
| Direct drill     | 2.08                          | 2.67   | 3.67   | 53               | 1,420               |
| Broadcast        | 1.58                          | 2.17   | 3.08   | 56               | 1,452               |
| Hoe drill        | 3.00                          | 3.92   | 4.33   | 53               | 1,358               |
| <i>B. napus</i>  | 2.92                          | 3.75   | 4.50   | 53               | 1,948               |
| <i>B. juncea</i> | 2.50                          | 3.17   | 3.92   | 53               | 1,394               |
| <i>C. sativa</i> | 1.25                          | 1.83   | 2.67   | 55               | 890                 |

<sup>1</sup> Scale: 1 = poorest, 5 = best.

<sup>2</sup> Days after planting.

**Table 2. Effect of planting method on emergence, time required for flowering, and oilseed yield for spring *Brassica napus*, *Brassica juncea*, and *Camelina sativa* planted on Apr. 18, 2006, Colby, KS**

| Effect           | Emergence rating <sup>1</sup> | 50% bloom<br>DAP <sup>2</sup> | Yield<br>lb/a |
|------------------|-------------------------------|-------------------------------|---------------|
|                  |                               |                               |               |
| Broadcast        | 0.9                           | 62                            | 13.5          |
| Hoe drill        | 2.8                           | 54                            | 103.9         |
| <i>B. napus</i>  | 2.0                           | 55                            | 59.1          |
| <i>B. juncea</i> | 2.0                           | 56                            | 16.3          |
| <i>C. sativa</i> | 1.4                           | 65                            | 88.1          |

<sup>1</sup> Stand evaluated on May 11, 2006.

<sup>2</sup> Days after planting.

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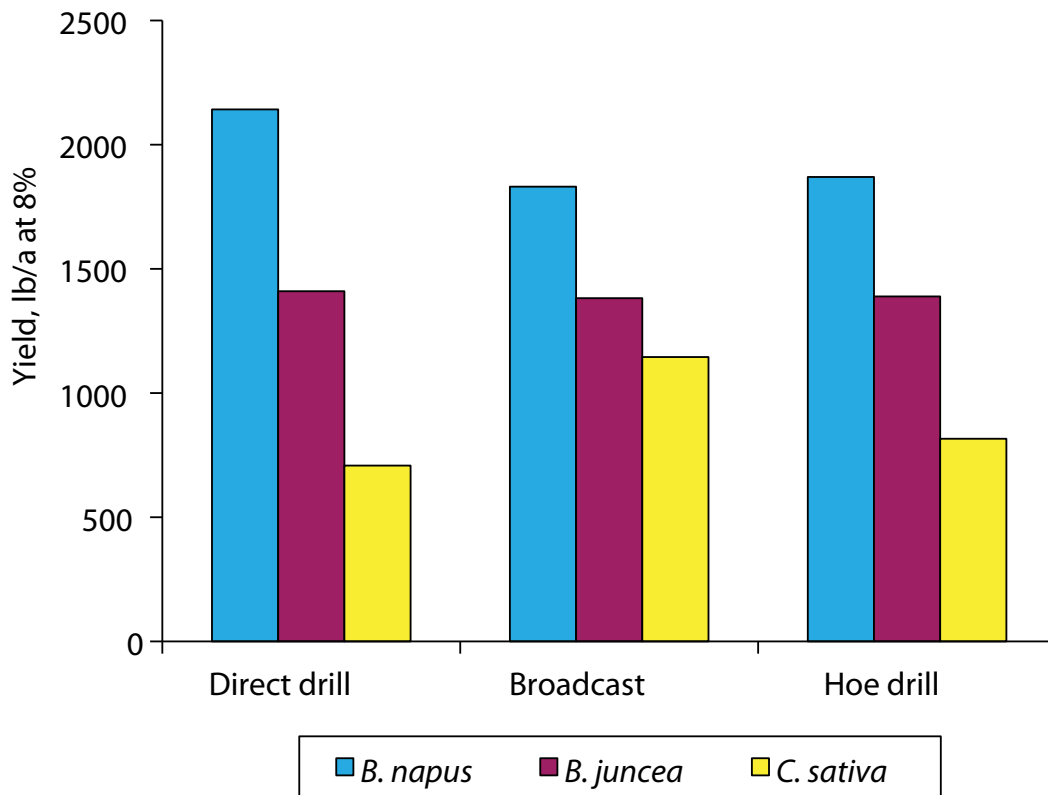


Figure 1. Effect of planting method on yield of spring *Brassica napus*, *Brassica juncea*, and *Camelina sativa* in 2005.

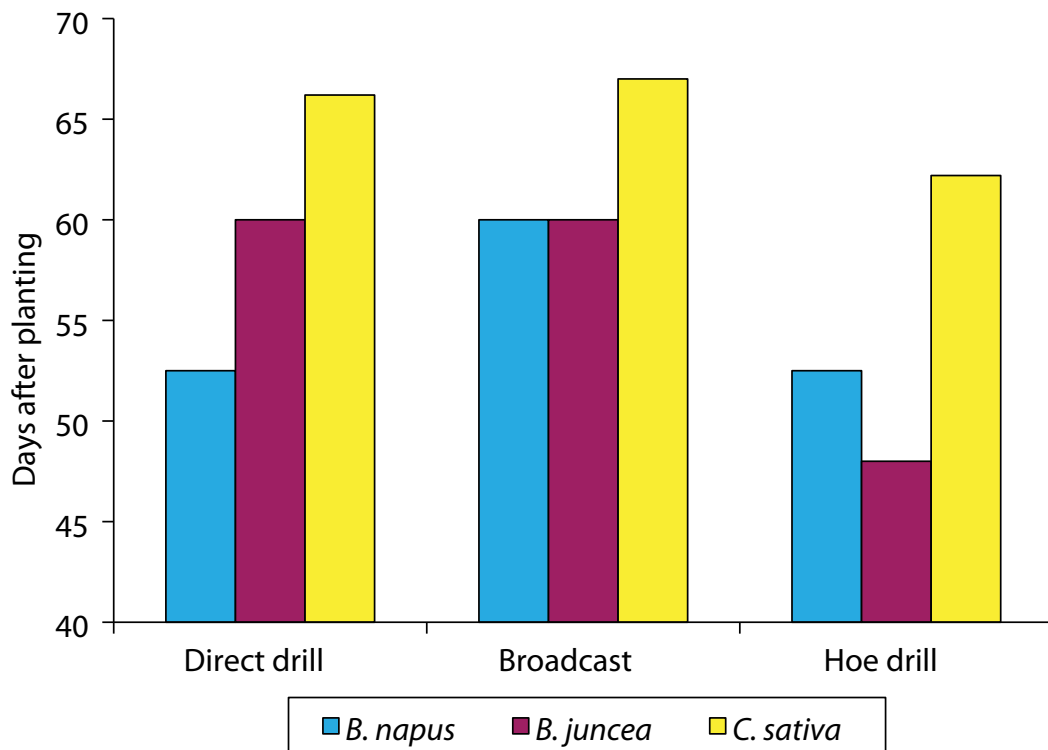


Figure 2. Effect of planting method on days to 50% bloom for spring *Brassica napus*, *Brassica juncea*, and *Camelina sativa* planted on Apr. 18, 2006.