Camelina

Camelina sativa

Institute for Agriculture and Trade Policy
RURAL COMMUNITIES PROGRAM

BIOECONOMY

INTRODUCTION

Camelina *(Camelina sativa)*, a member of the mustard family, is best adapted to cooler climates and can be grown in the flax-growing region of the northern Midwest. Camelina also known as false flax, wild flax, leindotter, German sesame or Siberian oilseed, is most known in North America as a weed called "gold of pleasure." Camelina has been valued since Neolithic times for its oil production. During medieval times direct cultivation of camelina declined, but the crop continued to evolve with flax. Now researchers, farmers and industry leaders are revisiting camelina for use in animal and bird feed/seed, cosmetics, and with its high oil content, potentially an alternative to soybeans in biodiesel and food-grade oil production. Camelina oil boasts 35–40 percent linolenic acid (Omega-3), which is higher than canola (8 percent) and soybean (1 percent) oils.

PLANT DESCRIPTION

- spring annual or winter annual
- grows to heights of 1-3 feet
- stems branched smooth or hairy and are woody at maturity
- leaves are arrow-shaped, sharp pointed with a smooth edge, 2-3 inches long
- flowers are pale yellow to green with 4 petals
- seeds are very small (0.7 by 1.5 mm), pale yellow to brown or orange, oblong, rough and ridged surface, very dense with 50 lb./bu weight (345,000 to 465,000 seeds per pound)
- allelopathic
- short-seasoned (about 85-100 days)
- no seed dormancy, often not a problem with other crops

PRODUCTION ASPECTS FOR UPPER MIDWEST

- broadcast-sown or drill-sown on frozen ground in late November to early December, or mid April to early May
- requires little to no seedbed preparation
- seeding rate of 2.5–11 lb./acre
- emerges in mid-April when winter sown (before weeds and spring-sown crops)
- reaches maturity late June to early August
- harvested with a combine harvester (use of 3/64 x 3/8 slotted screen)
- average seed yields varies from 670-2,240 lb/acre

AGRONOMIC FACTS

- seedlings are cold tolerant
- more drought tolerant than flax
- diseases and pests in trials have not warranted control measures, but some potential concerns include:
  - **downy mildew** *(Peronospora camelinae)*
  - **Turnip Yellow Mosaic virus**
  - **blackleg** *(Lepotosphaeria maculans)*—camelina is highly resistant
  - **black spot** *(Alternaria brassicae)*—camelina is highly resistant
  - **flea beetle** is a known camelina pest, but not a severe problem
- annual weeds are not a concern if seeded in the winter or very early spring or if planted at high densities

USES AND POTENTIAL MARKETS

Existing and potential markets for camelina include:

- edible or industrial oil (29–41 percent oil content)
- biodiesel fuel
- cosmetics
- linoleum
- birdseed
- livestock and pet feed
- fiber (from straw)
- green manure, cover crop, border rows or double cropping
- ornamental/dried flower arrangements

SUSTAINABLE CHARACTERISTICS

- low inputs of fertilizer, herbicide, pesticides and energy
- tillage generally not needed
- low input costs
- seedbed preparation generally not needed - can plant into stubble ground
- highly compatible with cover crops
- winter and early spring cover can reduce soil erosion
- potential alternative for stubble systems, winter surface seeding, double cropping or for marginal farmlands (Putnam et al. 1993)

CASE STUDY

In Montana, over 20,000 acres of camelina were planted in 2006. Yields between 900-2,200 lbs./acre when planted at 2.5-3 lbs./acre were achieved. Production costs average $45–$68/acre. The break even cost for camelina ($1.23) is lower than canola ($4.33) and spring wheat ($1.81) in Montana.

Great Northern Growers cooperative was formed to collectively market camelina. They sell most of their camelina to the cosmetics industry. However, a biodiesel plant, scheduled to open in 2007, will utilize oil from camelina and create a local market for growers in Montana. The Cooperative expects to pay producers between $0.09 and $0.12/lb. for their oilseed production.

FURTHER INFORMATION

Blue Sun Biodiesel LLC
www.gobluesun.com

Great Northern Growers Cooperative
www.greatnortherngrowers.com

Minnesota Department of Agriculture, Camelina
www.mda.state.mn.us/mgo/crops/Camelina.htm

Montana State University
Northwestern Agricultural Research Center
ag.montana.edu/nwarc

Siberian Tiger Naturals
www.siberiantigernaturals.com

Putnam, D.H., J.T. Budlin, L.A. Field, and W.M. Breene. 1993. *Camelina: A promising low-input oilseed*. p. 314-322. In J. Janick and J.E. Simon (eds.), New crops. Wiley, New York.

Robinson, R.G. 1987. *Camelina: A useful research crop and a potential oilseed crop.* Minnesota Agricultural Experiment Station, University of Minnesota, Bulletin 579-1987 (Item No. AD-SB-3275).

Vollmann, J., A. Damboeck, A. Eckl, H. Schrems, and P. Ruckenbauer. 1996. *Improvement of Camelina sativa, an underexploited oilseed*. p. 357-362. In: J. Janick (ed.), Progress in new crops. ASHS Press, Alexandria, VA.

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