for camelina stand establishment and seed yield. Field experiments were conducted for three years at four distinct rainfed agro-environments in the Pacific Northwest, USA. Average crop-year precipitation at the sites during the three years was: Lind WA, 9.0 inches; Pendleton OR, 16.6 inches; Moscow ID (one year only), 29.9 inches; and Corvallis OR, 39.1 inches. Camelina was planted on an average of five dates at each site (n=55) from early October to mid April at a rate of 5 lbs/acre by either drilling seed at a shallow depth or broadcasting seed on the soil surface. Although camelina has excellent cold hardiness, the best plant stands were achieved with the late-winter and early-spring plantings. Four divergent planting date yield responses across sites were: no yield differences at Lind; increased yield with later planting dates at Pendleton; reduced yield with later plantings at Moscow (one year data) and; a curvilinear response at Corvallis with the lowest yields from plantings in early fall and those after March 1 and highest yields from late-fall and mid-winter plantings (Fig. 1). Both drilling and broadcast were effective for planting camelina with no overall advantage of either method. Seed yields ranged from < 100 lbs/acre during an extreme drought year at Lind to 2600 lbs/acre at Moscow. Averaged across the four Pacific Northwest agro-environments in this study, we recommend: (i) late February-early March as the best overall planting date because of optimum stands and seed yield and having effective control of winter-annual broadleaf weeds with herbicide applied just prior to planting, and (ii) the broadcast method of planting as it generally equaled or slightly exceeded drilling for plant stand establishment and seed yield and can be accomplished more quickly at less expense.

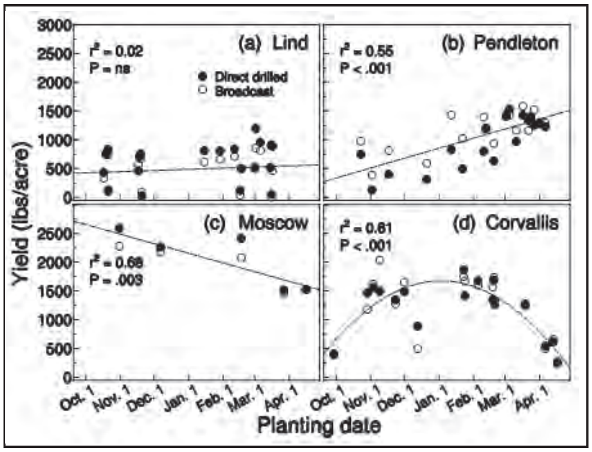

Fig. 1. Effect of planting date and method (direct drilled or broadcast) on camelina seed yield at four locations over three years.

Camelina: Seed Yield Response to Applied Nitrogen and Sulfur

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Camelina has received worldwide attention in recent years as a biofuel crop and as a rotation option for producers of small grain cereals. The objective of our study conducted during the 2008, 2009, and 2010 crop years was to determine camelina seed yield and nitrogen use efficiency (NUE) as affected by six applied nitrogen (N) rates at four sites in the Pacific Northwest. An N + sulfur (S) variable was also included. In 2010, seed oil as affected by applied N and S was also evaluated. The four sites and their average annual crop-year precipitation during the three years were: Lind, WA (9.0 inches); Pendleton, OR (16.6 inches); Moscow/Pullman, ID (27.4 inches); and Corvallis, OR (42.7 inches). The majority of the average annual precipitation at these sites is distributed in the winter and summers are comparatively dry. Camelina responded differently to applied N among sites based upon precipitation and available soil N. Seed yield did not respond to N rate treatments at Lind, presumably due to sufficient soil residual N and limited precipitation. Response of seed yield to applied N was mediated by increased precipitation at Pendleton, Moscow/Pullman, and Corvallis. Maximum seed yield increases attributable to applied N ranged from 19% at Pendleton to 93% at Moscow/Pullman. Based upon the results of this study, camelina seed requires about 5 lbs N per acre per 100 lbs of expected seed yield. Camelina NUE was greatest at Moscow/Pullman although it decreased gradually with increasing applied N rates at all sites. Lind, Pendleton, and Corvallis were the same with a NUE of -0.06 pound of seed for every added pound of N. Nitrogen use efficiency was greatest at Moscow/Pullman and Corvallis, and least at Lind. Camelina did not respond to applied sulfur at any site. Seed oil content was not affected by applied N or S.

Wind Erosion Challenges for Oilseed Cropping Systems

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The volatility of petroleum reserves, rising price of petroleum products, and climate change has created a worldwide interest in renewable fuels. The United States has set a goal of producing 36 billion gallons of biofuel by 2022 with 21 billion gallons being