

# European small grain systems reviewed

LANCASTER — European farmers set yield goals near the 150-bushel-per-acre mark for their small grain crops. How they expect to reach these yield goals was the topic of an international seminar on the technology of cereal production, yields and productivity, organized by the Royal Agricultural Society of England last summer.

This technology, as reviewed by several U.S. small grain researchers, has resulted in average wheat yield increases in England of almost 40 percent during the last 10 years to a national average of six tons per hectare (89 bushels per acre).

One U.S. representative at the European seminar was Mark Alley, associate professor of

agronomy at Virginia Polytechnic Institute and State University if Blacksburg.

He compared the European technology to U.S. production methods and says, "We have a great unexploited potential for small grains. We have soils with good production capacity, as good or better than those in Europe where some of the better growers average 150 bushels of barley per acre. That's eight tons per hectare and their high yield clubs set goals of 10-ton crops."

Alley reports that the philosophy of cereal production is based on the high value of the crop in European countries and the "total system thinking." Production techniques in the total system ranges from crop residue management and tillage systems to fertilizer and

plant growth regulator applications.

### Management factors

The management factors that aided progress toward the high yields are: (1) planting dates; (2) seeding rates; (3) nitrogen rates and timing; and (4) plant growth regulators to control lodging. To develop these management factors for U.S. growers will take research and field trials, Alley says, but he suggests farmers can begin a high-yield program by incorporating the following steps into their grain production program:

—Select the best adapted variety from university and company performance trials. Look for top yields over two to three years for consistency. Also watch for disease resistance, milling qualities and characteristics, plus maturity dates if doublecropping.

In Europe, breeders are concentrating on disease resistance and yield potential. The economic goal of the government is for their countries to be self-sufficient. This places more emphasis on the small grain breeding programs than in the U.S., says Alley. "Their varieties are bred for high fertility and high yields."

### Soil test

—Soil test for fertility levels, including potash and potassium. "Soil testing is standard procedure in both U.S. and Europe," Alley says. "But, the European farmers never question building the fertility to high levels." The Germans also apply quantities of micronutrients, although Alley reports that research does not support deficiencies of these nutrients in wheat. In some U.S. soils, possible deficient nutrients are copper and manganese because of low native supplies and boron because of its mobility in sandy soils.

—Seedbed preparation is a key to uniform depth and placement. Placing emphasis on uniform depth for maximum uniform

emergence, Alley says, planting can be done in no-tillage fields with several models of well-adjusted no-till drills.

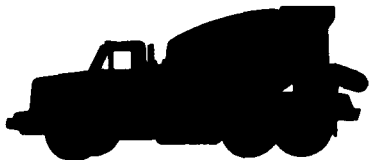
—Seeding rates are precisely managed in high yielding systems. To manage planting to a desired population, seeds must be counted, not planted by the pound per acre. Varieties will have varied seed sizes and required seed depths for best performance. In Virginia tests, Alley says, the seeding is determined by number of seed per foot of row to reach desired populations. Another consideration is that wheat plants compensate for population differences like soybeans, where the pod set increases in a thin stand to yield the same. The European goal is 600-700

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