INTRODUCTION
The following tables present results from barley and wheat varietal tests conducted in Virginia in 2003-2005. Small-grain cultivar performance tests are conducted each year in Virginia by the Virginia Tech Department of Crop and Soil Environmental Sciences and the Virginia Agricultural Experiment Station. The tests provide information to assist Virginia Cooperative Extension Service agents in formulating cultivar recommendations for small-grain producers and to companies developing cultivars and/or marketing seed within the state. Yield data are given for individual locations and across locations and years; yield and other performance characteristics are averaged over the number of locations indicated. Performance of a given variety often varies widely over locations and years which makes multiple location-year averages a more reliable indication of expected performance than data from a single year or location. All tests in 2003-2005 were grown in seven-inch rows planted at 22 seeds per row foot with the exception of Blacksburg and Warsaw which were grown in six-inch rows at 22 seeds per row foot and the No-Till test at Warsaw which was grown in 7.5 inch rows at 28 seeds per row foot. Details about management practices for barley and wheat are listed for each experimental location.

THE SEASON
The 2004-2005 small grain crop began with near average temperatures in October. Fall temperature overall was 1.7°F above long term mean (Figure 1) mainly due to November, which was much warmer than average. While the month of November was rainy, overall fall precipitation was 97% of normal (Figure 2). Spring and winter temperatures were near average with unseasonably warm periods in early January. Late winter saw many small grain fields that were stunted or tillering poorly due to late planting, inadequate topsoil moisture, and especially cold temperatures. This same trend was evident into March with small grains developing slowly. Concerns over cold temperature damage were felt statewide but more so in the Southern and Eastern counties. May was more than 3°F cooler than normal and was especially dry. Spring rainfall was 17% below the amount normally recorded for that time of year. A cool and mostly dry May contributed to conditions that were very favorable for a long grain fill period leading to good yields and high test weight. Small grain harvest occurred several days later than normal due to the cool May temperatures.

Figure 1.

Figure 2.
Virginia producers planted an estimated 60,000 acres of barley in 2004-05, an increase of 9% over the previous year. Grain harvest occurred on 72% of planted acres for the 2003-2004 crop and an estimated 73% (44,000 acres) for the current year. At a projected 83 bushels per acre, yields were nine bushels per acre higher than the 74 bushel per acre average of 2003-2004 and also well above the 10-yr state-wide average of 75 bushels per acre. Planted acres for wheat were estimated at 210,000 acres in 2004-05 which was very similar to the previous year. Harvested acres in 2004-05 decreased compared to 2003-04 to an estimated 170,000 acres. Statewide average yield was estimated at 57 bushels per acre, as compared to a statewide average of 55 bushels per acre in 2003-04 and was one bushel per acre lower than the 10 year average (58 bu/A). Overall wheat production is expected to be 9.7 million bushels, down two percent from last year.

SECTION 1 - BARLEY VARIETIES

Hulless Barley

Prior to the early 1990’s winter barley cultivars available and grown in the U. S. Mid Atlantic Region were traditional hulled feed barley types. Traditional hulled barley has been grown for centuries in the Mid-Atlantic Region on many farms as feed for all classes of livestock. Demand for high energy, low fiber grain by the vertically integrated swine and poultry industries, and availability of brewer’s distilled grains for the beef and dairy industries have resulted in greatly reduced demand for traditional barley. In an effort to recapture a share of this feed market, emphasis has been placed on the development of the more energy dense hulless type of barely. Hulless barley grows and looks like regular barley until nearly mature. When almost mature, the glumes start to separate from the seed. The grain is separated from the glumes when combined. Grain of hulless barley looks more like wheat than traditional barley.

Yields of current hulless barley lines are generally 10-20 percent lower than those of hulled barley lines. This is expected since the hull makes up 12-15 percent of the weight of traditional barley and the breeding program for hulless barley is relatively new.

During the past 10 years, the Virginia Tech barley breeding program has developed hulless lines that yield 5-18 bushels per acre higher than initial winter hulless lines. Many of these lines have improved straw strength and grain plumpness and have higher resistance to prevalent diseases. Meanwhile, increased interest in the use of hulless barley varieties having high energy and digestibility in manufacturing food and fuel products, as well as feed, has accentuated the desire to develop winter hulless barley varieties having greater marketability in both domestic and