Defender Management Recommendations - Idaho

Released in 2004, Defender is a lightly-russeted variety, which resulted from a cross of a late blight resistant breeding clone, KSA195-90, and Ranger Russet. It is suitable for processing directly from the field or following short-term storage. The name "Defender" was chosen to highlight this variety's foliar and tuber resistance to late blight. Defender is very high-yielding and tubers have high solids and Vitamin C. While foliage is late maturing, tuber bulking can be rapid making Defender suitable for early harvest as well. In addition to its late blight resistance, Defender also is resistant to tuber early blight, PVX, and net necrosis. It exhibits moderate resistance to early dying, pink rot, corky ringspot, PVY^{o} and soft rot. Its disease resistances make Defender a good candidate for use in organic production. Weaknesses include a relatively short tuber dormancy and susceptibility to common scab, blackspot bruise, and tuber greening.

Studies on the management of Defender were conducted primarily in southeastern Idaho and the results of these studies provide growers in Idaho and other regions with information that may be useful in developing management guidelines for their locale.

Seed and Pest Management

Optimal seed size for Defender is about 2 to 3 oz. Dry rot potential of seed lots should be determined and seed should be treated with an effective fungicide when needed. Seed piece spacing trials have shown that the optimal spacing for Defender in 36 inch wide rows is 10-12 inches. Seed should be planted 5 to 7 inches deep with 2-3 inches of soil applied at final hilling to minimize tuber greening. Defender is resistant to Metribuzin at normal application rates. The critical period for weed control in Defender is prior to row closure. Defender produces a vigorous vine that competes well with most mid- and late-season weeds.

Nutriment Management

Nitrogen requirements for Defender are about 80-90% of Russet Burbank. Total soil plus fertilizer N recommendations are about 200 lb N/acre in southeastern Idaho and 250 lb N/acre in south central Idaho. One-third to one-half of the seasonal N requirement should be applied at or near planting with the remainder applied before August 10 to avoid delaying tuber maturation. Late season N applications can also delay vine maturation, which can create difficulties with vine kill. Soil moisture should be maintained between 65-80% ASM throughout the growing season to avoid drought stress. Vines of Defender remain green and vigorous late in the season and can use more water than Russet Burbank during that period. Avoid excessive soil drying prior to vine kill to minimize tuber dehydration and blackspot bruise. It is recommended that phosphorus, potassium and micronutrient recommendations for Russet Burbank should be followed for Defender.

Harvest and Storage

Defender is similar to Ranger Russet with respect to bruise and sugar accumulation in storage. Therefore, the following management recommendations are appropriate for Defender:

1) Minimize the incidence of blackspot bruise by maintaining green vines up to vine kill or by "green digging".
2) Avoid tuber chilling in the ground prior to harvest, and
3) For processing out of long-term storage, maintain a storage temperature of $48^{o}F$