Robotics, automation, and intelligent machines for weed management – Steve Fennimore, Dept. of Plant Sciences, University of California, Davis, CA

Vegetable crops in California depend on hand weeding labor to realize commercially acceptable weed control. Labor shortages and increasing cost of labor are the force behind increasing use of intelligent weeders in Arizona and California. There are two general classes of weeders, tractor-towed and autonomous. The tractor-towed units such as Garford and Robovator have found some acceptance in the market place. These machines do not differentiate between crops and weeds but instead detect the crop row pattern. We have documented that the Robovator can reduce hand-weeding times by 35% or more. We have evaluated two autonomous weeders one from NAIO in France and the other from Farmwise – a California based company that you will hear about in the next presentation. The NAIO – Dino uses finger weeders to remove weeds and utilizes GPS guidance. We have documented that the Dino can reduce hand-weeding times by 14 to 27%.

Currently, machine weeders are expensive, but then labor costs are very expensive too. Even a modest reduction in labor expense can help pay for these weeders in one year or less. In addition, continuous improvements in technology will likely make intelligent weeders even more cost effective. Development of intelligent weeders is an ongoing process.