

# Grant Project Final Report

Department of Agriculture, Trade and Consumer Protection  
Division of Agriculture Development  
Agriculture Development & Diversification Program (ADD)

Contract Number: 24043

Grant Project Title: Development of Mechanical Harvesting for Sweet Potatoes

Amount of Funding: \$6,500

Organization: Joe Seis Farms

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The purpose of this project is to develop a mechanical means of harvesting sweet potatoes in Wisconsin. We used the grant funds to help develop and demonstrate a machine which would greatly reduce the labor requirements of sweet potato harvest. Reduction in harvest labor would greatly reduce the cost of production, thus making Wisconsin farmers and McCain Foods more competitive in the sweet potato french fry market.

Machine design was engineered around data we acquired from the 2008 sweet potato harvest. In 2008 we had many trials with Irish potato harvesters, these trials allowed us to evaluate what traditional Irish potato harvesting concepts worked with sweet potatoes and what the tolerance level of mechanical injury is acceptable for sweet potatoes being utilized in french fry production. We determined that the a sweet potato could be dug and lifted from the ground like an Irish potato, but could not withstand the drops, twists and turns that results from a potato going all the way through a potato harvester. Our sweet potato harvester engineering required making it a simple straight through design. We took 2 elevators off of the harvester and positioned the boom on the back of the machine, resulting in 3 less drops and turns. Our next step was building a conveyer mounted on a trailer for the sweet potatoes to drop onto. This trailer is where the actual "harvesting" of the potatoes is taking place. People and boxes are lined up along side of the conveyer, allowing people to take good potatoes off the conveyer and place them into the boxes while trash and debris continue on the conveyer and fall to the ground. This form of harvest worked quite well. Other area farmers came and watched it work and were impressed. After much harvesting with this machine we determined that our limiting factor was exchanging full boxes with empty boxes. We currently have

plans to build a box exchanging machine onto this trailer which will allow us to exchange boxes on the go.

We conclude that the grant funds successfully helped facilitate the design and demonstration of mechanical harvesting of sweet potatoes. The machines worked exactly as designed and successfully accomplished the task of digging the roots from the ground, allowing people to sort the potatoes, and maintained the integrity of the sweet potato allowing it to be utilized in french fry production. With the addition of the box exchange we will be adding, this machine will be a great success with even greater capacity than we originally hoped.

After conclusion of the 2009 growing season, McCain's determined that this form of harvesting has proved to be the most advantageous. All other Wisconsin sweet potato growers have watched this machine work, and agree that the concept is simple in design and makes use of the resources we already have readily available.

Thank you;

A handwritten signature in black ink, appearing to be 'Joe Seis', written over a horizontal line. The signature is stylized with loops and a long horizontal stroke extending to the left.

Joe Seis







