# Introducing the
# Precision Application Tillage Systems
# Sweet Potato
# Harvest Management System that will:

**1 – Improve quality by tightening the skins of the potato.**

**2 – Allow potato size to be managed by pulling the mother root.**

**3 – Puts 2 rows into a single windrow that will allow hand harvesting of the number 1 potatoes and allow more efficient mechanical or hand harvesting of the jumbos and canners.**

**4 – Allows the jumbos and canners to be covered with soil to allow harvest at a later date mechanically or by hand.**



I have been told NCSU has been working on pulling the sweet potato mother root for over 50 years.

The top picture shows the latest concept that they have been working on for a number of years.

I have been told that Amadas has built a 2 row and is ready to go to the field as soon as the crop is ready to harvest.

The bottom picture is from 1973 showing the concept of pulling the mother root with tires.

You can go online and Google / NCSU sweet potato root puller – Clinton, NC.

I really like this concept and feel that it could be the more practical of the two.



On 10/23/2014 I went to visit Tull Hill Farms to talk with Kendall and Michael Hill about undercutting sweet potatoes to tighten up the skins and their experiences in digging sweet potatoes with a moldboard plow.

They adamantly told me that you could not tighten the skins by undercutting.

They said that you must mow the vines to cut off the food and energy supply.

Pictured is their shredder and potato plow. As you can see the shredder does not do a good job on the vines.

Kendall and Michael both stressed that there needed to be a system developed to pull the roots to reduce skinning.



Pictured is a 1999 PATS row unit with the tire root pulling attachment.

These are the improvements we have made to the 1973 NCSU machine.

1 – We gauge the height of the pulling wheels from the top of the row, not the bottom.

2 – Replacing the standard tires with ATV knobby tires should grasp the vines better.

3 – Increasing the diameter and width of the pulling wheels should eliminate the need for the lifting attachment.

4 – Barring off the row will assist in vine / residue management.

5 – 3 point hitch will stay on row better.

## PATS Sweet Potato Root Puller Parts

### Agri Supply — 4 row parts and cost

| Description | Part # | # Required | / Each | Total |
|---|---|---|---|---|
| Knobby Tire | 29198 | 8 | $46.49 | $339.92 |
| Inner tube | 31576 | 8 | $9.99 | $79.92 |
| Rim | 49497 | 8 | $18.95 | $151.60 |
| Hub | 25669 | 8 | $13.49 | $107.92 |
| Bearing Kit | 83062 | 8 | $7.99 | $63.92 |
| 1/2" Hex nuts | 27354 | 32 | | $2.08 |
| 1/2" Lock washers | 27363 | 32 | | $0.72 |
| 1/2"x3.5" Bolts | 27350 | 32 | | $17.44 |
| 1/2" x1.13/16" Stud | 49347 | 32 | 0.99 | $31.68 |
| | | | **Total** | **$794.60** |

### Hydraulic Specialty Company / 4 row Package

3000 South Church Street / Rocky Mount, NC 27803 (252) 977-4673
Package includes 1 flow control valve, 4 hydraulic motors and all hoses.

**Total $1,552.50**

### Langley Industrial Machining Inc. / 4 row Package

4842 South HWY 301 / Sharpsburg, NC 27878 (252) 977-9222
Package includes all fabricated parts needed to complete machine.

**Total $1,320.00**

**Grand Total $3,667.10 Prices subject to change**

Clifton Dixon 10% commission $366.71
Delivery and setup negotionable

**Used 4 ROW PATS can be purchased for $3,500.00**

Clifton Dixon Cell# 252-916-3828 clifton_dixon@hotmail.com
2400 Gold Rock Road, Rocky Mount, NC 27804



The PATS rear roller has 6” of height adjustment.

The pulling attachment will also have 6” of adjustment.

This will allow us to precisely set the pitch and operating height of the pulling wheels.

The barring off discs will have a separate adjustment to precisely set the depth.

After we perfect this process, Langley Industrial and I will offer a complete row unit with a parallel linkage that will mount on existing rigid, folding and stacking 7” x 7” toolbars in 4, 6 & 8 row.

Residue management attachments to condition vines will also be available.

After working on the undercutter and a 2 row moldboard plow with a right and left bottom, I felt that the peanut digger blades with lifting rods could be a superior method to dig sweet potatoes.

Pictured is Joel and I barring off with disc blades and undercutting the potatoes in August.

I got Joel's permission to develop lifting devices with M-Fab, if he did not have to spend anymore money.

I am confident that if we pull the mother root and condition the vines and soil, it will allow better lifting of the potatoes and give the soil a better chance to be separated from the potatoes.



Joel helped a friend finish harvesting his crop late last November. This gave me a chance to run side by side with a disc digger.

As you can see when the disc digger gets off the row, it cuts a lot of potatoes.

These are some of the advantages of the PATS digger:

1 – Practically eliminates cutting potatoes and reduces skinning.

2 – Easier to keep in correct position.

3 – 6 & 8 row machines are possible on existing folding and stacker toolbars.

4 – Puts 2 rows into a single windrow.

5 – Eliminates the deep furrows that are difficult for workers and trucks to cross.



On 7-11-15 I visited my good friend Jeffrey Lee to show him the PATS sweet potato root puller and discuss ways to:

1 – Improve sweet potato quality.

2 – Reduce harvest cost.

3 – Maximize utilization of potato bins.

He told me about the pictured old Johnson sweet potato harvester that Godwin Farms in Dunn mounted a dump bin to load trucks directly with jumbos and canners.

He also told me in the old days that some growers had picked up their # 1 potatoes, then wrapped the jumbos and canners up with soil to protect them until they had the labor and or bins to harvest them.



**5 – In years when boxes are a factor jumbos and canners will not tie up the boxes for the # 1's.**

**6 – Jumbos and canners can be handled in bulk reducing # of boxes needed.**

**7 – With the potatoes being separated from the mother root, skinning is reduced by workers not having to pull the potatoes off the root. It will also increase worker productivity.**

**I am not claiming to be the first to try to pull the mother root, cover the jumbo and canners with soil to harvest later mechanically or by hand. I am claiming to be the first to adapt these existing technologies into a complete system.**