**Ballast**

**Step 1**
- Select the type of tractor to ballast and how the implement is mounted.

**Step 2**
- Enter in the PTO horsepower and how fast the tractor will be moving.

**Step 3**
- Enter in the dimensions of the tractor and the total weight of the tractor including the ballast already on the tractor.

**Step 4**
- This screen shows how much ballast you should add to or remove from the tractor.

**Behind the Scenes**

Private Sub cmdNext_Click()
If 2WD = True And Itowed = True Then
    Worksheets("part 1 -- targets").Range("B18").Value = 25
ElseIf 2WD = True And Ismount = True Then
    Worksheets("part 1 -- targets").Range("B18").Value = 30
ElseIf 2WD = True And Ismount = False Then
    Worksheets("part 1 -- targets").Range("B18").Value = 35
ElseIf FWA = True And Itowed = True Then
    Worksheets("part 1 -- targets").Range("B18").Value = 40
ElseIf FWA = True And Ismount = True Or Ifmount = True Then
    Worksheets("part 1 -- targets").Range("B18").Value = 45
ElseIf 4WD = True And Ismount = True Or Ifmount = True Then
    Worksheets("part 1 -- targets").Range("B18").Value = 60
ElseIf 4WD = True And Itowed = True Then
    Worksheets("part 1 -- targets").Range("B18").Value = 55
End If
frmTargets1.Hide
frmTargets2.Show
End Sub

- The button the left is from the first screen of the ballast portion
- The text next to it is the code that is executed when it is clicked
- It consists of a large ‘If...Then’ statement that will find the correct value that changes depending on which options are selected
- The two lines before ‘End Sub’ will hide the first screen and show the second.
Ballast Aid & Tire Pressure Program
Zach Dougherty, Tyler Shaw & Nick Barnard
Sponsor & Advisor: Dr. Dennis Buckmaster
ASM 495

Objectives
To create a user friendly program for farmers to use that will help them determine:
• How much weight should be added or removed from the tractor
• Proper tire inflation for the tires on the tractor

Ballast
• Proper weight in the front and rear axles of a tractor improves traction by reducing wheel slip
  - Reduced wheel slip results in more efficient operations, saving time and money
  - Proper ballast also reduces wear and tear, saving on maintenance costs

Notice the effect on the lug marks a tractor leaves in the soil when the tractor is under, properly and over ballasted.

• Over-ballasting reduces flotation, wastes fuel, power, and increases soil compaction

Tire Pressure
• Proper tire pressure depends on the type and size of the tire as well as the load on the tractor
  - It is best to have more pressure in the front tires for safer steering
  - Less pressure in the rear tires allows for more traction
• Over inflating the tires cause an increase in wheel slip and tire damage
• If pressure is too low there will be an increased chance of tire sidewall damage, overheating, and premature tire failure
• Always ballast tractor before adjusting tire pressure
  - The more load on a tire, the more pressure it should have

Acknowledgements
Dr. Buckmaster
Tire and Rim Association
Firestone Tires
ASAE Distinguished Lecture #27 By Frank M. Zoz and Robert Grisso
**Tire Pressure**

**Step 1**
- The first screen of the pressure portion allows you to enter new weight or use what was previously calculated.

**Step 2**
- This screen is where you pick your tires.
- The top boxes select the tire type.
- The bottom boxes select the tire itself.

**Step 3**
- The third screen displays the results.
- The results are obtained from a table of possible pressure and load combinations.
- The table below is an excerpt from one of the larger tables the program uses to calculate the solution.
- Poor choices from the user will result in a poor answer from the program.
- Picking the wrong tire could result in tire pressures that are exorbitantly high or below zero.

<table>
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<tr>
<th>Radial Ply Symbol</th>
<th>Marked Ag</th>
<th>Tractor Drive Wheel Tires</th>
<th>Tire Size</th>
<th>PSI</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>26</th>
<th>28</th>
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</table>

**Behind the Scenes**
- In addition to the code there are calculations performed within the tables.
- The “Load” column is where the program will enter the load.
- The “Per Tire Load” column is an intermediate calculation to determine the load per tire.
- The “Forecasted PSI” column is where the solution is calculated using the Forecast function of Excel.