

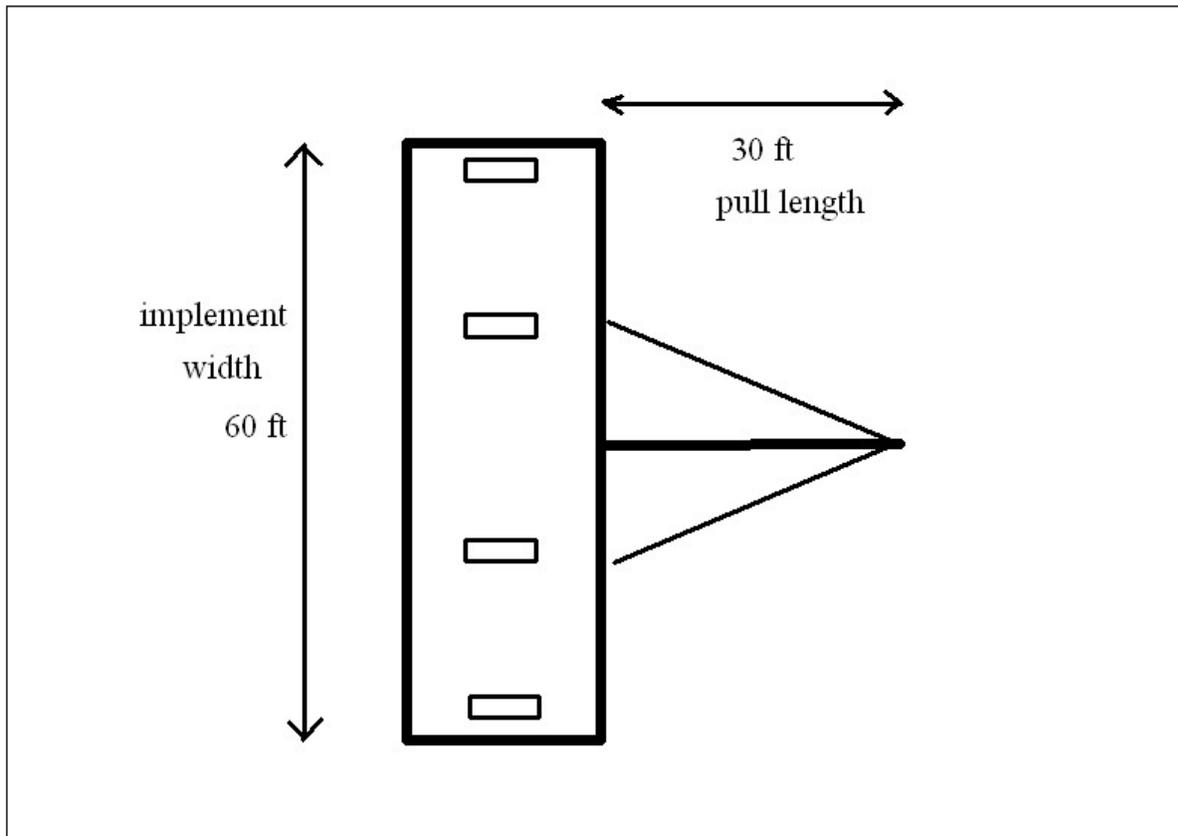
# Factors Affecting the Tracking Performance of Implements

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For farmers considering implementing inter-row sowing selecting an implement that tracks well is very important. It is possible to modify existing seeders to improve their performance. The following is a guide for farmers to select implements that will have good tracking performance.

## DRAWBAR LENGTH

- a. General rule of thumb drawbar length should be half the implement width, e.g. 60ft implement needs a 30ft pull
- b. Longer drawbars give more leverage and better tracking.



## WIDTH OF IMPLEMENT

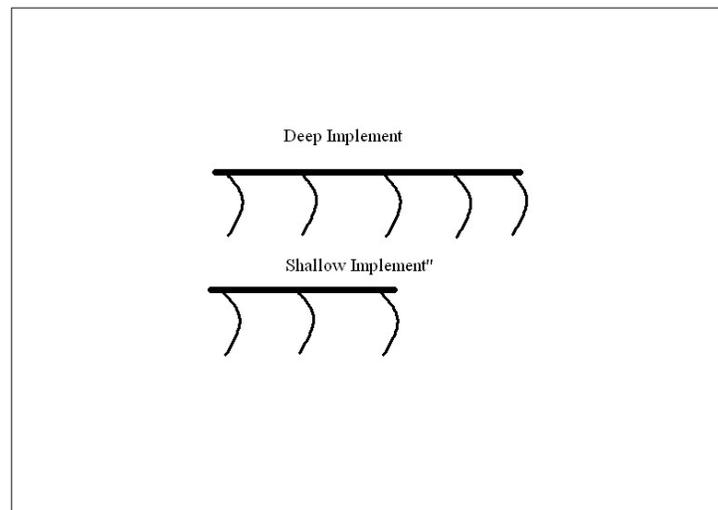
- a. The wider the implement the worse the tracking because depth control and contour following capability is compromised as implements get wider.
- b. 50-60 ft implements challenge tracking.

## DEPTH CONTROL

- Depth control across the implement is extremely important for good tracking, an implement that digs in more on one side than another will skew and track poorly
- Having a level implement is very important for tracking
- Independent depth control tynes like parallelograms solve this problem.

## DEPTH OF IMPLEMENT

- By depth of implement I mean the distance from the front rank of tynes to the rear rank of tynes.
- Deeper implements will have a greater tendency to skew and follow last years rows.
- Deeper implements are inherently less stable because of variations in depth control.



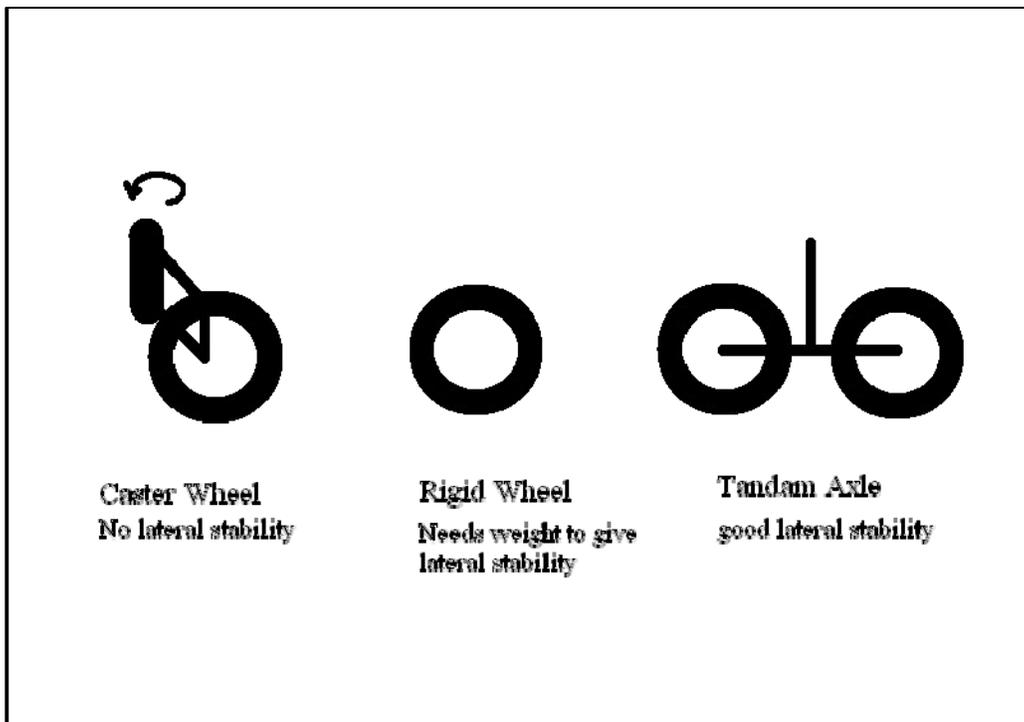
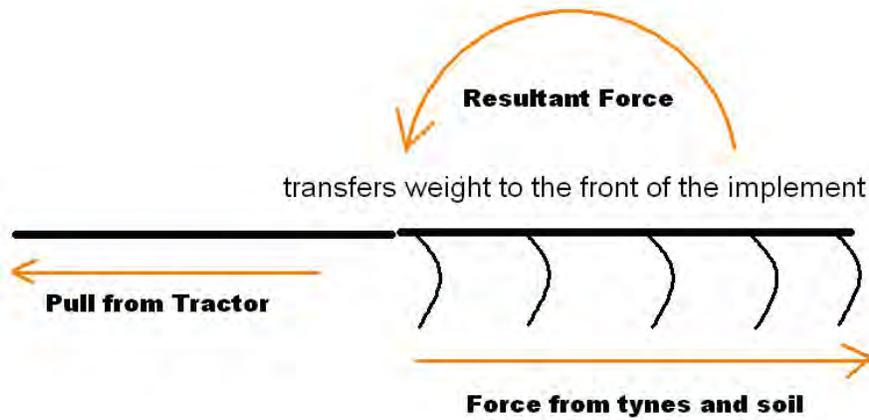
## TYNE LAYOUT

- Tyne layout is important in that we need to have an even tyne layout, the layout needs to be symmetrical around the centre of the machine.
- For example the lead tyne on the right side should be the same position on the left.
- This gives equal loading left and right to balance the machine.

## WHEELS AND TYRES

- Caster (free steering) wheels offer no lateral stability so are less stable
- Caster on the front on implements can often carry a lot of the load especially in heavy pulling situations (implements tend to rotate forward). So the rear tyres can carry little weight and so offer little stability.
- Single axle wheels offer little stability

- d. Tandem wheels offer more lateral stability than single wheels (lot more difficult to pull a tandem trailer around a sharp corner than it is a single axle trailer). Tandem axles want to run straight.
- e. Non-caster single axle wheels front and rear of the implement are the most stable (but they are difficult to turn).
- f. Remember wheels at the front tend to carry most of the load and hence offer stability.



## **SEEDER BOX - PULL BEHIND VS PULL BETWEEN**

- a. A “well designed” pull behind box will offer better tracking than a pull between box. By well designed we mean a box that has front steerable axle. Pull behind means the implement is nearer the tractor and so more closely follows the tractor.
- b. A poorly designed pull behind boxes will offer worse performance – those with non steerable axle. The box in this situation will tend to slide down slopes and pull the rig off line. So boxes with only one axle or that have front caster wheels will offer poor performance. Select a 2 axle box with the front steerable axle connected to the pull so as the box drifts down the slope the steer wheels point up the slope.

## **PREVIOUS PASSES**

- a. The worst situation for tracking arises when you may have had some tracks that run in the general direction but say not very straight or slightly unaligned with this years row this often is the case if the farmer has swapped from one steering system to another or has been using marker arm and now wants to use autosteer.
- b. The implement runs for some time in last years mark, then eventually the run is far enough off line to jump out of last years run, the result is this is repeated up and down the paddock so you get a saw tooth type pattern created.
- c. What can be done about this?
  - i. Cultivate the paddock to get rid of old marks?
  - ii. Work the paddock from a different direction – work at least 30 degree angle from previous marks.
  - iii. Ensure you have a very stable implement – narrow, balanced with long drawbar.

## **TERRAIN**

- a. Undulating terrain and side slopes make accurate tracking more difficult
- b. Try to work up and down slopes not across slopes
- c. If working across slopes try to work in the same direction each time.
- d. Undulations and Gilgai formations often mean the implement does not maintain an even depth and hence the load on the implement is unbalanced and causes the implement to skew.
- e. Parallelogram / independent individual tynes alleviate this problem.
- f. Shorter drawbars are probably better if you are working on side slopes.
- g. If you have this type of country then narrower implements are better.