

# THE GREENSEEDER HAND PLANTER

*User's Manual, April 2014*

*An Implement for  
the Use of Small  
Scale Farmers*



*USA Edition*





# THE GREENSEEDER

Feeding the World  
One Seed at a Time

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# ABOUT

## An Appeal for the World

Corn (also known as maize) in the developing world is planted by hand (as seen in the picture to the right, of a producer planting in El Salvador). This amounts to almost 72,000,000 acres (29,000,000 ha's), just shy of the total acres of mechanically planted corn in the US. Despite the fact that third world maize yields are generally less than 2.0 Mg/ha (\*Dowswell et al., 1996), a 25% yield increase on 60% of the hand planted maize area in the third world would be worth more than 2 billion dollars/year For some time, the developing world has needed a hand planter capable of singulating seed with every strike and that removes the chemically treated seeds from their hands.

Exemplary farmers ignite both innovation and progress. In order to capitalize on farmer innovation we have to deliver products that allow them to move forward. The GreenSeeder puts that opportunity in their hands. Additionally, the GreenSeeder also serves as a mid-season fertilizer applicator by simply changing the internal drum. Getting urea fertilizer incorporated into the soil has a striking effect on improved use efficiency, by avoiding ammonia volatilization losses when urea is surface applied. Finally, homeowners, gardeners, wildlife enthusiasts will all find added value in this planter for virtually all kinds of seeds.



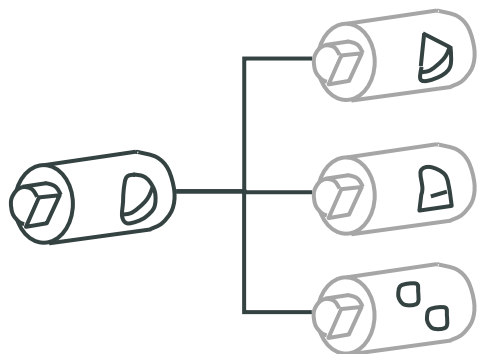
- Remove chemically treated seeds from the hands of small farmers
- Decrease soil erosion from improved plant spacing
- Accommodate mid-season applications of urea-N fertilizer
- Place urea below the surface reducing  $\text{NH}_3$  losses
- Potential to provide significant increases in third world corn production.

\*Dowswell, C.R., et al. 1996. CIMMYT mega-environment database, Maize in the Third World, Boulder, Colorado, Westview Press.



# AGRONOMICS

## Be a Part of the Global Community



Maize production embodies one of many uses that the GreenSeeder planter has. Legume interseeding systems can be more easily established, especially for maize-phaseolus systems common in Central America. Mid-season fertilizer application with the GreenSeeder allows farmers to improve fertilizer use efficiency and ultimately profit. Internal drums, machined or modified, can plant virtually any “relay” crop in maize. Whether the seed size is small or large, the GreenSeeder planter will accommodate what you seek in terms of sowing capabilities.

Gardeners are encouraged to use the GreenSeeder for every plant type available to them. Similarly, those in the wildlife and food plot areas should consider using the GreenSeeder to improve emergence of seeds they are hoping to establish in remote areas that cannot be met by mechanized means. Advanced planting techniques such as intercropping and no-till practices are now easier and cheaper with the GreenSeeder.

More experimentation means modifications of the planting tip and internal drum are anticipated. Having a planter that can adapt to local needs is critical in our design. Drawing input from the global community is crucial to meet the needs of an ever changing planet. Help us help each other by using the Contact page, or direct to [bill.raun@okstate.edu](mailto:bill.raun@okstate.edu) or [randy.taylor@okstate.edu](mailto:randy.taylor@okstate.edu).

You cannot build a peaceful world on empty stomachs and human misery.

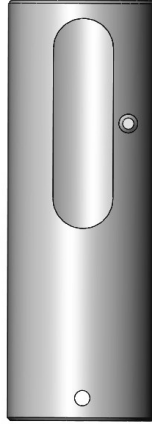
—Norman Borlaug, 1970 Nobel Peace Prize Laureate



# PARTS LIST

Steel Pin With Wire Lock

Pin Diameter 3/8"  
 Usable Length 2 1/2"  
 Pin Length 3 1/8"  
 Inside Clearance 1 5/8"

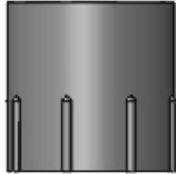


Outer Housing

Material Aluminum  
 Bottom Hole Diameter 1/4"

PVC Threaded Adapter

Nominal Diameter 1 1/2"

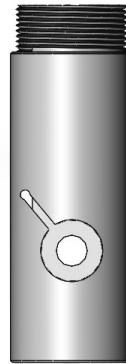
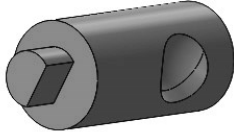


Singulation Drums X2

Nominal Diameter 1"  
 Nominal Length 2 1/2"

(Maize and Urea Drums included)

(Urea Drum delivers 1.5 g/strike)



Inner Barrel

Material Plastic  
 Thread NPT 1 1/2"  
 (Built-In Brush Not Pictured)

Transfer Arm

Slot Diameter 1"  
 Nominal Length 2.5"



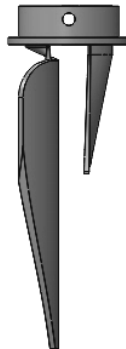
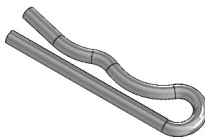
Compression Spring

Material Stainless Steel  
 Diameter 2"

Separate Wire Pin

Wire Diameter 0.1"

(May not look exactly like image)



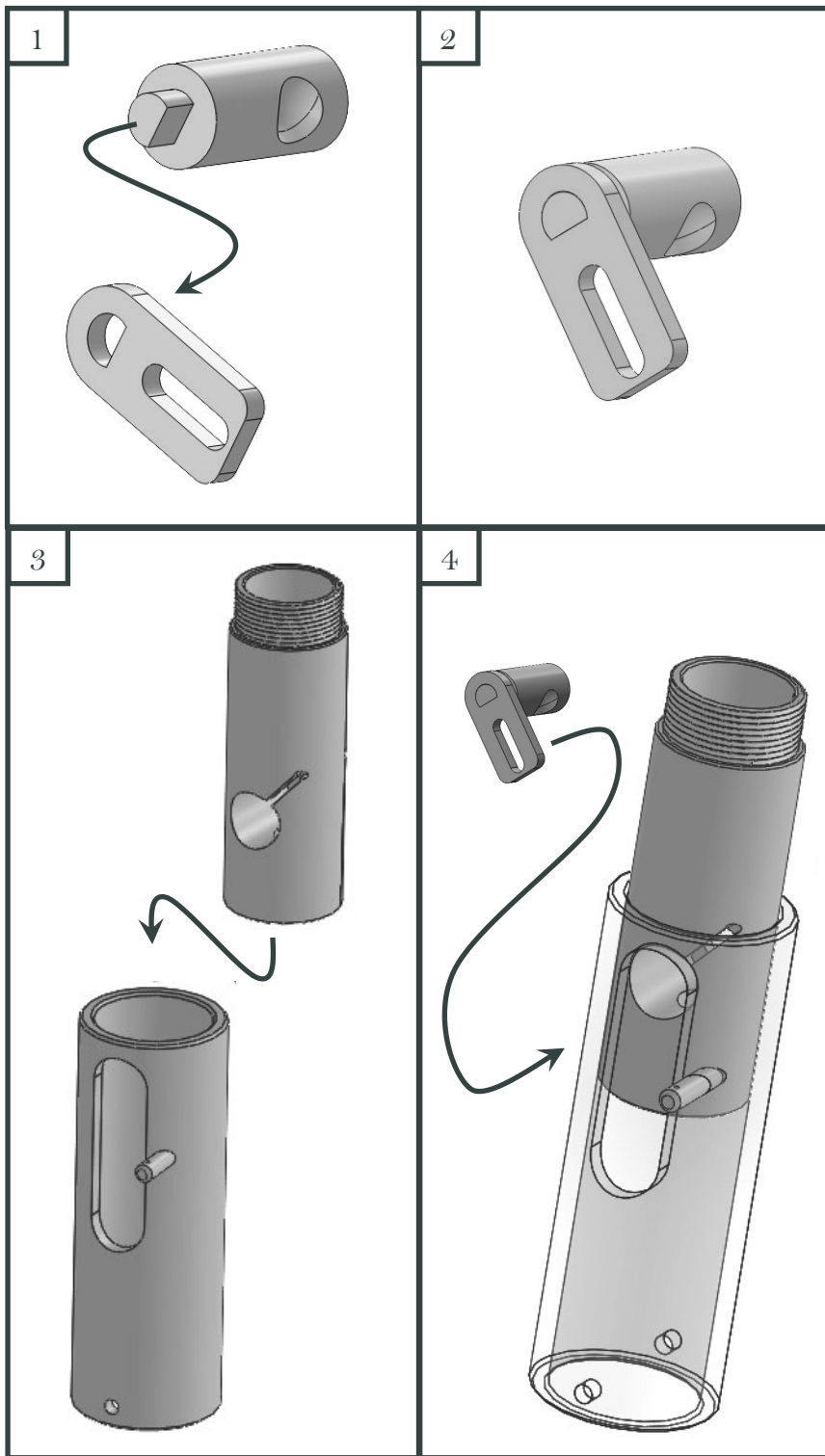
Bushing/Tip

Material Steel  
 Collar Diameter 2"



Note: Not to Scale

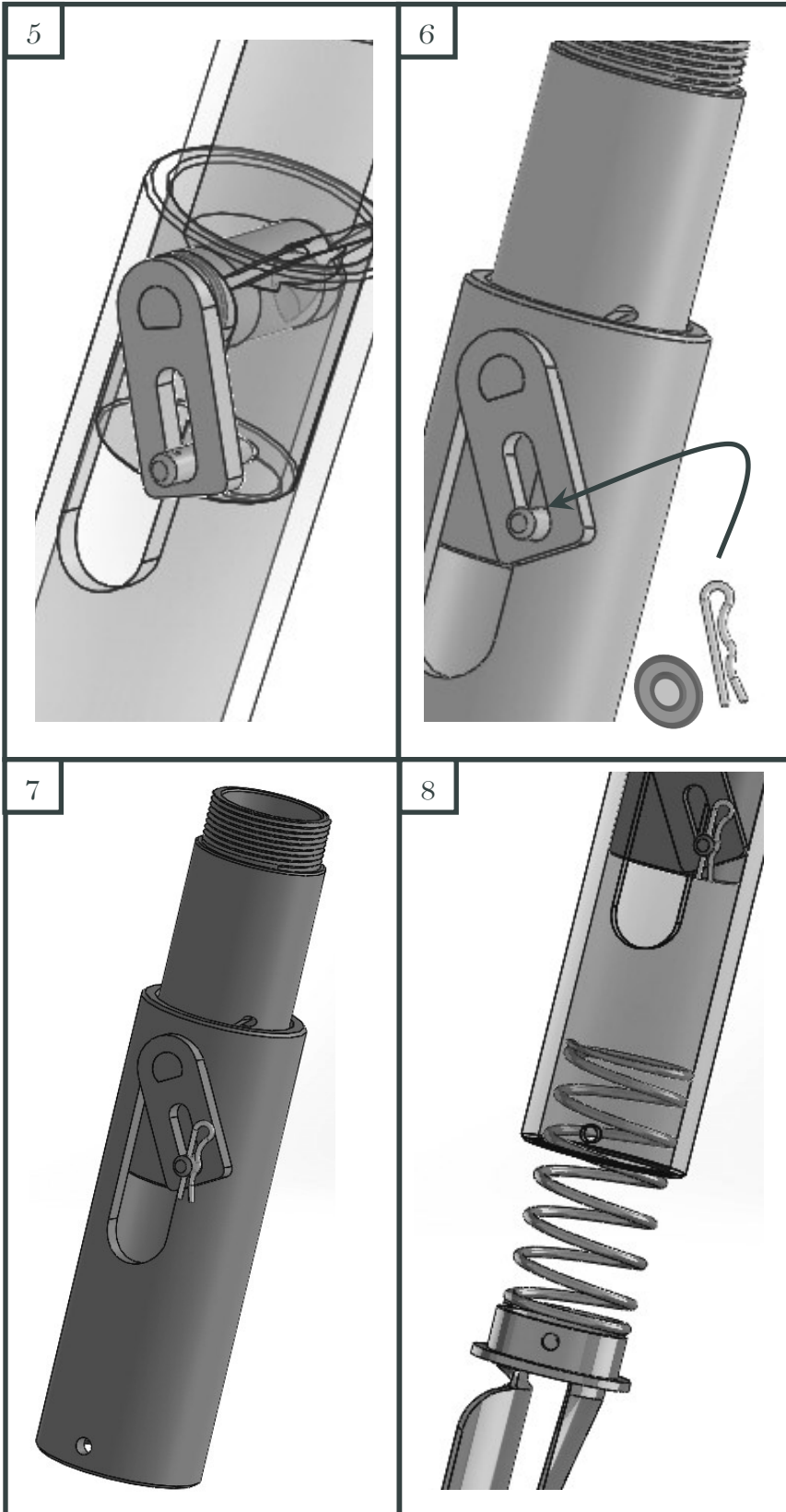
# ASSEMBLY



1. Locate the *singulation drum* and *transfer arm*. Plug the *seed drum* into the *transfer arm*.
2. *Drum and arm assembly*.
3. Locate the *inner barrel* and *outer housing*. Insert the *inner barrel* in to the *outer housing*.
4. Insert the *drum and arm assembly* through the *outer housing* into the *inner barrel*.



# ASSEMBLY

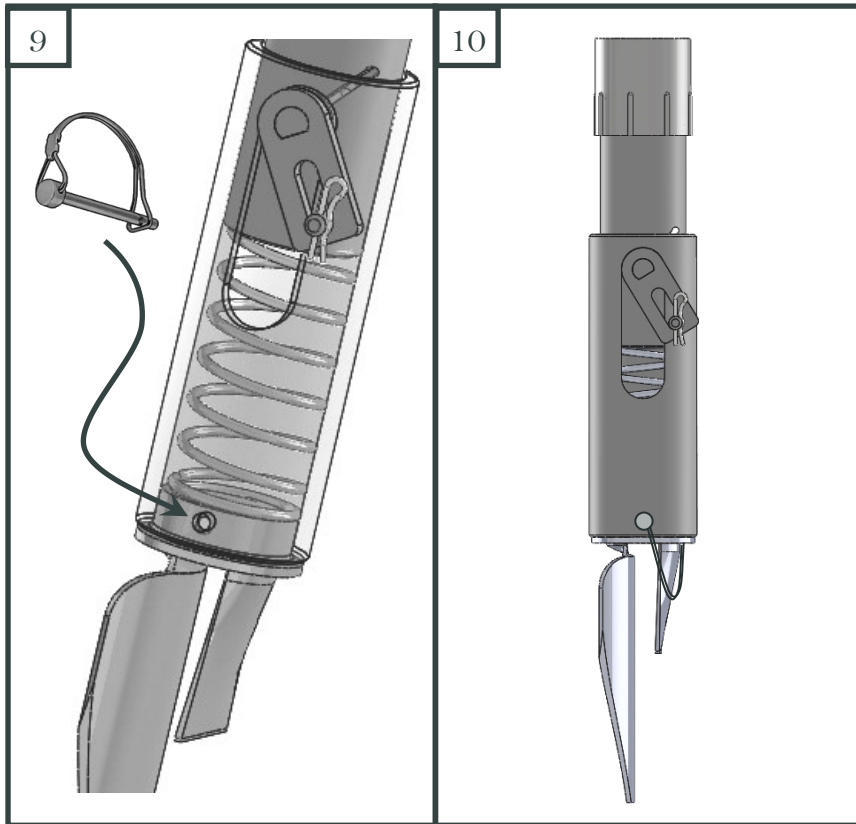


5. Ensure the *outer housing* pin is in the *transfer arm* slot.
6. Secure the *transfer arm* by inserting the *washer and wire pin* into the *outer housing* pin.
7. *Barrel and housing assembly.*
8. Locate the *spring* and *bushing/tip*. Insert the *spring* then *bushing/tip* into the *outer housing*.





# ASSEMBLY

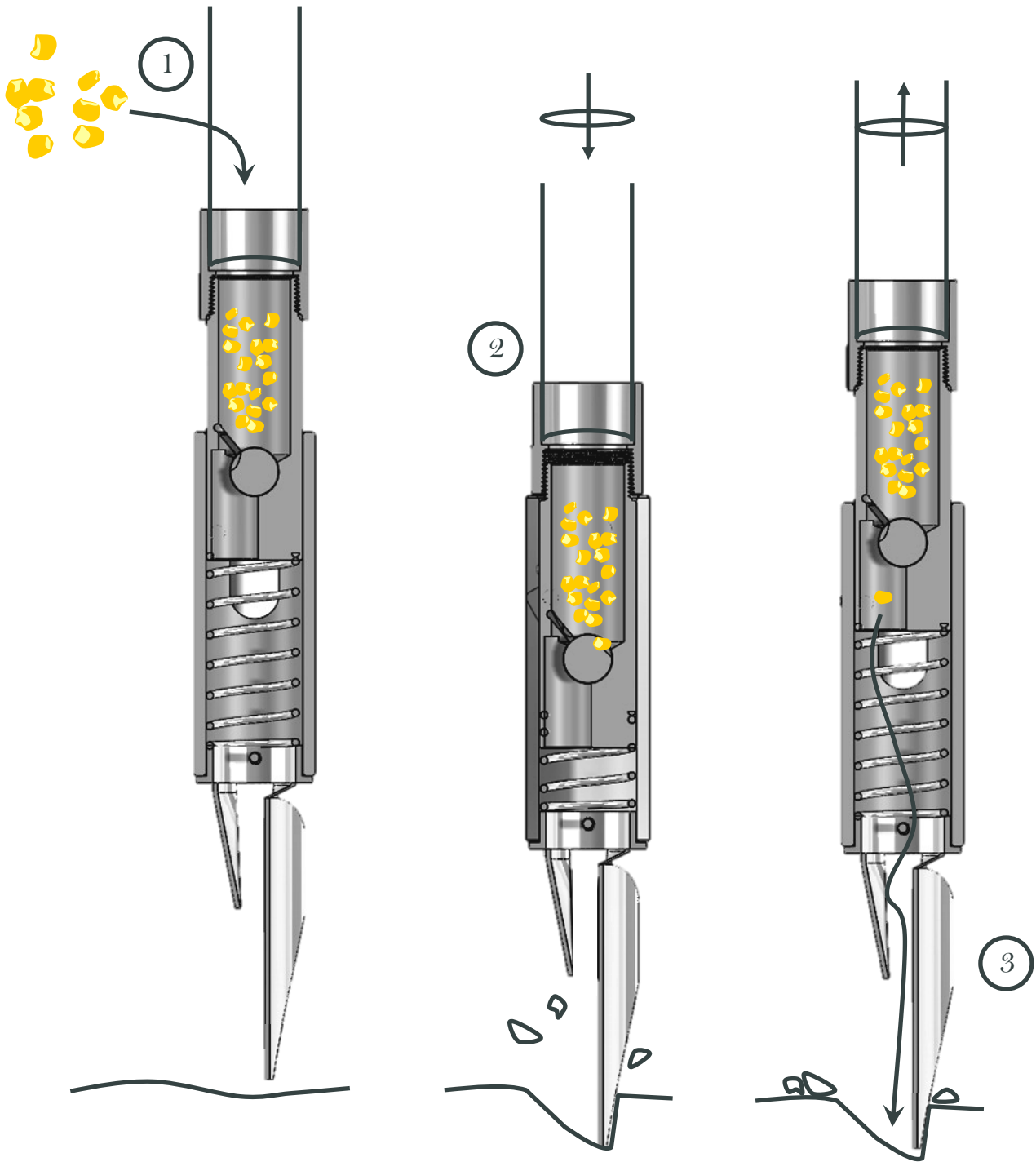


9. Locate the *steel pin with wire lock*, and insert in the *outer barrel* to secure the *bushing/ tip*.

10. *GreenSeeder Assembly*.



# USAGE



# USAGE

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## **Operating the GreenSeeder**

1. Fill the PVC pipe handle with approximately 1 kg of selected seed. A satisfactory funnel for filling/re-filling the PVC pipe (seed reservoir) can be made of a cut-off 2 liter bottle.
  - *Optional:* Lay planting string clearly marked with correct spacing, for research plots, where specific population counts are needed.
  - Hold the hand planter vertically (approximately at right angle) to the ground surface.
2. Strike the soil with the planter leaning towards the operator.
  - While holding the planter in that position, with the planter tip in the ground, move the handle forward (away from the operator) until the planter is almost perpendicular to the ground.
3. Pull the hand planter out of the hole to drop the seed.
  - Repeat as needed to complete the entire field.
  - Clear the tip of impacted soil if needed.
  - Refill the PVC pipe with seeds when almost empty.

## **Precautions and Safety Measures**

- Do not strike the ground with the planter too close to your feet. This may cause an unexpected injury.
- Do not use the planter on extremely hard ground, as this will lead to planter failure.
- Do not handle treated seeds with bare hands. Use gloves to avoid direct contact with treated seeds.
- Wash your hands thoroughly with soap after planting.

## **Additional Information**

- The *Urea Drum* provides 1.5 g urea per strike per plant (population of 70,000 seeds/hectare) equating to 50 kg N/ha.

# CONTACT

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## Supply and Distribution

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[www.smallfarmtoolbox.com/greenseeder](http://www.smallfarmtoolbox.com/greenseeder)



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## Design and Manufacturing



[www.nue.okstate.edu/Hand\\_Planter.htm](http://www.nue.okstate.edu/Hand_Planter.htm)

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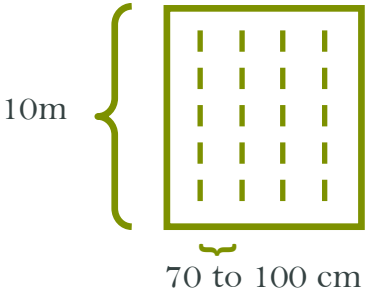
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# STANDARD PROTOCOL

| Plot Layout   | Plot Number              | Method Type | Preplant N rate, kg/ha | Distance Between Seeds, cm |
|---|--------------------------|-------------|------------------------|----------------------------|
|  <p>10m</p> <p>70 to 100 cm</p> <p>Note additional information including grain yield by plot, row width, planting date, harvest date, estimated rainfall, average temperature, type of seed used, and anything else.</p> | 1                        | Local       | 0                      | Local                      |
|   | 2                        | Local       | 50                     | Local                      |
|   | 3                        | Local       | 100                    | Local                      |
|   | 4                        | GreenSeeder | 0                      | 18                         |
|   | 5                        | GreenSeeder | 50                     | 18                         |
|   | 6                        | GreenSeeder | 100                    | 18                         |
|   | 7                        | GreenSeeder | 0                      | 25                         |
|   | 8                        | GreenSeeder | 50                     | 25                         |
|   | 9                        | GreenSeeder | 100                    | 25                         |
|   | <b>10, User's Choice</b> |             |                        |                            |
| <b>Notes</b>  |                          |             |                        |                            |



|   |    |   |   |   |   |   |   |    |    |
|---|----|---|---|---|---|---|---|----|----|
| 9 | 6  | 1 | 8 | 7 | 5 | 2 | 4 | 3  | 10 |
| 6 | 5  | 7 | 4 | 3 | 1 | 9 | 8 | 10 | 2  |
| 2 | 10 | 5 | 1 | 4 | 6 | 8 | 3 | 9  | 7  |



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