

**Presentation Notes - Tillage****ANSWER KEY**

Name \_\_\_\_\_

**Introduction: What is Tillage?**

Tillage is the Mechanical Manipulation of the soil in preparation for Planting

**Purpose**

1. Seedbed Preparation
2. Weed Control
3. Residue Management
4. Soil Aeration

**Primary Tillage is** the first soil tillage operation after the last harvest

**Effects of Primary Tillage-**

1. breaks up compacted soil layers
2. Buries weeds and crop residue
3. Enhances water infiltration
4. May cause soil erosion if done excessively

Equipment	Description	Best Use	Advantages	Disadvantages
<b>Moldboard Plow</b>	Turns over the <u>entire</u> top layer of soil	In <u>heavy</u> residue fields and for breaking new ground or <u>sod</u>	Excellent <u>weed</u> Control, Completely buries <u>residue</u>	High <u>fuel</u> Use, soil erosion risk
<b>Chisel Plow</b>	Loosens soil but leaves <u>residue</u> on the surface	For Breaking up <u>compacted</u> soil without excessive soil <u>disturbance</u>	Reduced soil <u>erosion</u> (compared to moldboard plow)	Doesn't fully bury <u>weeds</u> or <u>residue</u>
<b>Ripper/Subsoil Plow</b>	Uses deep <u>shanks</u> to break up the soil <u>deep</u> below the surface without <u>turning</u> the soil over	For breaking up <u>compacted</u> soil layers	Relieves soil <u>compaction</u> , improves <u>drainage</u> , preserves soil <u>structure</u>	High <u>horsepower</u> requirements, does not mix residue

**Secondary Tillage is** the process of preparing soil for planting after primary tillage

### **Effects of Secondary Tillage-**

1. Breaks up large clods from primary tillage
2. Improves seed -to- soil contact
3. Reduces weed competition
4. Helps with moisture conservation

Equipment	Description	Best Use	Advantages	Disadvantages
<b>Field Cultivator</b>	Uses rows of <u>shanks</u> to aerate the soil while breaking up <u>large</u> clods	For preparing a <u>smooth</u> and even <u>seedbed</u> and for light <u>weed</u> control	Helps incorporate <u>herbicides</u> and fertilizers, low fuel and horsepower requirements	Less effective in <u>high</u> - residue fields and has a limited penetration <u>depth</u>
<b>Disk Harrow</b>	Uses rows of <u>Concave</u> <u>disks</u> to slice through the soil and mix <u>residue</u>	For Breaking <u>clods</u> of dirt and <u>smoothing</u> soil after primary tillage	Good for incorporating residue and <u>herbicides</u> . Can be adjusted for different <u>soil</u> conditions	<u>Multiple</u> <u>passes</u> may be needed <u>edit - high risk of compaction</u>
<b>Rolling Basket/ Soil Conditioner</b>	Rollers with metal <u>bars</u> break up small <u>clods</u> and <u>firm</u> the soil surface	For final soil preparation before <u>planting</u>	Prevents soil <u>crusting</u> , enhances <u>seed</u> -to- <u>soil</u> contact	Very limited affect on <u>soil</u> compaction. Requires <u>secondary</u> tillage for best results

## Reflection Questions

1. Emilia has been farming the same fields for years, and she has noticed her crops aren't growing as well. Her soil seems hard and compacted, especially below the surface. Water pools in her field after heavy rain instead of draining properly. She doesn't want to disturb the topsoil too much but needs to break up the hardpan. **What tillage implement should she use?**

Ripper/Subsoil Plow

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2. Jake's field is almost ready for planting but there are still some small soil clods that could make seed-to-soil contact uneven. He needs something to firm the soil and create a uniform planting surface. **What tillage implement should he use?**

Rolling Basket/Soil Conditioner

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3. Carlos used a chisel plow in the fall to loosen his soil, but now in the spring, his field is too rough and cloddy to plant soybeans. He needs to break up the clumps and create a smooth, even seedbed so that his planter works efficiently. **What tillage implement should he use?**

Field Cultivator or Disk Harrow

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4. Amanda just bought a piece of land that has never been farmed before. It is covered in thick grass and weeds, and she wants to grow soybeans next year. She needs to completely break up the soil and bury the plant material to start fresh. **What tillage implement should she use?**

Moldboard Plow

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