

# Hydraulics In Agriculture

## A Brief Lesson In Fluid Power

- I. How Do Hydraulics Work?
  - a. The Basic Principles of Hydraulics:
    - i.
    - ii.
    - iii.
  - b. Hydraulic Multiplication Effect:
    - i. Syringe Exercise
    - ii. Mathematical Calculations
  - c. The Parts of A Hydraulic System:
    - i. Basic Parts:
      1. Pump:
        - a.
      2. Cylinder:
        - a.
    - ii. Other Simple Parts:
      1. Check Valves:
        - a.
      2. Reservoir:
        - a.
      3. Control Valve:
        - a.

iii. Summary:

- 1.
- 2.
- 3.
- 4.

II. Pro's & Con's of Hydraulics:

a. Advantages:

i. Flexibility:

- 1.

ii. Multiplication of Force:

- 1.

iii. Simplicity:

- 1.

iv. Compact Nature:

- 1.

v. Economy:

- 1.

vi. Safety:

- 1.

b. Disadvantages:

i. Efficiency:

- 1.

ii. Cleanliness:

- 1.

### III. Common Hydraulic Systems:

#### a. Open Center vs. Closed Center Systems:

##### i. Open Center:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

##### ii. Closed Center:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

#### IV. Basic Cylinder Types:

##### a. Single Action:

- i.
- ii.
- iii.
- iv.
- v.

##### b. Double Action:

- i.
- ii.
- iii.
- iv.
- v.

#### V. Safety:

##### a. Pressure Concerns

- i.

##### b. Pin-Hole Concerns

- i.

##### c. Stored Energy

- i.

##### d. Heat Energy

- i.

##### e. Correctly Connected Lines

- i.

##### f. Avoid Heating Lines

- i.

##### g. Crush Points

- i.