

## **8. Maintenance and Storage**

Please follow the maintenance and storage instructions below in order to ensure your Robocrop precision guided implement stays in first class working order

1. There are no lubrication points on the side shift.
2. Check that dirt does not build up on the side shift rails and rollers and clean if necessary. However, take care not to pressure wash electrical components such as the potentiometer, camera, solenoid valves, or control box. It is also inadvisable to pressure wash the rotor units as they are not completely sealed and do contain moisture sensitive components.
3. Regularly check the routing of hoses and cables and protect against chaffing.
4. Check that the implement hydraulic filter indicator does not show that the filter is clogged. Clogged filters should be replaced before working. Repeated clogging should be investigated as it indicates high levels of contamination that may cause expensive components to be irreparably damaged. In any case filters should be replaced as part of an annual service.
5. Always store the hoe fully undercover. Although the camera, loom and computer box are shower proof damage may result if they are exposed to wet weather for extended periods.
6. The console and camera should always be stored in a dry atmosphere.
7. Always ensure the correct 20 amp fuse is fitted in the power supply.
8. Always ensure the correct supply polarity is adhered to.  
Blue = negative, Brown/Orange/Black + (fused side) = positive.
9. Always ensure the correct oil flow direction is followed Red=supply, Blue=return.

## **9. USB Update and backup procedure (service menu)**

If the console is switched on with a USB memory stick inserted into the socket under the inspection hatch the following service options are listed and can be selected using console keys:

- Backup configuration data to USB
- Restore configuration data from USB
- Capture images to USB
- Apply update

The first backs up configuration files and system data onto a USB memory stick within a file called hoe-backup.tgz. This file can be e-mailed to Garfords to aid remote diagnosis.

It is also possible to do the inverse operation restoring from a file of the same name.

The image capture utility allows users to take still images from any cameras connected to the machine and load them onto the USB memory stick. These can be e-mailed back to Garfords for evaluation of issues relating to the camera or crop scene.

The update option lists any update files found on the memory stick and the user can select which to apply. This is the normal process for updating machine software.

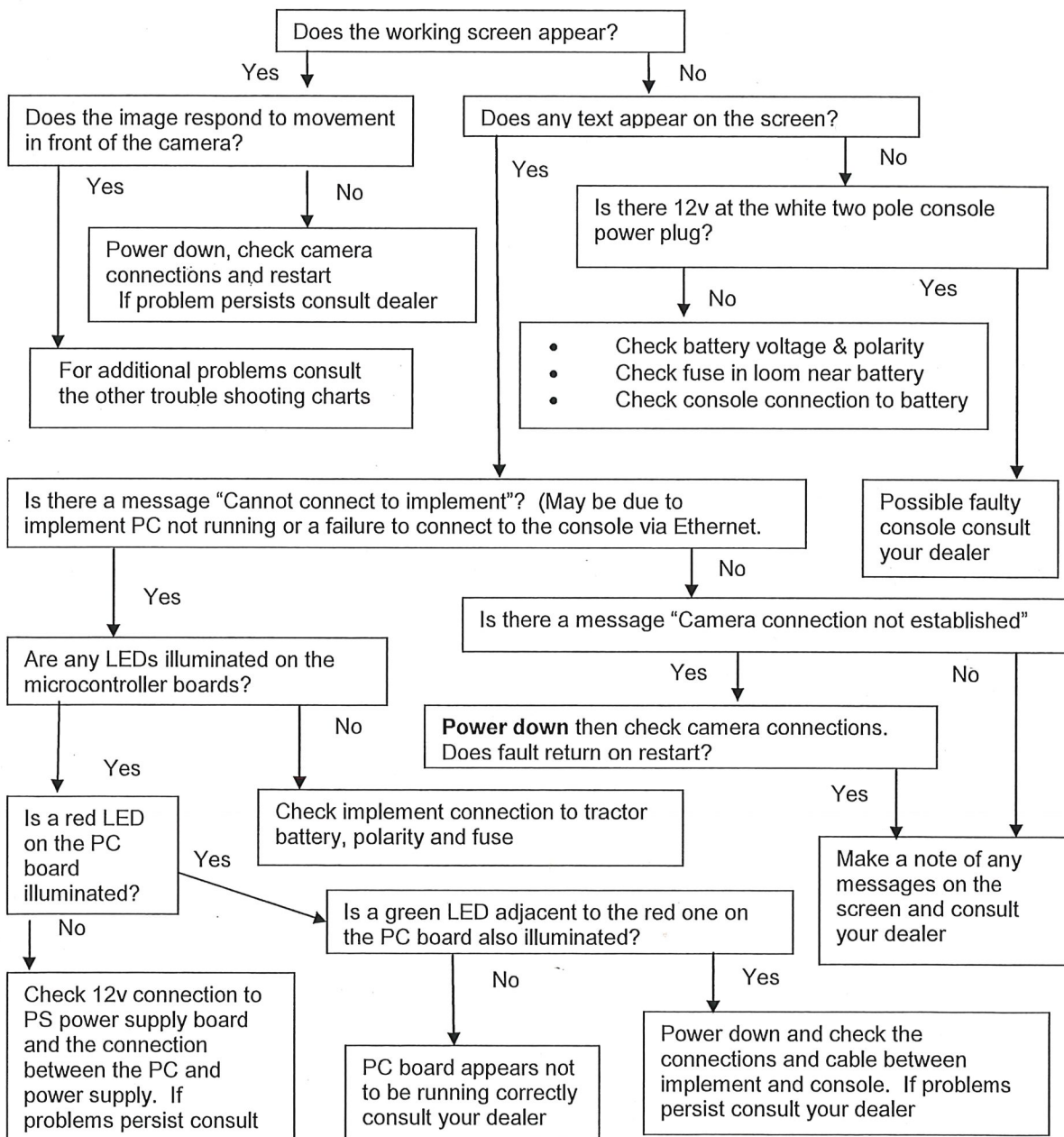
It is possible to reach a more extensive service menu by connecting a keyboard and holding the alt key on power up.

## 10. Trouble shooting

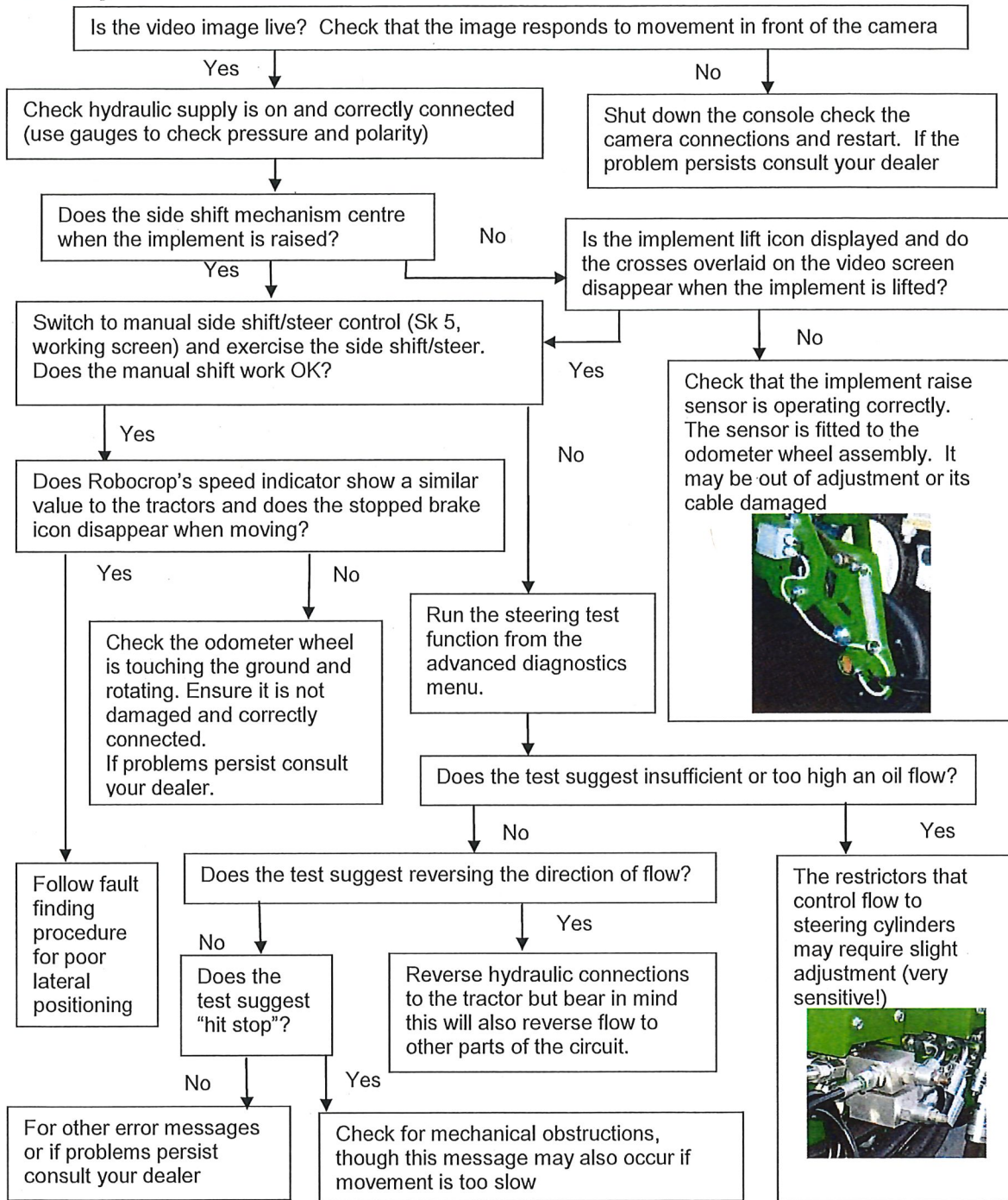
Problems have been divided into six categories listed below. Select the most appropriate category and work through the flow chart. Please consult your Garford dealer for any other problems.

1. Console fails to start up correctly
2. Console shows a working screen but the side shift/steered discs do not respond correctly
3. All systems appear to be functioning and the steering test passes but lateral positioning performance is poor
4. Lateral positioning is good but rotors are not rotating correctly around crop plants
5. Lateral positioning is good and all rotors pass the rotor test but rotors are not rotating correctly around crop plants
6. Lateral positioning is good, all rotors pass the rotor test and are rotating about crop plants but their motion is jerky

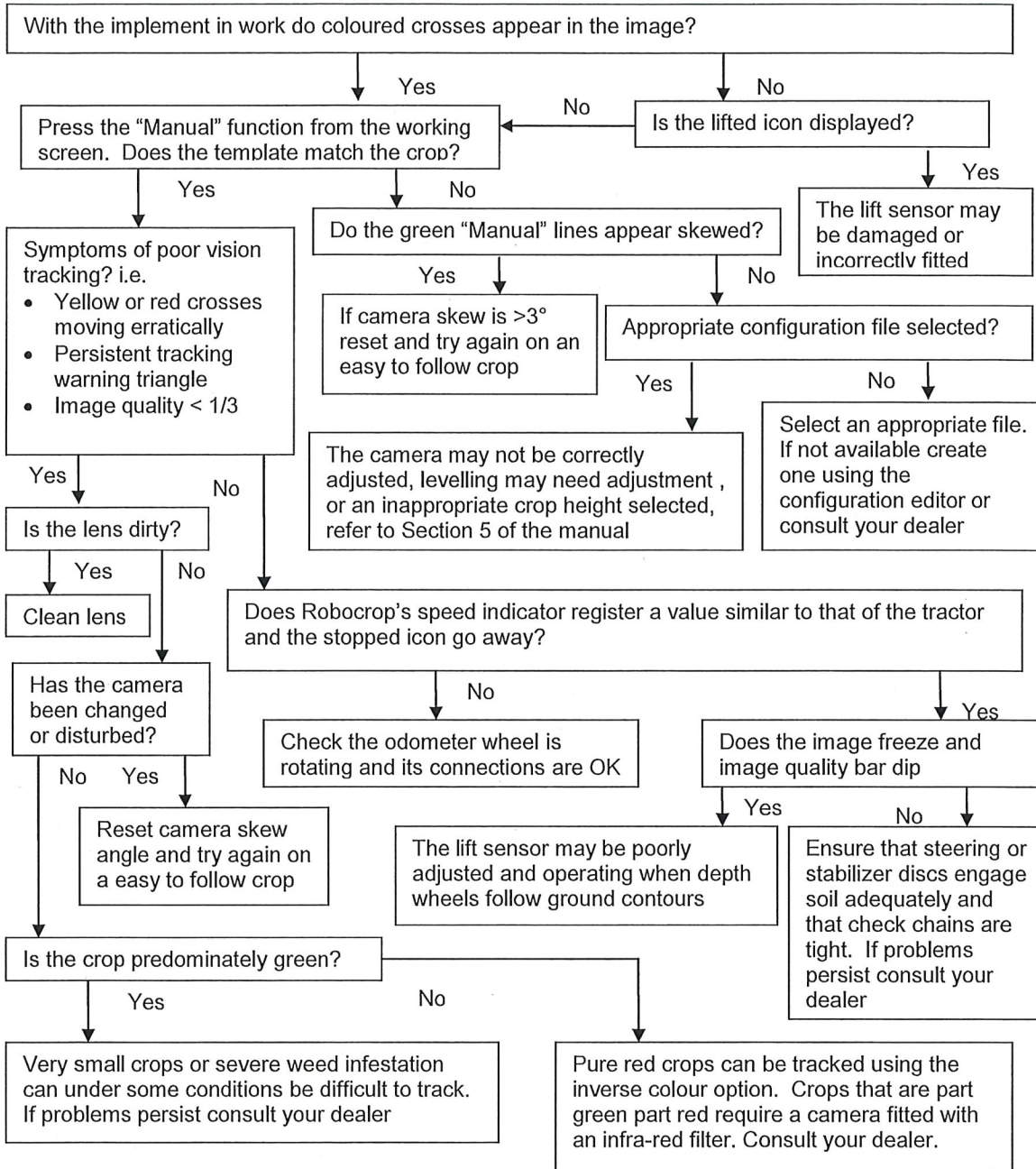
### 1. Console fails to start up correctly



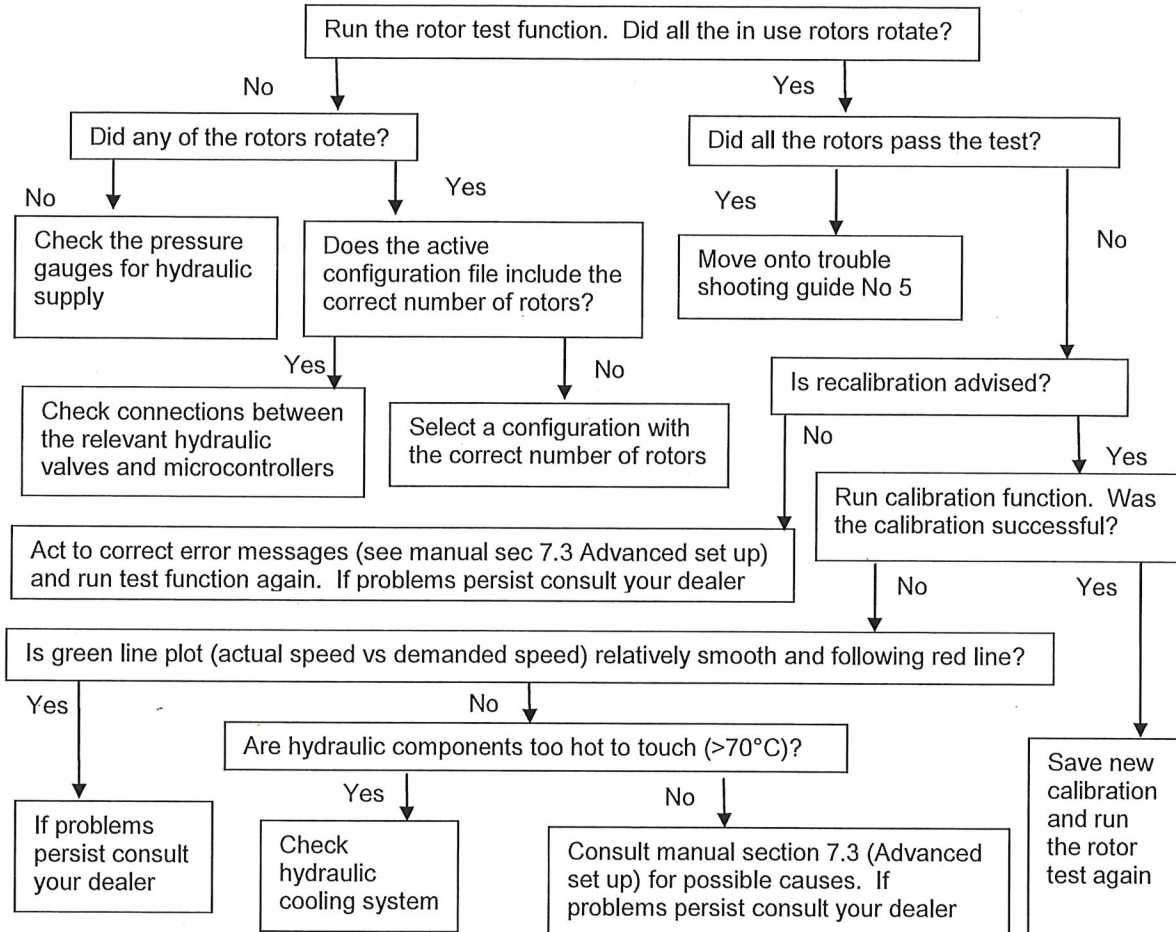
**2. Console shows a working screen but the side shift/steered discs do not respond correctly**



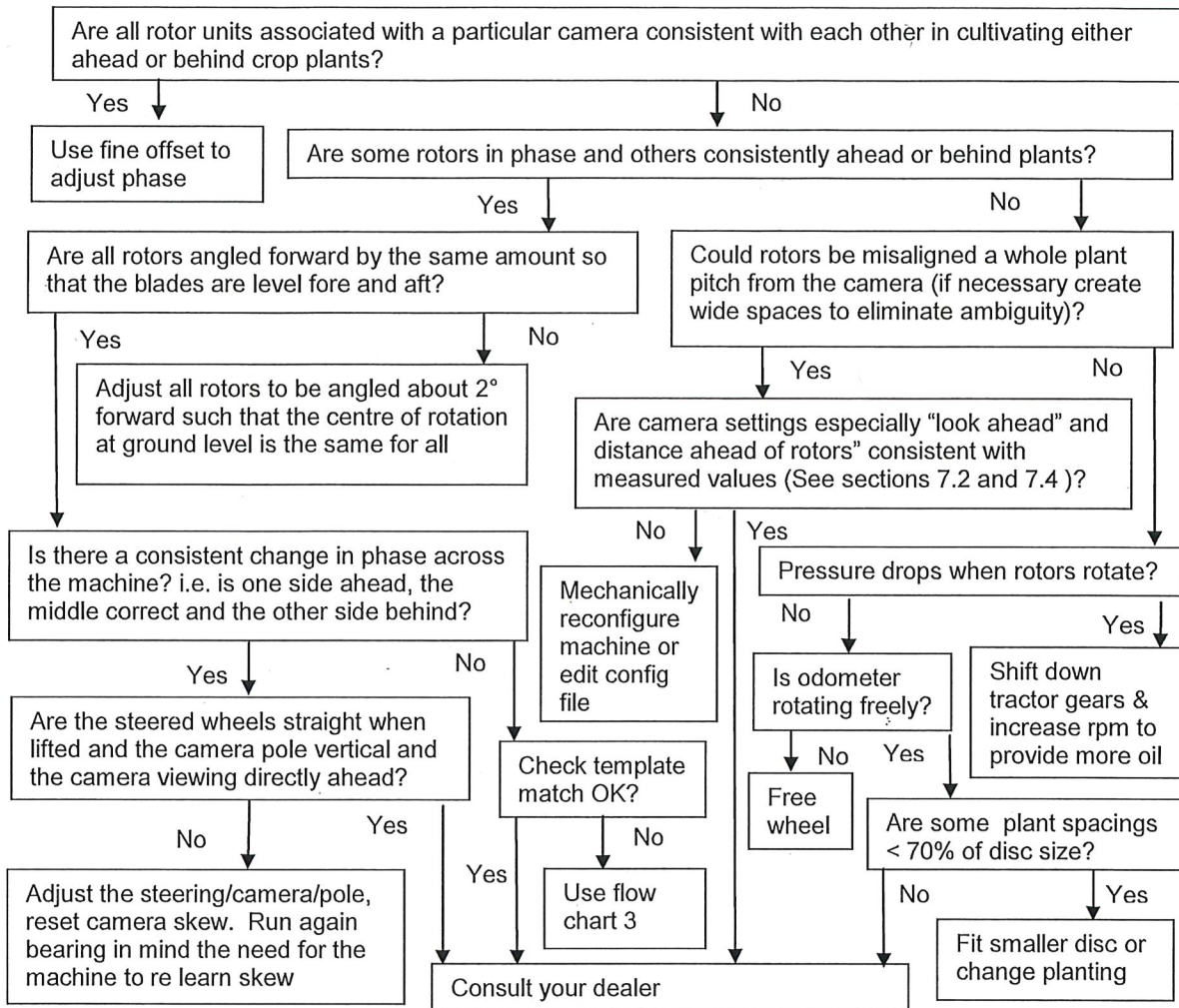
### 3. All systems appear to be functioning and the steering test passes but lateral positioning performance is poor



#### 4. Lateral positioning is good but rotors are not rotating correctly around crop plants



**5. Lateral positioning is good and all rotors pass the rotor test but rotors are not rotating correctly around crop plants**



**6. Lateral positioning is good, all rotors pass the rotor test and are rotating about crop plants but their motion is jerky**

