Two Way Radios and GPS Signal Interference

There have been issues with GPS receivers in operations where farmers utilize two way radios for communication. Two way radios; either handheld or mounted, have been known to interfere with the GNSS satellite signal, causing signal degradation. Most two way radios that have been known to cause issues are CB radio devices—when the operator presses the talk button, it can knock out signal.

Some methods have been found to be helpful in these instances where GPS signal is lost during the use of these handheld or mounted radios. Most radios have extra coax cabling and the antennas are sometimes placed on the cab rooftops close to the GPS receiver. It’s been recommended to avoid placing the radio antennas in close proximity to the GPS receiver.

Some possible fixes to avoid interference may include:

1. Placing the location of the radio antenna out of the line-of-sight of the GPS receiver, this can help with shielding the GPS receiver from the signal put off from these radio antennas whenever the user transmits. Places to mount could be on the side mirrors of the vehicle, or possibly behind the vehicle.
2. Taking the excess coax cabling and placing it off the side of the cab rather than on the roof can help reduce interference. If the slack is coiled up in a loop, the loop can increase the signal interference. Positioning the coax cabling into a figure 8 shape or pinching the loop at two ends can help cancel out the interference that the radio may cause, as pictured below:

The GPS receivers (circled above) and the 2-way radio antenna (circled right) are not within line of sight of each other as a result of proper placement. This potentially reduces the signal interference that can be caused when the 2-way radio broadcasts.
Most 2-way radios may have longer cabling that is rolled into a loop to save on space. This can potentially cause signal interference when positioned by a GPS receiver.
3. Placing metal sheets in between the radio coax cabling and the GPS receiver cabling can potentially help shield radio signals from interfering with GPS signals.

4. Some operators may use high gain antennas or omni-directional antennas. Omni-directional gives the option of positioning the antenna next to the GPS receiver on the same roof without disturbing the signal if the direction of signal is aimed away from the GPS receiver. Having a high gain antenna puts the GPS receiver within the blast cone of the radio signal; so try putting the high gain antenna in an alternative position, leaving the GPS receiver out of line-of-sight with the antenna.

Most of the GPS interference issues that happen with using two way radios can be potentially resolved or effects minimized by following these steps. These are steps that are recommended to try based on in-field methods that have helped in the past with minimizing the signal interference issue.