**Case File #1**

Location: Northeast Texas

Name: Green Acres Farm

Farmer Jones is concerned about the health of his crop. The area appears to be patchy, but there are no signs of infection above ground. When he pulled up a plant to investigate, he noticed there were white and yellow pearls on the roots. He stated that, “From a distance the crop looks normal, but the yield is down. When we pulled up the plant, we saw weird little balls on the roots.” He said he regularly tills the soil.

He wants your help to determine what could be harming his crop and how he can fix it.

**Case File #2**

Location: Central Texas

Name: Golden Acres Farm

Farmer Johnson is concerned about his crop. He said his plants have started turning yellow and appear to be nutrient deficient, almost like they are being blocked. When he pulled up a plant to investigate, he noticed the roots were swollen and had formed galls. He stated that, “We’ve been growing cereal crops back-to-back for years. Never had this problem until now. The roots look strange and knobby.” Crop rotation has not be utilized at his farm for over 4 years.

He wants your help to determine what could be harming his crop and how he can fix it.

**Case File #3**

Location: West Texas

Name: Hilltop Harvests

Farmer Bob is concerned about his crop. He said that the leaves have begun to twist and he noticed the infected seedlings appear swollen at the base. The older bulbs split and have become swollen, causing the inner layers to bulge through. Older plants are also turning yellow. He stated, “Something’s going on with our alfalfa. The leaves are curling up and the plants look bloated at the base.” He

He wants your help to determine what could be harming his crop and how he can fix it.

**Case File #4**

Location: Panhandle

Name: Sunrise Spuds

Farmer Jean is concerned about her crop. She said her plants appear stunted and the yield is low. When she analyzed the roots, she noticed cysts. The plants have been smaller than expected as well. She stated that, “We’ve had a sharp drop in \_\_\_\_\_\_\_\_ production, even though nothing seemed wrong at first. There were odd cysts in the roots.”

She wants your help to determine what could be harming her crop and how she can fix it.