

**2013 Cowboy Classic  
Agricultural Technology and Mechanical Systems  
Environmental and Natural Resources**

You have just been selected as the new manager of a 10-acre growing operation in your hometown. Your neighbor is interested in starting a beef operation and wants you to grow forage sorghum to be harvested in the fall and stored for the silage fermentation process. Under normal conditions irrigated forage sorghum will yield more than twice as much as non-irrigated. Forage sorghum has the potential to produce as much, and in many cases more dry matter than corn when grown with the same amount of water. Fully irrigated forage sorghum will require approximately 30% less water than corn. This makes it a good alternative to corn in those areas where precipitation is scarce and water for irrigation is limited (e.g., declining well capacities). Determine the correct amount of herbicide, fertilizer, and water to be applied and the total costs of the herbicide and fertilizer. Make sure to use all the correct units throughout your work. **The back may be used for calculations.**

**Costs of Products**

Fertilizer  
1- 50 lb bag = \$11.50

Herbicide  
\$2.95/lb

**Application rates**

Fertilizer  
Per acre = 2.5 bags

Herbicide  
2/3 pint/acre needed

**Conversions**

1 pint = 16 oz.

1 oz. = 0.063 lb

**Calculate the following:**

How much fertilizer in pounds should you use?	How much herbicide in pounds should you use?
At 30 days of growth, how much H <sub>2</sub> O in inches should be applied with a GPM/acre of 3?	What is the total cost of the herbicide and fertilizer on your sorghum?

**Inches Applied of Water for Corn**

GPM / Acre	Daily	Weekly	30 Days	45 Days	60 Days
2	0.143	0.962	4.16	6.24	8.32
2.5	0.169	0.219	5.20	7.80	10.40
3	0.208	0.270	6.24	9.36	12.35
3.5	0.247	0.321	7.28	10.92	14.43

Criterion	Points possible	Points earned
Questions	28 (7 points ea.)	
Safety	2	

Name \_\_\_\_\_ School \_\_\_\_\_ Contestant Number \_\_\_\_\_