

**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? Fertilizer = 2.5 bags/acre * 50 lb/bag * 10 acres =1,250 total lbs	How much herbicide in pounds should you use? Herbicide = 2/3 pint/acre * 16 oz = 10.67 oz/acre * 0.063 lbs = 0.672 total lbs/acre 0.672 lbs/acre * 10 acres = 6.72 total lbs
At 30 days of growth, how much H ₂ O in inches should be applied with a GPM/acre of 3? 6.24 * .30 = 1.872 6.24 - 1.872 = 4.368 in.	What is the total cost of the herbicide and fertilizer on your sorghum? Fertilizer = 2.5 bags/acre * \$11.50 a bag * 10 acres = \$287.50 Herbicide = 6.72 lbs * \$2.95/lb = \$19.82 Both added = \$307.32

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 _____