Cut and Dry

Objective: Students will learn plant types and determine feed quality.

Summary: Students will examine grassland plants for range forage quantity and quality.

Time: 1½ hours

Student Grouping: Three to five students per group

Materials: An open, grassy field, one hoop per group, clippers or scissors, five plastic bags per group, a scale (measures 0 to ½ kilogram/1 lb.), one copy of the physiognomic characteristics worksheet per group.

Background Information: Just as the different foods we eat have varied nutritional value, so do the variety of plants in a particular pasture provide different nutrients to livestock's health. Almost all dairies find it necessary to amend their cows' diet in order to maximize their production. The same is true for beef cattle. Cattle are rarely put out to pasture for their entire life to fend completely for themselves. Forage, grasses and plants they graze on while out in pasture contribute to their diet and, depending on the quality of that forage, can save the rancher a lot of time and money. The quality of forage also plays a part in determining land value for livestock acreage.

The following information is essential in helping students interpret the chart in the handout for this activity.

Good range land is a combination of grasses and clovers. Seasonally the grasses come out in the spring, followed by the clovers and other plants. Clovers are most nutritional, with 20–22 percent protein, followed by grasses, with 8–10 percent protein, and broadleaf and other plants, with 7 percent protein. Cows like grasses because they're taller. Cows need protein to make milk. Sheep like clovers and other plants because they're lower growing and more accessible closer to the ground. Both sheep and cows are ruminants. They have multiple stomachs that help them break down cellulose in plants into energy.

Marin Ag. Facts: Our damp coastal climate is one of the reasons that dairy farms are able to thrive in Marin County. The grasses grow well here and therefore decrease the supplemental feed budget of the rancher. Buying feed for livestock is typically a rancher's biggest expense. The cost of feed can vary a lot depending on the weather and crop yields of the people growing hay and other feed crops. Any time that feed money can be saved, the rancher makes a larger profit. In 2006, hay, grain and silage, worth $5,787,648 were grown on over 4500 acres. At the same ranchers spent half of their income earned from agricultural production purchasing grain and hay. For this reason, dairy and beef operations are choosing to grow some of their own feed where possible, becoming farmers and ranchers simultaneously.

Preparation:

1. Collect the materials needed. For hoops you can cut 3' lengths of wire and twist them into rounds. You can also give students a 3' loop of string and tell them to lay it out in a circle.
2. Scout out an open, grassy field where you can do the activity. Make sure it is okay for students to cut the forage in this location. Decide where you will place the hoops. Along a straight line (transect) at 20' intervals is ideal.

Procedure:

1. Go to sampling location. Talk about the different plant types in the area and relate them to the physiognomic (judging character or qualities by observation of features) table provided. Note: a grassy field will probably net a more diverse mix of "range" type plants than a weed lot! Good range land is a combination of grasses and clovers. Tell the students they are going to find out how well livestock could survive and produce on this forage.
2. Distribute the hoops and demonstrate, laying one down on the ground. Explain to students that they are to look for plants that they can categorize using the handout.
3. Assign each student group a separate area and have them put down their hoops and examine the plants contained in their hooped area (plot). Circulate among the groups to answer questions and provide help.
4. Have students make notes on the plant types and collect (cut above the roots) each type in its own plastic bag. These samples will be weighed in the classroom.
5. Using worksheets, students weigh their plant samples and determine the nutritional quality and livestock preference for their plot.
6. Have students compare their results and discuss the quality of the entire area sampled.

Questions for Discussion:

- What are livestock's favorite plants?
- Which plant provides livestock the most nutrition?
- Which physiognomic type was most common?
- Is this good range land?
- How could this land be improved?

Extensions:

- Repeat the activity in varied locations to compare range quality.
- Have a rancher come to the classroom and talk to students about how they determine what to feed their animals.

Idea from Walker Creek Ranch,
Marin County Office of Education.

Names _____

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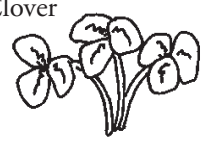
PLANTS	WEIGHT	FOOD QUALITY	PREFERENCE		PLANT VALUE	
			SHEEP	COW	SHEEP	COW
Grass 		7	7	10		
Clover 		10	10	8		
Broadleaf 		4	4	5		
Other Plants		5	8	6		

WEIGHT: The weight of all the plants of one type within the hoop

FOOD QUALITY: The most nutritious food

PREFERENCE: The favorite food for that animal

PLANT VALUE: The importance of the plant for food

PLANT VALUE = WEIGHT x FOOD QUALITY x PREFERENCE

Nombres _____

_____

_____

PLANTAS	PESO	CALIDAD COMO ALIMENTO	PREFERENCIA		VALOR DE LA	
			OVEJA	VACA	OVEJA	VACA
Pasto 		7	7	10		
Trebol 		10	10	8		
Planta de Hoja Ancha 		4	4	5		
Otras Plantas		5	8	6		

PESO: El peso de todas las plantas de un solo tipo adentro del aro.

CALIDAD DEL ALIMENTO: El alimento más nutritivo.

PREFERENCIA: El alimento favorito de ese animal.

EL VALOR DE LA PLANTA: La importancia de la planta como alimento.

EL VALOR DE LA PLANTA = PESO x CALIDAD DEL ALIMENTO x PREFERENCIA