

Seasons!

Objective: Students will learn where agricultural products come from, when they're produced, and the climate and other conditions best suited for different products.

Summary: Students use maps of the county, a local information sheet and handouts to label where commodities come from, indicating in what season that commodity is produced.

Time: 1½ hours

Student Grouping: Four to five students per group

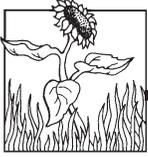
Materials: A copy of Marin County commodity map (page 70) per group, a blank Marin County map with questions (page 73) per group and the *Lunchbox Review* with necessary information. Optional: Books on gardening and livestock production (see Resources Directory, Hobar Publications and National 4-H Council for livestock production information).

Background Information: All agricultural products are dependent on the seasons and/or geography. The growth and harvesting of different products coincide with the most favorable soil and weather conditions for each particular commodity.

Marin Ag. Facts: Salad greens can be grown just about year round in areas where frost is not extreme. This means they are started, grown and harvested during all months of the year. The plants that need warmth and long days like tomatoes, squash, cucumbers and peppers are available from local growers only in warmer months. These plants are started in the spring, grow during summer and are harvested in summer and early fall. Sometimes these products are available a little earlier or later in the season when hothouses and protective coverings are used to extend the normal growing season.

Similarly, livestock are grown according to the calendar. Beef cattle are grown on the coast where foggy, moist conditions keep the grasses green almost year round. Cattle are generally bred in November so that they will give birth just before the rainy season nine months later. This provides the cows and calves a lush pasture watered by nature after the calves are born. The cattle graze the pasture throughout the winter and spring, and the calves are weaned in early summer. They are then fattened on purchased feed through the summer and sent to be butchered in the fall or as soon as they reach 1,000 lbs.

Sheep are bred in the summer so the lambs will be born in the late fall. Along the Marin coast, sheep are bred earlier so that lambs born in the late fall or early winter can take advantage of the lush green grass in the early spring. By summer lambs are sold for meat. Wool is "harvested" in April and May to keep the sheep from being too warm in the summer months, then again in September so there are no "tags," or dirty wool, in the way when the ewes give birth. Our damp coastal climate dictates that sheep with coarse wool, which dries easily, are grown here. This coarser wool is used for carpets and other heavy materials rather than for clothing.



Nursery plants are grown year round. Specific plants flower or are best planted or transplanted at a specific time of year. These can be determined by looking up the individual plant in a gardening book or asking at a local gardening shop.

Oysters grow year round also. There are varying opinions on when their flavor is the best. In the summer months the bay water is warmer, and the increased sunlight means there is more algae growing in the bay. More algae means the oysters have more food and grow more rapidly. In the summer there are more tourists on the coast to buy the oysters directly from the oyster farmers. In the winter months there is more fresh water run-off from rain; this dilutes the food in the bay and decreases the growth rate of the shellfish. Oysters naturally lay their eggs in the summer when it's warmest. In Tomales Bay growers usually get their young oyster seeds (1 month old) from the nursery in the early spring. After the seeds are planted in mesh bags, it usually takes about one year for an oyster to fully mature. You can start eating oysters as soon as they are 10 months to a year old.

Dairy farmers work to keep their milk supply constant throughout the year. This means they breed their cows year round and calves are born year round to ensure a constant milk supply. Dairy farmers often grow feed for their cattle. This process is weather-dependent, as seeds are sown in the rainy season. Hay and other dry storage feeds must be harvested at a time when they will dry well for storage.

Our coastal salmon are fished in the summer. They come close to shore to spawn in streams and rivers. Salmon need a lot of water to swim upstream. This means they must swim up and breed when the heaviest rains hit our area in the winter and spring.

The market also affects what time of year some foods are produced. Turkeys are often grown to mature around the Thanksgiving and Christmas season when many consumers are likely to be cooking such fare. The turkey poults must hatch in the summer to be big enough for eating in November. Christmas turkeys can be hatched a month or so later. Chickens naturally lay more eggs during the longer days of summer. Egg production plants will use lights in the hen houses to fool them into thinking it is summer. By extending daylight hours artificially with lights, ranchers get more eggs from their chickens in a shorter time. There is only one very small egg farm left in Novato, so it is omitted from mention in the *Ag Reporter*, and only turkeys are mentioned.

Preparation:

1. This is a mapping and research activity. Students will use the information provided in the *Lunchbox Review* to fill in maps that relate to their assigned commodity. Once they find out where in the county their commodity is produced, they will do research to determine how seasons or geography affect the growth of their assigned commodity.
2. Review the background information and Marin Ag. Facts so you will be able to talk to students about how seasons affect agriculture.
3. Acquire a collection of books so students can find additional information they will be asked to fill in on their maps. However, everything they need to complete the exercise is provided in the accompanying *Lunchbox Review*. You may want to look for a few telephone numbers/addresses so that students can contact local growers to get information. The Food for Thought Resource Directory will be helpful. Ask a reference librarian to help you locate any information you feel is missing.
4. Decide how you will group the students and what commodities (lettuce, beef, wool, poultry, oysters, milk, lamb, flowers, salmon) they will research and map.

Procedure:

1. Group the students.
2. Distribute blank maps and the *Lunchbox Review* to groups and assign one or two commodities to each group. Decide what symbols you want them to use. For younger students you may want to provide the master map at the beginning of the exercise, since the information (answers) supplied in the *Lunchbox Review* may be easier for a fifth- to sixth-grader to translate to a blank map than for a third-grader. Older students won't need to see the master map until the exercise is over.
3. Explain to the students that they are to mark their maps to show where their assigned commodity is grown within Marin County. Small towns and communities that are identified on their blank maps will correspond to the information provided in the *Lunchbox Review*. They are to do some research and answer the questions that follow.

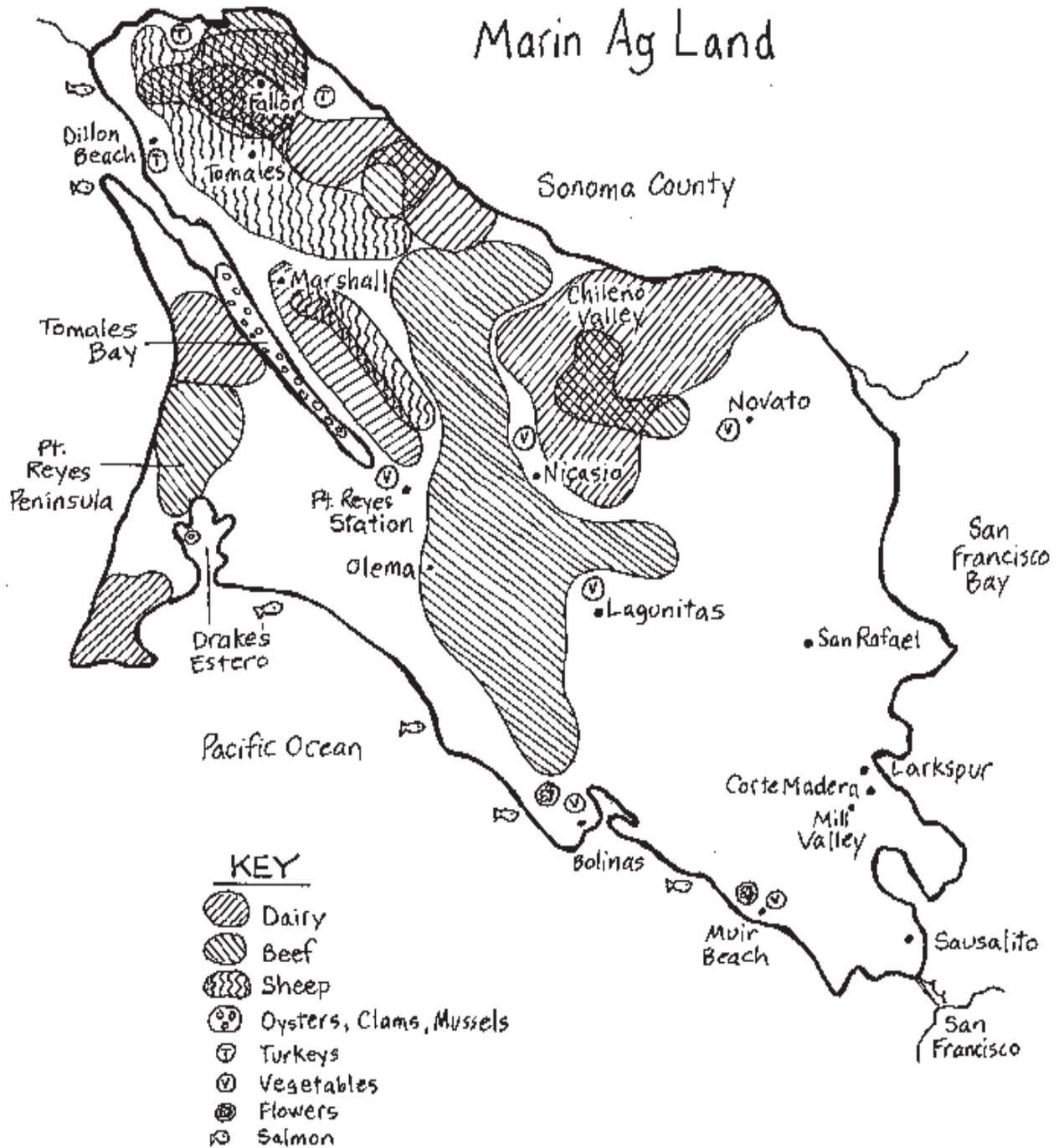


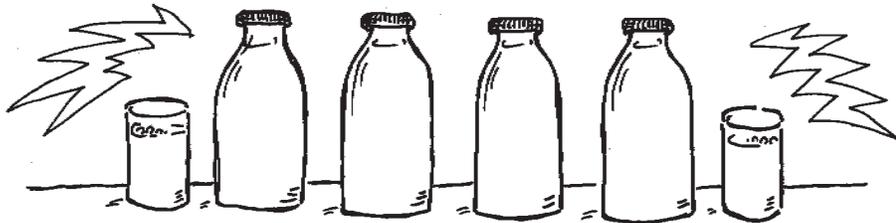
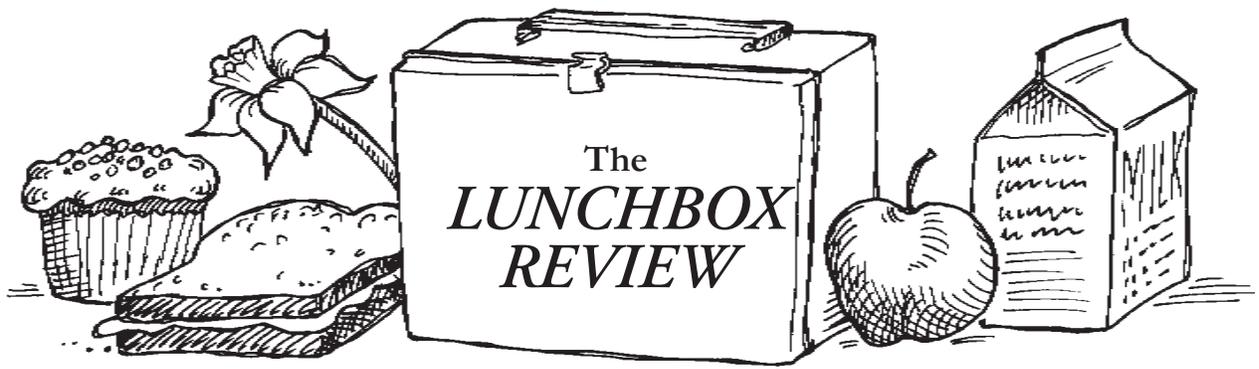
Possible Questions for Discussion:

- When and where does your product grow? Which product is the biggest in Marin?
- What things are harvested in the spring (summer, fall, winter) but not in other seasons?
- Are there agricultural products that are harvested locally all year round?
- Where does most of our livestock (cattle and sheep) live? Is the weather different there? How does this affect where they are grown?
- Where are the summertime crops grown? Why do you think they are grown in that location?

Extensions:

- Ask each group to present their findings to the class.
- Note the change of produce available at the Farmer's Market over the seasons.
- Have students try to grow a specific plant in all four seasons and keep notes. Compare results.
- Talk about how students spend their free time at different times of the year. Relate summer, winter and year-round activities to the seasons.





**LOCAL MILK INDUSTRY
TOPS COUNTY AG PRODUCTION
CHARTS**

Marin's Ag commissioner report on annual crops is out and milk production is tops again at close to \$34 million in milk sold. Milk continues as the top producer for the 135th year! "Dairy ranchers work to keep their milk supply constant year round" says Betty Butterhead, local dairy producer.

"We try to grow oats hay for them to eat when the grasses turn dry in the summer. We plant in the fall to take

advantage of the rainy season to grow our crops. Some ranches don't have the flat land or soil to grow crops so they have to buy more hay and grains from feed stores."

"Some of our milk is turned into cheese and butter at places like the Cheese Factory outside of Novato. There used to be dairies in Sausalito, Nicasio, Chileno Valley, Marshall, Novato, along the border between Sonoma and Marin coun-

FISH AND GAME COMMENTS

**FISHED TO
DEATH?**

Henry Herring of California Fish and Game commented on opening day of salmon season. "Our coastal salmon are fished in the summer when they come closest to shore preparing to spawn in streams and rivers in late fall and winter. Salmon need alot of water to swim upstream and they're tired from their long journey in the ocean.

Henry also spoke about the dwindling numbers of fish compared to past fish populations. "In some areas they are barely hanging on and we're worried the coho salmon won't make it."

Biologists blame the dwindling fish population on many factors, including the drought, river damage, overfishing, logging of shade trees, and loss of spawning habitat.



**Marin Nurseries
Offering Grand
Year End Sale**

Rose Heather, owner of We Be Plants announced a grand sale of her nursery stock. "We're offering our wonderful selection of California natives which are drought tolerant and many other types." Check your yellow or green pages for the other wholesale and retail nurseries or ask your local nurseryperson.

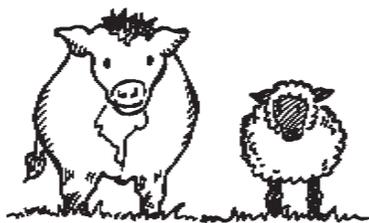


Marin County's Top Products in 1999	
Milk	\$ 33,879,000
Cattle & Calves	\$ 7,462,255
Fruits & Vegetables ..	6,948,674
Poultry & Eggs	\$ 2,509,344
Aquaculture	\$ 1,266,000
Nursery Crops	\$ 707,452
Sheep, lambs, wool ..	\$ 547,077

Questions & Answers

Interview with.....

Irma and Fred Shearing, beef and sheep ranchers in Tomales.



Q: How do you manage to raise sheep and beef at the same time?

A: Cattle or beef are generally bred in November so that they will give birth in the fall just before the rainy season nine months later. This provides the cows and calves a green pasture watered by nature after the calves are born. The cattle graze the pasture throughout winter and spring and calves are weaned in early summer. They then are fattened on purchased feed through the summer and are sent to be butchered when they reach about 1,000 pounds.

Sheep are bred in the summer so the lambs re born in the late fall (before beef). Along the Marin coast sheep are bred earlier so that lambs born in the late fall or early winter can take advantage of the new green grass in the early spring. By summer the lambs are sold for meat. Cattle and

sheep also prefer eating different type of plants.

Q: What do you do with the wool?

A: Wool is harvested in April and May to keep the sheep from being too warm in the summer months and then again in September so there are no "tags" or dirty wool in the way when the ewes (female sheep) give birth. Our damp coastal climate means that sheep with coarse wool, which dries easily, are grown here. This coarser wool is used for carpets and other heavy materials rather than clothing.

Q: Are beef and sheep ranches found in Mill Valley?

A: Not any more. Most beef and sheep ranches (there are about 81 operations) are found in and around Tomales, Pt. Reyes, Nicasio, Marshall, Olema, Bolinas.

Gobble, Gobble!

As the holiday season approaches those turkeys are getting big at the Turkey farms near Fallon and Dillon Beach at the North tip of our county. Young turkeys are hatched in the summer to be big enough to eat at Thanksgiving or Christmas. They stay nice and dry because they're kept inside out of the rain and away from predators who'd like an early meal, like the coyote.



EDITORIAL

Support your local agriculturalist by buying locally at the farmers market. For example salad greens! Salad greens can be grown just about year round in areas where frost is not extreme (like our coastal areas). This means they are started, grown and harvested during all months of the year. The plants that need warmth and long days like tomatoes, squash, cucumbers, and peppers are only available from your local growers in warmer months. These plants are started in the spring, grown during the summer and harvested in the late summer and early fall. Sometimes these products are available a little earlier or later in the season when hot houses and protective coverings are used to extend the normal growing season Our local growers hail from Bolinas to Novato, Muir Beach to Lagunitas (and up in Sonoma county to the North) taking advantage of their own special climate to grow all those yummy products you can get at the farmers market and your local market that carries Marin and Sonoma produce.



Letter To The Editor

I am a former philosophy professor turned shellfish grower on Tomales Bay. We oyster growers out here on Tomales Bay and Drakes' Estero want more people to know about our aquaculture or underwater farming business. We get our oyster seeds or baby oysters from a nursery up North and we plant them in the bay, usually in big plastic bags for at least a year. Oysters grow year round. There are varying opinions on when their flavor is best. In the summer months the bay water is warmer and the increased sunlight means there

is more algae growing in the bay. More algae means the oysters have more food and get bigger faster! In the summer there are more tourists who buy the oysters directly from the oyster farms. In the winter, it's colder and the lower temperature slows down the oyster growth rate.

Thank you for your time,
Sincerely, Ina Halfshel



Seasons!

Group Members' Names: _____

Agricultural product assigned: _____

Mark this map to show where in Marin County your assigned agricultural item is produced.





1. What time of year does this plant/animal start growing?

What time of year is it finished growing?

2. What phase of growth is it in during the spring?

Summer?

Fall?

Winter?

3. Does weather affect production of this plant/animal? How?

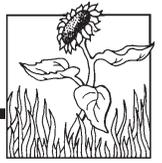
4. Why do you think it's grown in the area where it's found?

5. What towns or cities are close to where this plant/animal is grown?

6. What other crops or animals are grown nearby?

7. How much money is your product worth? Is it a big business in Marin?





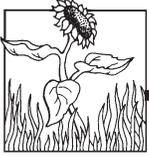
¡Las Estaciones!

Nombres de los Miembros del Grupo: _____

Producto agrícola asignado: _____

Indica en este mapa el lugar donde el producto agrícola que te ha sido asignado es producido en el condado Marin.





1. ¿ En qué época del año comicza a crecer esta planta/animal?

¿ En qué época termina su crecimiento?
2. ¿ En qué etapa de su crecimiento se halla durante la primavera?

¿ el verano?

¿ el otoño?

¿ el invierno?
3. ¿ Afecta el clima la producción de esta planta o animal? ¿ Como?
4. ¿ Por qué crees que se cultiva en el área donde se encuentra?
5. ¿ Qué ciudades están cercanas a donde se cultiva esta planta o se cria este animal?
6. ¿ Qué otras cosechas se cultivan o animales se crían en las cercanías?
7. ¿Cuál es el valor de tu producto? ¿ Es una de las mayores industrias en Marin?

