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The Oregon State University Extension Service staff is devoted to extending research-based information from OSU to the people of Warm Springs in agriculture, home economics, 4-H youth, forestry, community development, energy and extension sea grant program with OSU, United States Department of Agriculture, Jefferson County and the Confederated Tribes of Warm Springs cooperating. The Extension Service offers its programs and materials equally to all people.

The Clover speaks

by Sue Ryan
Oops! There was a reprint in the last edition of Cloverspeaks of an old column. I had written a new one, but when I doublechecked my computer disk directory for it - it was nowhere to be found! My words are still floating around in my computer somewhere. Anyway, my apologies for any misunderstandings regarding 4-H Recognition Day - which will be held November 16th, not the 9th as previously planned.

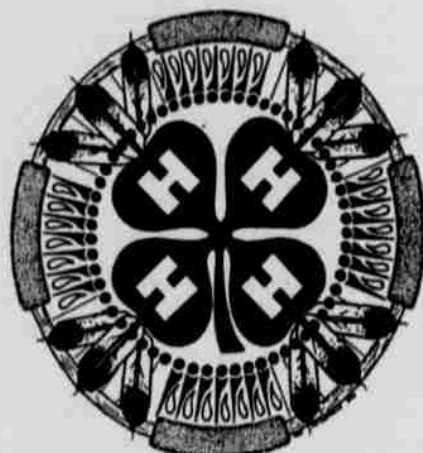
Our 4-H Youth Cooking Series has received a tremendous response! Registration is currently closed, but we are considering having a series for younger kids (kindergarten through 3rd) in the winter. Right now students have to be at least in the 4th grade for the Youth Cooking series. Our first class we covered Kitchen Basics and Safety, and students happily dug into the potatoes they learned to bake in the microwave.

There's a new 4-H club in Warm Springs! Learn to crochet by joining "Creating with Yarn" and more! This club will teach the basics of crochet, looming to make shapes, and fun ways to create with yarn. You can be in Kindergarten through the 12th grade, and sign-up at the Warm Springs 4-H office. This is on the first floor of the old boys dorm or Education Center on Wasco Street (next door to Warm Springs Elementary) "Creating with Yarn" meets on Tuesday afternoons from 4:00 to 5:30 p.m. in the 4-H Center. The leader is Rosemary Charley. Sign-up today as there are only 12 openings! Call 553-3238 if you have any questions.

The 4-H Rainbow Dancers are also accepting new members for the 4-H year. Leader Myra Shawaway says this club is for 4th grade and up. Younger children can partici-

rate, but must have a parent present. For meeting dates, contact Leader Myra Shawaway at 553-2201.

One note - I often have parents call up wanting to sign their children up for a club for "something to do". While this type of request often lets us know what interests the community has, please consider your child's interests when committing them to a 4-H club. Make sure they have a genuine interest in learning a new skill, rather than just filling time.



ALERT! ALERT! ALERT! 4-H'ers who were went to Trout Lake camp this year - check to make sure you have your camp T-shirt. If not, stop by the 4-H office as we still have some in the closet.

We want to wish Larry Switzler a quick recovery. This 4-H'er was hurt during a recent club activity. Thanks to leader Keith Baker for his quick response to the situation and in getting Larry to the hospital.

Natural Resource Notables

By Bodie Shaw

There is a new organization that might be of some interest to many community members. The Northwest Center for Sustainable Resources (NCSR) is a collaborative effort of partners from Oregon, Washington, and northern California, including high schools, community colleges, four-year colleges and universities, private industries, government agencies, and Native American tribes. The Center is coordinated from Chemeketa Community College in Salem. It is funded by the National Science Foundation (NSF) at \$3 million over a three-year period with an anticipated \$2 million, two-year extension. Featuring a "seamless" approach to natural resources education from middle and high schools to community colleges and 4-year colleges and universities, grant funds are committed to serving the dual roles of enhancing curriculum and providing an information network for the region and the nation.

What will the center do?

The NCSR will develop natural resources technology programs that incorporate higher levels of mathematics and science, using an ecosystems-based approach that emphasizes sustainable methods of resource use. Central Oregon Community College is one of the colleges taking the lead in program development. Other colleges in the region will test and modify lead programs. Core programs in Geographical Information Systems (GIS) and environmental science are being developed. NCSR programs will feature faculty development opportunities and student internships, and ultimately, the production and dissemination of multimedia materials. Graduates will be employed as advanced technicians or may go on to earn baccalaureate or advanced degrees. Programs are being evaluated by

the Western Center for Community College Development at Oregon State University.

The Center's office at Chemeketa, under the direction of Susie Kelly, is providing leadership for the development of programs, ensuring articulation with other levels of education and active involvement from industry and agency partners. It will also provide opportunities for students beyond their respective programs, such as offering a "hotline" for student internship opportunities. Also, some people around here may remember a young fellow by the name of Bob Tom. Bob is a member of the Confederated Tribes of the Siletz Indians, as well as their Education Director, and is the Native American Consultant for NCSR.

What needs does the NCSR address?

Both the NCSR's programs and the information repository is being developed to meet evolving needs for natural resources management - namely, needs to incorporate a systems-level approach into management techniques - and also to further define and develop concepts and produce applications which support the sustainability of managed ecosystems.

The need for change is evident in a region where the decline of Pacific salmon runs and old-growth forest debates have received national attention. Prevailing laws and past mismanagement of natural resources are forcing natural resources-based economies in the Pacific Northwest to make changes toward more sustainable methods of the management of fisheries and wildlife, forests, and agricultural crops. The NCSR provides a model for collaborative efforts to address these important regional and national needs.

For more information about the NCSR, contact Center Director Susie Kelly at

Chemeketa Community College: 503-315-4583, Bob Tom: 503-390-9494, or give me a call here at OSU Extension: 553-3238.



OSU offer publications on small fruits

by Carol Savonen

Are you baffled by the sheer number of varieties of small fruits offered at local nurseries and in mail-order catalogs? Which varieties of raspberries, blueberries and grapes grow well in Oregon? What qualities do each have?

Bernadine Strik, small fruits specialist with the Oregon State University Extension Service, has published Extension Circulars (ECs) to help Oregon home gardeners select and plant the best blueberry, raspberry and grape varieties.

"Blueberry Cultivars for Oregon" EC 1308 (75 cents each); "Grape Cultivars for Your Home Garden," EC 1309 (75 cents each); and "Raspberry Cultivars for Oregon," EC 1310 (no charge unless more than six copies needed. Over six copies enclose 25 cents for each copy beyond six). "Growing Raspberries in Your Home Garden" EC 1306 (\$1 each) offer information about growth, timing of fruiting, fruit quality, disease resistance, keeping quality, climate preferences, flavor and heritage for many cultivars of blueberry, grape and raspberry varieties suitable for Oregon.

Most cultivars, or varieties, recommend in these publications have been tested by Oregon growers and researchers and have been found to be successful in the region.

Select the varieties you prefer, then take advantage of the low prices in late winter and early spring of "bare root" small fruit plants. Bare root plants are usually less expensive and easier to handle than their container grown counterparts. But remember - bare root plants need to be planted as soon as possible before new spring growth begins.

To order any of the above publications, mail a request and check or money order made out to OSU Extension Service and send to: Publication Orders, Extension & Experiment Station Communications, OSU, 422 Kerr Administration Building, Corvallis, OR 97331-2119.

Horseradish can be preserved

by Norma L. Simpson

Extension Agent - Home Economics
Last year we had a Spilyay reader call for instructions to preserve horseradish. Well we had to make a dozen calls because no one had been making this pungent condiment even though lots of people here use it on the Prime Rib dinners at the Deschutes Crossing. My own preference is to mix a teaspoon of horseradish with catsup for fish sticks and other sea food, though I usually buy the grated horseradish in a jar ready to mix in to cocktail sauce as it is needed.

This request prompted the OSU Master Food Preservers to search out the latest information about processing and using horseradish. It's a member of the mustard family with two common varieties being New Bohemia and Maliner Kren.

HORSERADISH needs a climate where the fall and winter are fairly cold. The stout taproots don't develop until cold weather has encouraged the plant to begin to store starch. The best roots are those that have endured several frosts.

Harvesting
To harvest, loosen the soil with a spade or fork and lift the roots by hand. Remove the tops and side shoots. Since horseradish tends to take over the garden, it's important to dig all the root at harvest time.

The roots can be stored in moist sand or sawdust in a cool dark cellar, or buried in

outdoor pits. The root may also be mulched heavily and left in the ground for use over the winter. The harvested roots can also be stored, sand and all, in a plastic bag and stored in the refrigerator.

Preserving and Using Horseradish Basic Horseradish Relish
(yield about 2 half pints)
2 cups (3/4 pound) freshly grated horseradish
1 cup vinegar
1/2 teaspoon canning salt
1/4 teaspoon powdered ascorbic acid (optional)

Wash horseradish roots thoroughly and peel off brown outer skin. The peeled roots can be grated in a food processor or cut into small cubes and put through a food grinder. They can be mixed with the vinegar and chopped in a blender for the desired consistency. Combine ingredients and fill clean jars, leaving 1/4 inch headspace. Seal jars tightly and store in the refrigerator.

Note: Horseradish fades and loses its pungency within 1-2 months, even when stored in the refrigerator. It's therefore advisable to store roots in a cool place and make the relish in small quantities that can be consumed with 1-2 months.

If you wish more information about Horseradish-tomato relish and how to dry horseradish, contact Norma at the OSU Extension Office 553-3238 or pick up the publication at 1110 Wasco Street.

Feed can change color of turkey

by Norma L. Simpson

Following a funeral, a lady called to say she was giving a family a cooked turkey for them to eat as they had many visitors. But when she opened the package, the turkey her husband bought did not look "good" or at least not like the pink turkeys that she had cooked before. Was it safe to eat?

I called Carolyn Raab, the OSU Foods and Nutrition Specialist to confirm that it was safe as long as it did not have any odor of spoilage. The caller said that the bird looked fine except for the color. The meat was firm, no slime on the skin and no unusual odor - just the smell of fresh turkey.

Raab said that the color was probably due to the difference in feed eaten by the birds.

I remembered that in the 60's, chickens and turkeys from the southern states often were fed anchovy meal made in Peru from the tons and tons of tiny smelly "anchoveta" fish harvested in the Pacific Ocean of the Peruvian coast. There was a decline in the harvest due to the El Nino climate that affected coastal Peru as well as Oregon, California and all other countries on the Pacific Ocean.

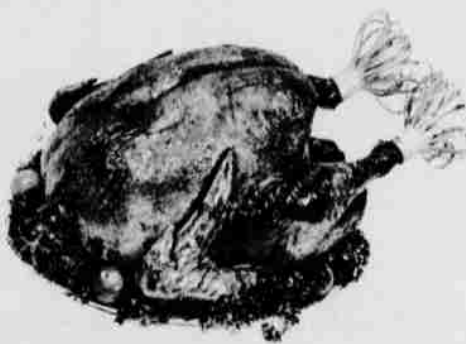
Raab suggested that I call James Hermes, the OSU Extension Service Poultry Specialist, about the feed used for turkeys today. Turkeys are no longer raised in Oregon, he said, because the state has to import the soy and corn feed that are now used in the USA. Hermes said the color is related to the feed used in Nebraska and Utah, which is generally wheat rather than the yellow corn.

The caller did know that the brand of the

turkey was Family Pride of Midvale, Utah but it did not indicate if the turkeys had been injected with more fat which would make the birds more yellow-skinned. One brand, Butter Ball, does add more fat that makes the skin more yellow and also browns better. Other companies think the added fat is "not politically correct" today, with so many people overweight.

That was not the reason that Oregon producers no longer grow turkeys, it was economics. When you have to import the soy and corn from other states, it increases the price by several cents for each pound of meat and fat that are added to the birds. That made it less competitive with other producers located in the corn and soy growing states.

The USDA's Meat and Poultry Hotline agreed with Carolyn Raab and James Hermes. The color of turkey skin is related to the feed of the birds.



STOCKMAN'S ROUNDUP: Understanding animal needs



by Bob Pawelek
OSU Livestock Agent

Providing a practical system to efficiently utilize rangelands requires some insight into the animal's own point of view. Once ranchers and managers understand the common behaviors of ruminants, they can better deal with range management.

The ruminant animal has the capability of converting plant fiber (cellulose) to energy for body maintenance and growth. However, all animals do not utilize fiber with the same efficiency and use different tactics to obtain nutrients from a forage resource. First, all ruminants have basically the same needs and all employ the same basic approach to harvesting food from the landscape.

All animals have three basic needs, in order of importance:

- * Water
 - * Thermal regulation (keeping warm)
 - * Food
- Ruminants also need:
- * Time

Why time? Rumination is the mechanism by which cattle, sheep and deer process their food after harvesting it. Time is required for this process to occur, and to allow rumen in

the rumen for the next meal. At some point in the grazing process, nightfall arrives and this limits grazing to localized areas. Ruminants have evolved as prey, and have an organized social behaviors to strengthen their chances for survival. Therefore, night-time grazing is restricted due to this social behavior. Animals have a need for complete rest, however cattle seldom sleep for longer than 30 minutes at a time, with rest occurring along with rumination.

When eating a plant in a given landscape, the animal has gone through a methodical process which begins either at a water source or the bedding site. Since most ruminants are herd animals, the dominant animals with the highest physiological need will initiate a hierarchical behavioral trigger. When water and thermal needs are fully met, the herd will then begin to select certain plants within the landscape.

Animals will select sites that will do their physiological needs the most good in the shortest amount of time. Research has been done on intake rates attained by animals, and is categorized by the amount of food that can be ingested per minute of grazing. This process is called, "profitability."

Whenever you drive past a herd of cattle, nine times out of ten you will see them all facing one direction. This is because their grazing pattern is directional. Animals will move in one general direction and alter their course only when they encounter plant communities of differing profitability. They speed up over ground where plants are not as profitable, or if it's getting hot, the need for thermal regulation takes over and they head for shade or water, since this is a higher need at the time. Cattle tend to take their time over more profitable plants in their particular pasture.

As grazing profitability decreases grazing velocity increases.

Dispersed patches of profitable plants will cause the animal to move more as long as the

energy obtained from those plants exceed the energy costs of the animal.

We know that cattle like grasses, but will eat browse, deer like forbs but eat a lot of browse while goats will eat browse first but grasses when highly abundant.

SPECIES PROFITABILITY
Deer forbs then browse
Cattle grasses then browse
Goats browse then grasses

Why do these ruminants show such different selectivity for the different food groups? The principle answer can be found in the effect of natural selection. All ruminants use an "optimal approach" to grazing, that is, expending the least amount of energy to gain the most energy to meet physiological and reproductive needs.

Optimal approach to grazing Energy Used vs. Energy Gained Through grazing To meet needs - walking physiological ruminating reproductive

To meet this goal, different ruminants have adapted different tactics due to differences in their anatomy and metabolism.

PLANT FIBER COMPONENTS
Lignin Cellulose Cell Contents
Digestion is affected by these components.

The presence of these different fiber sources affect the rate at which the nutrients can be released to the rumen during the fermentation and digestion phase. Grasses generally have slower rates of digestion in the rumen, but a higher extent of digestion than browse. When consumed, forbs have the highest rate and extent of digestion of all the food groups.

Grasses are high in lignin, browse is high in cell contents as well as lignin, while forbs are high in cell contents and highly digestible cellulose. Since these different food groups are constant, why aren't they consumed as such? All else being equal, it seems that goats, cattle and deer should eat the same foods. This is not the case because different

ruminants possess different rumen and prehensile anatomies.

Cattle eat grasses, which require a longer time in the rumen to garner the calories needed for the fermentation process. Their larger rumen volume allows greater fermentation capacity suitable for grasses. Because of their larger body size, their nutrient requirements are lower, but total nutrient requirements have to be higher.

Cattle have to travel 2 to 4 miles in 8 to 12 hours each day to harvest 20 to 30 lbs of dry matter. The greater the moisture content, the more forage that must be harvested to sustain those dry matter requirements. It would take an even longer time for cattle to harvest adequate quantities of forage and browse to meet their nutrient requirements.

The smaller rumen volume/body weight ratio of selective feeders like deer allow them to consume more highly digestible cellulose, that is, plant material that has high cell contents. Deer digest these cell contents rapidly and move the indigestible fiber through the GI tract faster than cattle.

Therefore, the rv/bw ratio is a good anatomical feature to use to determine tendencies toward consumption of the primary food groups. The smaller the ratio, the faster the rate of passage and the greater reliance on plants with high cell contents.

Cattle travel less from water and will not traverse rough or steep terrain as well as sheep or goats. However, none of these herbivores, whether they are cattle, mule deer, elk or goats, prefer the same forage resource. Therefore, stocking rate should also reflect proper balance of animal numbers and the supply of their preferred food groups.

Goats and deer both have small body sizes in relation to cattle and elk, lower dry matter requirements, and their prehensile lips and agility allows them to travel more in a landscape in search of high quality food items.

You may notice the fact that I choose not

to compare sheep with the other ruminants. Sheep are just strange critters. First of all, the moment they are born, they are looking for a reason to die. Secondly, their eating habits simply do not match up with what I am trying to present here. Their rumen volume is similar to cattle (for their size) but nutrient requirements are higher. Sheep tend to eat a lot of grass but will select high quality forbs at other times, but not simply because grass dries up. I've seen sheep turn up their noses at good young grass and head straight for skunk cabbage.

Landscapes having complex vegetation types offer the manager an opportunity to stock mixed animal populations and increase total animal production. I understand the Hatfield's High Desert Ranch is considering goats to control young juniper. In the Mesquite - Blackbrush rangeland of South Texas, ranchers have increased their stocking by 25% through the addition of goats and setting aside sections of rangeland to be used as hunting leases.

In summary, understanding the needs of diverse herbivores can lead to greater stability of managing rangelands.

Happy Thanksgiving from the staff of OSU Extension Services of Warm Springs!!