

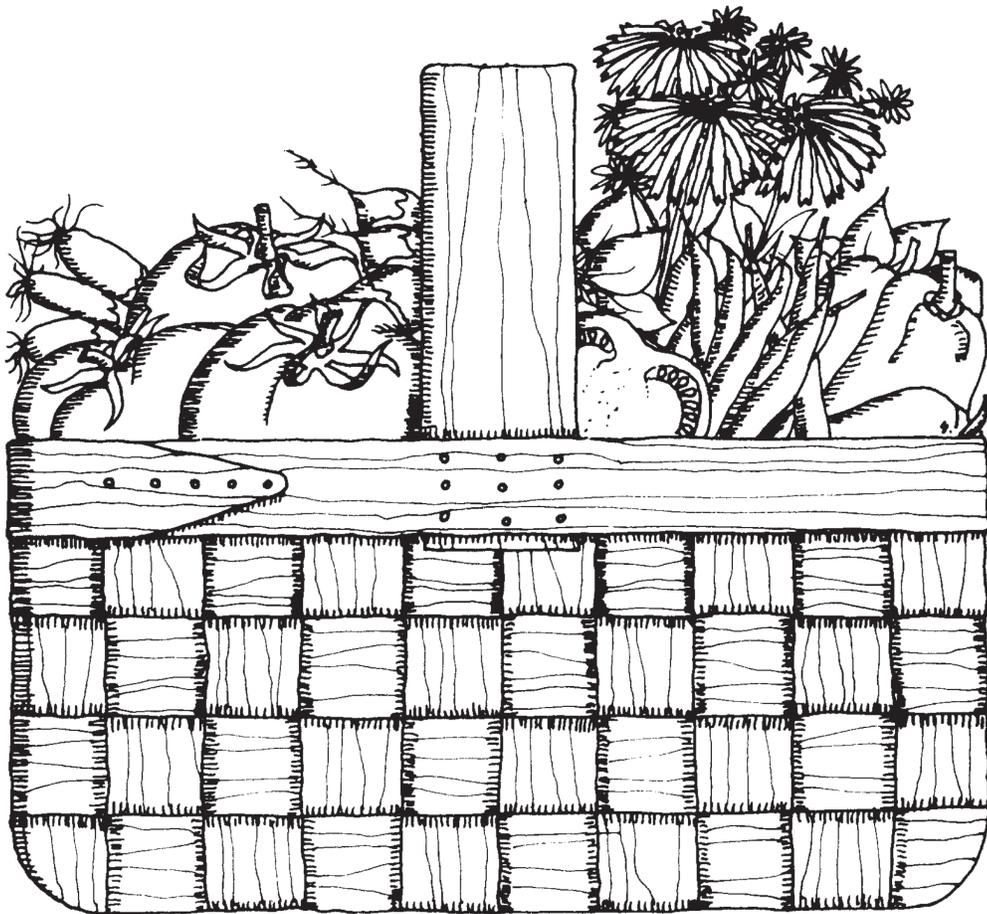


COOPERATIVE
EXTENSION
SERVICE

UNIVERSITY OF ALASKA FAIRBANKS

Gardening in Southeastern Alaska

HGA-00237



Planting Suggestions for Selected Vegetables

BEETS	Beets will do well with some well composted seaweed added to the soil along with the regular fertilizer.
BROCCOLI	Plant in rows 18 inches apart; thin plants to 18 inches apart.
CABBAGE	Select a non-bolting variety (one which will not go to seed early in the season). Allow 3 or more square feet per plant.
CARROTS	Plant in rows 18 inches apart; thin to 3 to 4 inches between plants.
CAULIFLOWER	Thin so that the plants grow in an area 2 feet x 1½ feet to allow enough room.
SWISS CHARD	Thin 8 to 10 inches apart while still in the seedling stage.
HEAD LETTUCE	Plant in rows 2 feet apart; thin to 1 foot apart.
ONIONS	Green onions are grown from seed; dry onions are grown from sets. Set in shallow trench. Space 4 to 5 inches apart; thin to 4 inches apart.
ENDIVE	Plant in rows 16 inches apart; thin plants to 16 inches apart.
KALE	Plant like cauliflower.
LEAF LETTUCE	Plant rows 12 inches apart; thin to 18 inches apart in rows.
PARSNIPS	Plant seeds in rows 16 inches apart; thin to 6 inches apart.
PEAS	To plant peas, dig a furrow about 1 inch deep. Scatter the pea seed down the furrow. Cover the seed with a half-inch of soil and pack by tamping with the rake or hoe. Tamping insures good contact between the seed and moist soil. A good stand of peas should have plants every inch.
POTATOES	Plant in rows 3 feet apart; 18 inches apart in the row. Hill as needed to keep the tubers covered. Green sprouting can be used to decrease the amount of time required for emergence.
RADISHES	Plant in rows 6 inches apart; thin to 1 inch apart in the row.
RUTABAGA	Thin to 12 inches apart.
TURNIP	Thin to 8 inches apart.
ZUCCHINI	Grow through clear plastic for best results.

Gardening in Southeastern Alaska

With well chosen garden practices, recommended plant varieties and a bit of effort, numerous garden crops grow very well in Southeastern Alaska.

For additional general information about growing a vegetable garden, including transplants and direct seeding, see the Cooperative Extension Service Publication, *16 Easy Steps to Gardening in Alaska*. This publication covers topics dealing with special problems in this part of the state, including soil drainage, organic and inorganic fertilizers, liming, pest control, weeding and recommended vegetables.

The General Situation

Starting a vegetable garden in Southeastern Alaska can be a frustrating experience because of the extremely heavy rainfall with cold, wet and infertile soils. However, with proper gardening practices, you can usually overcome these difficulties to take advantage of a long growing season and mild temperatures.

Preparing the Garden Site

If possible, choose a garden site which gets the most sunlight throughout the day. In clearing the site, pull out as many stumps as possible. Remove large roots and rocks that will obstruct plant growth. Now is a good time to cut down trees and brush which will shade the garden area.

If the garden is in a flat place, plan to have the rows run lengthwise east and west to take full advantage of the sun. On slopes or hillsides, always have the rows run across the hill — never up and down. This practice will save valuable topsoil. Once the site is cleared, turn the soil over and break up large clods, preferably with a rototiller. At this point, fertilizer and lime, if needed, should be mixed into the soil.

Fertilizers

Soils of Southeastern Alaska are usually infertile. Because of the heavy rainfall, water is continuously moving down through the soil and leaching plant nutrients out of the topsoil. It is almost always necessary to add fertilizer.

What kind of fertilizer should you use and in what amounts? To find the answer, take a soil sample from your garden area and have it tested.

Contact your district Extension office for a soil sampling kit. The Extension agent will send your sample to a laboratory for analysis and return the lab report to you with appropriate fertilizer recommendations. Following these recommendations will save you time and money and insure a more successful garden.

Usually the soils in Southeastern Alaska are low in three major nutrients: nitrogen (N), phosphorous (P) and potassium (K). Phosphorous is frequently the lowest in supply.

Inorganic fertilizers (fertilizers synthesized commercially with a guaranteed content of plant nutrients) can be used to correct these nutrient shortages. Fertilizers with an N-P-K analysis of 8-32-16 are generally recommended for soils of this area. This analysis means, in the case of 8-32-16, that the bag contains 8 percent nitrogen (N), 32 percent phosphorous (P_2O_5) and 16 percent potash (K_2O) by weight. In other words a 100-pound bag would have 8 pounds of N, 32 pounds of P_2O_5 and 16 pounds of K_2O .

It is a good idea to divide the fertilizer application into two parts. Apply the first half as you are preparing the soil for planting. The rest is applied halfway through the growing season. Dividing the fertilizer application insures against all nutrients being leached away before the growing season is over. When using built up rows you may want to apply the fertilizer only on top of rows to insure most effective placement and to reduce leaching. Don't allow fertilizer to come in direct contact with seeds or plant roots.

Soil Acidity and Liming

Soils of Southeastern Alaska are naturally acid, mainly because of the leaching action of rainwater. Native plants and shrubs, such as the blueberry and cranberry, are adapted to acid soils. Also, there are a number of domestic flowers and shrubs which grow well in acid soil. Most garden vegetables, however, do their best in soil which is only slightly acidic.

When you have your soil sample tested, it will be analyzed for a pH reaction. This will indicate the level of acidity or alkalinity in the soil. A pH reading of 7.0 is considered neutral; from 7.0 to 0.0 is acid, while 7.0 to 14 is alkaline. A pH of 4.0, not uncommon in our area, is highly acid. A pH level of 6.0 to 6.5 is best for growing vegetable crops.

With your soil analysis report you will receive a recommendation for applying lime, *if* your soil pH value indicates a need for it. It is *not* a good idea to add lime unless needed.

Lime may be added as agricultural lime or as marine shell. Marine shell is a good source of lime and is readily available. One pound per square foot (pulverized for best results) improves soil structure and gives longer-lasting effects. Shell is heavy and hard to transport, so for many busy gardeners, buying agricultural lime at the store may be much easier. Marine shell can provide the additional benefits of breaking up a tight soil and providing a long term liming effect.

Organic Matter

Organic matter will improve the productivity of your garden if the soil is mostly gravel or clay. In addition to providing nutrients, organic matter improves the condition, or tilth, of the soil.

Gravelly, rapidly draining soils can be as much a problem as poorly drained soils. These gravelly or rocky soils frequently occur in housing areas built on glacial outwash plains or in communities and logging camps that are built on rock-laden fill brought in from other locations. Loamy soil, organic matter and fertilizer will help rebuild these soils. Loamy soil can usually be found on beaches or tideland meadows or along streams. Even though this is a difficult job, it is often the only way to improve the quality of rocky soils.

AMOUNTS OF NITROGEN, PHOSPHOROUS AND POTASH IN ORGANIC FERTILIZERS*

Organic Fertilizer	Lbs/100 lbs Nitrogen (N)	Dry Organic Phosphorous (P ₂ O ₅)	Material Potash (K ₂ O)
Seaweed	1.5	1.0	5.0
Wood Ashes**	0.0	1.5	8.0
Starfish	5.0	8.0	2.0
Peat Moss	3.0	0.0	2.0
Horse Manure	0.6	0.2	0.5
Chicken Manure	1.6	1.3	0.5
Sawdust	0.0	0.0	1.0
Cooked Fish Scraps	8.0	13.0	4.0
Salmon Meal	10.0	3.0	1.5
Crab Meal	6.0	2.0	2.0
Bonemeal	4.0	24.0	0.0

*Secondary and minor elements are also available from these materials, such as calcium (Ca), magnesium (Mg), sulphur (SO₃, SO₄), iron (Fe), manganese (Mn), boron (BO₃), molybdenum (MoO₄), copper (Cu), zinc (Zn), and chlorine (Cl). These are often lacking in Alaskan soils.

**A more important function of ashes is their liming effect.

There are several abundant sources of organic matter in Southeastern Alaska:

Seaweed — If composted, this is a very good source of plant nutrients. The salt content usually will not harm garden plants. Protect your pile of seaweed from rain, as this will leach out the nutrients.

Sawdust — Old sawdust which has been exposed to the weather for several years is a source of organic matter. New sawdust should be avoided since the microorganisms breaking it down will tie up the nitrogen in the soil and make it unavailable to plants. If it is used, additional nitrogen fertilizer should be added also.

Leaves — A well rotted compost of alder, willow or cottonwood leaves is a good organic fertilizer.

Manure — If available, this material provides major nutrients and trace elements and adds tilth. Be aware, however, that it may also be a source of weed seeds. It should be composted and the pile protected to prevent leaching.

Although organic matter is usually good for gardens, it can also be harmful to southeastern soils if it is used in large quantities or as the

only form of fertilizer. Why so? First, organic matter holds large amounts of water which is not desirable in the already water-logged soils of Southeastern Alaska. Second, to act as a fertilizer, organic matter must be broken down by soil microorganisms, which themselves utilize valuable soil nutrients. Nutrients that are being used by soil microorganisms are not available to plants. This means that adding organic matter may temporarily decrease the fertility of your garden rather than increasing it.

There are ways to avoid this tie-up of nutrients. First, compost the organic material before adding it to the soil, and add only moderate amounts of well rotted compost to the soil at any one time. Second, always add inorganic fertilizer at the same time you add compost material. This fertilizer will supply the nutrients which soil organisms need to finish decomposing the compost.

Drainage

Wet soils are cold soils. Even on warm days, water evaporates from the ground and keeps the soil in your garden cool. Anything you can do to get rid of excess water will warm up the soil and improve plant growth. A seed germinates twice as fast in 60°F soil as in 50°F soil. This growth ratio holds throughout the rest of the growing season. There are several ways to provide drainage. These include:

Ditches — 1. An open inverted Vee ditch above the garden will divert surface water around the garden.

2. Blind ditches may be dug across the gar-

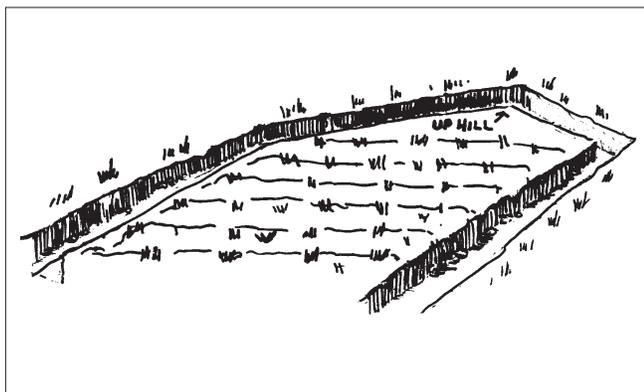


Figure 1. Open Inverted Vee Ditch

den. Slope them toward larger ditches at the side of the garden. Dig a standard ditch and fill in the bottom with large stones or poles of spruce, hemlock, or cedar. Avoid using willow or alder, as these rot rapidly. Place a layer of smaller stones next, and then lay an old plank or roof shingles over the rocks. Fill in the ditch with garden soil.

Drainage Pipe — Perforated plastic pipe can also be installed for drainage. This pipe is lightweight, inexpensive and durable. It can be purchased from mail-order catalogs or local hardware stores. Place lengths of pipe in ditches two to three feet deep, sloping them toward a larger drainage area. Face the holes in the pipe down, so the water can move upward into the pipe. Arrange rocks at the upper end of the pipe to keep it from filling with soil and a screen over the lower end to keep out small animals. Coarse gravel placed under the pipe will help prevent the holes becoming plugged with soil.

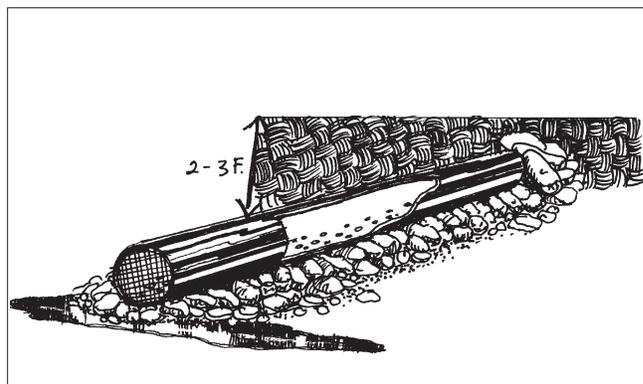


Figure 2. Drainage Pipe

Built-Up Rows and Beds — Making raised beds or ridges across the garden will warm the soil several degrees. Beds are best if you have only a small area. If the beds are wider than two feet, they will not warm up as fast, nor as well.

Built-up rows or ridges are especially effective in larger gardens. They take effort to build, but will result in much improved plant growth. To be effective, ridges should be about 12 inches high and 18 to 24 inches across the top. Narrow ridges drain and dry out too quickly. Gradual changing

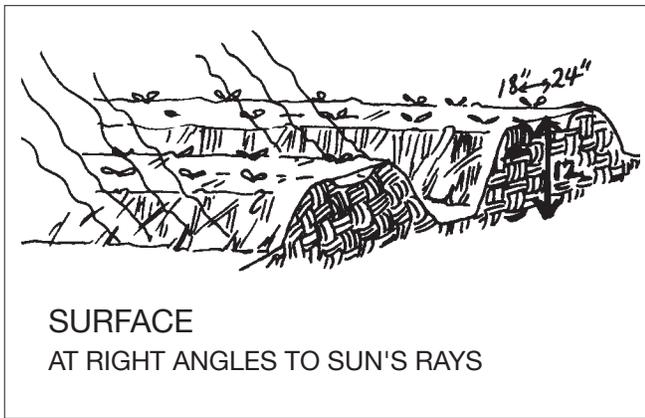


Figure 3. Built-Up Rows or Ridges

from cold to warm, wet to dry, is most desirable. The sides of the ridge should slant so that they are at right angles to the sun's rays during the warmest part of the day. This will allow the soil to absorb the greatest amount of heat.

After working in the correct amount of fertilizers and lime, set a row of stakes across the garden to mark the center of the first ridge. Follow the contour. Start at the bottom of a sloping garden and work up the slope. Pull in the soil from both sides until you have a ridge 12 inches high and 18 to 24 inches across the top. Now you know how wide an area is necessary to get the needed soil. Set the stakes for the next row far enough from the first so that there will be enough soil to make it. It usually takes at least 5 feet, but you will plant two rows of seed on each ridge.

Level the tops of the ridges, and plant seeds or set transplants in rows about 4 to 6 inches from the center of the ridge. Be sure to firm the soil over the seeds or around the transplants because the soil will dry rather quickly at the surface.

Be prepared for one major problem — *with heavy rain the ridges will wash down and settle*. To reduce washing, you can place sheets of CLEAR plastic over the rows. Pin down the uphill side with rocks and bring the plastic completely over the row anchoring it on the downhill side. The soil should be moist before placing the plastic over the row. It is critical that the soil does not dry out during the seed germination period. Cut slits exactly over the plants. Make small slits and pull the plants through. The plastic will also help raise the soil temperature.

USE ONLY CLEAR PLASTIC OR IRT PLASTIC MULCH!

Seedlings (except corn up to 4 inches) must be released from under the plastic as soon as they appear. A delay may mean lost plants due to sunburn.

Terracing — For gardens on moderate to steep hillsides, terracing may be the best answer to drainage problems. Terraced gardens are better drained and warmer than unterraced ones. The narrower the terraces are, the more this is true.

The steepness of the slope determines the width of terrace to use. Wide terraces with space for four or more rows are best for gentle slopes up to 10 degrees. Two- or three-row terraces are best for intermediate slopes.

To lay out your terrace, set a stake and attach a cord at the level of the lowest terrace. Now take the cord to the far end of the garden and attach it to a second stake so that you have a level reference line. By leveling back to the slope at intermediate points from your reference line, you can see where the finished surface should be. The fill you use to make a terrace comes from the back of each terrace. Make the front rise of the terrace just high enough to use the fill cut from the back. When building terraces, allow ample room to walk and stand so that work on the next terrace can be done easily. All types of terraces should have a flat, level surface and should follow the contour of the hill. A drainage ditch on the hill side of each terrace may help to prevent erosion and improve drainage.

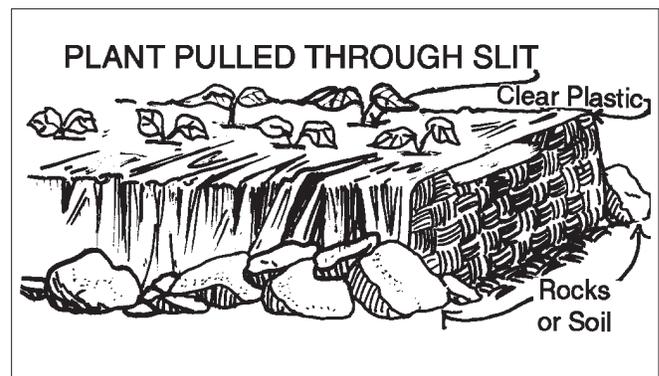


Figure 4. Clear Plastic Mulch

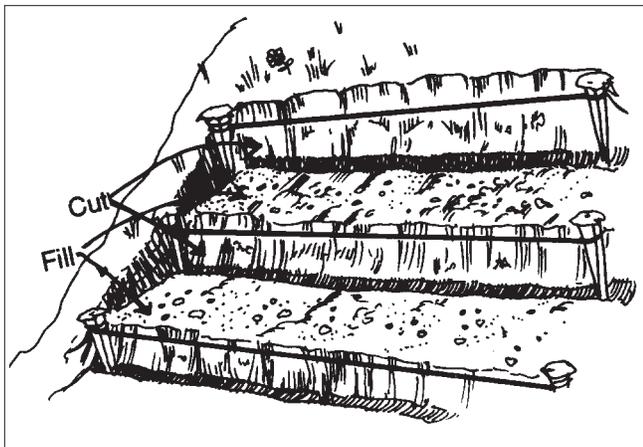


Figure 5. Terrace Layout

Adding Sand and Gravel to Poorly Drained Soils — Sharp sand and/or fine gravel will improve the structure and drainage of heavy clay and muskeg soils. They should be worked well into the soil in moderate amounts.

Starting Your Garden

Placing seeds directly in the ground in the spring is the most common way to start a garden. Good results will be obtained if you seed well drained, properly fertilized soil — after danger of killing frost has passed. For a current list of recommended vegetable varieties, see Cooperative Extension Service publication HGA-00231, *Recommended Variety List for Southeastern Alaska*. It is important to use a recommended variety which will mature early and under cool conditions.

If direct seeding is done, it will be necessary to thin the rows of young seedlings after they appear above ground. This step is necessary to insure fast growth and optimum size. Some vegetables, such as beets, can be used as greens as they are thinned.

Another method of starting a garden is to grow transplants indoors early in the spring and move them outdoors. You can transplant such vegetables as cabbage, lettuce, kale, cauliflower, broccoli and squash. If you have the time and space to grow transplants and if you follow the proper procedures, you can gain considerable time during the growing season. For complete information on transplants, see the Cooperative

Extension Service publication HGA-00032, *Seed Starting and Transplanting*.

Treated Seeds

When seeds sprout, the young shoots are often attacked by fungi and other microorganisms. Some of these soil organisms start growing before the seeds sprout and are ready to attack the young growth as it emerges from its protective seed coat. In wet soils, many seedlings are killed by these microorganisms. The disease is called damping off.

Several materials to control damping off are now available. Contact your district Extension office for recommendations. Most seed companies treat seeds with a protective fungicide before they are packaged.

Pest Control

While Southeastern Alaska is relatively free of plant diseases, there are several insect pests which, if not controlled, can do considerable damage.

Aphids — are small, soft-bodied winged or wingless insects. They injure plants by sucking their juices and spreading virus diseases. Contact your district Extension office for control recommendations.

Cutworms — are the larvae of small moths. They travel just under the surface of the soil or on top of it. They feed on a variety of vegetable crops. One control measure which has proved helpful is a band of metal placed around the stems of the young plants. The metal band — a No. 1 tin can with top and bottom removed is a barrier to the cutworms. Contact your district Extension office for other control recommendations.

Root Maggots — These destructive insects attack turnips, radishes, cabbage, cauliflower and broccoli from late May through July. They are the larvae of a fly. Extension publication PMC-00330, *Root Maggots in Alaskan Home Gardens*, will provide you with important control recommendations. Contact your district Extension office for additional control and prevention information.

Slugs — are a continuing problem for vegetable gardeners in Southeastern Alaska. Slug bait is a means of control. Follow the directions on the container. To shelter the slug bait from rain, cover it with two boards balanced to form an inverted Vee. Try to make certain, too, that the slug bait is fresh. An inverted pie tin securely fastened over the bait will also protect the bait from rain, and has the additional advantage of protecting the bait from pets.

Another method is to use beer as bait. The beer is placed in a flat pan and protected from rain as above. This is just as effective as other slug baits and not as hazardous to children and pets. Additional information on methods of slug control can be obtained by contacting your district Extension office.

Weed Control

High moisture and long days favor rapid weed growth in your garden. Begin weed control early and continue throughout the growing season.

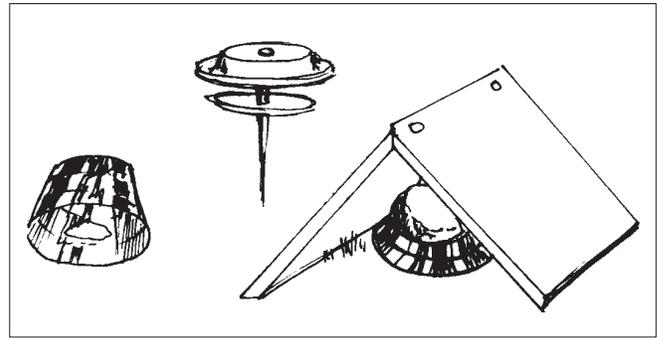


Figure 6. Slug Bait Shelters

Cultivation by hand or power tools must be shallow to avoid damage to plant roots. Hoeing and hand weeding are needed both in and between the rows. Chemical weed control is not recommended for beginning home gardeners.

Mulches, other than those of clear plastic, for weed control, are *not* practical for Alaska. While weed growth might be retarded, a heavy layer of mulch holds water in the soil and keeps soil temperature down.

For more information, contact your local Cooperative Extension Service office or Robert Gorman, Extension Faculty, Natural Resources and Community Development, at 907-747-9413 or ffrfg@uaf.edu. The original manuscript for this publication was written by a former Southeastern Alaska District Extension Agent, Kathy Jelesky McLeod, who was born and raised in the Juneau area. Much of the information is based on her personal experience and consultations with acknowledged successful gardeners throughout Southeastern Alaska. The manuscript was adapted in 1971 by Alan C. Epps, Extension Horticulturist, and revised by Wayne Vandre, Horticulturist, in 1982.

Visit the Cooperative Extension Service website at
www.uaf.edu/ces or call 1-877-520-5211