

Living On Your Small Piece of Alaska



Living On Your Small Piece of Alaska



Published by
Cooperative Extension Service
University of Alaska
P.O. Box 756180
Fairbanks, AK 99775-6180



The University of Alaska Fairbanks Cooperative Extension Service programs are available to all, without regard to race, color, age, sex, creed, national origin, or disability and in accordance with all applicable federal laws. Provided in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Anthony T. Nakazawa, Director, Cooperative Extension Service, University of Alaska Fairbanks.

This material is based upon work supported by the Cooperative State Research, Education, and Extension Service. U.S. Department of Agriculture, under agreement number 00-45046-0990. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

The University of Alaska Fairbanks is an affirmative action/equal opportunity employer and educational institution.
Visit the Cooperative Extension Service Web site at <http://www.uaf.edu/coop-ext>.

Contents

INTRODUCTION	4
<i>Small Acreage Ownership</i>	4
PROTECTING ALASKA'S WATER RESOURCES	5
<i>Limits of Acceptable Change</i>	5
<i>Living in a Watershed</i>	5
<i>Local Planning</i>	5
<i>Farm and Home Water Quality</i>	5
<i>Individual Assessments</i>	5
<i>Additional Things That You Can Do to Protect Water Quality</i>	6
PEST MANAGEMENT, AGRI-CHEMICALS AND SMALL ACREAGE	7
<i>Pest Management</i>	7
<i>Pest Identification</i>	7
<i>Pest Management Plan</i>	7
VEGETABLE PRODUCTION ON SMALL ACREAGE	9
<i>Plant Basics</i>	10
<i>Plant Problems</i>	11
<i>Plant Economics</i>	12
FORESTRY ON SMALL ACREAGE	13
<i>Agroforestry- What is it?</i>	13
<i>Success with Farmland Forestry</i>	13
<i>Products and Values for Alaskan Farms</i>	13
<i>Agroforestry in Alaska</i>	14
LIVESTOCK PRODUCTION ON SMALL ACREAGE	16
<i>Make Sure It Fits</i>	16
<i>Animal Specifics</i>	17
<i>What Do You Need to Know?</i>	17
<i>Animal Facilities</i>	18
<i>Animal Manure Nutrient Management</i>	19
CONCLUSION	21
<i>Managing Your Land</i>	21
APPENDIX	22
<i>Contact addresses and telephone numbers</i>	22

INTRODUCTION

Small Acreage Ownership

Maybe you purchased a home on a few acres outside of town. Maybe you bought a parcel of Alaska's great-land through the Alaska Department of Natural Resources Land Sales Program. Or was it a small waterfront property near your favorite fishing hole that you were able to buy? When you become a property owner you have a variety of rights as well as responsibilities. Too often small acreages in rural areas become trashed-out, despoiled eyesores as a result of the owners' lack of foresight and understanding of their land. The Alaskan climate is unforgiving. While many of the plants and animals native to Alaska are well adapted, many native Alaska species (species found naturally in Alaska prior to the arrival of European settlers) are at the edge of their natural habitat. What you do on your land may favorably or adversely tip the balance of nature and create all sorts of problems that become serious land management problems.

If your property is located in a valley, the water table (the top of the zone of water saturated soil/substrate) probably is shallow, and the soils may well be sandy, gravelly, or silty. Shallow water tables and porous soils predispose the groundwater to contamination from petroleum, human and animal waste, fertilizers, and pesticides. Valley floors are at a lower elevation than the surrounding foothills and mountains and will have a longer growing season (period between the last and first killing frost), but valley floors may trap winter cold and fog for weeks at a time while the surrounding hilltops are clear, cold and sunny. For every 1,000 feet in elevation above sea level the annual temperature decreases by 3°F. Most Alaskans live between sea level and 1,500 ft above sea level because of the winter cold and the short growing season at higher elevations.

What kind of vegetation is growing on your property? If there are no trees, were they removed or were they never present? If trees were never present the land may be muskeg or wetland, both of which will limit many land uses. The absence of trees may be due to low annual precipitation and/or sandy, gravelly soil. Lack of reliable moisture will create many land management problems that limit plant and animal productivity. Scarcity of trees and shrubs will reduce cover from wind and other elements and place physical stresses on the vegetation and animals on the land. Land management practices that alter air and water movement, including removing vegetation, impeding stream flow, road building, and land clearing, may create environmental stress on plants and animals and predispose them to attack from pests and predators.

The goal and objective of this booklet is to get you thinking about your land and the opportunities that may be available to you because you are a small acreage land owner. Land owners realize, sometimes only subconsciously, that they will change the environment by the very nature of land ownership. This implies considerable responsibility associated with land ownership. This booklet is only a beginning point, hopefully stimulating you to pursue additional information and ideas concerning your land and how you will take care of and properly use that piece of Alaska.

PROTECTING ALASKA'S WATER RESOURCES

Malcolm Ford, Extension Water Quality Liaison

Limits of Acceptable Change

Collect the family (you all have a say in this), put on hats and coats and walk the property. You don't have to take the bank manager! Ask yourselves the question "Why do you choose to live here?" Is it the low mortgage, the view, a house or buildings, a creek or pond - perhaps even the opportunity the land offers? Write them all down (have the kids draw what they see and like).

In your grand design, what are the limits of acceptable change? And how do these mesh with your plans for the future? Do you expect to clear areas, put in some crops, or raise some livestock? Establish some simple indicators that will help as a guide as you make choices about your land. Clean water is a good item for inclusion because it relates so well to the health of the land and potentially the health of your family and business enterprise. It gets expensive to fix water quality problems, and the results are rarely entirely satisfactory!



What goes around comes around; *everyone* contributes to water quality.

Living in a Watershed

A watershed is an area of land that drains into one common body of water. In your watershed, what goes around comes around – especially when you are downhill from a pollution source. It is like living in a bathtub where everybody contributes to water quality. Buffering and protecting surface waters such as lakes, streams, and wetlands is a good place to start. Cooperative Extension can send you helpful material and direct you to other valuable non-profit, state and federal programs.

Local Planning

Urban/rural growth is an established reality in most landscapes. What is a farmstead today may well border the subdivision of the future. Local aerial photographs and maps give good account of development patterns. Check out the local City or Borough planning office and involve yourself in local planning. It is the best way to ensure that change falls within acceptable limits and at a pace you can deal with.

Farm and Home Water Quality

Many Alaskan small landowners rely on groundwater as a source of drinking water. Beyond permafrost regions of the state most water comes from public or private wells and requires little or no treatment prior to drinking. However, good care and maintenance of private water supply equipment or storage facilities will prevent bacteria, pesticides, fertilizer, animal manure, petroleum products, or other pollutants from placing your family's and neighbor's health at risk.

If you are contemplating raising livestock, fertilizing or spraying crops – even working up a productive front lawn and garden – you may wish to consider a “Farm & Home Assessment.” You are in charge of the material and individual assessments and decide what help or advice you seek afterwards. As a non-regulatory agency, Extension is always ready to help or work with you to find an expert who can help you!

Individual Assessments

Call the Cooperative Extension Service at (907) 786-6300 for the “deluxe package,” or choose only those elements that you are ready to work on. Check out the following list:

Site Assessment

Household Wastewater Treatment

Livestock, Dog Lot and Poultry Operations

Assessing Crop and Pasturelands

Petroleum Product Storage

Buffering Wetlands and Water Bodies

Water Quality

Household Hazardous Waste

Fertilizer Storage and Handling Practices

Pesticide Storage and Use–Farm and Garden

Woodlands

Junk Cars and Dumps

Additional Things That You Can Do To Protect Water Quality

Reduce the Use of Water Polluting Chemicals Whenever Possible

Household cleaners, lawn and garden fertilizers, pesticides, phosphate detergents, solvents, paints, and preservatives help to make our life easier. They each, however, exact a cost on water quality and act



Keeping fertilizer and pesticide use to a minimum will help maintain water quality.

indiscriminately against beneficial organisms. There are a growing number of less toxic alternatives (e.g. citrus-based products). Keep fertilizer and pesticide use to a minimum, and let good plant and animal husbandry be your ally. Work with UAF Cooperative Extension Service to apply integrated pest management techniques.

Pamper Your Vehicles and Heating Fuel Storage Tanks

Watch out for petroleum products. Spills and leaks may appear small, but cumulatively they cause considerable degradation to our waterways. Check fuel storage tanks regularly for leaks, and dispose of all petroleum products correctly. Most local landfills or transfer stations will accept them for free. When topping up engines with oil or fuel take the time to use a funnel so as to hit the mark every time. Junk cars reduce property values and threaten surface water and groundwater sources. Avoid pouring oil products and solvents onto the ground or into a storm drain (most Alaska storm drains connect with a local stream or lake). Wash your vehicle at a local car wash where specialized separators reduce the by-products that would otherwise enter local water bodies.

Use Only What You Need

Water conservation measures don't just "save" water - they help to keep it clean. Pay close attention to water usage in the home and garden. When water is drawn from surface or subsurface sources, it generally picks up pollutants before being returned to the system. Localized areas of the Anchorage Hillside and those of the Matanuska-Susitna Borough are already experiencing lowered water tables due to increased water demand. Impermeable surfaces (e.g. large area of homes, wide roads and parking lots) reroute water to local creeks that would otherwise recharge the underground aquifers.

Use Less, Reuse and Recycle

Use less, reuse, and recycle in that order, and you help to limit landfill space, cut natural resource and water use, and prevent contamination. Landfills produce some of the most potent and polluting chemical cocktails. Support cleanup and recycling programs when talking with friends, business contacts, and government representatives.

Clean-up Pet Waste

Scoop the poop to prevent unwanted nutrients and bacteria in public places and nearby water bodies. Bag it and dispose of it by flushing it down the toilet, by burying it, or by placing it in the trash.

Educate Your Family and Friends

Strong values and water-friendly lifestyles are contagious. Share them. Volunteer with local groups working on watershed stewardship projects. If you live by a lake, talk to neighbors about developing a lake management plan. Support community council, borough and assembly actions designed to provide creek/lake buffers or improved planning. Call your local Cooperative Extension Service office – we can help!

PEST MANAGEMENT, AGRI-CHEMICALS AND SMALL ACREAGE

Robert Gorman, Extension Land Resource Development Agent

Pest Management

Pest management on small acreage may be anything from controlling mosquitoes to eradicating exotic (non native, introduced) weeds. Pest management starts with keeping the land with its associated plants and animals as healthy and free from environmental stresses as possible. Healthy plants and animals are decidedly in a better position to overcome pests. Adequate food, water and shelter are needed for biological organisms to remain healthy and productive. Environmental stress from human interaction can seriously stress plants and animals, and these stresses are avoidable. Other environmental stresses such as changing climate are beyond the control of the small acreage landowner, but if unmitigated (no management actions are taken to compensate) the plants and animals will decline.

Pest Identification

Beyond maintaining healthy plants and animals, pest management requires a continual scouting of the area being managed for plants, insects and vertebrate (mammal) pests that are rapidly increasing in numbers and damaging to plants, animals and other aspects of the land. With limited training you will recognize what plants, insects and vertebrate pests are common on the land and what are uncommon and rapidly expanding. When a rapidly expanding population of damaging organisms is detected, it is important to quickly identify the problem. When an organism creates problems in a given management system it becomes a pest, and accurate pest identification is the first step in controlling the pest. Determination of a species as a pest requires land area specific knowledge. For example, alder trees rapidly move into disturbed slopes, wood lands and stream banks. Over time the alder will capture atmospheric nitrogen and convert it into soil borne nitrogen which is then available to other early plant colonizers. Alders in a field planted with forage is a pest. That same land being used for a hunting/fishing camp may benefit by having wildlife browse (alder) close in. In unmanaged, wild land alder plays an important role in revegetating sites disturbed by fire, bank erosion and land slides. Therefore, the characterization of whether alder is a pest or not depends on where the alder is located.

Pest Management Plan

After a plant or animal is determined to be a pest you have the decision to do nothing or to actively manage (control) the pest. The no-action strategy dealing with pests may have serious consequences, such as virtual elimination of certain plants and animals native to your land. Such a decision may also limit the success of land management systems on your land. The decision to actively manage a pest will not produce guaranteed results but will reduce the likelihood that the pest will override all your land use plans. The methods you use to control pests can have serious long term implications on your land. Conversely some pest control methods are very time consuming while other methods require significant outlays of money for equipment and materials.

Integrated Pest Management (IPM) is a pest management strategy that is based on using a variety of techniques to control a pest while doing the least damage to disrupt the overall ecosystem. Nature has a variety of checks and balances to keep plant and animal species from overrunning a given area. All biological

organisms have enemies (predators, diseases, dietary restrictions or demands, etc.). Many exotic pests arrive into new territory without natural enemies. Unchecked by natural enemies, pest populations may rapidly expand. IPM strategies attempt to maintain or introduce natural enemies of the pests while limiting adverse impacts on other aspects of the land. The Cooperative Extension Service provides information and education resources on IPM.

IPM is not a pesticide free strategy. Pesticides are products used to kill, control or mitigate a pest. Pesticides used to control insects are insecticides; those used to control weeds are herbicides; those used to control rodents are rodenticides, and those used to control fungus are fungicides. Pesticides manufactured, sold and used in the United States are regulated by the U.S. Environmental Protection Agency (EPA). In Alaska the Alaska Department of Environmental Conservation (DEC) oversees manufacture, distribution and sale of all pesticides. Pesticides must have an EPA registration number which certifies that the product has been tested and when used according to label instructions to control pests is safe for humans and the environment. Products sold for pest control that do not have an EPA registration number are untested and may or may not be safe for humans and the environment.

There are two classes of pesticides: general-use pesticides are available for purchase by the general public whereas restricted-use pesticides are purchased and applied only by trained, certified pesticide applicators. If you only use general-use pesticides on your property you do not need to become a certified pesticide applicator with Alaska DEC. If you apply any pesticides on property owned by anyone other than yourself or your employer, you'll need DEC pesticide certification.

Pesticides can be valuable tools when used properly. When improperly used they can degrade the environment by contaminating water, injuring or killing non target organisms (any organism other than the pest), and reducing your land use options. For example, picloram is a herbicide used for brush control which will kill most brush and prevent seed germination and re-sprouting for 12-24 months after application. Picloram would be a poor choice if you wanted to grow potatoes after brush removal. Other examples abound; for instance, spraying a systemic insecticide to control aphids on spruce trees and wild roses would be a poor choice if you wanted to make spruce tip jelly or collect rose hips. Be sure you have a land use plan in mind before you start using pesticides. The degree that you use pesticides can be determined by yourself but be aware that using any broad spectrum pesticide (something that controls most pests) also kills beneficial organisms that are natural enemies of the pest. Improperly used pesticides may create a downward spiral of increasing pest populations and decreasing natural enemies and reduced species diversity. Use your Cooperative Extension Service District Land Resources Extension Agent and the District IPM Technician to help you identify the proper method of pest control given you specific land management goals. Area offices and phone numbers are listed in the appendix.

You may want to avoid pesticides completely. Organic or pesticide free pest management is possible, but it is labor intensive. Organic pest management demands an intimate knowledge of the pest and the environment the pest is invading. Organic pest management can be challenging and rewarding. Just be aware that organic pest management requires learning about the pest and its preferred habitat and monitoring pest populations intensively and altering the environment to reduce its suitability to the pest.

VEGETABLE PRODUCTION ON SMALL ACREAGE

Roseann Leiner, Extension Horticulture Specialist

There is no need to distinguish between a large garden and a small farm because vegetables can be cultivated on whatever scale will fit the landowner's goals. The economics of plant production is the key to determining the success of plant cultivation. For example, a small greenhouse of tomatoes can be as valuable as a field of potatoes when market value is considered, but the cost of production is also higher for tomatoes than potatoes. The choice of plants should be tailored to the goals of the landowners:

What are the goals?

Are vegetables grown mainly as food for home use?

Are some of the plants harvested to sell or to barter for other supplies?

Are vegetables or flowers destined for sale at specialty market, with a premium price paid for gourmet products? The goals of the landowners may change with time and experience, but goals are central to planning plant production. This section on vegetable production will present an overview of major considerations for plant cultivation.



Tomatoes growing in a greenhouse

Start planning by thinking about specific goals of production. If plants are grown for home use, their taste and nutrition are primary considerations for the landowner. If plants are grown for income, the marketing of the product can take as much time and energy as cultivating the plants. This part of the planning process is essential: define the reasons for growing the plants. With the reasons clearly in mind,

the plans for marketing or storage will be easier. For example, if potatoes are grown for a winter food supply, then a place for potato storage is needed where the potatoes will be dark and cool but never frozen. If specialty items are grown for sale, such as baby greens for a salad mix, then the market needs to be arranged before harvest. In the latter case shelf life is short, and marketing and delivery to market may take as much time as plant cultivation. Growing the plants may turn out to be easier than marketing or storing the harvest. Proper planning ahead of time will alleviate problems that could diminish the value of the crop.

In general, cool season vegetables are suited for economic production in Alaska. Potatoes grow well in Alaska, and they can be a staple in family meals. Other vegetables provide variety in the diet. Cool



One row of potato plants harvested from a small field

season vegetables such as carrots, cabbage, beets, and turnips can be stored for several months, while other cool season vegetables such as cauliflower, broccoli, kale, and peas can be processed by canning or freezing for winter use. More specific information on growing and processing of these vegetables is available from UAF Cooperative Extension Service publications. For summer use, lettuce and other leafy greens are good for healthy fresh salads. Herbs for home use, or specialty markets, can be cultivated on a small scale and can literally provide the spice of life. It is possible to grow warm season vegetables such as tomatoes, corn, peppers, and squash by using plastic mulch, plastic row covers or a greenhouse. However, weather can greatly affect the economics of production for these plants, and risk of crop failure becomes an issue. On the other hand, food value is not the only value of plants: beautiful flowers can be grown for specialty markets, including cut flowers, bedding plants and hanging baskets. In Alaska, agricultural statistics show the sales of greenhouse and nursery plants far exceeds the sales of vegetables. When growing plants for sale, however, think carefully about the market for those plants well ahead of market time.

Plant Basics

What do plants need to grow? All plants need sources of light, water, and fertilizer. Light is the primary source of energy for plant growth. Shade from trees, buildings, hills or mountains will affect the rate of plant growth. Southern exposure is especially helpful in the spring and fall to get more light and

heat from the sun.

Water accounts for most of the weight of the plant. An even supply of water in well-drained soil is desirable. Consider the available water source and how it will get to the plant roots. Wells and surface water are common sources of water for irrigation when rainfall is in short supply. Hand watering is practical only on a very small scale. Other irrigation systems may be worth the initial investment. Drip irrigation is an option for slow and steady water supply, especially with plastic mulch or greenhouses. On a larger scale, sprinkler irrigation from moveable pipes may be economical.

Water is taken up by the plant roots and also transports the minerals in fertilizers to the stems,



Plastic tunnels protect plants from cool spring nights, and dark plastic on soil limits weed growth.

leaves, flowers, and fruits. Certain elements are essential in specific amounts and ratios for plant growth: Nitrogen (N), Phosphorus (P), Potassium (K), Calcium (Ca), Magnesium (Mg), Sulfur (S) and several more elements in very small quantities. Too little or too much fertilizer can affect plant growth and the cost of production. There is much more information on fertilization and soils available from UAF Cooperative Extension Service and other sources.

Plant Problems

Even when plants have a good supply of light, water, and fertilizer, there are more considerations for healthy plants: control of weeds, pests, and pathogens. Weeds are plants growing where they are not wanted. Weeds compete with crop plants for light, water, and fertilizer. Weed control is most important when the crop plants are small, so plan time to control weeds before weeds grow bigger than the vegetables. Weeds grow quickly and produce seeds prolifically. Land that is recently cleared from forest often has few weeds until a few weeds go to seed. Those seeds will be in the soil for years. Plan control measures, such as hand weeding, herbicides, or plastic mulches to cover the soil between vegetable plants where weeds would grow.

Pests are animals that eat plants. Insects and other animals can damage plants by feeding on leaves

and roots, and control measures have varied success. On one end of the spectrum, moose can sometimes be excluded from small areas by tall fences. Insects such as cutworms and root maggots are controlled with smaller barriers or insecticides. Aphids and mites can sap the strength of plants in a greenhouse.

If plants are not stunted by weeds or eaten by pests, they may be attacked by pathogens, organisms that cause disease or decompose plants. Diseases are often favored by wet leaves and little wind, so cultural methods of control such as increasing air circulation and keeping leaves dry are the first line of defense. Prompt identification of problems can keep the problems small. Fortunately, there are many sources of information to identify pathogens, pests, weeds, and efficient options for their control. Contact your CES District Land Resources Agent for more information on plant health issues.

Plant Economics

The bottom line is the cost of production compared to the value of the plant product. Keep careful records of costs and income to evaluate each season. Many successful growing operations start small and expand only after learning the critical details that can make or break the harvest. It is possible that the goals of production may change with time. Take time to periodically reevaluate goals. Sometimes variety is a goal, so different types of vegetables or flowers are added. Other times producing larger quantities of a specialty item may be a good way to expand if larger scale production is a goal. Consider the size of market, cost of transportation to market, and the availability of labor in any plans for expansion. In reality, job satisfaction may be an overriding factor: Do you enjoy what you are doing? Landowners may want to spend time to think about this important question. How big is big enough for the current season? Commercial growers know that it is possible to make a return on the investment with skill and planning. Home gardeners know the many rewards of cultivating plants. Landowners can learn lessons from both and thoughtfully choose their goals and lifestyles.



Baby greens for salad mix growing in a raised bed.

FORESTRY ON SMALL ACREAGE

Bob Wheeler, Extension Forestry Specialist

Agroforestry - What is it?

The use of agricultural land in Alaska for the production of trees and forests has many opportunities. The choices that the landowner makes depend on several factors including landowner objectives, location of the property in Alaska, site conditions, desired production systems, species preferences, wildlife or animal species that may be associated with use or management of the trees, risk factors such as insects, diseases, and wildfire, level of land management intensity, and the long-term use of the land. Trees and forest areas can provide a diversity of products or values that can be designed to be complimentary to the overall goals of a farm or small land acreage situation. These systems can include both traditionally managed forest and tree plantations as well as more intensive agroforestry applications.

Agroforestry Definition: Agroforestry is any land use system or farming practice that combines the management of woody perennials on the same land area with crop and/or animal production in some form of spatial arrangement or time sequence such that there are beneficial economic and ecological interactions.

The following is an outline of options for small farm and small land acreage woodland management in Alaska.

Success with Farmland Forestry

Forest and farms may seem to be conflicting land uses. However, evidence has shown that in many countries and within many environments, forestry is well suited to meet many of the objectives of farmland ownership. Determining your land use objectives and designing your land management activities to meet these goals are essential to your overall success. Economic and biologic production losses on farms are likely due to a combination of factors including weather, production economics, farming operations, and even international competition and monetary exchange rates. For many of these the landowner has very limited or no control. However, planning for troubled times and providing for a sustainable, productive, and viable farm or small land acreage is within the range of landowner. Forestry can provide a sustainable and diverse range of products and values that can further enhance the value and productivity of land.

As outlined in the Alaska Cooperative Extension Service three part series *Managing Your Trees and Shrubs in Alaska*, a detailed prescription is given for success in managing your forest land using three steps. These steps include: 1) Determining your goals and objectives, 2) Determining the condition of your trees and property, and 3) Developing a management plan. In that publication specific questions are presented for the landowner to consider. Although these questions are designed more to focus on forest lands, they do provide an important service to the general landowner as well. Many of the objectives of a successful farm or small land acreage include forestry related objectives. Success with planning for the future is often found by providing for a diversity of products or values from your property. Forests provide a diverse group of products and values including but not limited to timber, wildlife, water, recreation and provided benefits through environment enhancement.

Products and Values for Alaskan Farms

Trees:

Growing trees as a commercial product is very challenging in Alaska due to severe limitations on the economics of timber production. These limitations are associated with factors including limited local lumber or wood product manufacturing, relatively high transportation costs, loss of round log markets,

competition with abundant local timber supplies, chronically low timber stumpage prices, distance to market centers, rate of tree growth, and low cost of imported wood products. These factors have combined to create a situation that is not supportive of growing timber using local species that are highly economical for lumber. However, there are other products that could be produced for higher value including trees for house logs, hardwood for value-added products such as flooring, mouldings, and furniture; poles for sheds and fences, bowls and finished crafted wood items, and landscaping trees.

Cultural activities such as thinning, pruning, and fertilizing can improve the value and health of your trees and forest and may be a desired management option. Nitrogen fixing trees can provide substantial augmentation of soil fertility through nitrogen fixation. It may be helpful to have a professional forester help you review your land and the potential it has from forestry.

Selecting which trees will grow and are best suited to meeting your land management objectives requires appraisal of your farm or acreage and the characteristics of species that have been shown to be adapted to your location. Whether growing your own seedlings or purchasing planting stock, tree planting requires additional planning and care in order to be assured continued success with your trees.

Wildlife:

The farmland owner may have portions of their land that are suited to habitat for producing wildlife. Small forest plots or wood lots are suited for the production of game birds for hunting as well as habitat for fur bearing animals and large game animals. The combination of farm cropland and forest cover can create some problems with unwanted foraging by game animals. Farmers can provide important habitat for non-game bird species and for migratory birds, which can be beneficial for both observing and hunting opportunities.

Livestock:

Windbreaks have been shown to reduce wind velocities by as much as 70% on exposed livestock, greatly reducing their exposure to severe wind chill. They also can provide important shade during warm summer months by helping to reduce animal maintenance energy expenditures and can improve animal health and weight gain. Silvopastoral systems can be utilized to enhance forage availability by using woody shrubs and trees suited to repeated browsing.

Water:

Sources of clean water are important to farm and small acreage operations. Forests can act as filters to farm effluent and are used successfully for controlling erosion and land stability. Windbreaks can provide protection from wind scouring, leaving more effective snow cover to protect soil water reserves and providing a thermal blanket for crop fields to limit the depth of soil frost.

Agroforestry in Alaska

Agroforestry applications for Alaska need considerably more research, however, agroforestry applications are used in cold temperate climates around the world and when properly applied can be of assistance for Alaskan farmlands and small acreages as well. Agroforestry practices as distinct land use systems are quite diverse and may include combinations of agricultural, forestry, horticulture, and animal production systems. Generally farmers are interested in agroforestry from the standpoint of increasing their land or crop productivity and reducing production risk. Ideally, agroforestry systems are both stable and sustainable.

Trees and forests can provide land owners with a variety of products and values. Knowing what your land objectives are and how trees or forest areas can assist these objectives provides needed guidance.

Selecting what tree species to plant or how to culture the trees and forest you have to best meet your goals may require the assistance of professional help. The Cooperative Extension Service has a number of publications that may assist you in making your decisions. Trees and agroforestry practices can coexist with other land use practices and serve to provide for a diversity of products and values, even in cold temperate climates. Tree planting, care and forest management should be a consideration when thinking whether or not to diversify the productivity of your farmland or small acreage.

LIVESTOCK PRODUCTION ON SMALL ACREAGE

Milan Shipka, Extension Livestock Specialist

Make Sure it Fits

Livestock may fit very well in a small farm situation. However, land owners need to honestly determine some important factors in order to determine whether they should have livestock as an enterprise on their small acreage. An assessment of “what fits” is vital before buying animals. “What fits” means doing a self assessment as well as an assessment of the land. Do you have the knowledge and skills in order to be successful raising animals or can you readily obtain that knowledge and skill base? The UAF Cooperative Extension Service can help you gain the needed knowledge base. You may also have neighbors experienced in livestock production that will help you learn necessary skills.

There are also other questions you need to include in your self assessment. Do you have the time to work with animals? Are you willing to take care of the animals in all types of weather and at all times of the day and night? The romantic picture of cows contentedly grazing on beautiful verdant pastures is great, but it does not apply to Alaska in January. Raising livestock and supplying family income or a family food source can be very rewarding, but it is also a commitment to always properly care for and provide for the needs of the animals in your charge.



Musk ox bull and harem

Animal Specifics

Once you have determined that raising some livestock is your goal, you need to decide some specifics for your application. Are you more interested in raising some chickens for eggs and meat, or do you like four legged animals such cattle or bison. Either of these endeavors may be logical for you small acreage, but each has specific requirements as far as knowledge and skill, facilities, feed, overall investment and time frame considered. I once had a call from a couple who owned a small acreage. They wanted to get into bison, but wanted to “make their money” and get out of the business in three years since they planned on retiring and traveling south every winter after that time. I am glad they called me first because I could tell them not to try it with that goal in mind, it just was not realistic.



Bison cows and calves

Once you make a decision on the type of livestock you would like to raise, then you need to delve further into what requirements might be necessary in order to be successful. Here I am talking about nutrition and feeding requirements, breeding and reproduction, facility requirements, and manure nutrient management requirements specific to the species you’ve decided to raise. The requirements of poultry production are very different from those of cattle and the requirements of cattle production are different from those of swine. In the short space available here I will not be able to discuss every species or class of livestock. UAF Cooperative Extension Service has excellent publications on animal production topics, and many publications are available from Cooperative Extension Services in other states via the Internet. Contact your UAF Cooperative Extension Service District Land Resources Agent for help in locating these sources.

What Do You Need To Know?

Animal Nutrition

Animals must consume certain amounts of nutrients in order to grow well, produce offspring and stay healthy. If you knew nothing about animal nutrition and just threw some feed to your animals on a

regular basis, they may well survive. However the very essence of animal production is more than survival. Animal production implies that animals produce for you in the most economical way possible. You can make this happen on your small farm by understanding animal nutrition requirements and feeding your animals accordingly.

There are six basic nutrients; water, protein, carbohydrates, fats, minerals, and vitamins. Each of these nutrients is required in the daily ration of the animal, and feeding them in the correct amounts and proportions will allow you to manage your animals in the most economic and productive manner.



Musk ox grazing

Animal Reproduction

A basic premise of livestock production is reproduction. Poultry are often used to provide eggs for the table. Managing a laying flock requires knowledge of the ovulation cycle of the hen. It also requires knowledge about when to expect a hen to molt and how molt affects egg production and how each of these processes is affected by light, including day length and light intensity (both are very important in Alaska). Considering mammals (animals that produce live offspring), there are very different and species specific knowledge requirements. Some mammals, such as the sow (swine) and doe (rabbits and hare) can produce two or more litters of offspring in a single year. Some mammals, such as the cow (yak, bison, and cattle) can only have one offspring per year with occasional twins and breeding can occur during any season in the year. Still other mammals can reproduce only once per year, but are seasonal breeders. The ewe (sheep), doe (goat) cow (elk, reindeer, and musk ox) breed in the fall while the mare (horse) breeds during the spring. Understanding reproductive processes in the livestock species you have chosen to produce is vitally important to establishing an ongoing enterprise.

Animal Facilities

Animal facilities includes such things as a barn, fences, feeding and feed storage area, and animal capture facilities to safely handle your animals when necessary (here I speak of safety for the animal and the handler). Different species tolerate our Alaskan climate differently. Many species such as bison, yak,

elk, musk ox and reindeer are well equipped to handle the coldest weather. Others such as cattle, horses, swine and poultry require barns. Even the hardiest animals may be more productive if given the opportunity of using a wind break or shelter belt for protection from the elements.

Barns are also important for providing optimal birthing areas for mammalian livestock and nesting and roosting areas for poultry. For mammals that give birth in the early spring, a maternity building or pen can mean the difference between the loss or survival of a calf (cattle, bison, yak, musk ox, reindeer, and elk), lamb (sheep), kid (goat), foal (horse), or cria (llama). Providing proper nesting boxes for laying hens allows you to find eggs each day and, knowing where the eggs are and collecting them regularly works to prevent hens from becoming broody, an undesirable behavior trait from a management standpoint.



Elk mom and baby

Proper fencing is important anywhere near the Alaska road system and production of elk requires state inspected (Alaska Division of Agriculture) and approved fencing prior to obtaining animals. Pastures must supply enough feed so animals prefer to remain on the pasture instead of trying to stretch over or go through the fence to satisfy the hunger drive. If your pasture grass supply is insufficient, then you must place enough feed in a sufficient number of feeders in order to supply the animals' nutrients. In Alaska, proper fencing is also important for keeping predators away from your animals, allowing your animals safety and protecting your investment.

Animal Manure Nutrient Management

Animal manure makes great fertilizer. It is great fertilizer because it is loaded with the humus and nutrients that help build your soil and help plants grow. You can reduce the use of commercial fertilizers and soil amendments by using this natural product. This is all great for the land. However, like any good thing, it can be over done, or it can be done incorrectly, and either way this is not good for your land or the environment we all appreciate and in which we choose to live. Manure management means proper storage with no runoff and protection of water quality. Proper application means the correct amounts in the correct

places at the correct time on your small farm. Even doing something like composting, which is a wonderful practice, requires management knowledge.

Animal husbandry is a rewarding and potentially profitable opportunity for you and your family on your small land parcel in Alaska. To be successful you must obtain knowledge and skills in areas such as animal nutrition, animal reproduction, animal facilities, and animal manure nutrient management. Utilize the UAF Cooperative Extension Service to help in obtaining knowledge at each step of the way, from the decision process through your ongoing enterprise. Entering into a livestock enterprise is no small decision. It requires investment throughout time and provides potential rewards that may be profit orientated as well as providing quality of life for you and your family.



Musk ox tearing up ground

CONCLUSION

Managing Your Land

Some people think nothing about dumping engine oil on the ground. Perhaps they are not aware they are contaminating their own water sources and limiting the uses of the land contaminated with oil and petroleum products. Other people will never introduce anything onto their property that could alter the balance of nature. Most people fall between those two. Most landowners want to utilize their small acreage to meet some life goal: a residence, a fishing or hunting camp, a base for winter travel and recreation, a place in the country or a homestead. The best decisions in land management are made early, before the land is altered or external inputs (land clearing, road building, grass seeding, fertilizing for example) are undertaken. Why did you purchase the property? What do you want to do with it? How do you want your life to interact with the small acreage?

Hopefully, reading this booklet has convinced you to take the time to think through the implications of your land management activities. If you move a camp trailer to your land, how will you dispose of it after it is no longer useful? If you clear the land first and then find out the soil is shallow or the water table is high, you have eliminated or stressed the natural vegetation with few options to substitute for it. In addition to the information presented in the different sections of this booklet, many parts of Alaska have soil surveys completed by the USDA Natural Resource Conservation Service. Many of the surface and sub-surface attributes of land can be determined by studying topographic maps produced by the US Geologic Survey. Information on native animals is available from the Alaska Department of Fish & Game. Alaska Department of Natural Resources provides information on managing small wood lots. The Cooperative Extension Service – University of Alaska Fairbanks has a variety of publications that will be helpful to you in accomplishing your land management decisions. In addition, faculty and staff with years of experience in plant and animal systems and land management are available to you before, during and after that decision process.

Time spent utilizing these resources will help you determine what is reasonable to expect from your land. Contact information for Alaska state and federal agencies are listed in the appendix. Please use the information provided in this booklet to your advantage.

Forethought about use and management of small land parcels by land owners will benefit all Alaskans. As a small acreage landowner you can contribute significantly to your personal satisfaction and to the overall productivity of the land. As in any human endeavor, positive results take time and effort. Get to know the physical environment of your land. Visit it throughout a year's period to understand the environment seasonality. Decide what you want to do with the land, and make your plans accordingly. Be realistic in your expectations. If you only want someplace to camp, then a small clearing and a privy may be all you need to do. If you want a vacation home, you will need to make decisions about location of the dwelling and construction. If you want to derive an income off the land, you have your work cut out for you. Whatever you decide, remember that land management is a matter of stewardship. Make your mark on the land positively, or leave no mark.

APPENDIX

Contact addresses and telephone numbers

University of Alaska Fairbanks

Cooperative Extension Service

<http://www.uaf.edu/coop-ext/>

CES Offices with resident Land Resources Agents

Anchorage Extension Office
2221 E. Northern Lights Boulevard
Suite 118
Anchorage, AK 99508-4143
Phone (907) 786-6300
Fax (907) 786-6312

Delta Junction District
Jarvis Building
PO Box 349
Delta Junction, AK 99737
Phone (907) 895-4215
Fax (907) 895-4210

Fairbanks - Tanana District
University Park Bldg
Room 138, P.O. Box 758155
Fairbanks, AK 99775-8155
Phone (907) 474-1530
Fax (907) 474-6885

Palmer - Copper River/Mat-Su District Office
809 South Chugach Street, Suite 2
Palmer, AK 99645
Phone (907) 745-3360
Fax (907) 745-5479

Soldotna - Kenai Peninsula District
34961 K-Beach Road, Suite A
Soldotna, AK 99669-9728
Phone (907) 262-5824
Fax (907) 262-3939

**School of Natural Resources and Agricultural Sciences
Agricultural and Forestry Experiment Station**

<http://www.uaf.edu/snras/>

Fairbanks (907) 474-7083
Palmer (907) 746-9450

State of Alaska

Division of Natural Resources

<http://www.dnr.state.ak.us/>

550 W. 7th Ave, Ste 1400 Anchorage, AK 99501 (907) 269-8431
3700 Airport Way, Fairbanks, AK 99709 (907) 451-2705

Division of Agriculture

<http://www.dnr.state.ak.us/ag/>

1800 Glenn Hwy, Ste. 12, Palmer, AK 99646 (907) 745-7200
3700 Airport Way, Fairbanks, AK 99709 (907) 451-2780

Department of Environmental Conservation

<http://www.state.ak.us/dec/>

555 Cordova Ave., Anchorage, AK 99501 269-7500
610 University Avenue, Fairbanks, AK 99709 451-2360
410 Willoughby Avenue, Suite 303, Juneau, AK 99801 465-5010

United States Government

Natural Resource Conservation Service

<http://www.AK.nrcs.usda.gov/>

949 E 36th Ave, Ste 400, Anchorage, AK 99508 271-2424

Environmental Protection Agency

<http://www.epa.gov/region10/>

222 W. 7th Ave Anchorage, AK 99501 271-5083

United States Geologic Survey

<http://ak.water.usgs.gov>

4230 University Dr, Ste 201 Anchorage, AK 99508 786-7100

