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New marketing approach links certain foods to healthy living

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"The National Cancer Institute believes that a high-fiber, low-fat diet may help reduce the risk of some types of cancer. Brand X breakfast cereal can be a part of this dietary plan."

We all have probably heard such advertising claims for a particular breakfast cereal recently. As accustomed as we may have become to these ads, they represent a dramatic and controversial new approach to food product advertising and labeling. Very simply, this new marketing strategy involves the incorporation of public health messages into food product advertising and labeling. The goal is to make an explicit association between the consumption of a food and the prevention or treatment of a particular disease.

Historically the Food and Drug Administration (FDA) has defined any product for which an explicit health claim is made to be a drug, not a food. For drugs, the manufacturer must prove their safety and effectiveness in disease prevention or treatment. Providing such proof would be extremely expensive, lengthy, and impossible for most foods. For example, how can a manufacturer prove that consumption of a high-fiber breakfast cereal will help reduce your risk of cancer? Nevertheless, nutritional scientists and others continue to propose possible links between diet and chronic diseases, particularly cancer and heart disease.

Implicit vs. explicit claims

The food industry is no longer content to rely on implicit health claims in its labeling and advertising. Implicit claims limit the manufacturers to statements regarding, for example, the cholesterol, sodium, calcium, or fiber content of a food, but do not allow the manufacturer to make explicit claims that a low-cholesterol, low-sodium, high-calcium, or high-fiber diet may prevent a particular disease. The manufacturer must rely upon consumers, presumably with knowledge of diet and health, to make the association.

Maintaining the distinction between explicit and implicit claims may seem subtle and insignificant; however, it has been an extremely successful means of preventing unscrupulous individuals from making broad, unsubstantiated, and potentially dangerous claims about the health benefits of a food or food supplement. In the early part of this century, for example, the marketplace was full of "food" products that fraudulently claimed to prevent or treat a disease. Since prior proof of safety and effectiveness was not required, consumers sometimes chose "easy elixir cures" rather than more conventional and effective medical attention. Furthermore, some of these products were themselves extremely toxic.

Current industry arguments

Today, the food industry argues that guidelines and regulations could be established by the FDA to prevent such dangerous abuses. It further argues that the judicious inclusion of explicit health claims on food labels and in advertising may help consumers learn the importance of a balanced and varied diet. The FDA, which regulates labeling, and the Federal Trade Commission, which regulates advertising, appear to agree.

This past summer, the FDA announced its long-awaited proposed regulations for health claims in food product labeling. It may be several more years before these regulations become final, however. In the meantime, some food companies are proceeding with food health claims in the absence of new regulations and thus, in effect, inviting FDA and/or Federal Trade Commission enforcement action.

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Dr. Pintaura shows cereal package containing new marketing pitch.

Red spruce decline in New England: Are swift moths the culprits?

by
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High-elevation stands of red spruce are declining across upstate New York and New England. Virtually all forests above 1,000 m are showing signs of needle loss and dieback; in some forests, more than 50% of the standing trees are dead. Acid rain and other industrial pollution have been touted as the most likely cause of the decline. However, prolonged exposure to clouds with acidic pHs (as low as 3.0) and loaded with other pollutants may pose even greater danger to vegetation.

Other causes?

Also, other factors may affect forest decline, such as large-scale meteorological changes, changes in logging practices and natural plant succession, severe winter damage, and other

natural causes of stress. Possible biological influences—often ignored by researchers—include nematodes, fungi, and insects.

Another possibility is that biological and pollution-related factors act together to weaken tree growth. For example, in southern California, Jeffrey Pines growing below the smog line are susceptible to attacks by beetles, while those trees above the smog line are not.

One reason why biological factors have been ignored in studies of spruce decline is that above-ground portions of these trees appear relatively free of insect and fungal pests. But what about the root systems of ailing spruce? Recent work at the University of Vermont shows that the larvae of a previously unknown and yet prevalent pest called the Conifer Swift Moth (*Heptialus gracilis*) feed on the roots of spruce, fir, and other plants. The brown, nondescript swift moth is found in conifer forests from the southern Appalachians (another area of spruce decline) into Canada. It appears to be most common where red spruce grows in abundance. The insect spends 2 years in the larval stage consuming roots and other organic matter.

Our studies

Since 1984, Bruce Parker, his graduate student Dob Tobi, and William Wallner of the U.S. Forest Service have been studying the potential role of the Conifer Swift Moth in red spruce decline. Jonathan Leonard and David Wagner joined the project in May 1987.

In laboratory studies, we found that the larvae will eat a variety of food, such as the excised roots of sugar maple, mountain ash, paper birch, balsam fir, and red spruce, as well as the leaf bases of spinylose wood fern and the leafy portion in decaying wood, we even offered them a diet of partially decomposed wood. After 8 weeks, all larvae on the wood had died; those on ferns also had done poorly. To our surprise, those larvae on the two moss species gained the most weight.

In two controlled experiments, we found that as few as one larva could kill a 30-40 cm sapling in less than eight weeks. Even if the sapling was not killed outright, its root system was damaged. In the field young larvae of the Conifer Swift Moth feed on nonwoody roots; the late instar larvae can tunnel into large woody roots. Our studies on Camel's Hump suggest that there may be as many



Larva feeding on roots of red spruce.

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Carl Ruprecht supervising fuel pump installations at his full-time job (left), working on his farm in Berkshire, VT (right).



What part-time farmers must know to be competitive

by
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Nearly half of Vermont's farms are small-scale or part-time operations. In other words, many farmers earn a significant amount of their income from work performed off the farm. For agricultural educators the question becomes, what are the future educational needs of persons preparing for or engaged in such farming?

To answer this question, we decided to contact knowledgeable people in agriculture and have them identify trends and events they think will have an impact on small-scale/part-time agriculture in the 1990s. Two major themes arose: new technology, and marketing and business management skills.

Nature of our study

We used a modified Delphi technique as our forecasting tool, which is designed to derive a consensus among knowledgeable people about future events. We sent a mail survey to Vermont agricultural organizations, UVM county Extension teachers, and vocational and natural resources teachers, requesting names of individuals thought to be knowledgeable about small-scale/part-time agriculture in Vermont. From that mailing, more names were gathered, leading to two more mailings and requests for names.

From this effort, we identified a pool of 945 individuals, from which we created two panels. The first, a panel of experts, consisted of the 100 most frequently nominated individuals. A second group, called the technical panel, consisted of the

12 most frequently nominated individuals. The task of the panel of experts was to help us identify important agricultural trends and events. First, we sent them a questionnaire and asked them to rate a list of possible future events for both likelihood of occurrence and potential impact on educational and training needs. Respondents were shown the results and given a chance to change their ratings in a second questionnaire; few did. We received 72 replies to the first questionnaire and 67 replies to the second.

The task of the technical panel was to help us determine possible new knowledge and skills that would be needed if the most likely future trends and events were to occur.

What we learned

From a total of 58 possible future events, the panel of experts rated 27 as highly likely to occur and to have a significant educational and training impact. They are summarized as follows:

- Genetics will continue to improve productivity, product quality, and insect and disease resistance;
- ornamental horticulture, small fruits and vegetables, and nondairy livestock operations are expected to increase;
- marketing will focus on high-quality products, specialized markets, and a limited number of wholesale food and fiber firms;
- business management will increasingly rely on computer and telecommunications technology; and
- sophisticated electronic and hydraulic devices will become more common on equipment and machinery.



Every decision we make (e.g., which equipment or fertilizers to use) reflects our values.

gists, environmentalists, and philosophers at the nation's land-grant colleges and universities, including UVM's College of Agriculture and Life Sciences. In fact, the need for a cross-disciplinary approach to this task is a powerful reminder that in important ways agriculture is not like other industries. Its traditionally close link with the social and ethical character of our society remains unbroken, even though so few people are actually farming. Of necessity, then, scientists and policymakers face complex decisions when setting goals and priorities for agricultural research.

Four "views"

A constellation of implicit social values is imbedded in agricultural research. Philosopher William Alken has identified four "views" of values that guide decisions of agricultural researchers and policy makers: the top-priority view, the net-gain view, the constraints view, and the holistic view:

- The top-priority view decides on an appropriate set of goals for agricultural research and the correct ranking of those goals, regardless of their effect on other goals.
- The net-gain view attempts to balance incompatible or conflicting goals and to pursue the course of greatest net gain.
- The constraints view may prohibit certain types of acts, such as clear violations of human rights, whether or not they would interfere with attaining the top-ranked goal or the greatest net gain.
- The holistic view determines what is valuable by examining the functioning of the whole system. "Negative" effects, as identified by other views, might be viewed as desirable if they promote the whole; "positive" effects identified by other views, in contrast, might be considered harmful to the system.

This framework is not rigid. Complex decisions might depend upon more than one view. However, this framework helps bring to light different values affecting agricultural research.

How values affect research

Let's say that researchers are concerned about developing new cropping practices. If these researchers hold the top-priority view, they might rank increased food production as more important than soil erosion or increased pesticide use, which might result from their research. If they hold the constraints view, on the other hand, they might feel that soil erosion or increased pesticide use would of necessity modify the type of cropping practices they recommend.

Agricultural philosophers will figure prominently in the growing debate over agriculture's proper direction and its role in our society. A systematic inquiry into the values of agricultural research is important to insure that agriculture in the future not only meets our food needs but that it is also fair and just and good. □

Determining the values of agricultural research

by
 David L. Rogers
 Department of Animal Sciences

The primary goal of agricultural research has been to increase food production: without enough food people as well as societies perish. But what comes next? With finite scientific and financial resources, what ought to be the goals of agricultural research when there is already enough food?

Should researchers seek to increase production in less fortunate parts of the world? Should they develop new ways to make our food safer and more healthful, tastier, and less expensive at the supermarket? Should further increases in production remain paramount in order to maximize profits or increase exports? Or should emphasis shift to the development of new production practices and products that are resource conserving and ecologically sound?

And what of agriculture's human resources? How do new agricultural practices, technologies, and products influence who will farm the land? And where? And to whose benefit?

Answers sought

Questions such as these are occupying a growing number of scientists, economists, sociolo-

UVM dairy foods group develops new products and programs

by
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Chair, Department of Animal Sciences

Have you ever wondered how new food products get developed? Sure, big companies such as General Foods and Beatrice have research departments that constantly work on new products, but did you realize that universities are doing the same thing?

At the University of Vermont, we have developed such new food products as maple-flavored yogurt, deluxe ice cream, Old World soft-ripened cheeses, a premium yogurt, and an exotic yogurt-like drink. And more new products are in the works. The development of such products is even more likely now with the recent addition of local and national money and equipment.

Dairy research center

In March 1987, the University of Vermont was selected as one of six Centers of Research Excellence in Dairy Products, designated by the National Dairy Promotion and Research Board. The Northeast Dairy Foods Research Center actually is a joint venture between UVM and the Institute of Food Science at Cornell. The Center's budget is more than \$1.75 million per year.

The Center wound up in Vermont thanks to the work of many UVM faculty, staff, and administrators, as well as alumni and Trustee Bob Blackford (B.S., 1943). Research and education will focus on dairy product safety, especially pathogens; dairy product quality; functional properties of dairy products and their components, primarily related to the physical and chemical properties of cheese; and new product development and processing.

New food products

Several years ago, Dr. Alexander Duthie and his colleagues developed maple-flavored yogurt, which has become a local favorite on campus. No commercial developer has been found yet, although negotiations are still underway to find one. And then the dairy products crew set out to develop a deluxe ice cream, one with a higher (14%) fat content than usually found in grocery-store varieties. The researchers experimented with 19 different types of chocolate before deciding upon the best variety to use.

Dr. Paul Kindstedt has been working with a local cheese manufacturer to develop Old World soft-ripened cheeses, using techniques perfected in Europe. In conjunction with Prof. Ron Savitt, marketing specialist in the School of Business Administration, the dairy group is now developing a premium yogurt, one that will have many of the characteristics of the maple yogurt, without the maple. And for 2 years, the University has test-marketed Boruga—a yogurt drink originating in the Dominican Republic—in the Hispanic markets in New York City. Later this fall the University will have completed the project and a private manufacturer will market the product nationwide.

Proposals have been submitted to develop other new food products, such as dairy soft drinks, nutritious snack foods, and fudge bars—all containing dairy products. Such products could be a boon to the Vermont dairy industry, as well as providing new taste sensations for consumers.

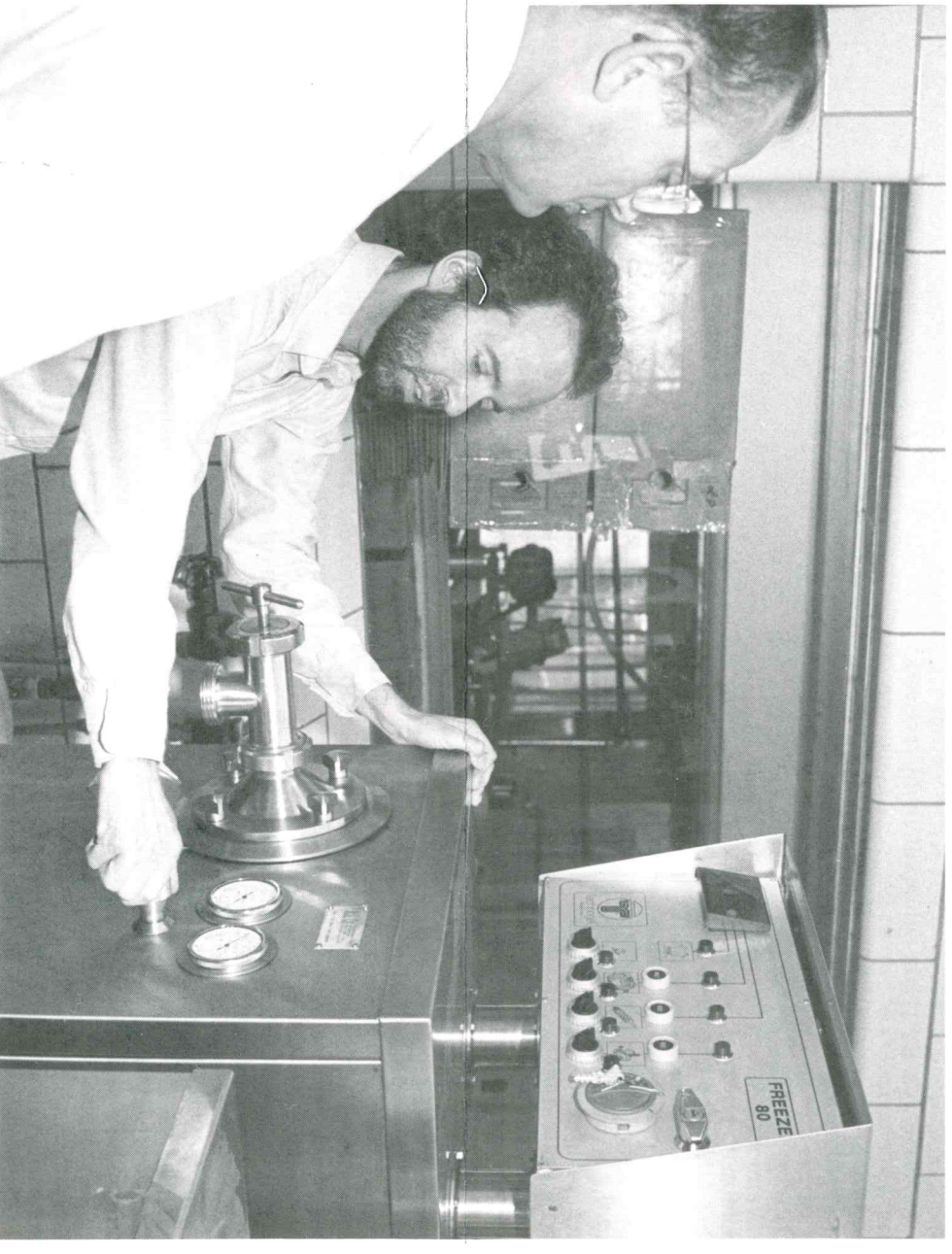
Many of these new products have come about as a result of the Partners in Applied Research program. Initiated 2 years ago by Governor Madeleine Kunin and University President Lattie Coor, the program stimulates cooperative developmental work between private industry and the University for the benefit of the State's economy.

New equipment

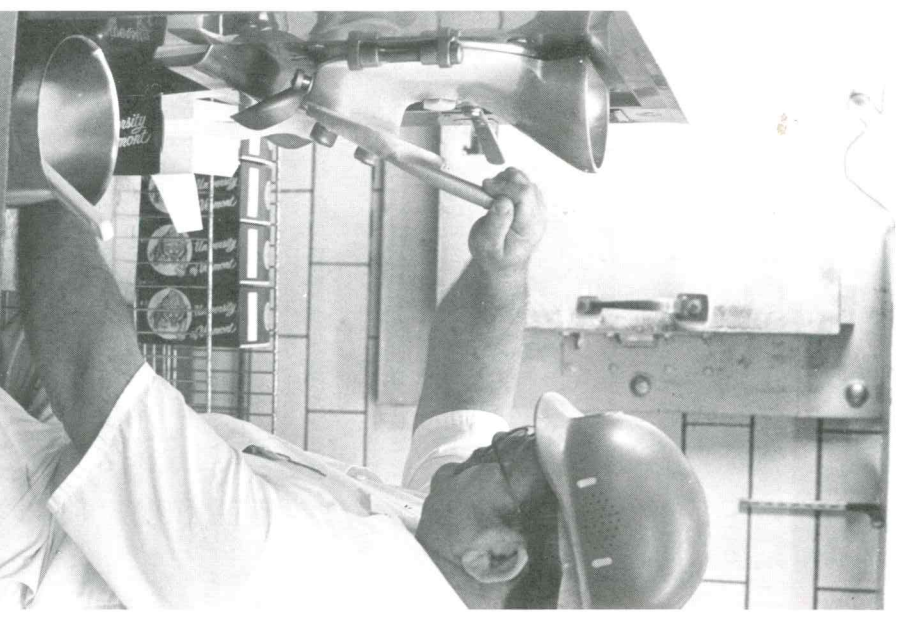
Early in 1987 we received \$100,000 from the Vermont Dairy Industry Council to purchase the most up-to-date pilot plant unit available for dairy product research. It will allow us to do virtually anything that can be done in a larger dairy plant; however, we can do it by using 5 gallons or less of milk! This new "plant" occupies only a corner of a room in Carrigan Building.

Another new piece of equipment purchased for \$15,000 and donated by the Vermont Dairy Industry Council is an ultrafiltration unit. This device can separate out various parts of milk by passing it through membranes to create an entirely new "milk" that can then be used to make new and different products. The possibilities are limited only by our imaginations.

Because of the dairy group's work, Vermont dairy producers will have more outlets for their milk. And consumers will have more nutritious and tasty food items from which to choose. □



Dr. Alexander Duthie and James Fox, research technician, adjust the continuous ice cream freezer, which is part of the modern milk and dairy products pilot plant.



David Lafayette, dairy plant operator, making UVM premium ice cream.



Containers of Boruga, the exotic yogurt-like dairy drink developed by the UVM Dairy Foods group, and manufactured and sold by LaVida Foods of Hardwick, VT.

Marketing techniques from page 1

The FDA-proposed regulations outline the criteria that must be met for food product health claims. The information must:

- 1) be truthful and not mislead the consumer;
- 2) not imply that a particular food be used as part of a drug-like treatment or therapy;
- 3) be based on and be consistent with valid, reliable scientific evidence that is publicly available and derived from well-designed and conducted studies; and
- 4) be consistent with generally recognized medical and nutritional principles for a sound total dietary pattern.

A new era

We have entered a new era in food labeling and advertising that will generate extensive debate among scientists, government regulators, food industry representatives, and consumers about the implications of this type of food marketing. Ultimately, the success or failure of this marketing strategy will depend on whether the targeted consumer will use the information in developing a total healthful diet. □

Fuelwood — the Unavailable Resource

by
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"Forests, forests everywhere but not a cord of wood to spare"

The Northeast, which lies outside existing energy supply routes, is the most energy-dependent region in the United States. Because of its long and severe heating season and lack of significant oil or gas deposits, the Northeast depends on foreign oil for 89% of its energy needs. This situation became particularly serious during the 1973-74 Arab oil embargo when energy prices soared and supplies of gas and oil dwindled.

This "crisis" promoted the establishment or revitalization of state energy departments and a concurrent effort to find and develop alternative sources of energy. The search, especially among the more rural areas of the region, led to wood. Fuelwood is a renewable natural resource, and the Northeast has an abundant supply (75 million acres) of generally low timber/high fuelwood-quality hardwood forests.

However, fuelwood has not significantly reduced the region's dependency on foreign oil. Resource economists from several Northeastern land-grant universities joined forces to find out why.

Study findings

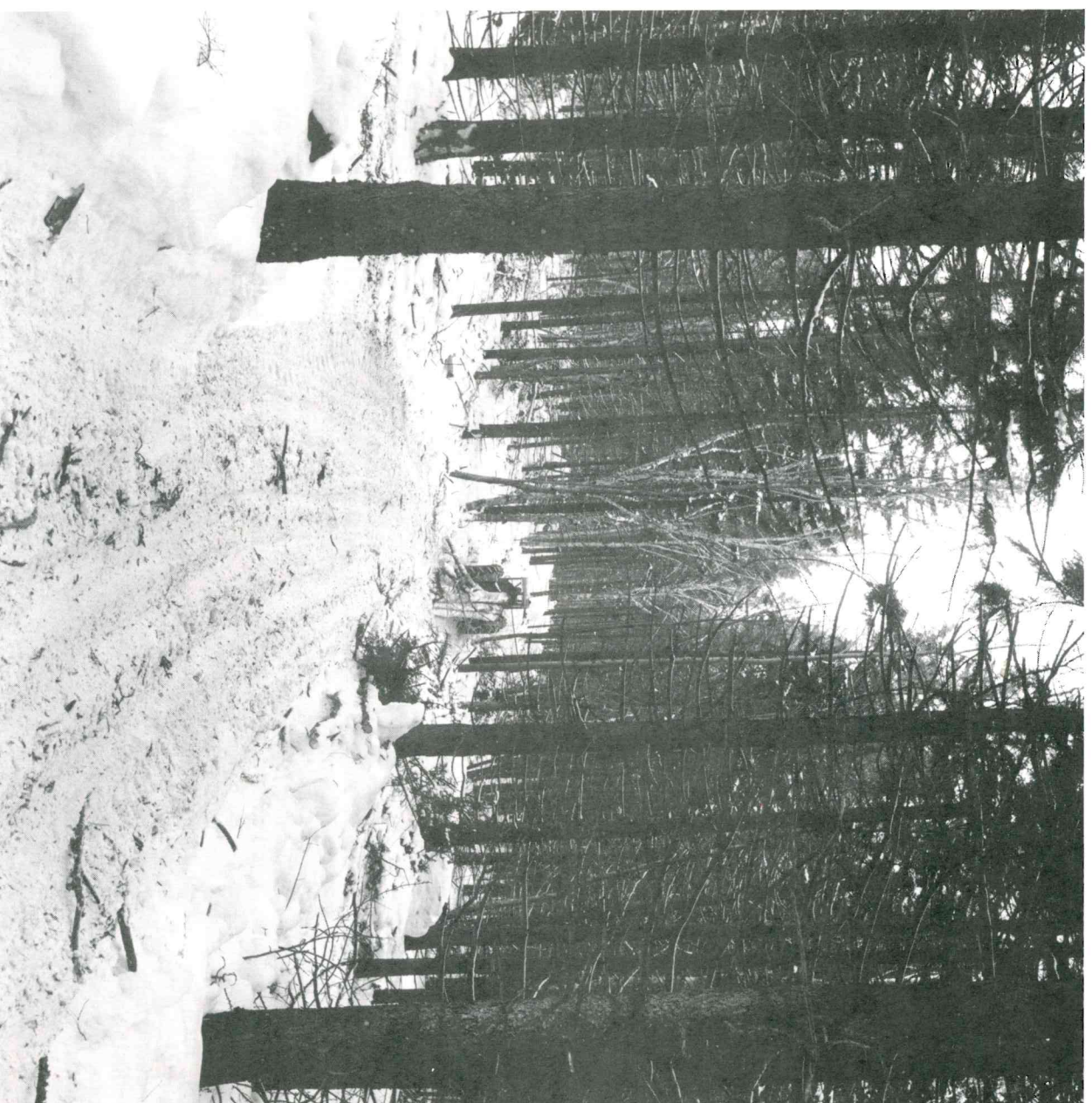
Vermont's role in the regional study was to determine physical, social, and economic factors that affect the harvest of fuelwood from non-industrial, private forest (NIPF) lands. This we did through mail surveys of NIPF landowners and an analysis of numerous fuelwood studies, including 10 U.S. Forest Service reports on private forest ownership and timber harvest in each of the Northeastern states.

We found that the vast majority of NIPF landowners in the Northeast have little or no interest in harvesting forest products from their land. More than 78% of the NIPF landowners have not harvested forest products during their ownership and 56% indicated that they never plan to harvest trees. Collectively these owners have refrained from cutting 47 percent of the NIPF acreage in the Northeast.

Why landowners don't harvest timber

Many reasons were given for not harvesting timber, but the root of the problem is population-induced parcelization of land. Population pressure has increased the value of forest land to the point where it is no longer profitable to use the land to produce forest products. The landowner consequently subdivides the forest and sells it to people who purchase the property for residential, recreational, investment, and other such uses.

Parcel size, in fact, is the best indication of a landowner's harvesting practices: owners of small



The presence of a logging road increases the likelihood that fuelwood will be harvested.

parcels (20 acres or less) probably never will harvest timber.

Some landowners did not harvest timber for fear that it would destroy wildlife habitat, degrade the residential quality of the site, damage recreation values, or adversely affect the aesthetics of their land. On the other hand, those who do harvest do so for such reasons as improving the quality of the woodlot, improving wildlife habitat, or removing dead and diseased trees. The similarity of responses between the two groups suggests that most forest landowners no longer consider trees as harvestable products but rather as amenities that enhance property values.

Implications for fuelwood use

As a result of our research, we conclude that the supply of fuelwood and other forest products from nonindustrial, private forests in the Northeast will continue to decrease. The ongoing process of parcelization, fueled by a growing population's demand for land, will continue to convert productive forest land into passive uses (i.e., housing, recreation, or investment) that preclude commercial harvest.

In other words, although the Northeast has an abundant supply of timber, it may not be widely available for fuelwood. □

Swift moths from page 1

as 160,000 Conifer Swift Moth larvae per acre at higher elevations. And these are not small insects: mature larvae approach 4 cm in length.

The only villain?

The role of the Conifer Swift Moth in spruce decline demands more attention. The insect might be a primary cause of spruce mortality, or it may act in concert with industrial pollution. Even if the moth does not kill mature trees outright, it may set the stage for other infections, e.g., by the wood-rotting fungus (*Armillariella*). At the very least, the Conifer Swift Moth may prove to be a useful biological indicator of spruce forest condition. In that case, surveys for the moth could be used to make forest management decisions. □

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