

AGRICULTURE



Features

★ ORGANIC FOOD:

A challenge to buy and sell

★ BIOLOGICAL CONTROL:

Putting good bugs to use

★ EXPERT ADVICE AVAILABLE:

For a price

★ FERTILIZING WITH ALGAE

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AGRICULTURE IS THIS MONTH'S THEME

by: Bill London

For the first time, this Newsletter is devoted to just one topic - agriculture and the search for alternatives to the present production and distribution systems. All is not well in American agriculture (and that's not news to you if you read a paper or hear a newscast).

But beyond the media's concern with foreclosures and the survival of the family farm, there are other serious environmental and political problems bubbling away in the background - here, in this region.

For example, the Palouse has one of the worst soil erosion rates in the U.S. Notice the plowed hills next time you cruise around outside the city limits. Up to 50 tons of topsoil per acre flows down those gullies every year, filling streams with mud, killing fish, causing the million dollar expenditures required to dredge the reservoirs on the Snake River, and, of course, destroying soil fertility.

And then there is the chemical addiction of the farmers. Larger and larger doses of more exotic toxins are required to poison the insects and plants harmful to the planted crops. It is the pesticide treadmill in action, with consequences unknown, and various levels of contamination inevitable.

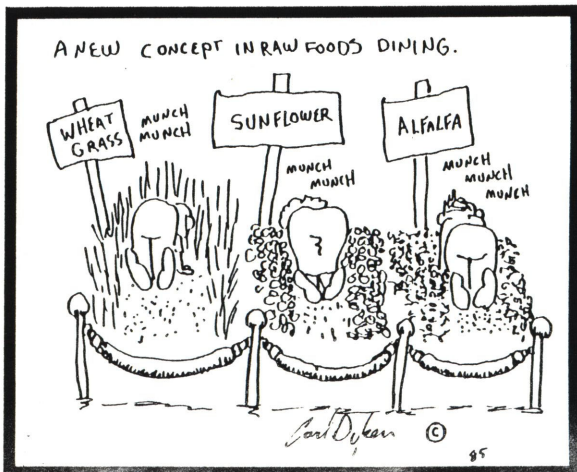
If the commitment needed to make the necessary changes flows from information and understanding, perhaps this Newsletter will be of some use.

Also, here is a CORRECTION to last month's Newsletter. The Gravelles of Julietta Orchards do all their own picking and do not, as erroneously reported, allow customers to pick their own fruit.

* * * * *
 * Due to reoccurring cash flow prob- *
 * lems, Equinox, our major supplier, *
 * is cutting back on their selection *
 * of goods for sale. This means there *
 * will be some "holes" in our *
 * inventory until we are able to *
 * find replacements. We will do *
 * our best to rectify this situation *
 * as soon as possible - Thanks for *
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The costs of modern chemical agriculture are high. Pests are becoming resistant to chemicals. When ecological balances are upset and insects, beneficial or not, are killed, some insect species are released from the control of their natural enemies and surge in populations, becoming major pests. Birds, humans, and other animals can be contaminated. And repeated chemical applications are extremely expensive. Since the early 1970's, Integrated Pest Management (IPM) programs have been developed as a way to slow or end that chemical dependency.

IPM is a decision-making process for determining if, when, what and where pest suppression treatments are needed. It utilizes multiple tactics in a compatible manner to maintain pest populations at levels below those causing economic injury. It strives to provide protection against hazards to humans, domestic animals, plants and the environment.

In essence, integration pertains to IPM's broad interdisciplinary approach. Scientific principles of entomology, plant pathology, agronomy, architecture, soil science, etc. must fuse into a single system of management strategies and tactics. IPM strives for maximum use of naturally occurring control forces of the pest's environment (weather, pest diseases, competition, predators, parasites). If chemicals are used, they are applied judiciously only after thorough pest monitoring.

Biological control may be one of the treatment strategies used in an IPM program. It utilizes natural enemies of a pest to regulate that pest population. Biological control includes conservation of the pest's natural enemies through proper selection, timing and placement of toxic materials, and through habitat modification. Augmentation is achieved through the introduction of additional numbers of the pest's natural enemies or pathogens.

Classical biological control involves trying to reestablish a natural enemy. It is relatively cost effective, may be a permanent self-perpetuating solution, and safe to the environment. However, an IPM program requires more work, and monitoring of pest populations, and is not necessarily as reliable as chemical applications.

Biological control of weeds is an ecological approach to weed management. Unlike the biological control of insects, eradication of the pest (weed) is not desired; weed's natural enemies need not necessarily kill its host outright in order to be a successful agent. If natural enemies can stress the weed enough to decrease an annual's reproductive rate (reduce seed production) or induce slower growth, thereby reducing the weed's competitive ability, weed populations may be lowered sufficiently.

Weed control agents must only attack the targeted pest, to prevent damage to nearby commercial crops and desirable native plants.

Several biological weed control programs are going on in our state through efforts at the University of Idaho. The biological control of Klamath Weed (St. John's Wort, Goatweed), Hypericum perforatum is one of the most remarkably successful endeavors not only in Idaho, but in North America.

Klamath weed invaded the western U.S. in the early 1900's and spread quickly throughout rangeland communities, becoming a dominant plant. Due to its toxicity to livestock and ability to supplant valuable forage, control of the weed was deemed necessary. In 1944, a weed-feeding beetle, Chrysolina quadrigemina, was imported from Australia into California and released in large quantities throughout the west. At the time, hundreds of thousands of Idaho rangeland acres were infested with Klamath weed. Since then, infestation has been greatly reduced, primarily by Chrysolina quadrigemina.

The beetle injures the weed by feeding on the young rosette leaves over a prolonged period of time. Thus, photosynthesis is reduced at a critical stage in the plant's lifecycle and subsequently the root system is weakened. The weed may die or live to be a poor competitor.

In spite of this success, the weed continues to occupy large stands throughout Idaho. An augmentative management plan for the beetle is now being investigated. Little is really known about why the beetles are not exerting sufficient pressure on the weed. Regulating factors affecting C. quadrigemina survivorship and the beetle's consumptive patterns under different environmental conditions are the next area of research to be pursued. Also, a "whole-system" approach, dealing with management in terms of what will replace the weed needs to be developed.

I hope this discussion illustrates the need for emphasis on long-term weed "management" systems using IPM as opposed to weed "eradication," and some of the existing opportunities for reducing chemical inputs. I have pointed out a range-pastureland example. Weed natural enemies for cropland weeds are just beginning to be investigated, partly through research at the University of Idaho.



It's hard to make a living selling people a service they think they don't need, especially if it's expensive.

Richard Nathanson, whose business Eco-Vision was aimed at finding ecologically sound methods of pest control for growers, discovered this disappointing fact.

"The people who are interested in my services often can't afford me," said Nathanson, who is now looking for a teaching job in science or mathematics to supplement his income as an independent crop consultant specializing in Biological Control and Integrated Pest Management. He is a Co-op member, who now works for the University of Idaho and lives in southern Benewah County.

Nathanson holds a B.S. from U.C. at Berkeley in forest entomology and an M.S. from the University of Idaho where he studied with Ron Stark, one of the leaders in the field of Integrated Pest Management. He compares his science to holistic medicine. His training represents a large investment of time and money, just like a medical doctor's.

Like any doctor, his time is valuable and this system of pest management takes time. He considers all factors, including soil, climate and past history of the area, as well as insects presently found there. The level of infestation and other factors are monitored by computer, and techniques of management are recommended; among them, natural enemy augmentation and introduction of bacteria and viruses.

Eco-Vision was not in the habit of recommending chemicals, but they were available as a last resort. When growers try to handle their own pest problems, they are quick to rely on chemicals, often taking the advice of sales persons whose own interests are best served by pushing their products, Nathanson said. "Then the farmer feels, well, if some is good, more must be better." This leads to chemical dependency.

Even with these conditions, the field of Integrated Pest Management has a future, he said, noting the growing demand for organically-produced food and the high economic and environmental costs of chemical dependency. "What is needed is a system to assure the consumer the product he buys is what he is told it is. Now there is relatively little protection for the people who want foods grown in healthy soil without sprays and residue from other, adjacent land which is under different management."



Organic foods, the product of alternative agriculture, are those grown without chemical pesticides or herbicides. One advantage to organic foods is that they are free of toxic residues. They also symbolize the growers' efforts to work with the ecosystem minimizing impacts on the environment and producing quality food products.

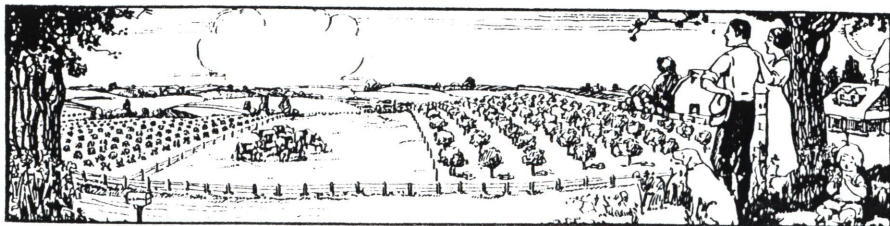
"I have a big commitment to organic," said Kenna Eaton, Purchasing Manager at the Moscow Food Co-op. "So I try to carry it whenever it's feasible." Eaton pointed out three problems with carrying organic food at the Co-op: shipping, availability and sales.

The organic produce is not treated with preservatives, and since most of the vegetables have to be transported long distances out of season, there is a high spoilage rate. During the off season, most of the organic produce is bought through Equinox. Equinox has been losing money though, because of the spoilage. Recently they have cut down to dealing mostly with produce that won't spoil quickly, like citrus fruits, carrots and potatoes, said Eaton.

The second problem is availability. Eaton explained that one local grower used to grow organic garbanzo beans, but the pathogens in the soil stopped germination in the beans. He ended up having to treat the beans. "So sometimes it's just impossible to find organic," she said.

Even if the problems of shipping and availability were overcome, there are still the problems with sales. "This is not a high awareness area as far as pesticides are concerned," said Eaton, so the produce, beans and grains in stock at the Co-op are slow to sell. Organic produce sells fairly well in season when local growers can bring it in fresh. But people like their produce to be pretty, and organic just isn't as pretty as non-organic.

Space limits in the store require some definite choices as far as stock is concerned. "Organic beans and grains are twice as expensive as non-organic," Eaton said. "So I just carry the more popular ones. I want to keep good prices on the more basic food staples."



"I remember the time when the stable would yield
Whatsoever was needed to fatten a field;
But chemistry now into tillage we lugs,
And we drenches the earth with a parcel of drugs;
... All we poisons, I hope, is the slugs."

A Country Carol, 1846

From the start, the proposal that chemicals should be added to the soil was met with skepticism. After more than a century of use it seems that, perhaps, those initial instinctive doubts should have been heeded.

Today there are studies indicating that chemical fertilizers create hardpan, a hardened layer of soil six inches to two feet beneath the surface; damage soil structure by not returning organic material to the soil; are inimical to soil life, including earthworms; inhibit the growth and development of fungi which are of fundamental importance to plant nutrition; increase the chance of disease in plants and reduce the friability of the soil and increase water run-off, which is accompanied by erosion and loss of nutrients.

Naturally there have been counter-studies done which either attempt to refute these findings or explain why they occur and offer advice on how they might be avoided. There are also the pro-chemical arguments that claim these fertilizers increase yields; are cost effective; are easy to store and apply, and, most importantly, help keep the cost of food down.

In the midst of this debate is a fairly new company offering a common sense approach to the use of fertilizers. Micro Ag, located just off U.S. 395 in Steptoe, Washington, has been in existence for six years. It was started by four area farmers after they saw the results of crops grown with seed treated with a seaweed fertilizer. For several years the product was distributed from the home of one of the farmers, and four years ago they moved to their present site and hired Mel Wilks to run the company.

Micro Ag offers a consulting service to farmers who wish to participate in the company's program. The first and most vital step is a soil test which, stresses Mel, differs from most soil tests in that it tells the farmer exactly what his soil contains that is available to his plants, as opposed to a normal soil test which simply states everything the soil has in it. Then, with the farmer, they diagnose the problems and offer advice on a course of action. Up to one thousand local farmers utilize some of Micro-Ag's products, and about 60 use the complete consulting, fertilizing and soil rebuilding program. Those using the total program have experienced 20 to 50 percent reductions in herbicide use, as well as significantly lowered costs with no loss in yield.

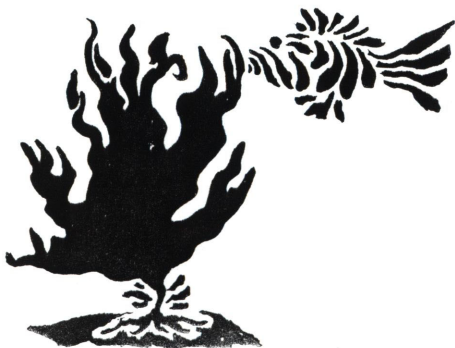


Micro Ag receives powdered seaweed from a Canadian company, Multi Crop. Then, with the addition of only water, they package and distribute it as Liquefied Seaweed Seed Nutrients. Likewise, their Liquid Seed Fertilizer is received in dry form. In combination, a gallon of each will effectively treat 160,000 lbs. of seed. They claim that their products will create larger and healthier root systems; make the plant more disease resistant; give higher yield potential; higher sucrose levels; more winter hardiness; and increased germination.

From Texas, Micro Ag receives a culture of a green soil alga, *Chlamydomonas Mexicana*, "Chlamy" for short. Chlamy is a natural soil-borne alga applied to fields in the fall and spring and is capable of producing large quantities of plant sugars. In a building, designed specifically for growing the algae, are ten open tubs measuring 36'x6'x3'. In these tubs the algae are grown in an optimum depth of fourteen inches of water for five or six days until the mixture attains the proper consistency. It is then pumped into a tank truck and transferred to an airplane for application. The algae condition the soil and, Micro Ag claims, help control erosion by improving aeration and allowing water into the soil. It also helps retard some diseases and increases organic material in the soil.

Micro Ag is also working with and testing a blue-green alga which is capable of producing nitrogen in the same manner as legumes. It is a natural water-borne alga and would be grown and applied the same as Chlamy.

The liquid seaweed and fertilizer are available to the gardener in gallon jugs. Along with their use as a seed treatment and fertilizer, they may also be used as a foliar spray. Another product Micro Ag offers is European Tree Wash for flowering shrubs, grapes and fruit trees. This is another seaweed product designed to feed and clean your trees. Micro Ag is also available as a supplier of powdered seaweed, which can easily be applied to bath water or used as a food additive. Micro Ag may be contacted at Box 125, Steptoe, Washington 99174; phone (509) 397-3935.



I am the coordinator of the Inland Regional Council (IRC) of the Northwest Coalition for Alternatives to Pesticides (NCAP) and a member of the Moscow Food Co-op. After a fouled attempt to open an office at the Moscow Recycling Center last June, the IRC finally found a home for our toxic substance resource library in Room 149 of the Moscow Hotel in January of this year. We are presently open to the public from 4:00 - 6:00 p.m. (882-6083).

Since 1945, the amount of pesticides used each year has increased tenfold, yet crop losses to insects have doubled, and the record for weed control is only slightly better. There are two major reasons for this phenomena: first, over 600 species of plants have developed resistance to the effects of the chemicals, and second, when aerial application is utilized to deliver treatment, as it is on 50% of the crops in the U.S., less than 1% of the formulation actually arrives at the target insects and 2-3% on target weeds.

The natural protection from pests sustained by maintaining the health of the soil and high predatory insect populations through crop rotation is enjoyed by over 20,000 organic farmers in the U.S., but most conventional farmers cannot survive the years of reduced income that the initial yield losses of transition to pesticide-free farming entails. One way of assisting growers through this transition would be the passage of the Agricultural Productivity Act, a federal bill that would set up 48 experimental organic farms for research purposes. Industry's opposition has killed the bill twice before and it will take a combined effort from all of us to assure its passage this session. Letters in support of the APA to members of both the House and Senate Ag Committees would be helpful and timely during the next month.

The data available on the health effects of the chemicals commonly used in the Palouse raises questions about their safety. The concern of urban residents in the area is apparent from the record attendance by citizens at last spring's Moscow City Council hearings on overflight permits by aerial applicators. In response to this concern, the City Council appointed a committee to investigate the possibility of creating a buffer zone around Moscow's city limits where aerial applications of pesticides would be prohibited. The committee met regularly for the past year and accumulated the testimonies of many experts on the diverse aspects of the problem and will soon make their recommendations to the City Council. Public input will again be possible when the City Council discusses these recommendations and I urge you all to attend the meeting(s) and voice your opinions. The dates and times will be published in the Idahonian or can be ascertained by calling City Hall.



Spray drift is a problem. Any time a pesticide applicator disregards label instructions and a pesticide travels off the intended site, or affects a non-target organism (e.g., any person, animal, or vegetation on your property), a spray violation has occurred under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Spray drift is illegal! The IRC can provide you with information on what to do if you get sprayed, but immediate action is critical. If your property is vulnerable, call today and have the information in hand when the spray season starts.

The heart of the issue is how to avoid exposure in the first place. First of all, don't use pesticides in you home, garden, or yard. Find alternatives. The IRC can also be helpful in this regard. Actively recruit numbers of people. And don't spend all your time convincing the people who agree with you anyway. When you've got an alternative or fact of importance, share it with your neighbor or that farmer down the road. Support the use of Integrated Pest Management.

My final suggestion is a course of action being taken by many municipalities around the U.S., passage of a local notification ordinance. These laws are unique to each community, but basically require chemical users to notify adjacent property owners that buildings, trees, or grounds are going to be sprayed and that these areas be clearly marked for a minimum of time after the application. The possibility of proposing such an ordinance to the City Council as a supplement to the Buffer Zone Committee's recommendations will be discussed at a meeting to be held on April 9 at 7:00 p.m. Please attend if you are concerned with these issues. We will be in the public meeting room of the Moscow City Hall.

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