



Appropriate Equipment for Sustainable Agriculture

Market farming is a major growth sector of American agriculture today. Yet the tools for mid-sized and small-scale operations are not easy to find. The right equipment can mean less pollution and fewer passes through the field, saving time, energy, and money. This ATTRAnews looks at some tools to help sustainable farmers and ranchers.

Sharing Farm Equipment in Nevada's Antelope Valley *By Paul Driscoll, NCAT Editor*

When Lori and Rod Monk started growing organic alfalfa in 1998, the expense of farm machinery was a major concern. The cooperative use of farm equipment "was the only way we could have done it," Lori recounted recently. A tractor and baler were all they had to begin with on their farm in central Nevada's Antelope Valley. But Lori was raised in the area and had connections with nearby family and friends.

Over the years the Monks have gradually purchased most of the equipment they need to operate their 480-acre Sunnybrook Farm. But in the early years, the Monks would trade baling services for use of their neighbors' swathers, harrows, rakes, trucks, and loaders – most of the implements necessary for a successful operation. Lori said that most of the shared equipment was within five miles of their farm in Battle Mountain.

"Close enough to just drive the tractor," she said.

The Monks' baler delivers four-foot-square one-ton bales. Only one of the five farms the Monks cooperatively shared equipment with was an organic operation. Consequently, any non-organic hay had to be purged from the baler before it could be returned to duty on their own farm. And any farm equipment had to be power washed before seeing use on the Monk farm. "It wasn't really too bad," Lori recalled.

Sunnybrook Farm produces alfalfa hay and a little feed oats and wheat. The Monks sell the baled feed to an organic dairy in southern Nevada. "We get several calls a year from people in California and Oregon," Lori said. But the Nevada dairy takes everything they can currently produce.



Equipment on the Monk's farm.

ATTRA Funding Eliminated from 2007 Spending Bill

In February NCAT learned that annual funding for our ATTRA project was cut when Congress passed a Continuing Resolution bill which funded the federal government through the remainder of the 2007 fiscal year. Because the fiscal year started in October of 2006, USDA had luckily already approved some bridge funding for the project which will provide the resources to keep ATTRA operating, although at a much reduced level for the remainder of the year (loss of 60% of our annual project budget).

As you can imagine, this is difficult for a small nonprofit organization that provides technical services on a tight, very economical budget. We have had to reduce staff and project activities significantly. However, we are committed to providing as much technical service to our clients as possible within our funding limits. We will continue to operate our toll-free

technical assistance hotline 12 hours per day and we will continue to answer incoming questions from farmers, educators, agriculture professionals and others and provide technical responses for them. While we have had to reduce staff, we are trying to maintain a core of technical specialists with expertise in all aspects of sustainable agriculture.

Our website will remain up and running. All of our current publications will remain available for clients to download on the Internet. We will not, however, be adding any new publications that were not substantially completed before the cutbacks.

One big result of the reduced project funding is that staff will not be available to participate in conferences and workshops or other events unless the travel costs are financed by the sponsor. Also, we've made cutbacks in our mailing budget,

including for this ATTRA newsletter. If you received this newsletter by mail and are willing to get it via e-mail, please let us know, because it will reduce our postage and printing costs if we can email it. Send your email address to johne@ncat.org and please include your name and mailing address so we can update our records. The newsletter will, however, continue to be available on our website.

We appreciate your patience during this period. We will be answering the toll-free number, but at times you may reach an answering machine when we get too many calls coming in at the same time. We are hopeful that our funding for next year will be restored and that we can return to providing our excellent services to our clients in a timely, cost-effective way through the website, our toll-free hotline, and in-person training.

Thank you for your support.

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New Inspiration from Old Farm Implements: Historical Books and Digital Archives By Steve Diver, NCAT Agriculture Specialist

It's often possible to retool old farmyard implements into modern-day machinery. To find inspiration for small farm agriculture equipment and techniques, try looking in historical agricultural literature. These sources can be helpful for the basics of farm equipment and soil preparation. Even the photos and illustrations in these old books can provide ideas for innovative tools that can be crafted on the farm.

Some libraries are now providing full electronic copies of books on their websites. I highly recommend the *Core Historical Literature of Agriculture*, hosted by Cornell University online at <<http://chla.library.cornell.edu>>. It features more than 1,800 digitized books.

Here are a few excellent titles from this Cornell collection. They provide illustrations and descriptive uses of tillage, cultivation, and soil preparation equipment.

- *Equipment for the Farm and the Farmstead* by Harry Clifford Ramsower, 1917
- *Farm Equipment for Mechanical Power* by Frank N.G. Kranich, 1923
- *Farm Machinery* by Archie A. Stone, 1928
- *Farm Knowledge: Complete Manual of Successful Farming, Vol. 1* by E. L. D. Seymour, 1918

The illustrations, photos, and descriptions in these historical guides will help you develop a system of equipment appropriately matched to your farm. These books will also

provide equipment terminology. They can even help you put together makeshift equipment collected from pieces obtained at old equipment yards and farm auctions, based on the information contained in these books.

Useful Websites and Online Discussion Groups

To find more key documents and Internet collections about historical farms and equipment, see this posting on the very worthwhile **Market-Farming** online mailing list: <<http://lists.ibiblio.org/pipermail/marketfarming/2002-October/000060.html>>. This was originally posted to another good online discussion group about sustainable agriculture, **SANET** <<http://lists.sare.org/archives/sanet-mg.html>>. Sponsored by the USDA's Sustainable Agriculture Network, SANET has been operating since 1991.

Farm Forums: Many internet websites host Farm Forums where producers exchange ingenious suggestions for how to modify and improve farm machinery. This shared intelligence can be a modern marvel, with a much wider reach than the traditional coffee shop conversations. To find some of the websites that provide information about agricultural equipment, search Google for "farmer forums," "used farm equipment," or a specific implement.

Yesterday's Tractor Company has a website with active forums, photos, and extensive information about pre-1985 equipment: www.ytmag.com.

Tools for Small Farms

By Lee Rinehart, NCAT Agriculture Specialist

Hand-held and non-motorized farm equipment is a great choice for small farms. Low-input, appropriate technology such as human-powered seeders, subsoiling forks, cultivators, hoes, and good old shovels exercise the muscles as well as the soil (and the soul, too). These human-powered tools are quiet, don't produce fossil fuel emissions that hurt the environment, and allow people to make a more solid connection with the land. The following suppliers offer an assortment of tools especially well-suited to small farms:

Earth Tools: Heavy, well-made, substantial hand tools for the serious farmer. Owenton, Kentucky; 502-484-3988; www.earthtoolsbcs.com

Hida Tools: Specializing in Japanese handcrafted weeders, hoes, sickles, and cutting implements. Berkeley, California; 800-443-5512; www.hidatool.com

Johnny's Selected Seeds: Complete line of tools for the gardener or commercial grower, including flame weeders, Glaser wheel hoes, row covers, and more. Winslow, Maine; 877-564-6697; www.johnnyseeds.com

Lee Valley Tools: Extensive inventory of gardening tools and implements. Ogdensburg, New York; 800-267-8735; www.leevalley.com

Peaceful Valley Farm and Garden Supply: Full line of hand tools, orchard supplies, bare root stock, cover crop seed, and bulbs. Grass Valley, California; 888-784-1722; www.groworganic.com/default.html

Seeds of Change: Seeds, digging and cultivating tools, hand tools, rakes and hoes, and seed-saving supplies. Santa Fe, New Mexico; 888-762-7333; www.seedsofchange.com

ATTRA Publications about Equipment for Sustainable Agriculture

Many of ATTRA's publications contain specific information about equipment used to produce crops or raise livestock more sustainably. Topics include postharvest handling of fruits and vegetables, livestock watering systems powered by solar energy, pump maintenance and irrigation designs, and equipment ideas for range poultry housing, to name just a few examples. All ATTRA publications can be downloaded for free from the ATTRA website, www.attra.org. Or call 800-346-9140 for a printed copy.

A sampling of ATTRA titles that provide practical details about agricultural equipment:

- **Paddock Design, Fencing, and Water Systems for Controlled Grazing** (IP152)
- **Bug Vacuums for Organic Crop Protection** (IP194)
- **Flame Weeding for Agronomic Crops** (CT157)
- **Flame Weeding for Vegetable Crops** (CT165)

- **Season Extension Techniques for Market Gardeners** (IP035)

- **ATTRAnews Weed Management issue**, September 2006: available online at <http://attra.ncat.org/newsletter/archives.html>



Finding Specialty Equipment for Market Farms

In the 1980s Ferrari tractors became popular with kiwifruit growers in California's Sacramento Valley. The low-profile machines could pass under the trellises and handle hilly terrain. Eugene Canales, the local Ferrari dealer, saw that these low-impact tractors would also work well for vineyards and small market farms. "I went looking for implements to match the tractors," he recalls. In Italy he found numerous manufacturers of small-sized specialty farm equipment adapted to regional needs.

Canales started importing implements such as spading machines, which were a big breakthrough because they loosen the soil without inverting or compacting it. At first only a few forward-thinking viticulturists used the spaders, but the machines are finally becoming popular with market farmers all over the country.

Walk-behind tractors are gaining market share, too. These small tractors look like rototillers, but are much more powerful. They can utilize a wide range of implements including spaders, potato diggers, grain drills, transplanters, mowers, hay balers, windrowers, and powered trailers.

Greens harvesters are another new machine for modern market farms. Some are powered and others use battery-run cutter blades and are designed to be pushed along a wide bed of mesclun lettuce or other greens. According to Canales, the most exciting new development is an implement that buries rocks while preparing a fine seedbed over

them. "In Europe, stone buriers are as common as grass," he said. "But here they are nowhere to be found."

Several American companies are now importing various small-sized European tractors and implements that are extremely well suited to market

farms. Asian tractors are also in wide distribution for both small and large operations. The following dealers specialize in machinery for small and medium-sized market farms.

Earth Tools: Walk-behind tractors & compatible implements. Owenton, Kentucky; 502-484-3988; www.earthtoolsbcs.com

Ferrari Tractor CIE: Eugene Canales' company has a wide range of equipment and an information-packed website. Gridley, California; 530-846-6401; www.ferrari-tractors.com

Market Farm Implement: Vegetable crop machinery of all kinds. Friedens, Penn.; 814-443-1931; www.marketfarm.com



Small powerful Italian tractors were developed for work in hilly terrain.

Plans and Designs by and for Inventive Producers

I-Tech Designs – Appropriate Technology for Small and Subsistence Farms: The designers of these elegantly simple tools gave a gift to humanity by placing the designs in the public domain. Their website includes clearly drawn plans for implements such as propane weed burners, a grain huller, and a vacuum packing system for seed storage – all constructed with readily available parts. Allen Dong, PO Box 413, Veneta, OR 97487; www.plantsciences.ucdavis.edu/LTRAS/itech

Healthy Farmers, Healthy Profits Project The University of Wisconsin-Madison offers substantial tips & inventions (with plans and photos) to increase efficiency & safety for dairies, nurseries, and vegetable and berry farms. <http://bse.wisc.edu/1tfltpa>

Other Models for Shared Ownership of Equipment

At the **Intervale Center Farm Program** in Burlington, Vermont, farmers have always shared equipment owned and managed by the Center. The two most popular large pieces of equipment are a John Deere and a New Holland tractor. Since each farm has a slightly different specialty or focus, the farmers usually don't all need the same implements at the same time.

Over the last two years, the Center and farmers have been working together to develop a more sustainable and equitable system for equipment and greenhouse ownership. They are about

to launch a private company. The Center will own one-third of the company and control two of the seven seats on the board. It is their hope that this sale will make the farms more self-sustaining, allowing farmers to build equity and capitalize their businesses. For more information, see www.intervale.org

In Montana, the **Missoula Urban Demonstration Project** loans all types of tools to residents – including power and hand tools, a woodworking shop, an apple press, a rototiller, an 8-hp chipper-shredder, and many more: www.mudproject.org/programs/index.htm

New and Updated Publications from ATTRA

Federal Resources for Sustainable Farming and Ranching (IP294)

Oilseed Processing for Small-Scale Producers (IP134)

Pasture, Rangeland, and Grazing Management (IP306)

Strawberries: Organic and IPM Options (IP046)

Transgenic Crops (IP189)

Suppliers of Seed for Certified Organic Production (Online only, RL040)
This searchable database on the ATTRA Web site has been extensively updated.



Introducing an Important Pest Management Resource for Farmers and Ranchers

NCAT's **Ecological Pest Management Database** is a user-friendly new tool for farmers and others who want to manage pests using least-toxic methods. This searchable online resource lists ways to manage specific pests. It includes information about reduced risk pesticides, such as their labels, active ingredients, manufacturer contact information, and what pests may be managed using the pesticide.

The database also provides techniques to prevent pests from becoming problems in the first place. With this new resource, growers can learn whether treatment options are approved for use on organically certified acreage.

The Ecological Pest Management Database highlights "biorational" pesticides. These pesticides have low non-target impacts, degrade into nontoxic components, and fall into the following categories:

- Microbial pesticides (formulations of viruses, bacteria, fungi, or nematodes)
- Pesticides derived from plants
- Various new types of pesticides, such as particle film barriers, pheromones, and compounds like Spinosad

A major breakthrough for sustainable agriculture, the database is now available on the ATTRA website: www.attra.ncat.org.

Hard-to-Find Equipment and Information about Livestock

Hoegger Goat Supply Company: Equipment such as dairy supplies and machinery, harnesses, and wagons for working goats. Fayetteville, Georgia; 800-221-4628; www.hoeggergoatsupply.com

Premier Supplies: Portable electric fencing and netting – including solar electric set-ups – for all livestock, plus sheep and goat supplies, and a website that explains clearly the practical pros and cons of various equipment. Washington, Iowa; 800-282-6631; www.premier1supplies.com

Small Farmers Journal: A voice for independent small family farmers, rural communities, and appropriate technologies, including animal-powered farming. PO Box 1627, Sisters, OR 97759; 800-876-2893; www.smallfarmersjournal.com

Stromberg's Chicks and Gamebirds Unlimited: Longtime suppliers of all kinds of chicks, eggs, birds, small animals, and the equipment needed to rear and manage them. Pine River, Minnesota; 218-587-2222; www.strombergschickens.com

Learn More about the Versatile Roller-Crimper

The roller-crimper, or knife roller, has proven effective at killing cover crops without herbicides. By rolling cover crops flat and crimping the stems, this implement allows farmers with no-till planters to plant directly into the field. It is not necessary to disk the ground first or to kill the cover crop with herbicide. To find out more, go to the ATTRA website "Question of the Week Archives" and search for "roller."

ATTRAnews

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Spring 2007
www.attra.ncat.org

ATTRAnews is the newsletter of the National Sustainable Agriculture Information Service. The newsletter is distributed free throughout the United States to farmers, ranchers, Cooperative Extension agents, educators, and others interested in sustainable agriculture. ATTRA is funded through the USDA Rural Business-Cooperative Service and is a project of the National Center for Appropriate Technology (NCAT), a private, non-profit organization that since 1976 has helped people by championing small-scale, local, and sustainable solutions to reduce poverty, promote healthy communities, and protect natural resources.

