ACRES, U.S.A. - A VOTE FOR ECO-AGRICULTURE - JANUARY 1990

WALLY THARP AND THE DIATOMACEOUS EARTH SCENE INTERVIEW:

Diatomaceous earth has been around - commercially speaking - at least as long as the eco-farming movement. In this interview, Wally Tharp tells about the background of this fantastic gift of nature. He also covers his own biography, hence a paucity of notes in this introduction. When people ask Wally Tharp where they can find him, he tells them to look it up in Acres U.S.A., where he always carries a commercial message. His phone is 505-247-3999, and he is willing to send literature, products or talk, the last as long as anyone is there to listen. With these things in mind, here was our opening question.

ACRES U.S.A. Mr. Tharp, we reported on diatomaceous earth in ACRES U.S.A. maybe 18 or 20 years ago. The product comes and goes. One company after another tries to make a go of it, and you seem to be the first one to look like you have some staying power. Are you a Svengali? Is this an illusion? Will diatomaceous earth go away again?

Tharp. It so happens that this is the second time I have successfully marketed the product. I went to work as an independent contractor with the original produce of DE - Phoenix Gems - which was having a rough financial time. The record will show that within 90 days, things began to turn around and within three years we were moving over a million and a half dollars worth per month and had distributors in 44 states. Remember that this program was made when there was only the beginnings of an environmental movement. Very few people were aware of the consequences of unrestricted use of organic synthetic pesticides and herbicides. In our college only a small minority of educators were calling for restraint. The brunt of the effort had to come from the various environmental and conservation groups. What we had to do was sell diatomaceous earth strictly on its merits in competition with the synthetic chemicals. We received little if any help from the agricultural establishment - state agriculture departments, county agents and most university ag schools. Despite this, we were making tremendous strides. When the president of Phoenix Gems died in 1968, a battle for control ensued, and before long the company went into bankruptcy.

ACRES U.S.A. We watched and monitored that, and of course nothing was happening at the exact time there was a tremendous demand for some way to deal with insect problems without using chemicals of organic syntheses. What, exactly, is diatomaceous earth?

Tharp. In June 1979, National Geographic wrote an eight-page article on the subject. It evokes very interesting reading. If any of your readers would like a copy, we'd be happy to furnish it if they send

a postcard, self-addressed envelope. Diatoms are simply one-celled algae and are found in all water, fresh or salt, on this planet. They are the basic food for all sea organisms. When they die their skeletal remains are deposited on the sea or lake floor, at times in massive layers. It is in these former lakebeds or seabeds that we find our fossilized material.

ACRES U.S.A And this is what you mine?

Tharp. Yes. There are a great many deposits in the United States. They vary greatly in age and quality of material. Also because there are a number of species of diatoms, each having its own unique shape and skeletal arrangement, there are a great many differences in physical forms when viewed under the scanning electronic microscope. When you examine diatomaceous earth under the electronic microscope you can readily see these differences and also get an idea of the various impurities and the extent of skeletal deterioration of the deposit. Thus we find that there are only three deposits that I know of that are suitable for our purposes. Many of the others are salt water deposits and are of no value to us.

ACRES U.S.A. Some years ago, this reporter edited a book called A Thousand Million Years on the Colorado Plateau, Land of Uranium, and what we were detailing was the sea life found in the high country of the four corners - Arizona, Nevada, Colorado, New Mexico. People do not realize that those areas were once under the ocean, and the area where you are mining the diatomaceous earth was also under the ocean at one time. Isn't that correct?

Tharp. The area where our DE is mined was once a lake bed. It is a fresh water deposit, and is not located in the four corners but in Nevada.

ACRES U.S.A Was it scrubbed after the fact by fresh water, or was it built in fresh water?

Tharp. This deposit was built in fresh water. Fresh water diatoms evidently are harder than salt water diatoms and have a hardness number of 7 on a scale that puts a diamond at 9. It is this hardness factor that enables a diatom particle to abrade the waxy outer coating of an insect's body and absorb its body moisture, causing death.

ACRES U.S.A. If we put this diatom under a microscope and projected it on a screen, it would look like the jagged edge of glass that has been smashed?

Tharp. Strangely enough the answer is No. If you look at the DE we use at one thousand or more magnification you will find it cylindrical in shape, hollow inside and with a latticelike shell, that looks

much like a sieve. It is this structure that gives us the greatly increased surface to absorb moisture. In contrast to many other DE deposits, you will find very little in the way of impurities such as various clays clogging the shells or their interiors. There are remarkably few fractured skeletons in Permaguard's DE. But this seemingly innocuous physical form still has the ability to effectively abrade the insect's outer shell or its insides if they ingest it.

ACRES U.S.A. So you put this into the wheat or dust the plant, the insects come in contact with it, and contact eviscerates, them, so to speak?

Tharp. That's right. It is very odd but this material kills insects in a number of different ways, some of which I don't even pretend to understand.

ACRES U.S.A. Can you tell us what some of those ways are?

Tharp. Here goes.

1. Laceration of the chitin in the bellows of the joint
2. Severance of the muscles of the thacheole valve.
3. Perforation of the walls of the trachea and thracheoles.
4. Mandibular damage by abrasion.
5. Esophageal laceration.
6. Peritonitis due to perforations in the walls of the digestive system.
7. Severance of the constrictive muscles of the malpigian system.
8. Absorption of the wax, allowing dehydration.
9. Starvation of the larvae.

Let's expand on what I just related to you. The DE particle scrapes the body of the insect causing a loss of fluid. An insect does not have blood vessels as do higher forms of life. They have a shell that is semi-porous - more or less like unglazed porcelain. In order to keep their body fluids from evaporating through their shells, nature puts a waxy coating on the outside. If you were to take a brand new shoe shine and put diatomaceous earth on one shoe and leave it for 20 minutes and blow it off, you would have no shine. The DE would have absorbed the wax. You have much the same situation with insects. Once the protective coating is gone, the insects slowly dehydrate. *National Geographic* tells about cockroaches that died in 12 hours after exposure. DE also stops up the breathing apparatus of insects. They ingest it and it lacerates them inside.

ACRES U.S.A. And yet this same material, if we inhale it, really doesn't damage a person all that much?

Tharp. I think the best way for me to answer your question if to quote an article on diatomaceous earth which appeared in *Common Sense Pest Control Quarterly*, volume III, number 1, Winter 1987. The *Pest Control Quarterly* is published by the Bio-integral Resource Center (BIRC) headquartered in Berkley, California. BIRC, a non-profit corporation formed in 1979, was established to provide practical information on non- or least toxic methods of managing pests. BIRC's advisory board is drawn from a wide range of environmentally oriented entomologists, medical doctors and agriculturalists not only from the United States but the Philippines, China, the Netherlands and Canada. We are working with BIRC through our Arizona distributor, Pristine Products, furnishing them material and dusting equipment for use on their experimental farm near Sacramento. Here's the quote:

"Both swimming pool grade and natural diatomaceous earth come from the same fossil sources, but they are produced differently. The natural grades are mined, dried, ground, sifted and bagged. The pool grade is chemically treated and partially melted and consequently contains crystalline silica which can be a respiratory hazard. Thus, it is imperative that only natural diatomaceous earth be used for insect control. This non-crystalline silica is not a hazard as the human body apparently cannot dissolve it.

"Silicosis refers to lung contamination and irritation by crystalline or free silica (SiO_2) Crystalline describes the orientation of the SiO_2 molecules which occur in a fixed pattern in contrast to the nonperiodic, random molecular arrangement defined as amorphous. Exposure to free silica is an occupational hazard to workers."

The World Health Organization cautions that DE with a crystalline (free) silica content over 3% is dangerous for ingestion by humans or animals. Permaguard DE has less than 1% free silica. Swimming pool DE ranges from 60% to 70% free silica. There are very few deposits of DE that meet these free silica minimum standards. Because inhaling any dust is not a good idea our label recommends the use of a simple dust mark.

ACRES U.S.A. Well, it must be somewhat safe because a lot of farmers feed it to their animals.

Tharp. Yes, that's true. As a matter of fact, nearly half of our total volume of sales is added to animal feed. We think this is quite remarkable - inasmuch as our label states that this is fossil shell flower (sic) and is sold only as an anti-caking agent. A lot of our customers have fed DE for a long time and are evidently satisfied that it does something positive for their animals. We feel particularly gratified that several agricultural schools are showing a lot of interest in working with us on feeding tests. For instance

In cooperation with the University of Arizona and the Maricopa County Cooperative Extension Service, a very detailed dairy feeding program has started. Starting with calves it will encompass heifers and the milking cow. The goals are to evaluate weight and production gains and to ascertain optimum rates of usage. In addition the effects of feeding DE on the control of flies in the manure will be studied. Other tests are being run at Florida State University. There are many feed uses of DE that we want to explore. Does DE have a role to play in eliminating scours in calves? Does it affect animal metabolism? We want to study its role in other animals, horses, pigs, sheep, poultry and domestic pets.

ACRES U.S.A. What does diatomaceous earth do about parasites?

Tharp. The effects of DE on intestinal parasites is one area that we hope to explore. Until we get some really substantial clinical evidence that internal parasites are adversely affected by DE, we are not going to make any claims in that regard, even if our customers claim it works.

ACRES U.S.A. It seems to us a human being could use diatomaceous earth too. Would it hurt a human being as far as you know?

Tharp. Insofar as diatomaceous earth harming humans if ingested, you would have to determine just what kind of DE you are taking internally. If it contains more than 3% free silica it is dangerous, according to World Health Organization studies. It would also be very important to know if the DE was processed under safe and sanitary conditions. However, ours is a food grade.

ACRES U.S.A. Is there any research on human beings that satisfies the doubting Thomases, the people who like to rely on the university folk to comfort them in what they think?

Tharp. At the present time I am not aware of any research being done on this matter. We do not recommend even our own DE for human consumption.

ACRES U.S.A. Well, we've always said that if you want some real staying power in business, large or small, you have to capitalize on your savings and expand on your earnings, and if you are doing that, then the banks won't get you. Is that what you've done?

Tharp. You know, the American farmer who is surviving has to be one sharp cookie. And his sharpness starts by not getting into debt too deep. That's number one. Number two is, he quits doing what all the agricultural colleges tell him to do. If you keep doing what everybody else does, then you keep getting what everybody gets. You've said it - *What most people think and do has gotta be wrong*! In our case, we learn more from our customers than we teach them.

ACRES U.S.A. What about beef animals?

Tharp. This is one area that we think has a lot of promise. There are a lot of people who have been using DE for beef cattle and have been doing it for a long time. But here again we know that we still have to have the clinical data before we can really market the material. And one thing has to be made clear. The quality of the DE used is vitally important. Just using diatomaceous earth in a generic sense if not good research.

ACRES U.S.A. We've been told by nutritionists that the universal problem, human and animal, is parasitism. We act like it doesn't exist in the United States, but too many people literally are suffering from it, and those animals you've described sound very much like they really were loaded?

Tharp. If we act like parasitism doesn't exist in the United States, a lot of veterinary suppliers are selling a lot of worming compounds under false pretenses. There are a number of ways to combat parasites - like controlling insect vectors that transmit many parasites. We think if you can do it safely you've accomplished a great deal -and we can see no reason why the same line of thinking should not be applied to humans.

ACRES U.S.A. Even an animal that looks healthy can be subclinically ill. What you did with those hogs and with those horses and cattle was to attack the internal parasite problem. You did it with the diatomaceous earth. Is that the meaning of what you are telling us?

Tharp. That's what I am telling you. We've only heard of one internal parasite on horses. We've had two vets say that there is one worm called Strongyles that diatomaceous earth does not kill, but it cleans out all the others. We have had treated beef cows go through slaughter. An affidavit was made to the effect that there

were absolutely no internal parasites. Incidentally, the University of Illinois School of Veterinary Medicine says nothing gets in the meat or the milk when diatomaceous earth is fed. In other words, all these things we know about and which we have evidence of, the regulatory agencies absolutely refuse to let us put anything on the label. They won't even let us put out the fact that diatomaceous earth has trace minerals.

ACRES U.S.A. We have around us the mentality exhibited in the John Steinbeck novel, *The Moon is Down*. The fellow failed to show up for work one day and the Nazi asked him, *Why weren't you at work yesterday?* The fellow said, *No.* so the Nazi said, *Well then, how do you know you were sick*? This is kind of the mentality that we have to deal with when suppliers ask for the imprimatur of this properly credentialed white-coated individual. This amounts to legislating biology, doesn't it?

Tharp. Let me answer your question this way. If we are to successfully market our DE for parasite control we have to be able to substantiate our claims. We are very much aware of the ground rules laid down by the various state and federal regulatory agencies. And if we are to survive we have to abide by their rules. We think over the long haul that we can. The one factor in our favor is this - like *Acres U.S.A.*, we've been a voice in the wilderness for a long time, but we can feel the groundswell for real progress and it's running in our favor.

ACRES U.S.A. And of course, their attitude, John Steinbeck style, is if you hit a bug with a hammer, then the hammer is an insecticide.

Tharp. Yes, Yes! EPA now has fly swatters on the list. We now have to not only register our insecticide, but we have to register the applicators, and a fly swatter is listed. We are now in the process of trying to conform to those rules. We didn't even know about these rules and suddenly we find that every applicator we sell has been in violation. We have something that no one else has. We have an electronic nozzle which we blow our diatomaceous earth through which puts a negative charge on the particles of dust. This causes it to cover the leaves of the plant on top and bottom so tightly that a 100 mile an hour wind won't take it off.

ACRES U.S.A. Some time ago, we wrote an article on an electronic applicator for applying your product. Did you ever get it on sale?

Tharp. Yes, we have been marketing it all over the place. We've equipped aircraft with the electronics. We have eight row tractor mounted units. We have back-pack units. We have electric units, and we sell a lot of electric units for fly control around dairy barns and horse stables.

ACRES U.S.A. Applicators aside, we have other problems. We have firearms. What can diatomaceous earth do for or to firearms?

Tharp. To answer this question we have to look at another product we market that uses DE as a basic ingredient to which we bond natural pyrethrin. The product we call Home Guard has .2% natural pyrethrin and is labeled for the control of ants. And it works. Six or eight months ago, a fellow down in Florida called me and asked if this stuff could kill fireants. I told him the label says it kills ants and as far as I know big ants, little ants, red ants, black ants and fireants are all the same as far as killing them. I sent him a sample to try. He had 16 beds in his backyard and he couldn't even allow his children to touch the ground. He carried them from the car to the house and back. In three weeks he called me back and he said, You know, I don't have any more fireants. The best way to deal with a fireant bed is to take a stick and stir it up. They boil out by the millions right away. Next, you dust them liberally with the Home Guard and it eliminates them.

ACRES U.S.A. You stir up the bed as hard as you can with a good rod or stick, stand back, and then you fog the diatomaceous earth over what used to be the hill, and as they get that on them, they've had the course?

Tharp. Yes. Fireants die quicker than almost any other insect I have ever seen except perhaps flies, cockroaches and crickets. Other insects take longer - some up to an hour. Remember now that we are not talking about pure DE. We are talking about a product with natural pyrethrin and piperonyl butoxide, bonded to our amorphous DE.

ACRES U.S.A. What is it?

Tharp. Pyrethrin comes from a variety of chrysanthemum and is found in the head of the flower. Natural piperoynyl butoxide comes from sassafras. Because of limited supplies it has been synthesized. When combined with the natural pyrethrin it multiplies the effect of pyrethrin ten times. Pyrethrin has been used for many years - the first recorded use was in Persia, actually in Dalmatia in 1840. When you bond pyrethrin to DE you get a remarkable time release effect. The city of Tolleson, Arizona finds that a single application of Diacide Homeguard is effective up to six or seven months. At Kansas State University tests in the early 1970's showed the same material was almost as effective killing flies at the end of 65 days as it was on the first day of application. Normally, pyrethrin when used in a spray form lasts but a very few minutes at the most. In Arizona, automatic fly spray systems using it are used six to eight times per day. The bottom line is that Diacide Homeguard really conserves a very limited natural

resource - and while conserving it adequately does the job it's supposed to - killing insects.

ACRES U.S.A. This pyrethrin, it is grown in the United States or do you have to buy it from out of the country?

Tharp. We buy it in the United States, but the principle supplier is Kenya in Africa. Tanzania grows it and Ecuador grows it and the Chinese grow it.

ACRES U.S.A. Why can't we grow it here?

Tharp. We can grow pyrethrin in the U.S. Dr. Robert McDaniel, Department of Plant Sciences at the University of Arizona has been working on a pyrethrin growing project for nearly ten years. They have developed varieties with very high pyrethrin content. Also, varieties of uniform height and blooming season to facilitate mechanical harvesting. Also, optimum growing areas have been identified and it looks as if a domestic supply may be a reality within the next five years.

ACRES U.S.A. The other item you mentioned, piperonyl butoxide, originally came from what herb?

Tharp. Sassafras.

ACRES U.S.A. Why can't you get sassafras growers in the United States to produce for you?

Tharp. I have to admit that I have not looked into that.

ACRES U.S.A. If you had a grower who produced sassafras and could provide you, you certainly would buy from him?

Tharp. We would be glad to. It's just like the pyrethrin. They synthesize pyrethrin. I can get all that I want. We will not use the synthesized product because - first of all - it's toxic, whereas the natural pyrethrin is virtually harmless to all warm blooded life. On top of that, the insects become immune to the synthesized version. They cannot become immune to the natural. We don't know why.

ACRES U.S.A. The synthesized version is not the natural version, certainly. There is a difference. We may not know what the difference is but there are *unknown factors* that confer a difference.

Tharp. One explanation of the reason why natural pyrethrin keeps killing insects year after year is pretty simple - there are six compounds combining to form natural pyrethrin and because these will vary slightly the insect cannot adapt to the variations. The synthetics are unvarying in the makeup and thus an insect can develop an immunity to them.

ACRES U.S.A. Don't you have a rather bad rhetorical problem? For instance,

Frank Ford down at Arrowhead Mills, Hereford, Texas was enjoined by the government from using any of these kinds of approaches in the grains he was storing. In other words, the government seems to be in there protecting the other people, the ones who put toxic materials on the grain or who use certain gases, but you are not supposed to use diatomaceous earth?

Tharp. This is a fact. The original patent and the EPA registrations for grain storage with diatomaceous earth came way back in 1962.

ACRES U.S.A. So these are basically expired now?

Tharp. Oh yes, all the patents are expired. The only security we have is, number one, EPA Registration. No one else can just start something. They have to produce the data like they were starting from scratch. We have 12 EPA registrations that we bought through a bankruptcy proceeding. The next security we have is our formula for time release pyrethrin. No one else has that, and no one else has a right to it. Back to the grain storage, I have probably 200 or 300 pages of reports mainly from Kansas State University in conjunction with the Department of Agriculture where they ran test after test after tests on diatomaceous earth protecting grain. Right here in front of me, I have a sample of grain that was put up in 1976, treated one time only and that grain is as fresh and clean as it can be. Grain gets stale and gets a musty smell, but not with diatomaceous earth in it. It has been said that diatomaceous earth, when you grind wheat into flour, you need not remove it because it is not considered to be a foreign material and actually it adds 14 trace minerals to your bread. It is the only insecticide that you can treat grain with one time and never ever have to treat it again. It keeps absolutely fresh and clean.

ACRES U.S.A. Let's move on to another thing that is very important to people growing crops, and that is the dusting of the material out in the field and charging the material so that it is ionically attached to the leaf. We had talked before about an applicator that had been developed and as a matter of fact, we read about these things 20 years ago. Now you have picked up on the idea. Where is the state of the art?

Tharp. Well, 25 years ago, when I first became acquainted with both diatomaceous earth and the applicators, there was a man in Mesa, Arizona who was building these things, and he was using radio tubes and the coil from a Model T car. I had been out selling the product and sometimes we had failure. I couldn't figure out what was wrong until finally I ran into him and he said I was not covering the leaves on the bottom side, and that's where most bugs get their lunch.

ACRES U.S.A. That's where the leaf breathes and takes in nutrients from the morning air?

Tharp. That's right. He shoed me a demonstration on his orange tree where he covered the leaves on both side. He pulled a leaf off and told me to blow it off. If you just blow diatomaceous earth on a plant and then let the wind blow on it, it just goes away. But when you put this charge on it, it is bonded so tight that a 100-mile an hour wind won't remove it. As long as it is there, it is repelling insects.

ACRES U.S.A. Is it nourishing the plant?

Tharp. Frankly, I don't know whether DE nourishes the plant or not. But I'm sure that it will not set the plant back as sometimes happens when synthetics are used. We have no scientific evidence that DE nourishes a plant.

ACRES U.S.A. What kind of experience have you logged in with fruit groves?

Tharp. Not very much. There are a number of people who have tried it. Kansas State did some very limited tests on trees and the results showed promise.

ACRES U.S.A. At Acres U.S.A. home base we have a considerate number of apple trees, and apple trees around a metro community have real problems because of the great tonnage of toxicity and pollution loaded into the air. The industries use the air as their private dumping ground and it's very tough on trees, especially fruit producing trees, if you are in the range of these dumping grounds. Next, Wally, we have a very pragmatic group of readers and they really aren't that interested in whether a guy is in a white coat and carrying a lined tablet and writing it down in certain columns or not. Let's just get down to the old jawbone stuff we used in the old days siting around the stove and trading ideas.

Tharp. I don't think there is any argument that air pollution is raising havoc with not only people but with plants exposed to them. All around us is graphic evidence - southern California, the Black Forest in Germany, and acid rain problem on eastern Canada and the U.S. I understand the Appalachians are also feeling these effects. I can only say that using DE and natural pyrethrin are not going to contribute to these problems.

ACRES U.S.A. Let us worry about that. Let's just get the information.

Tharp. O.K. What's the question?

ACRES U.S.A. The question is fruit groves, grape arbors, any experiences that you have had along that line, field crops aside. We know that you have had experiences with cotton and with milo and with corn and with things like that.

Tharp. Kansas State University worked on a number of tests involving insects that attacked truck crops. This was in 1971 and 1972. Very good results were achieved on aphids, asparagus beetles, Colorado potato beetles, cabbage looper, tomato hornworm and a number of other vegetable pests. Results were considered satisfactory. A number of organic growers are using the material. Remember, they were using DE plus pyrethrin.

ACRES U.S.A. That's the kind of thing we're after and that's what our readers want to know!

Tharp. What happened was that it took 11 days to get a new hatch on ours. In other words, it kept the bugs out five times longer. The experiences with fruit trees are pretty much like the one I related about the apple grower.

ACRES U.S.A. How does this applicator charge diatomaceous earth? You say it puts an electrostatic charge so that it makes the plant a magnet and attracts the particles so they cling to the leaf?

Tharp. You hit it just right. It makes the plant a magnet. We have nozzles and we have a needle in the middle of the nozzle and we put a 25,000-volt charge on that needle. As the powder goes through it goes through this ionized field and picks up a negative charge. It will attach itself to anything that is attached to the ground because the ground is the conductor. I tell you, from an airplane, it is the most astonishing sight that you have ever seen. I don't mean to tell you that every particle goes on that field. You cannot charge every particle. There is still a cloud of dust that moves off, but as it moves, it will find somewhere to land. For example, we had an alfalfa field and we had just been up to Utah, demonstrating to a bunch of apple people, and we were on our way home with only about 20 pounds of powder left. Our applicator was an eight-row tractor mounted unit made for orchards. The nozzles were pointing 45 degrees up. We stooped in a little town there to eat, rest and what not. It happened to be the alfalfa seed capital of the world. We got to talking to some old boys there, and they got to ribbing us about saying we had a nonpoisonous insecticide. There was a fellow there who said he had a field that we could use for proving what we said. We had to work half a day to alter those nozzles. We couldn't even turn them down. We could only turn them straight out. I told them we had 20 pounds of product and all we could do was go until it quit. We not only killed the bugs that were directly there, but three days later I called him to verify. He said, *You know, I really apologize for ribbing you and accusing you of being a con man.* He said there were no bugs there, but he didn't understand why there was a 45 degree angle down across where were also no bugs

but we didn't go down there. I said, *Do you remember that day? We had a stiff breeze and that was our drift*. He said, *Are you telling me that you can do that without even going through the field?* I said, *Listen, we have done a quarter section of wheat and never entered the field. We had a big blower on the back of a pickup and drove down the side and back again and let the prevailing breeze carry the diatomaceous earth*. I said, *We don't recommend this yet. We are not satisfied but we are working on developing units where you can do large areas with only one or two passes.*

ACRES U.S.A. If you do have drift and it toes over on the neighbor, at least it is not damaging. He, in fact, is getting a freebie.

Tharp. There are places where they just won't let you use the dust because of drift. Our product is registered and approved to be used as a wettable powder. I mentioned the apple grower in Ontario. That is what he used. He mixed it with water.

ACRES U.S.A. How small an applicator do you have?

Tharp. The smallest one is an electric unit that weighs about nine pounds. We sell it mainly for fly control around dairy barns and horse stables. We have smaller applicators, but they don't have the electronics.

ACRES U.S.A. Now that governmental agencies are becoming interested in getting rid of the poisons, are there any other people or organization interest in your products?

Tharp. I've already mentioned BIRC, Bio-Integral Resources Center of Berkley, California. Another non-product organization is the KERR Center for Sustainable Agriculture, Poteau, Oklahoma. They are planning on a number of projects involving poultry, sheep, as well as other uses.

ACRES U.S.A. What do you truly the future holds for your products?

Tharp. We have an amazing opportunity. The pesticide business in the United States is around $6 billion per year. With the EPA taking so many chemicals off the market, leaving the farmers to look for substitutes, we are standing ready. Our product line covers uses in the home, on animals for ticks and fleas, if fields and orchards, flies around dairy barns and horse stables, etc. and a grain protectant better than anything else. Our product is extremely effective, costs less to use, and very safe. And we have the only insecticide that is also approved to be added to animal feeds. How can we fail?