Life & the Sea: Sea Solids in Agriculture

When Dr. Maynard Murray's groundbreaking book "Sea Energy Agriculture" was published in 1976, the good doctor traveled to Kansas City, Missouri, and at Charles Walters' request, spoke to the ACRES USA Conference. His presentation, simply titled "Sea Solids," Murray explained the theories behind his discoveries during 30 years of research and experimentation, and his wish that his work be continued on in future generations for the purpose of improving human health. The following is an edited transcript of this historical speech.

There are about 380,000 people studying life and making a living thereby in the U.S., but no one really knows what life is. So physicians use biologists, and so forth. We still don't know what life really is all about. We do know some essential characteristics of life, however. Life is, of course, electrical. There can be no life without a transfer of electrical energy. In other words, each cell is a little battery that puts out a current. If a cell is unable to put out a current, it is dead and can never return to living tissue. Anything living alters its environment for its benefit in order that it may live and reproduce.

This is the difference between living and non-living tissue. Life is always contained in a cell. In other words, it's surrounded into a definite volume, not like inorganic things — it is always in a cell. Cells, of course, vary in size. The largest cell on earth is an ostrich egg. The smallest cell is a tiny bacteria. In warm-blooded animals, the reproductive cells are the largest and the smallest — in other words, the sperm cell is the smallest cell in the body of a human or any other mammal, and the egg cell is the largest. These cells are able to carry on the processes of life alone. They do not need anything except food from the outside. They can manufacture many of their food products. They can break down complex compounds and synthesize their own body tissues.

A virus, which is much smaller than the smallest bacteria, cannot do this, and they have to live within the cell. A cell, a living tissue, has to get its food by either concentrating or diluting its environment or altering it some way in order to make its environment part of its tissue. All of life is parasitic, with few exceptions. In fact, one living thing lives on another and so on all the way up and down the scale. The exception to this rule is plants. Plant life contains chlorophyll or some chlorophyll-like pigment. There are three different pigments by which plant cells can synthesize their own tissue out of simple inorganic things: chlorophyll, the pigment in blue-green algae, and the pigment in the retina of our eye. If that is contained by certain cells, it is with the aid of light, able to synthesize food and proteins, etc., out of simple inorganic materials.

Green plants, in other words, will not use organic materials. I think the organic farmer and gardener has one of the best things going for them except the name. They're doing exactly the right thing, but they're using the wrong name! I wish they hadn't done that, because you're not really feeding a plant "organic" material — it has to be broken down into inorganic material before the plant, the green plant, can use it. So if we'd just started with a little different name, it would have been more accurate, and people might have understood it better. Nevertheless, the idea of keeping all the organic tissue on the soil and let it be broken down by bacteria and fungi in the inorganic form for the plant is a commendable practice and very good.

Now, I say that plants can't use organic elements or tied-up elements, and animals can't use inorganic, or shouldn't. Salts, ordinary table salt, for example, are the only real inorganic compounds we take in. We know as doctors that salt for the most part is a toxic material, sodium chloride. It produces swelling in tissues, and your doctor will take you off of it if you have any swelling, heart disease, pregnancy, etc. He does this not knowing why, except for his awareness that salt produces swelling. The reason it produces swelling is because it's tied-up in an inorganic form, and you, being an animal, can't utilize it. If you take carrot juice, or many different vegetables, they contain sodium and chlorine that you can tolerate without any harmful effects whatsoever, if it's tied-up right, in an organic form.

Take iodine, for instance. We do take some inorganic iodine and form a potassium iodide in salt. Here too, the iodine shows an opposite effect to that produced when it's tied-up organically. If you eat organically tied-up iodine, it steps up your metabolism. If you take potassium iodide, salt, it's the compound we use to step down the metabolism. We do know, however, that inorganic iodine prevents you from having a certain type of toxic goiter. This of course, is probably due to the fact that iodine is indeed hooked-up organically in small doses in plant life in your intestine. In the same way we know that ruminant animals can tolerate large doses of inorganic salts, because the protozoa and bacteria in the stomachs of the ruminant animal can tie these things up.

We do the same thing with iron. If we take ferric chloride, which is an inorganic iron, we do not get the benefit of the iron as such. It has to be absorbed by the bacteria of the intestine, then released as an organic tie-up before we can utilize it. In other words, the idea that animals have to have organically tied-up elements is still true. We can prove that anytime that an animal is benefited by the ingestion of an inorganic substance. It is indeed, because it is made organic by the action of either the fermentative juices or bacterial life in the intestine.

Now, life on Earth started in the sea. In fact, your own blood, the plasma of your blood, is about one-fourth seawater. If you look at the trace elements in your blood plasma, it's almost the same chemical analysis as quarter-strength seawater.

Even today, 85 percent of the life on our planet is in the sea. If we're allowed to live without artificially killing ourselves off with atomic bombs and so forth, then we must know that in the future life on Earth will also end in the sea. Why is this so? The answer is simple. Number one: the sea receives all of the elements washed off the land. This is a tremendous amount of nutrition, leaving the land and going into the sea. Because the sea is around neutral or a little bit on the alkaline side, there are two elements that will not stay in solution — phosphorous and iron. Certain research and tests suggest that phosphorous will be the limiting element to life. In other words, life is dying at a tremendous rate. We don't realize it, but it is leaving the land at a tremendous rate, because of the lack of phosphorous.

Phosphorous forms salts very easily with iron and other things and if in an alkaline solution or even neutral solution, it will go out of solution and form a very, very insoluble salt. Now this is taking place in the sea. We're losing phosphorous in tremendous amounts. And the only way the phosphorous is brought back to the soil is by bird droppings, which amounts only to about 1 to 3 percent of what is lost in the sea.

Phosphorous is one of the elements that is absolutely essential for all life, both plant and animal. So until we do learn to recover this lost element, we can look forward to the time when all life on Earth will quit and not go on. Simply because one of the 92 elements has become insoluble, unusable for living processes. So if you want to make money, invest in phosphorous, I would think, because the future is there — it has to be.

Because of all of these things, life started and is still more abundant in the sea, and life will end in the sea. Of course, I chose many, many years ago — more than I like to admit — to begin using sea solids for fertilizer. People turn up their eyebrows when they hear this, because I do not take out the sodium chloride. We use everything — all of the traces of 92 elements found in the universe actually are in our ocean. We use them all. We spread them on the soil. We use from 250 pounds to as high as 2,200 pounds of total sea solids per acre. We also grow many things in hydroponic solution using seawater. We have to add of course some NPK to the seawater, because land animals and plants have become acclimated to higher concentrations of NPK than is in the sea.

We've discussed phosphorous, but now let's consider nitrogen — the sea is a place that does fix the nitrogen. We talk about our plants fixing nitrogen out here by electrolysis — that's nothing compared to what nature does through bacteria! Lightning and other phenomena fix nitrogen too, but the bacteria in the sea are the main sources of the fixation of nitrogen. Their food source is the sea. So if you use the sea solids on the soil, you gradually build up nitrogen in your soil year after year, because these bacteria will actually live in your soil then. You'll get to the place where you don't need nitrogen supplements at all on your soil, because the bacteria will do it for you, just as it does in the sea.

Remember, 72 percent of the Earth's surface is sea. You never heard of a sea mammal having diabetes, arthritis, cancer or malnutrition, did you? I never did. It just doesn't happen. There are no hospitals in 72 percent of the Earth, you see. It sounds logical that maybe there's something in the sea that mean something health-wise, doesn't it? Many years ago we started to work out the amount of sea solids that could be used both in hydroponic solution or spread on the soil. After many years of trial and error, we did work it out, and now we've been able to grow any crop that we've ever tried on soil or solution containing total sea solids — sodium chloride and all.

My interest in this thing was to find out if I could grow a plant that was healthier and better to feed to animals — in other words, fertilization that would make the plants healthier. I think it was 1970 when the corn blight swept our country here. We could see in the fields with sea solids amendment right to the row where the corn was absolutely immune to the blight. Now we do the same thing with corn smut, a fungus of corn. You can see right up to the row where you put the sea solids. This works not only with corn, but also with many other crops.

We've worked with viral diseases — for example Tobacco Mosaic Virus, Tomato Mosaic Virus, Peachtree "curly leaf" — and find that we can produce a plant that is immune to them. We've had some nice results. We have also built up resistance very nicely to crown rusts, corn smut, etc.

How about bacterial infections? Center rot in turnips is a good thing to experiment with, because it's caused by staph infections — same kind of a bug that produces boils and staph pneumonia. We can indeed build up significant immunity to staph infections, viral and fungal infections in plants.

This is all very nice, but what happens when we feed these plants to animals? When we grow corn, wheat, oats, etc., and feed them to animals experimentally, we do see some changes that are very interesting, and we think are quite all right. We are at the present time and have in the past experimented with animals with cancer.

You have to be very careful before you publish anything on cancer prevention or cure, because, as we know, in science there can be a lot of flukes. One thing can happen one time, but the next time it won't happen quite that way. A common experimental animal is the C3H mouse, which spontaneously gets from 97 to 100 percent cancer of the breast. By feeding C3H mice food grown with sea solids, we have been able to cut down cancer in the first generation from 97 to 55 percent. That's a significant drop. We seem to be able to do that almost invariably. Sometimes it'll be a little more that 55 percent. Now we are running more generations, and we are finding that with each generation we are building up more and more resistance to this one kind of cancer in mice.

We have also experimented with leukosis in chickens, what we call leukemia in people. There we get a significant drop just by feeding. The only variable is the fact that one part of the field has the sea solids on it, the other has ordinary fertilizer. The crops are harvested the same day, everything is ground the same day to prevent the loss of vitamins, and so forth. In other words, the only variable that we know of is this sea solid. In leukosis or leukemia in chickens, we have again shown a nice response, a nice resistance built up in the chicken to this kind of cancer, cancer of the white blood cells.

Sarcoma in chickens is another kind of cancer that kills very rapidly. If you inject the chicken with sarcoma, it will kill them in five days. We have not achieved any results at all using so-called Rous sarcoma chickens. I don't know why. We've fed our chickens two weeks before we gave them the sarcoma, give them the sarcoma, and they'd all be dead within five days. We feed them the regular food, give them the sarcoma, and they'd all be dead within five days. We haven't done one thing for them that we know of, but we still want to carry on, of course. And we will continue with this type of experimentation.

We have experimented with arthritis in rats. Now you probably know rheumatoid arthritis—I'm not saying that we can do this in human beings yet because we haven't but I can say that arthritis in rats can be cured. We cannot only cure the animal if he's got some of his tissue left in the joint, but we can also prevent arthritis in rats that are bred to get the disease. Just by feeding. Just by feeding. So you see what a tremendous thing proper nutrition is. I just think the farmers are the greatest. They are really the beginning of preventive medicine. The farm soil — that's where it starts; that's what it's all about.

We have fed other animals — pigs, cattle, etc. — food grown on sea solids. Let me tell you about a cow. I can't understand it, but if you grow green corn — with the sea solids and without — and cut it and toss it over the field for the cow to eat, they can nuzzle through a whole bunch of corn and invariably pick out the one that's grown on the sea solids. Why? I don't know. But they do the same if you grow grass or anything like that. They always choose the one that's grown on the sea solids, with the sea solid fertilizer. I don't know what sense they use, but they know how to get it. And they always do.

You may have heard that a gray horse always dies of a cancer but a black one never does. Interesting. But no one really knows why this is. In addition, the grayer the horse is, the faster he dies — the younger he dies of cancer, a certain kind, called melanotic melanoma. It's a pigment producing cancer that can arise in a human being from a birthmark or a mole. That's the kind of a cancer a gray horse gets, but a black one never does.

In analyzing their blood, you do indeed find that there are minute, very minute differences in the amount of manganese that the gray and the black horse have, which could explain this business of why one gets cancer and the other doesn't at all. We do know that when we get gray hair, it's not because our hair turns to silver. It's because it loses silver. Gray hair has less silver and less manganese in it than "normal" colored hair. We know that aging does produce chemical changes in our body, and that brings me to what really interests us in our overall experiment.

We've got some experiments going using 8,000 acres of land. Hopefully we're going to increase that to around 25,000 acres using sea solids. If we do, we're going to divide a children's home containing 1,000 kids. We're going to start feeding half of them sea solid foods and half regular and run a longitudinal study on these kids to see what change we can produce — number of colds, weight gain, IQ, etc. We have done some superficial experiments with animals in which we've seen a small increase in intelligence. You may know that by injecting DNA, this chemical in the nucleus of an animal, you can educate an animal. You can also extract this education and give it by injection to another animal. We're just starting that kind of work.

Now as you probably know, if I take a piece of my tissue and put it in tissue culture, I can grow it, and it will divide 50 times. In other words, one cell will produce two, two will produce four, etc. Regardless of what we've tried, we have not been able to cause more than 50 reproductions of cells. The number of reproductions varies with different kinds of animals: a mouse, 17; a rat, 23; human being, 50; and so forth. It seems strange that this happens on land but doesn't happen in the sea. You take a sperm whale that's 60 to 100 years of age, but this whale's cells will keep right on multiplying. Seals, all warm-blooded animals in the sea will do this. All cold-blooded animals that we've tested in the sea do so.

Take a sea trout, for instance, which never gets cancer. If you take his tissue and put it in tissue culture, it just keeps dividing and dividing. On the other hand, with freshwater trout in Minnesota, Wisconsin, etc. — as many as 60 percent of them have cancer of the liver — in tissue culture medium, their tissue stops dividing at 23 to 27 times. His first cousin in the sea never stops. So far we've found that the tissues of sea animals, both warm- and cold-blooded, never stop multiplying in tissue culture. No cancer has ever been found in the sea — yet.

Their relatives on land, of course, have cancer very often. This is true of all so-called infectious diseases by virus, bacteria and fungi. It is for that reason that we have carried on this research. We're continuing to do so.