Interview

Ralph Frederick,

Metam specialist, AMVAC Chemical Corp.

By Joe Kertzman, managing editor, *Badger Common'Tater*

NAME: Ralph Frederick

TITLE: Metam specialist

COMPANY: AMVAC Chemical Corporation

LOCATION: Newport Beach, CA

HOMETOWN: Duluth, MN

YEARS IN PRESENT POSITION: 28 years with AMVAC, 9 months in current position

PREVIOUS EMPLOYMENT: Sales rep for Buckman Laboratories and Research Designed for Agriculture, conducting research in southern California and Arizona

SCHOOLING: Bachelor of Science degree in Agronomy, Colorado State University, Fort Collins, CO

ACTIVITIES/ORGANIZATIONS: WPVGA Associate Division member, and associate member of the Northern Potato Growers Association

FAMILY: Wife, Nanette, married for 24 years; daughter, Sophie (23); two stepchildren, Nic (47) and Kristina (43); and seven grandchildren

HOBBIES: Traveling with Nanette, fishing with friends and grandkids, mushroom hunting, and gardening

Founded in 1969, AMVAC Chemical Corporation has grown from a regional contract manufacturer of agricultural chemicals to developing, manufacturing and marketing products for agricultural use.

Today, AMVAC owns and operates six manufacturing facilities in the United States and Mexico. Headquartered in the U.S., the company is a solutions provider for global agriculture committed to technology, innovation, and sustainability.

The company focuses on four innovation platforms: proven chemistries, precision agriculture, GreenSolutions, and sustainability solutions for plant and soil health.

AMVAC is especially renowned for soil fumigants and corn insecticides and has most recently had a key focus on biologicals.

Crop protection products include K-PAM® HL™ and VAPAM® HL™ soil fumigants; BLOCKER® fungicide; Mocap® nematicide; AZTEC® insecticide; and SmartBlock® plant growth regulator, among a host of other inputs and applications.

AMVAC
An American Vanguard Company

AMVAC expanded its presence into the biological products markets, currently under its umbrella brand GreenSolutions. Biological sales now comprise approximately 10% of total AMVAC sales, and all AMVAC operating businesses have dedicated resources targeting the sales of biological products.

Above: AMVAC Metam Specialist Ralph Frederick checks potato stem counts at the Hancock Agricultural Research Station (HARS) where he's conducting a study using Rejuvenate, a growth regulator, to reduce weak, excessive stems in potatoes. He theorizes that, if growers can better control stem numbers, they may not need as much fertilizer but would still be able to maintain high yields. AMVAC donates crop and potato storage protection products to HARS annually and has for decades.

Ralph Frederick, currently a Metam specialist based in Duluth, Minnesota, has been with AMVAC for 28 years and is known to many Wisconsin potato and vegetable growers and industry professionals.

Have you always been a Metam (Vapam and K-PAM HL) specialist for the U.S. and Canada, or how has your career progressed? I started as a technical sales rep with territory in the Midwest. Over the years, as AMVAC has grown, my territory and product line that I cover have changed several times, but I've always been rooted in the potato and vegetable industry.

My new role as a Metam specialist

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Above: Soil fumigation rigs, such as the one at top-left, are set up to apply Vapam. They can be configured in many ways and with several types of shanks, discs and points.

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for the U.S. and Canada is an exciting one. It's fascinating to work with different production areas and see how production practices vary around North America.

How has AMVAC progressed during that same time and adjusted to changes in the marketplace? Twenty-eight years is a long time, and there have been a lot of changes in my time with the company. When I was hired on, AMVAC had just purchased the Vapam label from Zeneca, and overnight AMVAC nearly doubled in size.

That can be a challenge when competing in a global market, but we've found a way to make it work. I've seen the company grow from about $30 million to over a half-billion dollars in sales. Much of that growth has taken place as we entered the corn and soybean markets and increased our international presence.

We increased our manufacturing capabilities in the United States from one plant in Los Angeles to now having five manufacturing and formulation facilities in the United States and one in Mexico.

AMVAC Chemical Corporation owns and operates six manufacturing facilities in the United States and Mexico, including these two in Axis, Alabama, and Clackamas, Oregon.

As products come and go in the industry, it has been great to have Vapam as a constant quality offering the entire time. Vapam has been around for over 70 years.

I believe you have an agronomy degree—what do you feel your strengths are, particularly in working with potato and vegetable growers? That's correct. I received my BS in Agronomy from Colorado State University in Fort Collins. I guess I feel my biggest strength is just listening to the concerns of dealers and growers and hopefully offering a realistic solution to address them.

No two areas are the same and growers use different production practices, so my hope is to bring something valuable to the table that they can use.

As a Metam specialist, I take it you're focused on helping growers with AMVAC's soil fumigant products. What pests, diseases and weeds do they control? My primary focus is on supporting growers with their Metam needs through Vapam and K-PAM. Both products suppress soilborne diseases, nematodes and weeds.

Each of these is as significant a threat now as when I first started. Rates and application methods vary across the country, but one thing remains constant and that is the value of Metam in giving growers a solid foundation on which to start their growing season.

Each region of the country has specific needs, and I enjoy traveling all over North America offering insight on how a grower can best apply Metam to maximize returns.

Is Vapam part of a bigger crop protection program, and if so, what other products do you introduce potato and vegetable growers to in a typical crop year? I consider Vapam and soil fumigation a foundation practice. If diseases, nematodes or weeds are left unchecked, any of them can shorten the life or reduce the potential of a high value crop in a very meaningful way.

Above: Ralph Frederick says he feels that fumigation is a foundation program for many potato and vegetable crops, and biofumigants certainly have a place in any integrated pest management program.

For example, if you have a pest problem in alfalfa or corn, you may face reduced yield and profit. However, if you have a nematode or disease issue in potatoes, you could potentially face rejection of the entire crop, and a high value crop to be sure.

Once the foundation for a successful crop is established, we also have BLOCKER soil fungicide for suppression of common scab and

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Rhizoctonia.

Along with a couple of biological products, iNvigorate® reintroduces soil microbes to farmland and B Sure®, which is an amino acid product, helps the crop through stressful periods. Then, once the potatoes go into storage, SmartBlock can be used to help control sprouts.

Why is fumigation necessary, and how does it affect microbial activity in the soil? This is a terrific question. In recent years, we are getting a better handle on understanding what is going on with the microbial population of soil after fumigation.

Soil fumigation is necessary, because without it, we know the negative effects of nematode pressure and early die can be significant.

As for microbial activity, it has long been asserted that fumigation kills everything or sterilizes both pest and microbial activity, but what we've found is that it's for a short time and the recovery of beneficial organisms is near miraculous. This helps explain the yield benefits associated with using Vapam.

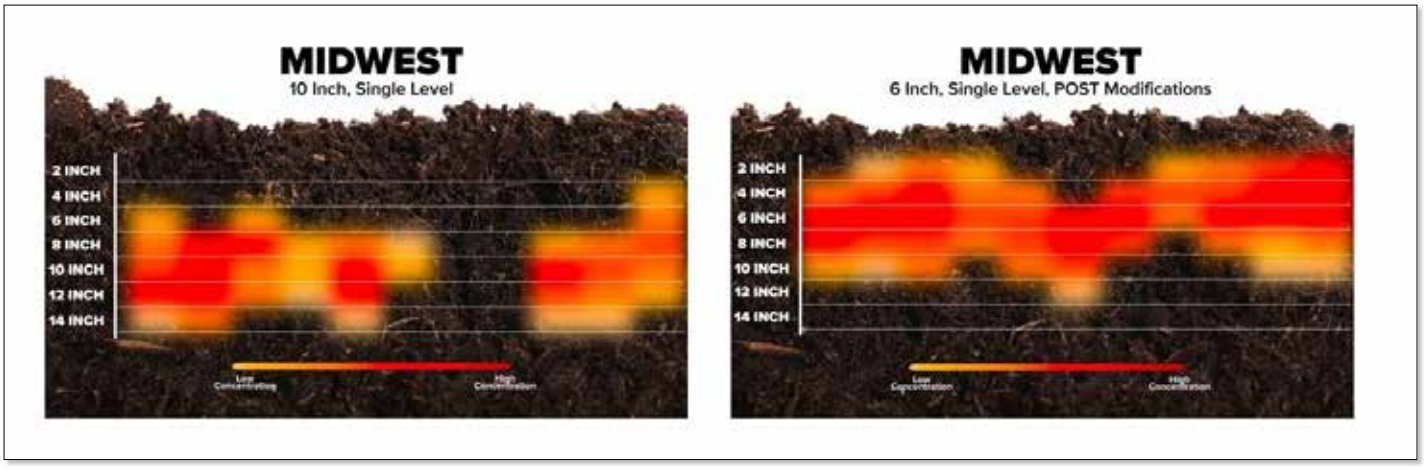
If the soil were sterilized, or microbial activity permanently reduced, how do you explain such consistent benefits over the decades? The answer is that soil fumigation is simply buying enough time for a crop to be grown successfully before pest populations rebuild.

Is there maintenance or calibration necessary with fumigation rigs, and are the rigs different from spray rigs? There truly is not a lot of difference between your spray rigs and a fumigation rig. They both have nozzles, and we are trying to apply a product as evenly as possible over a given area.

The difference with the fumigation rig is that we are applying a product under the soil surface and we haven't been able to see if we are applying it evenly.

I will be honest. In the past, we would calibrate fumigation rigs to make sure we were putting out the right rate, but we had little ability to make sure we were placing the Vapam in the right spot to optimize the performance of the product.

We now have equipment called the MiniRAE, which is a wireless, handheld photoionization detector that can show us the spray and injection patterns of the different rigs and where exactly the MITC



In the past, Ralph Frederick admits he would calibrate fumigation rigs to make sure he was putting out the correct product rate but had little ability to make sure he was placing the Vapam in the right spot to optimize its performance. AMVAC now has equipment called the MiniRAE, a wireless, handheld photoionization detector that can show the spray and injection patterns of different rigs and where exactly the MITC (methyl isothiocyanate) is moving within the soil profile. Frederick digs a trench in the field after fumigation and pokes some holes in the side of the dirt wall (shown on page 13). He can then use the MiniRAE to measure the amount of MITC in each of those holes. Using MiniRae readings, a heat map (above) shows pre- and post-modification to applications as a guide to more accurately place soil fumigant.

(methyl isothiocyanate) is moving within the soil profile. The results are fascinating.

When I first started selling fumigants, I relied on visual cues, such as weed suppression or through the collection of hundreds of samples, to help determine efficacy. We've sped this process up dramatically by utilizing a handheld MiniRAE to find inefficient application practices.

We can now adjust the equipment, if needed, to fix any application deficiencies prior to getting into the field and adjust our depth of application to match the pest we are after.

The label offers several ways to apply Vapam safely and efficiently, and we just want people to maximize the performance of their application, however it is made.

Can biofumigants fit into such a program then? I feel fumigation is your foundation program for many potatoes and vegetables, and biofumigants certainly have a place in any integrated pest management program.

Biofumigants can indeed add value in specific situations, but maybe not all, especially if disease pressure is high or the grower is raising Verticillium wilt-susceptible varieties or is in a situation where he doesn't have the opportunity to grow enough biomass for a biofumigant to have much of an effect.

We're always working with growers to find areas where the best approach is taken for their needs. As you can imagine, because soil fumigation is a significant investment in time, energy and cost, there has been no shortage of effort to reduce or eliminate it in the last decade.

Through competing products, the desire to reduce the amount of active ingredients applied to soils, and the push towards biological products, fumigation is in the crosshairs of many interested parties. Yet surprisingly, we find that Metam still holds its value for the grower.

Have the methods of controlling, say, Verticillium or nematodes changed over the years, and if so, how? We're talking about significant use, millions of gallons of crop protection product applied per year, for over 50 years. In the early days, most applications went through the pivot as chemigation. Wisconsin was the early adopter, in the late 1990's, of using ground applications to apply Vapam.

With buffer zones implemented in

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the early 2010's, most applications across the country flipped from water-run to ground applied.

Add to this that cultural practices have also changed in the last few decades, with plowing being a rare event, and we find that diseases tend to be concentrated more toward the soil surface.

We want to ensure that application and the placement of Vapam coincide with where the pest is located to maximize the efficacy of the product. By using a MiniRAE, we now have the capability to do that like never before.

What do you feel your main roles are in working with potato and vegetable growers? As the AMVAC Metam specialist, my role is to ensure that growers are getting the optimal benefit from their application. I will be spending a lot of time in fields this fall with a MiniRAE to ensure positive results.

This is a fantastic opportunity to better educate growers and applicators alike on the correct placement of Vapam to get the very best fumigation results possible while providing a safe and reliable approach to fumigation.

The last couple of years, I have been able to get out and work with different growers and applicators. Through my new role, that will be taken to a new level.

How can you best help them, and with what tools in your toolbox? With optimal fumigation, we will be giving them the strongest foundation on which to grow their potato crops. Through soil fumigation and

Above and Opposite Page: Once the foundation for a successful crop is established, AMVAC offers BLOCKER soil fungicide for suppression of common scab and Rhizoctonia. Then, once the potatoes go into storage, SmartBlock can be used to help control sprouts.

BLOCKER, we are preparing the land and giving them the best opportunity to maximize their return on those acres.

For example, I worked with a grower over the past couple of years employing a MiniRAE, and we found that there were some gaps in his application.

With the MiniRAE, I'll dig a trench in the field after fumigation and poke some holes in the side of the trench. I can then use the tool to measure the amount of MITC in each of those holes.

With that information, we get a picture of where the MITC is moving within the soil profile, and we can see if there are any flaws in the application and make necessary adjustments.

In this case, we were getting some skips between the shanks where we were not seeing any fumigant at

all. With a few adjustments to the nozzles and a little bigger sweep, we were able to close those gaps and get a more even application.

The MiniRAE also showed that, at their current depth of application, we were missing the area where the largest portion of the disease was at. We raised the application depth up a couple of inches, and with that adjustment, we were able to get an even application within the soil profile.

I've heard your name mentioned in conjunction with research at the Hancock Ag Research Station—how can you help growers through

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research, and any current projects you can talk about? Yes! I am always tinkering, which is why I love my job. My first job out of college was with a research and consulting company and I have always enjoyed research, but just not as a full-time job.

I have a great relationship with the station, and in addition to ongoing fumigation projects, this year I am working on a project to reduce soil nitrates, but in a very unconventional way.

Wisconsin and other states have identified soil nitrate concentrations as being high, and a solution is needed. We manufacture Rejuvenate, a growth regulator to reduce weak, excessive stems in potatoes.

The theory is that, if we can better control stem numbers, we may not need as much fertilizer, yet we would still be able to maintain our yield. I'm sure several approaches will be needed to help with this challenge, but I want to be part of the solution if I can.

What is your favorite part of the job, and do you ever have successes that make you proud of what you do? I feel that, in some small way, I have a part in helping growers with agricultural challenges that pop up. That may be improving their fumigation performance, issues with common scab, or other things that seem to pop up in Wisconsin and throughout North America.

If I'm able to bring an idea or solution to a grower's challenges, it is a very good day for me.

Aside from fumigation, what other areas of crop protection do AMVAC and you, personally, help growers with? AMVAC is an international company selling products all over the world, including corn root worm control products through our SmartBox system, Lock'N Load in 50 lb. bags, herbicides on corn, soybeans, and rice, and insecticides on cotton and other crops.

We have a line of biological products that can go on any crop, including our newest biologicals BioWake® for Corn and BioWake® for Soybeans. About the only crops I haven't worked with are rice and cotton.

Have you gotten to know growers and their kids and grandkids over the years? That I have. It is crazy to think that I have been in the business long enough to see the generational changes with farms. It has been a great opportunity and honor to have experienced this.

With these changes has also come the difference in the way information gets to individuals. So much information is at your fingertips now that the stops you make at growers' farms may not be as many but making them is important in keeping those relationships strong.

What are the biggest changes you see growers making in the crop protection realm? The changes over the years are numerous. I guess the biggest change in recent years has been the move to softer or biological chemistry. With a large focus on sustainability, growers are looking for ways to adapt their production practices to meet those goals.

What do you see growers doing correctly now that maybe they weren't 10 or 15 years ago? There are two big changes: the use of drones is probably the most visible, and then the focus on regenerative agriculture or sustainability.

Growers have always practiced regenerative agriculture, but there is a direct focus on it and sustainability

and trying to quantify what these different practices are bringing to the table can be challenging. How exactly does this practice affect my soil health and what are the parameters for measuring that?

What do you hope for the future of AMVAC and crop protection in general? AMVAC has an amazing number of talented, knowledgeable individuals working for us in the field and behind the scenes. I think we are well positioned to grow and provide products and services the agricultural industry is looking for in the future.

I believe that soil fumigation has far more benefits than people even realize. As when Temik was taken out of the market, we started seeing many additional pests surface that linked to that product.

I believe Vapam has lasted the test of time for a reason. It is of great value to the growers and suppresses numerous soil pests, and it really does fit into a regenerative agriculture or sustainability program. Growing more and better-quality potatoes on fewer acres is a good thing.

Is there anything I've missed that you'd like to add? I would like to add that I have been blessed to work in a job I love. It has been an honor to work all these years, and I hope to work a few more in an industry that has so many amazing individuals.

The growers, chemical dealers, and researchers I have met over the years and gotten a chance to know and work with have been the highlight of my career. BC'T

"Growing more and better-quality potatoes on fewer acres is a good thing."

– Ralph Frederick