



Insight

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Record Highs, Rainy Conditions Inundate U.S. Mint Crop

U.S. mint growers battled record heat and drought in the Pacific Northwest and summer rains in the Midwest. Still, growers apparently came through the conditions relatively unscathed, with most reporting near average crops.

Northwest

"We went through the storm and did alright," said Washington mint producer Todd Wheeler, who survived one of the driest springs on record and temperatures in late June that topped 115 degrees at one point. "In all honesty, it turned out better than we expected."

In Oregon's Willamette Valley, grower Scott Setniker said the heat may have even helped his yields. "Our first cutting had really good yields," Setniker said. "The heat just kind of pushed the oil a little sooner than normal."

Key to their ability to bring in decent crops was irrigation, and lots of it.



"Water management was thrown out the window," Wheeler said. "You just applied as much water as you possibly could. There was no management; just pour it on as much and as fast as you can."

"We started a little earlier than normal," Setniker said, noting he was watering his

mint stands by late April. "And then it was full throttle. You put on as much as you could and as fast as you could."

"My center pivot fields, where I could continually water, were probably my best fields," Setniker added. "We were getting water on them every 36 hours."

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Wheeler added that he had difficulties getting fertilizers and pesticides in the face of supply-chain disruptions brought on by COVID. “We had a lot of challenges getting products,” he said. “We finally got them, but you really had to be proactive and we had a few scares.”

“If it is a mild to moderate winter, there shouldn’t be any issue. But if we have a harder winter, where you don’t get a whole lot of snowfall and you have some really cold temperatures, it could be an issue.”

Doug Matthys,
Indiana Grower

Ultimately, Wheeler said, good soil moisture coming into the season played a big part in getting his crop to yield as well as it did.

Midwest

Drought conditions also inundated the Midwest through much of the spring and then, according to Michigan producer Doug Irrer, the spigot turned on.

“We had one of the driest springs on record,” Irrer said, “and the peppermint and spearmint were none too happy about it. Then, one day in late June, we picked up 4-1/2 inches of rain in less than a day, and the spigot has not turned off since.”

Indiana grower Doug Matthys reported similar conditions.

“There was probably a week at the end of June where we had a nice stretch of weather, then it got rainy and we got delayed, and that backed everything up,” Matthys said. “We had some scotch acres that we harvested a week to ten days later than we should have. And we had some

older peppermint fields that had some disease and weed pressure that should have been taken three weeks before they were, but, of course, you can’t be everywhere at once.

“The biggest thing is, our scotch yields probably suffered the most because of that,” Matthys said.

Irrer said the rains also backed up his harvest.

“The first cut was delayed and the second cut was also delayed because of that,” he said. Irrer said his yields were about average, noting that the first cutting came in below average and the second above average.

Matthys noted that his farm decided to forego second cuttings on the scotch fields that it was planning to leave in, and fortunately so, given that temperatures dipped into the 20s by early November.

“If we wouldn’t have taken off some of that mint, it would have left a pretty bare field on two-, three-year old scotch fields that we were banking on for next year,” he said.

The only fields they ended up second cutting were fields they were planning to take out, he said.

Idaho

In Idaho, temperatures didn’t hit the record highs they did in Oregon and Washington, but the heat came on earlier than usual and held steady, staying about 100 degrees for ten days or so in late-June and early July. Mint producer Tony Weitz said the high temperatures had a significant effect on marginal stands.

“The heat took its toll on some of the weaker stands,” Weitz said. “They were down considerably. The healthier mint withstood it. The weaker stuff started going backwards.

“One hundred degrees isn’t unusual,” he added. “It usually hits a little bit later though. It was much earlier this year and

that was a factor, not just on mint but on a lot of crops.”

Overall, he said, his mint yields came in just a little below average.

Good Regrowth

In looking ahead, growers generally said stands were getting good regrowth, but it looks like acres will be down in 2022.

Setniker said a wet cycle in October altered some of his planting plans. “We didn’t get quite the amount of acres planted that we wanted,” he said, “but it isn’t anything too detrimental.”

He added that crop was looking good going into winter. “We got good regrowth on everything,” he said.

The late harvest could still prove detrimental to the 2022 crop in Michigan, Irrer said, given that late harvests tend to result in weaker stands the following year. But, he said, the crop looked okay going into winter and he was hoping for a mild winter.

“If it is a mild to moderate winter, there shouldn’t be any issue,” he said. “But if we have a harder winter, where you don’t get a whole lot of snowfall and you have some really cold temperatures, it could be an issue.”

Matthys, too, said he was getting good regrowth. “We are setting ourselves pretty nicely for next year, both on the native and the scotch, and even the peppermint.”

The farm was, however, scaling back acres, he said.

“We probably are going to be cutting back 300 to 400 acres across the board, mostly because there are just no contracts and, of course, commodity prices are \$5.20 to \$5.50. So, you grow corn instead of mint,” Matthys said.

Most of the reduction will be in spearmint, he said, with maybe 100 acres of peppermint also coming out.

MIRC, WSU Researcher Working on Chlorpyrifos Issues

The MIRC is pitching in to help ensure the industry can export oil to Europe in the face of a crackdown by European regulators on imports from crops treated with chlorpyrifos.

The EU has banned use of chlorpyrifos products, like Lorsban, and has initiated an essential zero tolerance for chlorpyrifos residues on imports.

In working to alleviate EU regulator concerns, the International Federation of Essential Oil and Trade, or IFEAT, has been testing commodities in the essential oil and aroma trade, including mint, and earlier this year, IFEAT requested the MIRC help it collect samples of U.S. grown mint.

MIRC sent sample kits to three growers, one each in Oregon, Washington and Indiana, to fulfill the request. Growers collected samples of fresh cut mint, dried chopped mint and an oil sample all from the same field. The samples were sent to a lab in Belgium, where both the hay and

oil samples were tested for pesticide residue.

The oil is being screened for 250-plus products, according to Steve Salisbury, research and regulatory coordinator for the MIRC. No results were available as of press time.

Salisbury said he learned in talking to a representative of IFEAT that end users in Europe would like to purchase U.S. produced mint oil, but European Union regulatory authorities are essentially making it impossible to do so because of the residue issue.

“So, IFEAT is trying to be proactive in collecting practical residue data that they can use to illustrate to regulatory authorities that there is no concern here,” Salisbury said. “They are trying to generate a database of hard numbers based on residue samples to help them present the case for essential oil commodities around the world. They are sampling crops from all over and not just mint.”

In August, the U.S. EPA announced it is revoking tolerances of chlorpyrifos on all food use commodities as of February 28, 2022. The EU has already revoked tolerances there. The challenge with U.S. trade to the EU is that the U.S. mint industry has inventory from mint that could have been sprayed with chlorpyrifos in 2020 and 2021 that buyers are finding difficult to move into Europe. Also, as it stood as of press time, without further EPA action,

mint growers can still treat crops with existing stocks of chlorpyrifos. Doing so, however, limits export options. It is the hope that results from the IFEAT project will potentially alleviate this trade barrier for U.S. mint oil.

Residue Testing

WSU entomologist Doug Walsh, who doubts whether oil from crops treated with chlorpyrifos in the fall would in fact have

any residue of chlorpyrifos in double cut mint the following June, has joined in the effort to alleviate EU regulatory authorities of their concerns.

Walsh said that this fall, he treated all mint plots at the Irrigated Agriculture Research and Extension Center Prosser with Lorsban, and that he plans to have oil distilled from the mint tested for detectable residues this summer.

The default tolerance for any residues of chlorpyrifos in Europe is .01 parts per million, which is around the level of quantitation for most pesticide residue testing laboratories. Walsh believes mint treated with Lorsban in the spring for cutworms may not meet that essentially zero tolerance threshold, but that mint treated for mint root borer post-harvest in the previous fall, probably will.

Walsh also has been researching alternatives to chlorpyrifos. The research has field to yield positive results, and one product that is in the registration pipeline – the diamide insecticide cyantraniliprole – holds promise. Unfortunately, he said, to date he has not been able to get efficacy data because of low insect pressure in the trials he has conducted. On other crops, however, it has proven to be effective.

Cyantraniliprole comes in two formulations, Walsh said, one of which, Exeril, is designed as a foliar treatment, and the other, Verimark, which could be applied through an irrigation system. The hope, he said, is cyantraniliprole will perform better than the diamide insecticide currently registered in mint, chlorantraniliprole, or Coragen.



Doug Walsh



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“In the real world, where growers are applying Coragen and working with it, it is inconsistent,” he said. “And these are good growers and I know they know what they are doing and they still have inconsistency.”

Walsh said he didn’t know why Coragen hasn’t been consistent. “I wish I could tell you that,” he said. “I’ve had occasions where you can tell it worked like a charm and there are times where it just doesn’t seem to do much.”

Both Coragen and cyantraniliprole are looked upon favorably in the EU, Walsh said, due to their favorable

environmental and toxicological qualities.

Walsh also is looking at a pheromone disrupter, Trece, as an alternative to Lorsban. The idea there, he said, is to try and initiate a mating confusion program by putting out multiple pheromone dispensers in a field.

The pheromone was very effective at attracting mint root borers in monitoring traps this past summer, he said. The hope is at a certain threshold level, the pheromone will confuse the male moth to where it can’t find female moths.

“With mint root borer, there is not that long of a flight period,” he said, “and there is only one generation per year. The moths are flying sort of in the late-June through middle-of-July period, and that is when mating takes place.”

Walsh plans to test the concept next year.

In the meantime, outside of chlorpyrifos, growers have scant options to treat for mint root borer, Walsh said.

“This is bad,” he said. “If the EPA put out a call for comments, I would basically tell them this would be close to putting a nail in the mint industry.”

UC Davis Scientists Map Second Mint Genome

Scientists at the UC Davis Genome Center have mapped the genomic sequence for *Mentha suaveolens* (apple mint), one of two diploid parents of spearmint and peppermint.

The development, in combination with the map and genome sequence of the other diploid parent, *mentha longifolia* (horse mint), which was previously published by Oregon State University geneticist Kelly Vining, could lead to improved opportunities in mint breeding, according to Steve Salisbury, research and regulatory coordinator with the MIRC.

“It is another big stepping stone in trying to find that wilt resistant peppermint with desirable oil-like characteristics,” Salisbury said. “Mint breeders now have two great tools to help search for markers associated with traits of interest.”

This new map, and a forthcoming associated full genome sequence of apple mint, was four years in the making and the result of a project led by UC Davis geneticist Isabelle Henry. It means that mint breeders now have access to

thousands of genetic markers to select for clones that exhibit superior performance. It represents a significant advancement in mint research, Henry said.

“Mint has never really been worked on genetically,” Henry said, “or at least very little, until recently.”

Henry published a paper on her research earlier this year in the journal *Genes, Genomes, Genetics*. The report is publicly available at usmintindustry.com/media/2191/g3.pdf.

Among future steps, she said, will be to conduct mint phenotyping, which, in combination with genotyping, can inform about which parts of the genome, or which genes, are responsible for traits of interest.

Scientists also will want to compare the UC Davis genome to the OSU genome, as well as compare the two genomes to commercial clones of spearmint, she said.

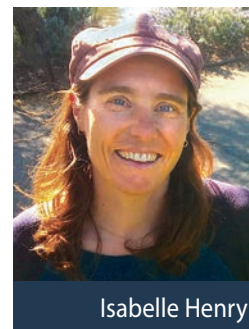
“Spearmint comes from a cross between apple mint and horse mint. Now that we have both of these genomes in hand, comparing them allows us to make

inferences as to what is important,” she said. “Further, if you put those two genomes together, and you compare with what is in various clones of spearmint, you can start to understand which parental genome is important for which traits of interest.”

An additional future step will be to map and sequence the third parent of peppermint, a species called *Mentha aquatica* (water mint), which, Henry said, is more genetically complex than the two diploids.

Henry will be providing a presentation on her research at the MIRC Annual Meeting, scheduled January 26 and 27 at the Kona Kai Resort and Spa in San Diego.

Visit usmintindustry.com for more information on the meeting.



Isabelle Henry

Colgate-Palmolive Driving Home Importance of Sustainability

Colgate-Palmolive Company is using its platform as the brand in more homes than any other to promote sustainability in homes, as well as throughout its supply chain. And, according to Vance Merolla, Colgate-Palmolive's Worldwide Director of Global Sustainability, the mint industry provides an ideal opportunity for the company to highlight its commitments to sustainability in promotional work and in driving sustainable production practices.

"We engage thousands of suppliers around the world," Merolla said. "Mint oil is a great example where you can actually engage a real farmer."

"And mint is so strongly associated with our product," Merolla said. "When you think toothpaste, you think mint. So, that is another reason we have highlighted mint in some of our campaigns. In terms of scale, we buy a much higher volume of other materials, but few are as relatable to our consumers as mint."

In announcing its 2025 Sustainability and Social Impact Strategy in November of 2020, Colgate rolled out several key ambitions and targets, including providing opportunities to help people succeed; empowering people to develop healthier habits; and preserving the environment by accelerating action on climate change and reducing environmental footprints. This work includes engaging with its supplier-partners, like mint farmers, to eliminate waste, save water and conserve natural resources.

Merolla said Colgate-Palmolive views its commitment to sustainability as both a matter of doing what is right for the planet and what is right for the business. "It has environmental aspects, and that fits the Colgate values," he said. "And it is a business issue. Managing climate change for ourselves, our operations, our suppliers and our consumers is a business issue."

"And yes, it is a reputational issue. We want consumers to know the good work we are doing and believe the brands that they are buying, like Colgate, are being sourced responsibly and that we are doing whatever we can to reduce energy and water use," he said.

"So, sustainability can have financial implications to it," he said. "And sometimes you do it and you can actually reduce costs. People think it is always an extra expense. And it is not."

"Energy efficiency, which helps reduce climate issues, is a great way to save money in the end," Merolla said. "And we've done that for many years now."

Among efforts to reduce its carbon footprint, Colgate-Palmolive regularly engages suppliers in the supplier survey CDP. The survey, considered the gold-standard of environmental reporting, queries suppliers on their production practices with respect to climate change, water conservation, waste reduction and other environmental factors.

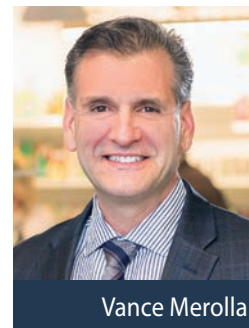
"We have been doing that for over ten years with many of our suppliers,"

Merolla said. "We engage them in that way and ask them, what is your approach to climate change? Are you doing water conservation?"

Colgate-Palmolive also worked with the MIRC and some of the organization's dealer

members to compile data on water-use practices among mint growers.

"We did that to try to understand what the water-use profile was in the different regions and see what techniques they were employing to help reduce water use," Merolla said.



Vance Merolla

"Energy efficiency, which helps reduce climate issues, is a great way to save money in the end and we've done that for many years now."

*Vance Merolla,
Colgate-Palmolive*

Colgate-Palmolive also has worked with researchers at the Massachusetts Institute of Technology in a study quantifying the potential impacts of climate change to the mint industry. The idea, Merolla said, was to get an understanding about how climate change might impact the availability of water and affect the heat profile in different parts of the country where mint is being grown.

Mint Highlighted in Campaigns

Among its promotional campaigns, Colgate-Palmolive has highlighted mint farmers several times in recent years, including on its website, which hosts a 30-second video of Oregon mint grower Scott Setniker on his Willamette



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Valley mint farm. The company also highlighted mint growers in an instore display at different Walmart stores in a recent campaign.

“Our commercial team was working with mint farmers and thought how cool it would be if we could tell the story of some of these mint growers to consumers,” Merolla said. “So, we had some great pictures that we used for big panel displays instore of real mint growers. That was a big hit.”

As part of its 2025 Sustainability and Social Impact Strategy, Colgate is now capturing supplier data on energy use and other production factors to quantify whether it achieves its announced goal of a 30-percent reduction of greenhouse gases from its suppliers by 2025.

“We are putting in place a system to collect some of that data,” Merolla said. “We have exciting anecdotal successes with mint farmers and others and we work very closely with suppliers. But it hasn’t been quantifiable until recently.”

Merolla, who has been with Colgate-Palmolive since 1997, said he has seen the emphasis on sustainability change considerably over the years. Today, he said, sustainability is a business imperative for large companies.

“Managing risk, expectations of the consumers, expectations of investors: companies are turning sustainability into doing the right thing and well beyond that as an important business imperative,” he said.

2022



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FieldRise Simplifies, Improves

Now in its eighth year, FieldRise, a program that measures sustainability in agriculture, is busier than ever, according to co-founder Jed Colquhoun, and it is easier than ever for growers to complete assessments.

“Our motto has always been that it takes about a slow cup of coffee to finish one of these assessments,” said Colquhoun, a professor of horticulture at the University of Wisconsin, Madison. “Now you can literally sit at the breakfast table and punch one of these in on your phone.

“I would say on average, it takes ten to fifteen minutes to complete the assessment,” he said.

“The goal still is to provide agricultural producers with a simple, efficient and understandable way to engage in these conversations around sustainability.”

*Jed Colquhoun,
FieldRise*

The most significant change in the program, which the MIRC uses to decipher and measure the sustainability practiced on mint supplier farms, is a switch from paper to digital reporting. The change has improved the program’s confidentiality and security, Colquhoun said, as well as made it more efficient for growers to complete the application process.

“So, there is no more paper copy,” Colquhoun said. “It is very simple, mobile friendly, tablet friendly, computer friendly.”

Assessment questions are devised to account for the different production practices of small and large farms, Colquhoun said.

“It gives us the ability to ask conditional questions,” he said. “So, if for example we ask in the assessment if you have employees, and someone answers no, they never see the human resources section. They go right past it. It makes it extremely efficient. It customizes the process to your operation.”

Once completed, analysts calculate the data and an email is sent to the grower informing them that they can log into their account and view their assessment.

The reports serve two purposes, Colquhoun said. The industry gets an aggregate accounting of their sustainability that they can share with retailers and others in the supply chain, and growers can compare their sustainability practices to others.

“It allows farmers to see how they compare to their peers in a number of different areas,” Colquhoun said. “It is an opportunity to learn. For example, you might discover that your peers are using more variable-rate irrigation in the Pacific Northwest than you are. Or maybe your nutrition inputs are higher than your peers. It is kind of a self-exploration of how you compare to what other people reported on their self-assessment.”

The process of filling out the assessment also can help growers prepare for a third-party sustainability audit, Colquhoun said.

“We hear that these are the kinds of questions you will get in that process,” he said. “So, there is certainly an educational opportunity.”

FieldRise analyzes multiple sustainability categories, including water use, nutrient

management, pesticide use and labor relations, while forming its questions around what a particular industry wants analyzed.

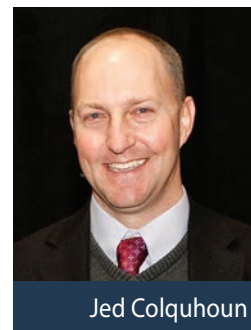
“The assessment itself is not something we pull off the shelf,” he said. “It is customized to what you want to know about as an industry.”

Colquhoun attributes the increased demand for FieldRise to an ever-increasing demand for information from consumers on where their food is coming from and how it is being produced. And that isn’t something he sees declining.

He added that the goal of FieldRise has not changed from when it started in 2014.

“The goal still is to provide agricultural producers with a simple, efficient and understandable way to engage in these conversations around sustainability,” he said.

He added, “Nobody got into farming because they like to do paperwork or answer surveys. Our goal is to provide a very efficient, simple way to fulfill these requests of wanting to know where food comes from, while allowing people to do their day job of producing our country’s food, feed and fiber.”



Jed Colquhoun



Chairman's Report

Dana Wendel, Chairman of the Board

I'd like to start this column by extending my appreciation to all of our Board members and Scientific Affairs Committee members for hanging in there in less-than-ideal circumstances over the past 20 months or so.

I would also like to thank Bryan, Shawn and team from the Ostlund Group for always rolling with whatever is thrown at them and keeping our organization connected and moving forward. This also applies to Steve Salisbury whose responsibilities have had additional challenges during this time and he has kept in close contact with all of our researchers and projects and has kept everything moving forward in a positive direction.

Obviously, holding meetings via Zoom is not something we are thrilled about, but it has been the reality we have been dealt, and I appreciate the patience and willingness of our members to keep the business of our Council moving forward.

Secondly, I want to say that I am really looking forward to the annual meeting in 2022 in San Diego. One thing this stretch has shown us is the importance of actually physically getting together.

We can do board meetings virtually and we can do SAC meetings virtually, but we can get so much more accomplished, have more in-depth discussions, when meeting face-to-face.

And after basically two years of seeing faces over a computer screen, it will be great to sit down and talk to many of you in person. Obviously, the business aspects of these meetings are vital to moving forward the work of the Council, but sometimes it seems the social aspects of these meetings, getting to know one another and the opportunities to talk about our separate parts of the industry, can be equally important. The informal conversations, that aren't part of the virtual environment, are not to be underestimated and are part of the relationship building that keeps us together.

We all recognize that the pandemic isn't over, and it won't be perfect anytime soon. We still have a way to go and we continue to have members working under travel restrictions. So, while meeting in person for the first time as a Council since our 2020 annual meeting is a big step in the right direction, we

will still have a virtual component to what we are doing to cover those who, because of corporate rules, can't be there.

As we move through this whole thing, we will keep our fingers crossed that we can eliminate that component as soon as possible.

On the positive side, while it may be premature to talk about, we have had several new member inquiries. The industry is alive and well, and business continues both here in North America and in other parts of the world. So, it is good to see that other major manufacturing companies recognize the value of the MIRC and all of the things that we do and work on, and we hope to have a positive report in the near future about new members joining our organization.

That's it for now. See you in San Diego.



Dana Wendel



Research & Regulatory Update

Steve Salisbury

If you have not heard yet, let me be the first to inform you, and if you have already heard then let me offer another reminder. The United States EPA has declared February 28, 2022, as the day in which all chlorpyrifos tolerances for all commodities grown in the U.S. will expire. After this day no food crops in the U.S. will be able to rely upon the insecticide for protection from damaging pests that cause crop damage and loss.

This has been a day coming for some time now, and we have been discussing the details and potential impacts for a while. So, is this really a surprise to us? To the mint industry I do not believe it was a huge shock to us. After all, when the European Union revoked the tolerances in 2020 it had some immediate impacts on mint oil producers. We are no strangers to the fact that the EU is a substantial international market for North American mint oils.

In light of that, growers, buyers and end users needed to respond accordingly so that the EU market would still be attainable. The MIRC assisted by advising its members to know who their customers are and manage the crops and fields accordingly, so that this trade barrier would not be an issue. In response, the mint industry acted as good stewards of its crop and oil and carefully managed the crop's plant protection portfolio to achieve adequate

insect control without the use of chlorpyrifos. As a result, oil from those fields could still be marketed to the EU customers.

Sounds simple and all well and good, doesn't it? Reality check, it's never that simple. The truth is that when a cost-effective option is removed from the equation, then something needs to step in and take its place. The hopes are that whatever the alternative options are they are: 1) equally as effective at protecting against substantial crop loss; and 2) offer their results at the same cost per acre.

Through research and development, new alternatives can be as effective. The MIRC has funded research and worked with registrants and the IR-4 program to develop new active ingredients that may be able to fill the void left behind without chlorpyrifos. We have a couple new actives in the works with one progressing through the process while the other is caught in an unfortunate regulatory review situation for the time being. In the meantime, let's take a closer look at our current portfolio. What holes exist without chlorpyrifos?

Let's look at our labeled alternatives and three examples of pests: mint root borer, cutworms and symphylans. Mint currently has only one alternative for mint root borer control after chlorpyrifos. The one option is chlorantraniliprole, a.k.a. Coragen/

Vanticor. Well, good news is we have an option, but the not-so-good news is we have only one option. What do we do about resistance development if we only have one option for protecting the crop? Valid question.

The MIRC has funded some recent research with Washington State University and University of Idaho to evaluate the use of a pheromone mating disruption technique, which is a non-chemical strategy for insect control. This seems like a strategy worth pursuing. However, this work is quite early in development stages for mint and it cannot be determined yet if it's a viable option. Research efforts such as this are critical to the future of mint integrated pest management. The MIRC needs to continue looking into new ideas to support the industry's needs.

Cutworm control, on the other hand, has a different analysis. Looking for chemical options beyond chlorpyrifos results in seven options that are currently labeled for cutworm control. This is a better scenario in that several options are available. There may be some important label and use differences that need to be fully understood before you apply to your mint, but there are options that appear to be worth looking into. Besides performance and effectiveness, the cost per acre should be considered, too.

The third insect pest we are using in this exercise is symphylan. This is one insect pest that is only found on the



Steve Salisbury

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chlorpyrifos label. There are no other currently labeled options for symphytan control in mint. This basically means that the cost of symphytan damage in mint has gotten significantly greater since there is no labeled means for control and damage will go unchecked, resulting in less crop produced per acre, which in turn increases the cost to produce a pound of oil.

So, at the end of the day the loss of a cost-effective pest management tool will more than likely increase the cost of production regardless of the insect pest that is being controlled. In California, where chlorpyrifos was banned before everyone else in the U.S., UC Davis did an economic evaluation of the impact of the loss of chlorpyrifos. They only looked at six major crops in the state and were able to estimate that the loss would cost in the neighborhood of \$11-12 million per year. Keep in mind that is only six crops. While I haven't seen any official numbers on mint, we could do some quick "tailgate math" to get a ballpark of the impact. Not considering non-chemical alternatives, which do have a cost don't forget, and only considering insects that can be controlled with alternative chemistry, and assuming similar levels of insect control and crop protection, let's assume an average increase of \$15/acre over chlorpyrifos. Of course, depending on how many of our acres were treated one time with an alternative, the additional cost could be approximately \$0.7 million. Again, there are a lot of assumptions here and the cost could easily be greater than this.

What's the point of all of this? First, to make sure everyone knows that you cannot apply chlorpyrifos to mint, or any other food crop, after February 28, 2022. Secondly, that the mint industry does have some viable alternatives for crop protection and the MIRC is supporting the search for more and new options.



Lastly, to point out that this loss will likely have some economic consequences to the cost of mint production. Increasing costs during relatively difficult soft-market times is not a welcomed scenario.

Don't take this the wrong way. This is not a greedy plea for higher farm gate prices. This is simply a statement of real-life sustainability. Higher costs at the farm level often go unnoticed further up a

value chain. I previously mentioned cost-effectiveness of our pest management strategies, and in my opinion, cost-effectiveness is one of the critical veins in the root of true sustainability. Without that vein, the root eventually dies. How do we keep that vein viable so that we can continue being the best mint oil producers in the world while also continuing to be the best proven stewards of our crop and industry?

Agarwal Brings First-Hand Global Experience to Board

Like many of the MIRC Board members, Essex General Manager Ankush Agarwal brings a global perspective to board proceedings. In his case, however, his international perspective may be a little more first-hand.

Agarwal grew up in the mint industry in India, where his family has operated a mint business since 1970.

Agarwal's journey from India to the Chehalis, Washington, headquarters of Essex began in the late 1990s when he decided to move to the U.S. to study chemical engineering. He secured a bachelor's and a master's degree from the New Jersey Institute of Technology, and by 2003 he was working for the petrochemical industry.

By 2008, still in the petrochemical industry, Agarwal was moonlighting for his family's business, selling mint oil to buyers globally. It was in that context that Agarwal met the founders of Essex, and by 2012 he was working remotely as an Essex team member. In 2016, shortly before Essex joined the Firmenich business community, Agarwal moved to Chehalis and began working for the company on-site.

While Agarwal's characterization of Essex as "a small cog" in the \$4

billion company's portfolio, Essex has nonetheless become "an instrumental part of Firmenich's natural business" since the 2016 business arrangement, Agarwal said.

"Firmenich is heavily focused on ingredients to the perfumery and flavor industry, and mint is a cross-divisional ingredient," he said. "It goes in perfumery, like oral care, toothpaste and mouthwash. It goes in flavors, and it is sold as an ingredient by itself.

"So, incorporating Essex within the Firmenich family of companies and making a place for mint in a global company has been both our biggest challenge and opportunity," Agarwal said.

As part of that work, Agarwal said the company has invested in quality control and research and development in recent years.

"We've done a lot as a company to revamp our systems, in terms of quality control," Agarwal said. "And we have invested heavily in our training program, which is our R & D innovation."

Asked to name his biggest challenges at Essex, Agarwal said helping buyers to understand the value of U.S. produced mint oil and to understand its price volatility rank high.

"Mint is a natural commodity, and if the price goes up, it is for a reason," he said. "And, similarly, if the price goes down, it is for a reason. We cannot treat mint as a mass-market commodity.

"There is a value in natural mint oils," he said, "and there are many benefits of buying American mint, namely stable quality, product safety, innovation and environmental sustainability, even though it is nearly three times the price of Indian mint.

"I am not saying mint from India is bad," he said. "I am only saying it is different and I want to help our customers see that difference."

Synthetic mint also poses a challenge to natural mint, he said, given that it, too, typically sells for about one-third the cost of U.S. produced natural mint. "It is definitely a huge challenge for American mint dealers like Essex," Agarwal said.

Agarwal, who has been on the MIRC board for a little over a year, said he has been impressed with the Council in his brief experience. He identified the work that Steve Salisbury does to coordinate research into pesticide registrations as extremely valuable.

"I think that contribution alone makes the MIRC very relevant," he said.

"I also think the breeding improvements and extraction improvements that the MIRC is helping fund are important. And I like the vertical integration of the organization. The growers are definitely well represented, as well as suppliers and end users," Agarwal said.



Ankush Agarwal





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