

Vistas

Business Solutions for the VM Professional

02: Switch it up: rotating bareground mixes fights weed resistance

03: Invasive Watch: Maretail

04-06: Cleantraxx™ herbicide keeps the tracks clean for RWC Inc.

07-08: Caltrans employs new tool to maintain bareground roadsides

09-11: Transporting the lifeblood of California's Central Valley



SWITCH IT UP: ROTATING BAREGROUND MIXES FIGHTS WEED RESISTANCE



The agriculture industry has waged a well-documented war against weed resistance for years. Overuse of some herbicides, such as glyphosate, in fields allowed tough weeds to build up resistance to herbicide treatments and take a toll on farmers' crop yields, ultimately, spurring the development of innovative new technology to regain the upper hand against weeds.

Beyond the farmers' fields, it's something many in the Industrial Vegetation Management (IVM) industry also struggle with due to gradual overuse of not only glyphosate, but other active ingredients such as sulfometuron and diuron. For years, these herbicides and many others were overused, especially in bareground use sites, giving rise to resistant kochia, Russian thistle and several amaranth species. The problem gets a temporary fix when new herbicides are introduced, but before long, the cycle starts again.



"Even the best herbicide solutions can have a relatively short shelf life without proper management," says Scott Flynn, field scientist for Dow AgroSciences. "Many times, when control issues begin, there is a tendency to continue to add more herbicide per acre each treatment cycle to get the total vegetation

control required for rights-of-way safety reasons. It's been shown that this is when many particularly tough weed species begin to exhibit signs of resistance."

EXTEND THE LIFE OF TODAY'S BAREGROUND SOLUTIONS

Not surprisingly, without action, the issue is likely to become more widespread. The solution?

"Maintaining a consistent rotation of bareground tank mixes that include herbicides with unique modes of action," Flynn says. "This fights weed resistance while extending the life of today's effective bareground products."

Recently, Dow AgroSciences released Cleantraxx™ herbicide, a new herbicide that provides preemergent and postemergent control of more than 65 grass and broadleaf weeds, with up to six months of residual. More importantly, it provides two modes of action, a chlorophyll biosynthesis inhibitor (oxyfluorfen) and an acetolactate synthase inhibitor (penoxsulam) in a single product. When tank-mixed with Milestone® or Opensight® specialty herbicides, it provides a very effective new rotational mix for use in bareground situations.

Flynn recommends Cleantraxx at a minimum of 48 ounces per acre for residual annual grass control. Mix Cleantraxx with either 7 ounces per acre of Milestone or 3.3 ounces per acre of Opensight for residual control of broadleaf weeds.

"Rotating herbicide programs will net you better weed control using less herbicide over time while reducing the likelihood of developing resistance," Flynn says. "It's beneficial to the environment, and while costs per treated acre may rise initially, not having to continuously increase rates can positively impact long-term budgets."

For more information on herbicide resistance and the impact it's having globally, visit the International Survey of Herbicide Resistant Weeds at www.weedscience.org. With the help and input of researchers around the world, the site monitors and designates herbicide-resistant weeds, as well as works to understand, prevent and manage their occurrence.

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InvasiveWatch

MARESTAIL (*CONYZA CANADENSIS*)



The inflorescence of marestail is branched with slender flower stalks, and flower heads are inconspicuous with white and yellow flowers.

WHAT TO LOOK FOR

Marestail, also commonly known as horseweed, coltstail, Canadian fleabane and several others, is a winter or summer annual that grows from 1 to 5 feet tall. Plants start out as a rosette and generally begin to bolt in April. Flowering occurs from June to August and plants disperse seeds from August to October. Stems are erect and unbranched below, but often branched above, and most times covered with short, white hairs — though in some cases will be nearly hairless. Upper leaves are alternate, lance-shaped, crowded on the stem, bristly with hairs and sessile. Lower leaves are spatulate and sparingly or coarsely toothed. Leaves grow in an alternate spiral up the stem, and the lower ones tend to wither early. The inflorescence is branched with slender flower stalks, and flower heads are inconspicuous with white and yellow flowers.

WHERE IT'S FOUND

Marestail can be found in every U.S. state and is easily one of the most common weeds in the eastern and central part of the country. Native to North and Central American grasslands, but now found throughout Eurasia and Australia, marestail is frequently found along roadsides and rights-of-way, pastures, meadows and in waste areas.

Marestail is a prolific producer of seeds, which are only about 1/16 of an inch long with a white and bristly pappus. Each plant is capable of producing up to 200,000 seeds, and most can germinate right off the plant. Seeds are also known to travel long distances in the wind.

HOW TO TREAT IT

Control of marestail can be difficult, especially with several populations shown as resistant to glyphosate and ALS-inhibiting herbicides. In fact, it was the first weed to develop glyphosate resistance, as reported in 2001 in Delaware. However, there are several very effective herbicide treatment options.

The most effective treatment is a foliar broadcast application of 1.5 to 2 ounces per acre of Opensight® specialty herbicide. Another excellent foliar treatment is 4 to 7 ounces per acre of Milestone® specialty herbicide. The most consistent marestail control is typically achieved when the weed is treated while it's small and in the rosette stage. Use lower rates when weeds are small and actively growing, and increase rates as the season progresses and plants become more mature.

Additionally, Cleantraxx™ herbicide at 2 pints per acre is effective on marestail as a fall preemergence foliar treatment.



■ Marestail

Source: USDA PLANTS Database Profile

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CLEANTRAXX™ KEEPS THE TRACKS CLEAN FOR RWC INC.

Every fall, as another busy railroad spray season winds down, RWC Inc. invites its employees from all over the country to its Westerville, Ohio, location for a couple well-deserved days of grilling out, golf and maybe an ice-cold beer or two. Applicators who have sprayed railroads for 30 years share stories with guys who just completed their first spray season. Employees showcase their pit master skills, smoking ribs for the opening night barbecue. It's a celebration of everyone's hard work, and it's symbolic of the family mentality behind RWC's success.

Headquartered in Westerville, but with locations in Westfield, Massachusetts, and Memphis, Tennessee, RWC is one of the largest and most established railroad vegetation management companies in the business, dating back to 1961. It serves a stable of large railroad customers across the country, and is a founding member of the National Railroad Contractors Association (NRCA).

Longevity at this family-owned company starts at the top. Joe Hage is president and has been with RWC for 45 years. Brothers Rod and Jeff Osburn serve as vice presidents, and have been with RWC for 40 and 36 years, respectively. In fact, Hage and the Osburns' father, Wesley, worked together to start RWC's Westerville operations many years ago; and Brian Chateauvert,

who runs the Westfield location, has 42 years in, and is the son-in-law of RWC's founder, John Roy.

"Being a family-owned company has allowed us to keep things running lean on the management side," Hage says. "And even though we've grown to be one of the largest railroad applicators and have modernized our approach, our original values have remained consistent."

FRESH CHEMISTRY KEEPS RESISTANCE AT BAY

While the railroad business has certainly evolved since RWC was founded, the company's success stems in part from its ability to change and adapt right along with it, from the GPS-guided trucks and equipment it now uses to the herbicides those rigs systematically put out. One thing that hasn't changed is the basic reason RWC is contracted by so many railroads: the company provides total vegetation control from the mainline tracks to the railroad crossings and rail yards. And although it sounds simple enough, it is far from easy.

Reduced maintenance budgets at railroads, difficulty getting track time to spray, inclement weather — all can stop an RWC crew in its tracks. But perhaps nothing is more challenging than weed resistance. Over the years, weeds like kochia, marestail,

Palmer amaranth and others have morphed into super weeds that have become extremely difficult to control. It's mainly because of the tendency of many to overspray the same herbicides over and over, at higher and higher rates in an effort to maintain control.

"Weed resistance is a major concern for us," Jeff Osburn says. "We don't want to see kochia or marehail breaking through on tracks we've just treated. RWC is always searching for new mixes to put out, because without new chemistry, we'd be in trouble."

Rotating in fresh chemistry is one best practice to keep resistant weeds at bay.

"We've been using a mix with Esplanade for years, but in our business you just can't keep putting out the same mix and expect to keep getting the same results," Rod Osburn says. "You have to keep things fresh, and we felt like it was time to move to something new."

In 2016, working with Homer Deckard, territory manager with Dow AgroSciences, RWC put out test plots of a new three-way bareground solution consisting of a mix of Cleantraxx™ herbicide with Opensight® and Spike® 80DF specialty herbicides. While RWC had worked with Opensight and Spike 80DF before, Cleantraxx was an entirely new chemistry to the railroad industry. When Deckard told them it might be a good fit for their program, it got their attention.

"We've had a great relationship with Homer for a lot of years, and he helped us put out some test plots with Cleantraxx," Jeff Osburn says. "If Homer thinks it will work, we are more than happy to give it a shot. And sure enough, when we went back and reviewed the plot results, we saw very clean lines."

Things went so well that the decision was made to start using the mix in 2017. And not just a little here and there.

"Based on the trial results, we decided to use the new mix of Cleantraxx, Opensight and Spike over quite a large geographical area," Hage says. "It made us one of the leading users of Cleantraxx in the railroad industry."

RWC estimates that between February and May, it sprayed upward of 20,000 acres using a mix of 2.5 to 3 pints per acre of Cleantraxx™ herbicide (depending on the area), 3.3 ounces per acre of Opensight and 1.25 pounds per acre of Spike 80DF.

"And those 20,000 acres were spread across the country, from the Louisiana Delta all the way to International Falls, Minnesota," Rod Osburn says. "It covers all different types of climates and soil types, along with other variables."

With such a wholesale changeover to a new mix, one might expect that RWC received some pushback from its customers. But Hage says it didn't happen, a testament to the long-developed trust RWC has built over the years.

"We've been doing this a long time, and almost all our customers look to us to make herbicide recommendations for them," Hage says. "We don't ever want to do anything that would risk that

relationship, so it's important that what we put out works, and works really well. Because there aren't many railroads that are shy about calling us up if something doesn't work so well."

Ultimately, the proof for RWC would be in the weed control results.

"The control we got this year was very good — in some places the best we've seen in several years — especially using the 3-pint rate of Cleantraxx," Jeff Osburn says.

Rod Osburn agreed. "We plan to use the same mix again in 2018," he says. "Our goal is to give our customers the most bang for their buck, and this mix is doing that for us."



Tracks treated using the Cleantraxx™, Opensight® and Spike 80DF® herbicides bareground mix in southern Illinois.



A close-up view of one of RWC's spray rigs.



More tracks treated with Cleantraxx™, Opensight® and Spike 80DF® herbicides, this time running through Louisiana.

EXPERIENCE AT ALL LEVELS SERVES RWC WELL

Danny Baugh and Ronnie Owen are both longtime applicators with RWC. Baugh is based in Memphis and Owen in Westerville. Each has been with the company more than 30 years, and if there's been a herbicide put out on a railroad, chances are they've worked with it. The two also team up every year to man the company's custom smoker built for use at the annual employee appreciation event. Both worked significantly with Cleantraxx™ herbicide this past spray season.

"Overall, Cleantraxx is a good product for us," Baugh says. "It took some getting used to in terms of mixing it because of how thick it is. It sits in a concentrate tank on our rigs before we add it to the mixing tank. We've learned we just need to make sure to give it a good mix before we start applying it."

When working with new mixes, it's not uncommon to experience a learning curve. Baugh and Owen mentioned the need to factor in how things like an area's rainfall and soil composition might play into the control they ultimately see. That's where RWC leans on its collective experience to navigate any challenges.

"We like the results we've seen so far with Cleantraxx, and we put it on a lot of different acres," Owen says. "I was surprised at the good job it did on foxtail, crowsfoot grass and crabgrass. We're able to get these in one pass without having to come back and re-treat."

There isn't much that RWC hasn't seen in more than 60 years helping to keep America's railroad rights-of-way safe and vegetation free. Now, as a third generation joins this family business, that certainly doesn't look to change anytime soon.

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RWC is also responsible with maintaining total vegetation control within rail yards.



CALTRANS EMPLOYS NEW TOOL TO MAINTAIN BAREGROUND ROADSIDES

How do you safely and continuously move nearly 40 million people through 50,000 miles of roadway? If it sounds like a tall order, it is. But it's the mission of the California Department of Transportation, or Caltrans, each and every day. This mission is rooted in more than 100 years of service, stemming back to a time when it managed nothing more than a collection of footpaths and wagon routes to the sophisticated system of highway and freeway lanes that now serve the transportation needs of the state's residents.

In California, properly managing rights-of-way means more than just controlling the encroachment of weeds and brush on roadsides in order to deliver a clear line of sight for motorists. Here, Caltrans designates a wider-than-normal, 4-to-6-foot vegetation-free fire strip along its roadways to serve as a critical line of defense against wildfires, an all-too-common occurrence in the state. These Zone 1 roadside areas are treated to bareground in order to provide a buffer against things like discarded cigarettes or hot exhaust pipes coming into contact with dry grass or brush, which could easily trigger a fire.

Multiple species of noxious and invasive weeds make it difficult to keep these important firebreaks free of vegetation. For Caltrans, herbicides play an essential role in getting this job done, and a recently introduced formulation has shown itself to be valuable in more ways than one.

TOTAL VEGETATION CONTROL THAT'S FORWARD-THINKING

Caltrans divides the state into 12 management districts. In District 3, which covers 11 Sacramento Valley and Northern Sierra counties, vegetation management responsibilities fall to Landscape Specialists Jeffrey Bodde and David Stach. Bodde has been with Caltrans for 10 years and covers the Sunrise Region, and Stach has been covering the Sutter-Sierra Region for nine years.

"We are licensed pest control advisors, managing the district vegetation control program, which encompasses 1,491 center-line miles and 4,385 lane miles across 11 counties," Bodde says. "This includes chemical applications in our rights-of-way and landscaped areas, as well as our working capacity as certified arborists and region water managers."

When it came to the bareground fire strip treatments on District 3 roadsides, Bodde and Stach had been prescribing a mix of 32 ounces per acre of GoalTender® herbicide with 7 ounces per acre of Milestone® specialty herbicide. It's a mix that has been very successful for several years. But when managing bareground use sites, best practice dictates thinking in the long term and implementing appropriate measures to combat weed resistance, such as rotating mixes or introducing new modes of action. That's true even when a current tank mix is still working. And that's exactly what Bodde and Stach decided to do with their managed areas.

A NEW TOOL GETS ADDED TO THE TOOLBOX

In 2015, Caltrans began testing a new herbicide, called Cleantraxx™ herbicide, as a potential addition to its Approved Chemical List. After successful trials, and meeting all the criteria set forth by the California EPA, Cleantraxx was approved for use. Working with their territory manager, Beau Miller, of Dow AgroSciences, Bodde and Stach saw a fit for Cleantraxx to replace GoalTender® herbicide in the bareground mix they prescribed.

“Since our chemical toolbox is limited, we saw the advantage of being able to introduce a new chemical formulation that contains two new active ingredients to this market — oxyfluorfen and penoxsulam,” Stach says. “Our goal was to maintain weed control while at the same time avoiding weed resistance.”

Cleantraxx provides preemergent and postemergent control of more than 65 grass and broadleaf weeds, with up to six months of residual. Combining its dual modes of action, a chlorophyll biosynthesis inhibitor (oxyfluorfen) and an acetolactate synthase inhibitor (penoxsulam) into a tank mix with the broad-spectrum control of Milestone® specialty herbicide, provides vegetation managers with a very effective new mix for use in bareground use sites.

Starting in 2016, applications went out in District 3 using the new bareground mix of 48 ounces per acre of Cleantraxx™ herbicide and 7 ounces per acre of Milestone. Applications by in-house spray crews were made from November through March, with higher elevations being treated in October. The results impressed Bodde and Stach.

“Our bareground fire strips have been holding very well with Cleantraxx and Milestone,” Bodde says. “Adding Cleantraxx also helped us pick up weeds that other bareground products don’t, such as ryegrass and a few others.”

Bodde and Stach list the most troublesome weeds in their area as ryegrass, marestail, Russian thistle and yellow starthistle.

“We will continue using this mix because it’s proved to be a real complement to our overall spray program while minimizing our risk of weed resistance issues,” Stach says. “It provides both preemergent and postemergent control, as well as helps us maintain low use rates, which is important as part of Caltrans’ agencywide efforts to reduce the amount of active ingredient we put out.”



Caltrans maintains a fire strip along its roadsides and has been successful using a mix of Cleantraxx® and Milestone® herbicides to do it.

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TRANSPORTING THE LIFEBLOOD OF CALIFORNIA'S CENTRAL VALLEY

What's known as the Central Valley in the geographical center of California is the most important agricultural region in the state and one of the most productive in the world. This vital area, covering some 18,000 square miles, produces more than 360 varieties of crops and provides more than half of the fruits, vegetables and nuts grown in the United States.

There's only one problem. Although the area boasts acres upon acres of rich, fertile soil, it doesn't get enough rainfall to naturally supply water to all the crops now grown here. Fortunately, the answer lies just to the north, where water is more plentiful.

This life-giving water from Northern California makes its way to the fields and spigots of the Central Valley via a 117-mile system aquaduct called the Delta-Mendota Canal. This canal plays a major part of the Central Valley Project (CVP), a federal water management project in California under the supervision of the United States Bureau of Reclamation. In any given year, the Delta-Mendota Canal is responsible for watering more than 1.2 million acres of farm land, as well as 180,000 acres of wetlands and over 1 million acres of population and industrial use.

Helping steward the water's journey is Larry Marques, a weed control specialist with the San Luis & Delta-Mendota Water

Authority, a Joint Powers Authority responsible for the operation and maintenance of key CVP facilities. "Our main goal is to get water from Northern California to Central California," Marques says. "Specifically, we convey water from the Delta to the Mendota Pool. Without that connection, things would be pretty bleak here."

The Delta he refers to is the Sacramento-San Joaquin Delta, which is formed by the Sacramento River flowing south to meet the San Joaquin River, which flows north, near Sacramento. This is where the Delta-Mendota Canal begins, and the Mendota Pool is where it terminates. The Mendota Pool is the confluence of the Delta-Mendota Canal, the San Joaquin River and the north fork of the Kings River, and serves as a small irrigation reservoir.

In all, there are 29 federal agencies that purchase water from the San Luis & Delta-Mendota Water Authority. The vast majority is used for agriculture — statewide the CVP delivers some 5 million acre-feet of water for farms. Another 600,000 acre-feet is used by municipalities for things like urban landscaping, and 800,000 acre-feet per year is dedicated to preserving fish and wildlife and their habitat, including several state and federal wildlife refuges and wetlands.



Concrete-lined irrigation canals transport precious water from Northern California to the state's Central Valley, one of the most productive agricultural regions in the world.

WATER CANALS NEED TO BE WEED-FREE

There is no tolerance for weeds or any vegetation growing in, on or around these miles of the cement-lined water canals that stretch through the water authority's management area. But that doesn't mean they don't try. Marques names short pod mustard, Russian thistle, marestail and fleabane as the most problematic species he treats.

"We spray the inner slopes and to the water's edge with herbicides to keep the canals clear," Marques says. "Then, we also spray out 10 feet on either side of the canal. It's all managed to bareground, so we can easily maintain accessibility to the canals. We also want to keep the spread of seeds down, as they'll travel right down the canals and cause issues further down the line."

Marques is responsible for all the herbicide treatments done in and around the canals, covering approximately 1,200 acres. For this, injection spray trucks are used to treat the canals, and applicators rely on handgun work only around pumping plants and turnout gates, where the truck can't reach.

An annual preemergent treatment goes out in December, consisting of Milestone® specialty herbicide at 7 ounces per acre, Dimension® herbicide at 1 quart per acre and 0.5-to-1 quart of glyphosate. It's expected to deliver six to eight months of residual control, which it's consistently done.

As a postemergent treatment, Marques swaps out Milestone for 1 to 2 pints of Capstone® specialty herbicide and makes the application in May.

"We only go out with our postemergent treatment as needed," Marques says. "If there is breakthrough for any reason, Capstone works great to clean up the resistant weed species that we see a lot of, like marestail."

TRIALS LEAD TO NEW TOOL FOR CONTROLLING WEEDS AND RESISTANCE

Marques understands that when applying herbicides, there are certain responsibilities that must be assumed. These can be magnified when working around water.

"We always have to be on our toes when making applications, especially when it comes to drift caused by high winds," Marques says. "However, we consider the herbicides we use to be environmentally friendly, in part because they just don't move at all. Dow AgroSciences really comes through with good formulations."

Beyond being careful to minimize off-target damage, there's a larger responsibility applicators need to consider: fighting weed resistance.



Service roads along irrigation canals must also be kept free of vegetation.

“Every couple years you really need to tweak things to fight off resistance, especially when working in bareground,” Marques says. “It’s always a good idea to change things up when you can.”

Looking to do just that, late in 2016, Marques worked with his Dow AgroSciences territory manager, Beau Miller, to put out trials of a new herbicide mix he was considering adding to his rotation. The mix consisted of 7 ounces per acre of Milestone® specialty herbicide, 32 ounces per acre of glyphosate and three different rates (32, 48 and 64 ounces per acre) of a new herbicide, Cleantraxx™ herbicide. Cleantraxx provides residual control of many annual grasses, which when mixed with the residual broadleaf and invasive weed control of Milestone, forms the foundation of a potent treatment for total vegetation control.

“Every couple years you really need to tweak things to fight off resistance, especially when working in bareground.”

Larry Marques
Weed Control Specialist

“Looking at the trial results this year, we found that the material worked very well,” Marques says. “When comparing the three rates of Cleantraxx we tested, for us the 48-ounces-per-acre rate seemed to be the sweet spot, and it’s what we will be moving forward with this spray season.”

Starting with December’s preemergent treatment, Cleantraxx will be introduced to the spray mix.

“We’re going to use the Cleantraxx and Milestone mix on around 40 percent of our treated acres this season,” Marques says. “It gives us an effective new tool to work with and provides us with more options in terms of herbicide blends we use.”

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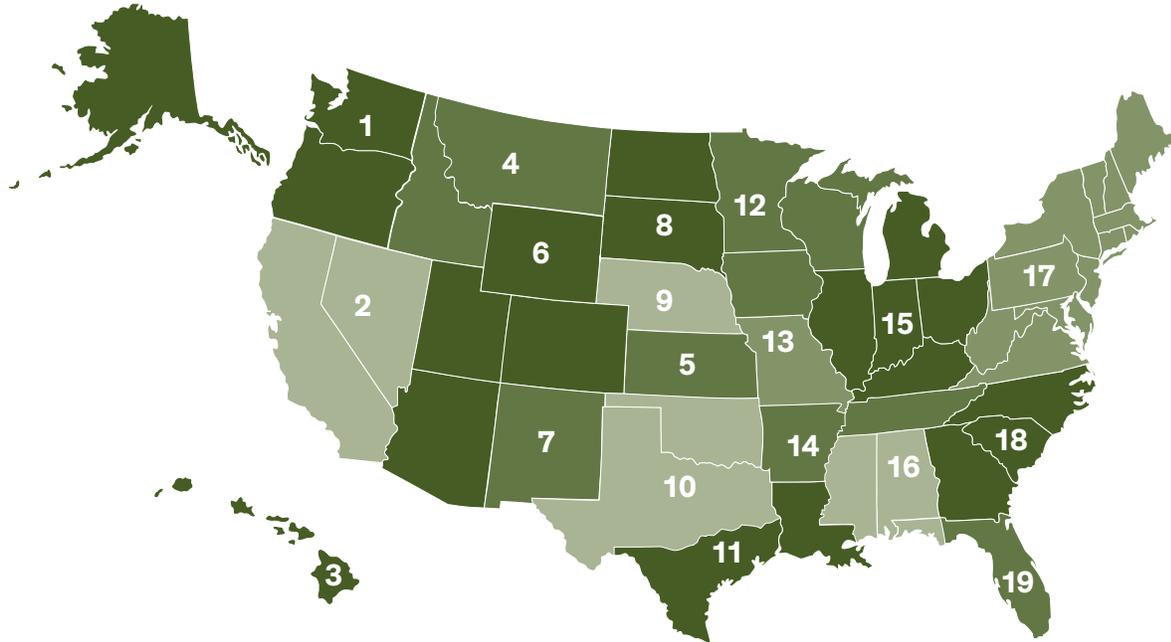
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