

One of a Kind: FRAC Groups with a Single Fungicide

How can you successfully incorporate these seven fungicides into your rotation?

BY A.R. CHASE

The advent of the age of pre-mixes and re-worked mixes has been with us for the past 10 years and will no doubt continue. If you have been in the green industry as long as I have, you will remember Banrot (FRAC 1, 14), one of our first pre-mixes for ornamentals — and indeed you may still be using it. Our newest pre-mix is Postiva (FRAC 3, 7) which was just registered by Syngenta.

On the other end of the spectrum, we have some fungicide products that are not only a single active ingredient but they are the only representative of a single FRAC (fungicide resistance action committee) group. Some of these products were first registered over 30 years ago like Pipron (powdery mildew

fungicide from SePRO), while others have recently been registered like Seido (powdery mildew fungicide from OHP).

In this article, I decided to review the single fungicides in seven unique FRAC groups with an eye toward their history, efficacy range and best ways to employ them in an effective fungicide rotation.

One of the biggest benefits to using one of these fungicides is that you can rotate with virtually anything (that actually works on the target) and avoid issues with resistance development due to overuse of a FRAC group. Additionally, simply adding a unique FRAC group to a rotation is a large benefit in keeping resistance at bay even if you have mainly

been rotating premixes or other very effective products. Table 1 summarizes features of the seven fungicides that fall into this unique category.

ADORN

Adorn was originally registered by Valent in 2009 and is currently available from NuFarm. Adorn consists of fluopicolide, the only member of FRAC 43 available on ornamentals. The product works primarily on Phytophthora and downy mildew oomycetes and on certain species of Pythium. Due to concerns on resistance management and retaining maximum benefits, the label requires that it be mixed with another fungicide that is effective on Phytophthora or downy mildew. Additionally, it was not registered for Pythium although some trials showed high efficacy. Since we are not always aware of the species of Pythium we are trying to prevent this seems like a good strategy to avoid failures.

There are a large number of other products that are very effective on downy mildew and Phytophthora, including: phosphonates (like Aliette), Subdue Maxx, Segway O, FenStop, and products with FRAC 40 (Micora, Orvego and Stature). Although you should be sure to check compatibility of Adorn with the chosen mixing partner before use, I have never heard of an incompatibility issue.

AFFIRM

Affirm is polyoxin D zinc salt and we started working on it while it was still a numbered compound. Originally there was another product with the same active ingredient (Endorse), but it was registered by Cleary in 2009. Affirm is very broad-spectrum and can be used for foliar and soil-borne diseases. It is

Fungicide	REI	FRAC No.	Company	Target pathogen(s)	Special features
Adorn	12 hr	43	NuFarm	Phytophthora, downy mildew	
Affirm	4 hr	19	NuFarm	Botrytis, Rhizoctonia, Thielaviopsis, powdery mildew, Alternaria, others	
Decree	12 hr	17	SePRO Corp.	Botrytis	Kills spores Safe on flowers
Pipron	12 hr	5	SePRO Corp.	Powdery mildew	Preventative and curative
Segovis	4 hr	49 (U15)	Syngenta	Phytophthora, downy mildew	Long-lasting, effective as spray or drench
Segway O	12 hr	21	OHP Inc.	Phytophthora, downy mildew, Pythium	
Seido	4 hr	50	OHP Inc.	Powdery mildew	

Table 1. Seven fungicides that are sole members of a unique FRAC groups.

in my opinion the second best choice for black root rot (Thielaviopsis), following thiophanate methyl. Affirm has performed very well on other diseases from Alternaria leaf spot to Botrytis blight to Rhizoctonia. At this time, Affirm is available from NuFarm. You can choose the best rotational partner once you have a disease target in mind. There is no standard answer since the product helps control such a variety of plant pathogens.

DECREE

The active ingredient of Decree is fenhexamid and was originally registered in 1999 on some agricultural crops. Decree is only labeled for Botrytis on ornamentals, but we did find quite a lot of activity on some other pathogens when we first did research trials for SePRO in the late 1990s. Decree has been the most effective at killing Botrytis spores if disease has started. The first year we did research on the numbered compound, almost all of the researchers across the U.S. reported on its unique ability to wipeout spores. It has been an industry standard for Botrytis control since it was first registered. We also have seen very safe use on many crops that are flowering.

At one point, Botrytis resistance to Decree was reported (Moorman, Penn State University) in a limited way so overuse should be avoided. As always choose another very effective product for Botrytis — not one that gives only “some” control. These include 7/11 fungicides (especially Broadform and Orkestra Intrinsic), Palladium (or Medallion or Emblem), iprodione (like Chipco 26019), and chlorothalonil (Daconil). Additionally, make use of the highest label rate for Decree (24 oz/10 gal) if a severe outbreak

	FRAC No.	Some choices for an effective rotation
Adorn	43	Mix with Subdue Maxx (4), then alternate with Segovis or Segway, FRAC 40 or 40/45, any phosphonate (PO5-previously called 33)
Affirm	19	Tmethyl (1) for BRR or Rhizoctonia, many choices for Botrytis including Decree
Decree	17	Any 7/11 (especially Broadform and Orkestra Intrinsic),
Pipron	5	Any FRAC 3 (like Avelyo or Eagle) or Seido, also any FRAC 7/11
Segovis	49	FRAC 40 or 40/45, any phosphonate (PO5-previously called 33)
Segway O	21	For Pythium - FRAC 14 (Terrazole) or Subdue Maxx (FRAC 4), for downy mildew or Phytophthora - FRAC 40 or 40/45, any phosphonate (PO5-previously called 33)
Seido	50	Any FRAC 3 (like Avelyo or Eagle) or Pipron, any FRAC 7/11 (especially Broadform)

Table 2. Possible rotational choices for seven fungicides (only members of unique FRAC groups).

occurs before you can get a preventative fungicide on the crop and you need to stop spore production fast.

PIPRON

Piperalin was originally registered in the U.S. in 1964 on agricultural crops. I could not find the first registration on ornamentals, but it has been available from SePRO since the late 1990s. Pipron was one of the few powdery mildew products that was believed (and proven) to be an excellent eradicant. Somehow this led to the idea it was not a good preventative. So since I always like a challenge, we tested it in California and it really is very good as either a preventative or an eradicant.

SEGOVIS

This Phytophthora and downy mildew fungicide is extremely long-term in its efficacy. Trials in Florida on Impatiens downy mildew showed a single drench to last up to 80 days. It was originally registered by Syngenta in 2015 and can be applied as a spray or drench, with drenches sometimes lasting longer than a foliar spray. You have many excellent choices for other FRAC group products for downy mildew or Phytophthora (Table 2). Consider using Segovis as a first treatment for the longest-lasting effects, then follow up with a different fungicide. The low use rates and long-lasting effects make this unique fungicide a critical part of a rotation. Consider tank-mixing with another fungicide like Subdue Maxx or Adorn

to make sure resistance doesn't develop; this is not required by the label, but is my own suggestion.

SEGWAY O

We started working with ISK Biotech around 1998 on many Oomycetes organisms (downy mildew, Phytophthora and Pythium). The active ingredient is cyazofamid, and it was registered on ornamentals around 2003. We saw very safe, high efficacy on all three types of Oomycetes organisms. Segway O is available from OHP. See Table 2 for some suggestions of effective rotational partners.

SEIDO

The newest FRAC group is 50 and contains only pyriofenone (active ingredient in Seido) from OHP. Seido was registered in 2021. We've performed trials over the past few years both in Arizona and in the field in California. Seido only works on powdery mildew and, based on trials, should be used at 5 oz/100 gal. It has low residue and could be alternated with many different powdery mildew fungicides (Table 2).

CONCLUSION

It will be interesting to see what comes next whether it is another new FRAC group or another new pre-mix. Stay tuned for updates! *gpn*

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Remembering or checking which fungicides are in what FRAC groups can be a challenge. Ann and Mike have developed a new 13x19 inch wall poster/pictorial guide to the FRAC groups. Contact one of them to order your copy. archase@chaseresearch.net or mike@chaseresearch.net.

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