

# *Meet the Mildews*

by Sue Munday

Along with the first beautiful flush of virgin green rose leaves come the natural little forces hell-bent on destroying that perfection. Meet the Mildews, who blow into town regularly this time of year.

The Mildews - Powdery and Downy - are more like cousins than brothers since they derive from separate families. Downy mildew is spread by air and water and requires water to germinate, whereas powdery mildew spores travel on the wind and will not germinate in water. So different are these fungi that there is no organic or chemical product that will simultaneously treat both.

Downy Mildew (DM) is one of the most insidious of the fungi that attack roses. A serious infestation can defoliate a plant within a day or two. DM thrives in cool, moist conditions, producing spores on the undersides of leaves. When it's wet, spores will germinate within four hours. Spores can remain dormant for extended periods of time until temperatures reach favored 65 degree conditions.

DM is often confused with blackspot. DM infestation appears as angular purple, red or brown blotches on leaves, often surrounded by a yellowing of the leaves. Whereas blackspot tends to be circular, DM splotches are irregular and grow between the veins of the leaves. DM can also produce brown or purplish blotches on rose canes and stems.

Cultural practices - selecting DM-resistant varieties, spacing rose bushes for good air circulation and keeping the ground clear of leaf debris - are the frontline tactics for discouraging DM in your garden.

A preventative spray program initiated when conditions favor the growth of DM gets a jump on the disease; when you can see downy mildew on your roses it's often too late to prevent severe leaf drop. Diseased plants should be pruned back to encourage healthy new growth and sprayed with an appropriate metal-based fungicide. Because spores can live on fallen leaves for as long as a month, old mulch and pruned leaves and canes should be meticulously collected and not composted, but destroyed.

There are no known organic methods to effectively treat DM. Commercial products that target DM tend to be pricey and include Heritage (3-caution), Aliette (3-caution - do not use a spreader/sticker with Aliette and do not combine with other chemicals in the tank), Compass (3-caution), Mancozeb (3-caution) and Subdue Maxx. Stature DM (III-caution), another fungicide, works by inhibiting the ability of DM cells to form cell walls, leading to the death of the fungal cell. It is active at all stages of DM's life cycle, and thus application stops disease spread.

Powdery mildew (PM) is well named - it appears as a light dusting of talcum powder or flour on the leaves, shoots, sepals and buds. Tender new leaves are the most susceptible. Severe build-up of the disease on the sepals will distort the bud and may even prevent the bloom from opening. When spores build up at the top of the stem just under the bud can twist the stem so that the rose juts off to look at you from a 45 degree angle.

PM favors warm days (80F temperatures) and cool nights (60F temperatures) - the very definition of our springs and falls. Spores are especially sensitive to extreme heat and direct sunlight, roses planted in partial shade will be most vulnerable to PM.

The same good garden practices that create an inhospitable environment for DM discourage PM as

well: sunny site, resistant varieties, good spacing, clean mulch and keeping the ground around bushes free of leaves and other debris that can harbor spores. Because PM spores do not germinate in water, a hose shower in the middle of a warm day will interrupt the germination process. Please note that this is not a good course of action if DM spores are present.

It's easier to forestall an outbreak of powdery mildew than it is to "cure it. Spray remedies to combat PM span the full range of toxicity, and should be used when weather conditions favor whatever disease you don't want to see:

#### **4 - Caution - relatively non-toxic**

- Mix baking soda (one Tbsp) and horticultural oil (one Tbsp) per quart of water.
- Clearys 3336F
- Neem oil products

#### **3 - Caution - slightly toxic**

- E-RASE (jojoba oil)
- Manzate
- Compass
- Heritage
- Eagle 20 EW

#### **2 - Warning - moderately toxic**

- Banner Maxx
- Honor Guard
- Immunox

#### **1 - Danger - highly toxic**

- Daconil Ultrex
- Funginex

Remember when spraying any solution to meticulously follow the manufacturer's directions which includes the use of gloves, protective clothing and goggles or other eye protection.