



## Approved Turfgrass Fungicides

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Fungicide group	Active Ingredient	Example Products§	Physical mode of action	Biochemical mode of action	Notes
Phthalonitrile	Chlorothalonil	Instrata#	Contact	Affects fungal cell function	Broad spectrum, protectant fungicide.
Phenylpyrrole	Fludioxonil	Medallion TL Instrata#	Contact	Inhibits spore germination	Broad spectrum, protectant fungicide.
Dicarboximide	Iprodione	Chipco Green	Contact and local penetrant†	Inhibits spore germination and fungal growth	Broad spectrum, protectant and curative fungicide. Resistance observed in <i>Microdochium nivale</i> and <i>Sclerotinia homoeocarpa</i> isolates in USA, but not observed in turf pathogens in UK to date.
Strobilurins	Azoxystrobin	Heritage Headway#	Acropetal penetrant‡	Prevent electron transfer in mitochondria, leading to insufficient energy and so prevents fungal growth	All strobilurins have the same biochemical mode of action but differ in their physical mode of action. Azoxystrobin has upward movement in the xylem, pyraclostrobin is primarily stored in the waxes of the leaf cuticle and trifloxystrobin is described as mesostemic (binds to the leaf cuticle and also has vapour phase activity that can move the product over short distances in the leaf canopy). Resistance has been observed in <i>Colletotrichum cereale</i> in USA, but not observed in turf pathogens in UK to date.
	Pyraclostrobin	Elland	Local penetrant†		
	Trifloxystrobin	Dedicate# Mascot Defender Scorpio	Local penetrant†		
Demethylation inhibitors (DMI)	Myclobutanil	Masalon	Acropetal penetrant‡	Disrupts ergosterol production, preventing growth	Resistance risk is considered to be medium, as the resistant isolates do not appear to be fit for survival in the absence of the fungicide. Resistance problems result in a slow decrease in product performance leading to increased dose rates and/or more frequent applications to achieve the same level of control. Resistance observed in <i>Sclerotinia homoeocarpa</i> and <i>Colletotrichum cereale</i> in USA, but not observed in turf pathogens in UK to date.
	Propiconazole	Banner Maxx Headway# Instrata#	Acropetal penetrant‡		
	Tebuconazole	Astute# Dedicate# Throttle#	Acropetal penetrant‡		
	Prochloraz	Astute# Throttle#	Local penetrant†		

§ This is NOT an exhaustive list of available products for each active ingredient

† A local penetrant penetrates into the leaf tissues but does not move far from the site of application

‡ An acropetal penetrant is moved systemically upwards from the point of absorption in the plant via the xylem (the part of the plant that transports water)

# These products contain more than one active ingredient from different fungicide groups and so provide multisite activity

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