



The miracles of science®

# DuPont™ ManKocide® DF® fungicide

## Technical Information

### Active Constituent:

300 g/kg COPPER (Cu) present as cupric hydroxide  
150 g/kg MANCOZEB

### Pack Sizes:

15 kg

GROUP	<b>M1 M3</b>	FUNGICIDE
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### CAUTION

**KEEP OUT OF REACH OF CHILDREN**

**READ SAFETY DIRECTIONS BEFORE OPENING OR USING**

A fine dry flowable fungicide for the control of various diseases of fruits and vegetables as indicated in the Directions for Use table

### SAFETY DIRECTIONS

This product may irritate eyes, nose, throat and skin. Avoid contact with eyes and skin. **DO NOT** inhale dust. Wash hands after use.

### FIRST AID

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26. Avoid giving alcohol. If in eyes, hold eyes open, flood with water for 15 minutes and see a doctor.

### MATERIAL SAFETY DATA SHEET

For further information refer to the Material Safety Data Sheet that can be obtained from <http://www.cropprotection.dupont.com.au>

### GENERAL INSTRUCTIONS

DuPont™ ManKocide® DF® fungicide is a protectant fungicide containing both Mancozeb and Copper Hydroxide. The dual formulation is designed to prevent and control a number of bacterial and fungal diseases. Its mode of action affects the germination of spores by inhibiting the respiration process. For best results, apply in a regular spray program. Thorough coverage of the target crop is essential.

### Mixing:

Fill the spray vat with good quality water. Remove the top strainer. With the agitation system operating, pour the required quantity of ManKocide® into the spray vat in a steady stream.

**DO NOT** attempt to pre-mix ManKocide® in water before adding to the spray vat. If other pesticides are being used, fully mix the ManKocide® in the spray tank before adding other products. Always add and mix the ManKocide® first. Sprays containing ManKocide® should be used within 3 hours of preparation and they should be agitated continuously during this period. Rinse out spray tank, pumps and nozzles at the end of the day.

**DO NOT** use in spray solutions with a pH less than 6.5.

### Application

#### Dilute Spraying

- Use a sprayer designed to apply high volumes of water up to the point of run-off and matched to the crop being sprayed.
- Set up and operate the sprayer to achieve even coverage throughout the crop canopy. Apply sufficient water to cover the crop to the point of runoff. Avoid excessive run-off.
- The required water volume may be determined by applying different test volumes, using different settings on the sprayer, from industry guidelines or expert advice.
- Add the amount of product specified in the Directions for Use table for each 100 L of water. Spray to the point of run-off.
- The required dilute spray volume will change and the sprayer set up and operation may also need to be changed, as the crop grows.
- Always apply sufficient water to cover the crop to the point of runoff, otherwise underdosing will occur and disease control may be inadequate.

### Concentrate Spraying

- Use a sprayer designed and set up for concentrate spraying (that is a sprayer which applies water volumes less than those required to reach the point of run-off) and matched to the crop being sprayed.
- Set up and operate the sprayer to achieve even coverage throughout the crop canopy using your chosen water volume.
- Determine an appropriate dilute spray volume (see Dilute Spraying above) for the crop canopy. This is needed to calculate the concentrate mixing rate.

The mixing rate for concentrate spraying can then be calculated in the following way:

#### Example Only

1. Dilute spray volume as determined above: For example 1,500 L/ha.
2. Your chosen concentrate spray volume: For example 500 L/ha.
3. The concentration factor in this example is : 3 times (i.e. 1500 L divided by 500 L = 3).
4. If the dilute label rate is 150 g/100 L, then the concentrate rate becomes 3 x 150, that is, 450 g/100 L of concentrate spray.

- The chosen spray volume, amount of product per 100 L of water, and the sprayer set up and operation may need to be changed as the crop grows.
- **DO NOT** use a concentrate factor higher than that specified in the Critical Comments and the following table:

Crop	Concentration Factor
Citrus, Bananas	Dilute application only
Deciduous Fruit	2 times
Mangoes and Passionfruit	3 times
Vines	3 times

- For further information on concentrate spraying, users are advised to consult relevant industry guidelines, undertake appropriate competency training and follow industry Best Practices.

For concentrate application use a minimum spray volume of 250 L per hectare.

### Wetting Agents

The addition of a wetting agent is not required. One may be added if required for other pesticides in a tank mix.

### Application by aircraft

Apply in a minimum of 30 - 50 litres of water per hectare. May be applied with hydraulic nozzles or rotary atomizers operated to produce droplets with a V.M.D. of around 150 microns. Avoid application in calm or very windy conditions or when the temperature and humidity cause rapid drying. To ensure good spray coverage, applications should ideally be made in a light crosswind.

### Spray Timing

Treatments using ManKocide® should begin prior to the disease infection and continue until the threat of disease has passed. Repeated applications are required to protect new growth. Consult directions for use on a crop basis. The rate and application

window will be determined by the level of disease and type of growth within the crop.

### Tank/Equipment cleanout

Immediately after application, completely drain equipment. Thoroughly rinse sprayer and flush the hoses, boom and nozzles with clean water. Apply the rinsate to the next crop or mix. **DO NOT DISPOSE OF RINSATE IN WATER WAYS OR DRAINS.** Take all necessary precautions when cleaning equipment.

### COMPATIBILITY

DuPont™ ManKocide® is compatible with most common fungicides and insecticides. This product is not compatible with Lime Sulfur. Before using tank mixes the user is urged to test the intended mix in a small jar and /or consult the manufacturer for further details and instructions.

Always add the ManKocide® to the spray solution and dissolve before other products are added.

### FUNGICIDE RESISTANCE

GROUP	<b>M1 M3</b>	FUNGICIDE
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### WARNING

DuPont™ ManKocide® is a combination of Multi-site activity fungicides. For fungicide resistance management, the product is both a Group M1 and a Group M3 fungicide.

Some naturally occurring individual fungi resistant to the product and other Group M1 and/or Group M3 fungicides may exist through normal genetic variability in any fungal population. The resistant individuals can eventually dominate the fungi population if these fungicides are used repeatedly.

These resistant fungi will not be controlled by this product and other Group M1 and/or Group M3 fungicides, thus resulting in a reduction in efficacy and possible yield loss.

Since the occurrence of resistant fungi is difficult to detect prior to use, DuPont accepts no liability for any losses that may result from the failure of this product to control resistant fungi.

**UNLESS OTHERWISE STATED DO NOT APPLY MORE THAN 8 TIMES PER SEASON.**

### PROTECTION OF WILDLIFE, FISH, CRUSTACEA AND ENVIRONMENT

The mancozeb component of ManKocide® is toxic to fish. **DO NOT** contaminate streams, rivers, waterways with the chemical or used containers.

### STORAGE AND DISPOSAL

Never allow the product to become wet during storage. This may lead to certain chemical changes which will reduce the effectiveness of the product as a fungicide and create vapors which may be flammable. Store in the closed, original container in a dry well ventilated area, as cool as possible out of direct sunlight. Store below 30°C. Store in a locked room or place away from children, animals, foodstuffs, seeds and fertilisers. Shake empty bag into spray tank. **DO NOT** dispose of undiluted chemicals on site. Puncture or shred and bury empty bags in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty bags and product should NOT be burnt.

**IN A MEDICAL EMERGENCY CALL  
1800 674 415 All hours**

## NOTICE TO BUYER

To the extent permitted by law all conditions and warranties and statutory or other rights of action which buyer or any other user may have against DuPont or Seller are hereby excluded. DuPont hereby gives notice to the buyer and other users that it will not accept responsibility for any indirect or consequential loss arising from reliance on product information or advice provided by DuPont

## DIRECTIONS FOR USE

### RESTRAINTS:

**DO NOT** apply when temperatures exceed 35°C.

**DO NOT** apply when slow drying conditions prevail.

**DO NOT** apply to copper-shy crops or cultivars.

**DO NOT** apply if it is likely to rain before the spray is dry.

**DO NOT** apply to wet crops.

**DO NOT** use in spray solutions with a pH of less than 6.5.

or on its behalf unless it is established that the product has been used strictly as directed. DuPont's liability shall in all circumstances be limited to replacement of the product or a refund of the purchase price paid therefore.

APMVA Approval Number: 60482/0106

All rates for tree and vine crops are for dilute spraying. For concentrate spraying rates, refer to the Mixing / Application section. If using concentrate application, apply the same total amount of product to the target crop.

TREE / VINE CROP	DISEASE	STATE	DILUTE APPLICATION RATE	WHP	CRITICAL COMMENTS
Apples Pears	Black spot (scab) ( <i>Venturia</i> ) Target spot Sooty blotch Fly speck	All States	200 - 400 g/100 L	14 days	Apply at green tip. <b>Note:</b> Crop injury (russetting) may occur from late application. Discontinue use when green tip on the earliest developing buds reaches 1 cm. Before applying to recently introduced varieties, ascertain their tolerance of copper sprays from relevant authorities. Apply as a dilute or up to 2 times concentrate spray. This product is not suitable for use in integrated mite control programs.
Bananas	<i>Cercospora</i> leaf spot ( <i>Cercospora musae</i> ) Leaf spot (Sigatoka) ( <i>Mycosphaerella musicola</i> )	Qld, NSW, WA, only	200 - 400 g/100 L 2 - 4 kg/ha plus label rates of a miscible summer oil.		Apply when weather conditions favour disease outbreak. Repeat treatments in accordance with locally recommended Department spray schedules. Use sufficient water to ensure coverage.
Citrus	Black spot ( <i>Guignardia citricarpa</i> )	Qld, NSW, ACT, SA, Vic, WA only	200 - 400 g/100 L plus 250 mL miscible summer oil/100 L	-	Apply at petal fall. Repeat treatment in accordance with locally recommended Department spray schedules. Use higher rates in coastal districts. Apply as a dilute application only.
Grapevines	Downy mildew Black spot	All States	200 - 400 g/100 L	14 days	For Black spot control, apply at budburst and repeat 10 - 14 days later. If Downy mildew is expected, spray at 10-14 day intervals while conditions favour infection. Use higher rates when conditions are highly favourable to infection. Apply as a dilute or up to 3 times concentrate spray. <b>DO NOT</b> apply more than 8 applications per season.
Mangoes Passionfruit	Anthraxnose	Qld, NSW, WA only			Apply from the end of flowering when conditions favour disease development and repeat at regular 7 - 14 day intervals. Apply as a dilute or up to 3 times concentrate spray. <b>DO NOT</b> apply more than 8 applications per season.
Stone fruit	Leaf curl ( <i>Taphrina</i> )	All States			Correct timing is critical for effective control. Apply when buds are swelling but before and within one week of bud opening. Where leaf curl is a serious problem apply at leaf fall, then apply at the first sign of budswell and repeat one week later. Apply as a dilute or up to 2 times concentrate spray.
	Shothole ( <i>Stigmina carpophila</i> )				Apply at bud swell but before the earliest sign of leaf bud development. Apply at least 1 post-harvest spray. Apply as a dilute or up to 2 times concentrate spray.
	Bacterial gummosis ( <i>Pseudomonas syringae</i> )				<b>Autumn</b> : Apply at 25 to 50% leaf fall. Apply again at 90 to 100% leaf fall. <b>Winter</b> : Apply in mid winter. <b>Spring</b> : Apply at first sign of bud movement. Repeat application 7 to 10 days later. Apply as a dilute or up to 2 times concentrate spray.
Cucurbits	Angular leaf spot ( <i>Pseudomonas</i> ) Bacterial leaf spot ( <i>Xanthomonas</i> ) Anthraxnose Downy mildew ( <i>Pseudoperonospora</i> ) Gummy stem blight ( <i>Didymella</i> )	All States	200 - 400 g/100 L or 2 - 4 kg/ha	7 days	Apply when conditions favour disease development and repeat at 7-10 day intervals. Use the shorter interval and higher rate when conditions are highly favourable for disease infection. <b>DO NOT</b> apply more than 8 applications per season.

## VEGETABLES

CROP	DISEASE	STATE	RATE	WHP	CRITICAL COMMENTS
Cole crops	Black rot ( <i>Xanthomonas campestris</i> ), Downy mildew Alternaria spot Anthracnose Ring spot	All States	200 - 400 g/100 L or 2 - 4 kg/ha	7 days	Apply when conditions favour disease development and repeat at 7-10 day intervals. Use the shorter interval and higher rate when conditions are highly favourable for disease infection. <b>DO NOT</b> apply more than 8 applications per season. CROP DAMAGE WARNING: This product contains cupric hydroxide which predisposes cabbages to frost damage. Cabbages should not be treated with the product if frosts are likely as crop damage may occur
Onions	Downy mildew Purple blotch		200 - 400 g/100 L or 2 - 4 kg/ha		Apply when conditions favour disease development and repeat at 7-10 day intervals. Use the shorter interval and higher rate when conditions are highly favourable for disease infection. <b>DO NOT</b> apply more than 8 applications per season.
Potato	Target spot / Early blight ( <i>Alternaria</i> ) Irish blight / Late blight ( <i>Phytophthora</i> )		200 - 400 g/100 L or 2 - 4 kg/ha	-	Apply from crop emergence to maturity depending on disease development. Apply when conditions favour disease development and repeat at 7-10 day intervals. Use the shorter interval and higher rate when conditions are highly favourable for disease infection. <b>DO NOT</b> apply more than 8 applications per season. May reduce yield if applied under dry conditions.
Tomato	Bacterial spot, Bacterial canker Bacterial spec ( <i>Pseudomonas</i> ) Target spot / Early blight Irish blight / Late blight Septoria leaf spot ( <i>Septoria</i> spp.) Anthracnose Leaf mould		200 - 400 g/100 L or 2 - 4 kg/ha	7 days	Apply when conditions favour disease development and repeat at 7-10 day intervals. Use the shorter interval and higher rate when conditions are highly favourable for disease infection. <b>DO NOT</b> apply to seedlings before transplanting. These applications will reduce the spread of Bacterial canker, but will not control seed or soil borne infection.

**NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.**

### WITHHOLDING PERIODS:

**CUCURBITS, COLE CROPS, ONIONS, TOMATO: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION.**

**BANANAS, GRAPES, STONE FRUIT, POME FRUIT, MANGOES, PASSIONFRUIT: DO NOT HARVEST FOR 14 DAYS AFTER APPLICATION.**

**CITRUS, POTATOES: NOT REQUIRED WHEN USED AS DIRECTED.**

**DO NOT GRAZE LIVESTOCK ON CROPS AND /OR TRASH TREATED WITH MANKOCIDE®. DO NOT PROVIDE LIVESTOCK ANY FEED MATERIAL THAT MAY HAVE BEEN CONTAMINATED WITH MANKOCIDE®.**

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