

A: Nucleic Acids Metabolism 核酸代謝

FRAC Classification of Fungicides 殺菌劑分類. A: Nucleic Acids Metabolism. Includes subgroups A1: RNA polymerase I, A2: adenosine-deaminase, A3: DNA/RNA synthesis (prop.), A4: DNA topoisomerase type II (gyrase), A5: inhibition of dihydroorotate dehydrogenase, A6: inhibition of thymidylate synthase, A7: inhibition of dihydrothymine synthase, A8: inhibition of thymidylate synthase.

FRAC Classification of Fungicides 殺菌劑分類. Fungal control agents by cross resistance pattern and mode of action 2022 (www.frac.info)

B: Cytoskeleton and Motor Proteins 細胞骨架與馬達蛋白. Includes subgroups B1: tubulin polymerization, B2: tubulin polymerization*, B3: tubulin polymerization, B4: cell division, B5: delocalisation of spectrin-like proteins, B6: actin/myosin/fimbrin function, B7: tubulin dynamics modulator.

C: Respiration 呼吸作用. Includes subgroups C1: complex I NADH Oxido-reductase, C2: complex II succinate-dehydrogenase, C3: complex III cytochrome bc1 (ubiquinone oxidase) at Qo site, C4: complex III cytochrome bc1 (ubiquinone reductase) at Qi site, C5: uncouplers of oxidative phosphorylation, C6: inhibitors of oxidative phosphorylation, C7: ATP transport.

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D: Amino Acid and Protein Synthesis 胺基酸與蛋白質合成. Includes subgroups D1: methionine biosynthesis, D2: protein synthesis (ribosome, termination step), D3: protein synthesis (ribosome, initiation step), D4: protein synthesis (ribosome, initiation step), D5: protein synthesis (ribosome, elongation step).

E: Signal Transduction 信息傳導. Includes subgroups E1: signal transduction (mechanism unknown), E2: osmotic signal transduction, E3: osmotic signal transduction.

F: Lipid Synthesis or Transport / Membrane Integrity or Function 脂質合成/運輸與膜完整性. Includes subgroups F2: phospholipid biosynthesis, F3: cell peroxidation (prop.), F4: cell membrane permeability, F9: lipid homeostasis and transfer/storage, F8: ergosterol binding, F10: interaction with lipid fraction of cell membrane.

I: Melanin Synthesis in Cell Wall 細胞壁黑色素生成. Includes subgroups I1: reductase in melanin biosynthesis, I2: dehydratase in melanin biosynthesis, I3: polyketide synthase in melanin biosynthesis.

G: Sterol Biosynthesis in Membranes 固醇類生成. Includes subgroups G1: C14-demethylase in sterol biosynthesis, G2: Δ14-reductase and Δ8 → Δ7-isomerase in sterol biosynthesis, G3: 3-keto reductase in C4-de-methylation, G4: squalene epoxidase in sterol biosynthesis.

H: Cell Wall Biosynthesis 細胞壁生成. Includes subgroups H4: chitin synthase, H5: cellulose synthase.

P: Host Plant Defence Induction 防衛反應誘發. Includes subgroups P1: salicylate related, P2: salicylate related, P3: salicylate related, P4: polysaccharide elicitors, P5: anthraquinone, P6: microbial elicitors, P7: phosphonates, P8: salicylate related.

M: Chemicals with Multi-Site Activity 多點作用. Includes subgroups M01: copper preparations, M02: sulphur, M03: zinc thiolozone, M04: zinc thiolozone, M05: chlorotriazines, M06: thiocarbamates, M07: phthalimides, M08: triazines, M09: anthraquinones, M10: quinoxalines, M11: malimides, M12: thiocarbamates, M13: thiocarbamates.

Unknown Mode of Action 未知機制. Includes subgroups G1: cyanoacetamide-oxime, G2: phthalic acid, G3: benzotriazines, G4: benzene-sulfonamides, G5: pyridazinones, G6: phenyl acetamides, G7: cyano-methylene thiazolidine, G8: pyrimidone-hydrazones, G9: pyridinone-hydrazones, G10: guanidines.

BM: Biologicals with Multiple Modes of Action 生物性多重機制. Includes subgroups BM 01: plant extract, BM 02: microbial.

NC: Not Specified. Includes subgroups NC: Not Specified. Legend: 劇毒性, 中等毒性, 低毒性.