|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Acynonapyr**  **NA-89** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Acaricide | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Nippon Soda |  | | |
| **Application** | Timing: | Foliar | **Rate – (g/ha):** 67-200ppm |
| Crops | **Main Pests** | | |
| F&V, Tea | Spider mites | | |
| **Recent History:**  Acaricide which reportedly features a new mode of action. Acynonapyr also reportedly features no cross-resistance with existing agents or effects on beneficial insects. Currently under development for the Japanese and South Korean markets, with launch anticipated in 2019. Expansion into other regions is also being considered. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Afidopyropen**  **ME5343** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other | R&D | R&D |
| **Key Manufacturer / Brand:** | **Other Manufacturers:** | | | **Structure** | |
| Meiji Seika (ME5343) | Joint development with BASF | | |
| **Application** | **Timing:** | Foliar, Seed, Soil | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
| Row crops, Ornamentals, F&V | Aphids, whitefly, scales, mealy bugs, leaf hoppers | | |
| **Recent History:-**  Developed as ME5343 through a research collaboration involving Meiji Seika and the Kitasato Institute. The product is from a new class of chemistry and reportedly offers a novel mode of action to control sucking insects such as aphids and whiteflies, as well as certain scales, mealy bugs and leaf hoppers. Potential usage includes vegetables, fruit, vine, row crops and ornamentals. Reported to be effective as a foliar, seed and soil applied treatment. BASF has a global exclusive license to develop and commercialise the product, excluding in Japan, Taiwan and South Korea, with Meiji Seika retaining the rights in these countries. Currently under review for use in the USA with decision expected during 2018.  BASF submitted the regulatory dossier for Inscalis in the USA and Canada during 2016. The dossiers cover a wide range of crops, including fruit & vegetables, row crops and ornamentals. Pending regulatory approval, the first market introductions are expected in 2018/2019. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Aminopyrifen**  **AKD 5195** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other | R&D | R&D |
| **Key Manufacturer / Brand:** | **Other Manufacturers:** | | | **Structure** | |
| Agro-Kanesho |  | | |
| **Application** | **Timing:** |  | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
| F&V | Broad spectrum | | |
| **Recent History:-**  Fungicide under development by Agro-Kanesho. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Benzpyrimoxan**  **NNI-1501** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other- Benzyloxy pyrimidine | R&D | R&D |
| **Key Manufacturer / Brand:**  Nihon Nohyaku | **Other Manufacturers:** | | | **Structure** | |
|  |  | | |
| **Application** | **Timing:** |  | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
| Rice |  | | |
| **Recent History:-**  Rice paddy insecticide currently under development for the Japanese and Indian markets with launch anticipated for 2021 and 2023, respectively. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Kappa-bifenthrin** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Pyrethroid | R&D | R&D |
| **Key Manufacturer / Brand:** Cheminova | **Other Manufacturers:** | | | **Structure** | |
|  |  | | |
| **Application** | **Timing:** |  | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
|  |  | | |
| **Recent History:-**  Resolved isomer version of the insecticide bifenthrin under development by Cheminova. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Broflanilide**  **MCI-8007** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other – Meta-diamide | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Mitsui Chemicals Agro |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| F&V, Soybean, Cotton, Maize, Rice, Non-crop | *Lepidoptera, Coleoptera*, termites, ants, cockroaches and flies | | |
| **Recent History:**  Mitsui granted BASF an exclusive and/or co-exclusive license to commercialize this product globally except in Japan and some other countries. Currently under registration review for the Japanese market, and also in Canada. Initial launches are expected in 2018/19. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cyclopyrimorate**  **SW-065** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | Other - Pyridazine | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Mitsui Chemicals Agro |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Cereals, Rice |  | | |
| **Recent History:-**  Herbicide under development by Mitsui Chemicals Agro | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Dichlobentiazox**  **KIF-1629** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | |  | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Kumiai |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Rice, F&V | Downy mildew, Late Blight, *Pythium periplocum* | | |
| **Recent History:**  Fungicide in early development by Kumiai. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Dicloromezotiaz**  **DPX-RDS63** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other-zwitterionic | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| DuPont |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Rice, F&V | Chewing pests | | |
| **Recent History:**  New chemistry with a new mode of action for the control of chewing pests. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Dipymetitrone**  **BCS-BB98685** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other- dithiinodipyrroletetrone | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Bayer Crop Science |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  |  | | |
| **Recent History:**  Fungicide in development by Bayer. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **F4050** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | |  | R&D | R&D |
| **Key Manufacturer / Brand:** | **Other Manufacturers:** | | | **Structure:** | |
| FMC |  | | |
| **Application:** | **Timing:** | Pre-emergence, Post-emergence | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
| Cereals, Maize, Sunflower, Rice, Soybean | Broadleaf weeds | | |
| **Recent History:**  Launch expected in 2024. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **F4260** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | |  | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| FMC |  | | |
| **Application** | Timing: | Drench, Soil, Foliar; Pre-flowering, Post- flowering | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Maize, Soybean, Cotton, F&V, Others | Lepidoptera, Diptera, Coleoptera, and select Aphids | | |
| **Recent History:**  Active ingredient is targeted at the US market. Launch is expected in 2019. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **F9600** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | Other - Isoxazolidinone | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| FMC |  | | |
| **Application** | Timing: | Pre-emergent | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Cereals, Rape, Rice, Cotton, Others | Broadleaf weeds and select grass weeds | | |
| **Recent History:**  Internally developed by FMC. Launch is expected in 2020. Target markets are reportedly: Europe, USA, Brazil and Asia Pacific. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **F9650** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | SDHI | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| FMC | Bayer | | |
| **Application** | Timing: | Foliar | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Maize, Soybean, Potato, Canola, Peanut, Wheat | *Septoria*, Asian Soybean Rust, Blast & Sheath Blight, *Alternaria, Sclerotonia, Anthracnose* | | |
| **Recent History:**  Broad spectrum fungicide targeted at row crops in the US with launch expected in 2018. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **F9960** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | HPPD | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| FMC |  | | |
| **Application** | Timing: | Pre & Post Emergent & Burndown | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Maize, Soybean, Cotton | Broadleaf weeds | | |
| **Recent History:**  Purchased from Kumiai. Launch expected in 2023. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fenpicoxamid**  **XDE-777** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other-antibiotic | R&D | R&D |
| **Key Manufacturer / Brand:** | **Other Manufacturers:** | | | **Structure** | |
| Dow AgroSciences (Inatreq), Meiji Seika |  | | |
| **Application** | **Timing:** |  | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
| Cereals, Bananas, Ornamentals | *Septoria, Mycosporella* | | |
| **Recent History:**  Fungicide reported to offer a new mode of action. In co-development by Dow AgroSciences and Meiji Seika. A registration decision is expected form the US EPA in November 2017. The EU registration dossier was submitted in late 2014, with approval expected in 2018. US import tolerances were granted in 2017 for banana, wheat grain and rye grain. Introduction is anticipated in 2018/19. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fenquinotrione**  **KIH 3653** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | HPPD | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Kumiai |  | | |
| **Application** | Timing: | Pre- and early post-emergence | **Rate – (g/ha):** 125-250 |
| Crops | **Main Pests** | | |
| Rice | Broadleaf weeds and sedges *Monochoria, Cyperus* and *Amaranthus* species | | |
| **Recent History:**  Benzoylcyclohexanedione herbicide. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Flometoquin**  **ANM-138** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other | R&D | R&D |
| **Key Manufacturer / Brand:** | **Other Manufacturers:** | | | **Structure** | |
| Meiji Seika | Nippon Kayaku | | |
| **Application** | **Timing:** |  | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
| F&V, Cabbage, Cucumbers, Ornamentals, Cereals | Thrips, Whitefly, Lepidoptera | | |
| **Recent History:**  Co-developed by Meiji Seika and Nippon Kayaku as ANM-138. Submitted for registration in Japan in 2013, with introduction expected to take place in Q1 2018. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Florpyrauxifen-benzyl**  **XDE-848** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | Pyridine | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Dow AgroSciences (Rinskor, Lovant) |  | | |
| **Application** | Timing: | Post-emergence | **Rate – (g/ha):** 5-50 |
| Crops | **Main Pests** | | |
| Rice, Others | Grass, Broadleaf weeds, Sedges | | |
| **Recent History:**  Arylpicolinate herbicide reported to have a novel mode of action for rice. Approval in China was gained in 2016, whilst in 2017 the US EPA proposed registration of four herbicides containing the a.i.: GF-3206 (florpyrauxifen-benzyl), GF-3480 (florpyrauxifen-benzyl and cyhalofop-butyl) and GF-3565 (florpyrauxifen-benzyl and penoxsulam), for post-emergence grass, sedge and broadleaf weed control in the states of Arkansas, Florida, Louisiana, Missouri, South Carolina, Tennessee and Texas. The fourth product, GF-3301 (florpyrauxifen-benzyl), is for use on rice in the same states and for national aquatic use, including foliar application to emergent aquatic vegetation and for direct application to water bodies. Target weeds include: hydilla (*Hydrilla verticillata*), Eurasian watermilfoil (*Myriophyllum spicatum*) and crested floating heart (*Nymphoides cristata*).  Additionally, the a.i. has been granted reduced-risk status by the US EPA for use on rice and aquatic uses. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fluazaindolizine**  **DPX-Q8U80** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| DuPont |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| F&V, Turf | Nematodes | | |
| **Recent History:**  Nematicide in the advanced development stage at DuPont. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fluhexafon**  **S-1871** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Sumitomo Chemical | None | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  |  | | |
| **Recent History:**  Insecticide being developed by Sumitomo. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fluindapyr**  **IR9792 / F9990** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | SDHI | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Isagro and FMC |  | | |
| **Application** | Timing: | Foliar | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Cereals, Soybean, Rice, Tree nuts, Rape, Maize | *Septoria*, Asian Soybean Rust, Blast & Sheath Blight, Blossom Blight, *Alternaria, Sclerotonia, Anthracnose, Botrytis,* Powdery mildew | | |
| **Recent History:**  SDHI fungicide in co-development by Isagro SpA and FMC Corp. EU registration is expected in 2021. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Flupyrimin**  **ME5382** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Neonicotinoid | R&D | R&D |
| Key Manufacturer / Brand:Meiji Seika Pharma | Other Manufacturers: | | | Structure | |
|  |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Rice, Non-crop | American cockroach (*Periplaneta americana*), and house fly | | |
| **Recent History:**  New neonicotinoid insecticide being developed by Meiji Seika Pharma. The literature indicates activity against imidacloprid resistant rice pests, as well as superior safety toward pollinators. Activity towards American cockroach (*Periplaneta americana*), and house fly is also described, indicating potential development in non-crop markets. Pending regulatory approval, initial launches are anticipated for 2019/2020. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fluxametamide**  **NC-515** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other - Isoxazoline | R&D | R&D |
| **Key Manufacturer / Brand:** | **Other Manufacturers:** | | | **Structure** | |
| Nissan Chemical (Gracia) | None | | |
| **Application** | **Timing:** | Foliar | **Rate – (g/ha):** 25 – 100 |
| **Crops** | **Main Pests** | | |
| Vegetables, Soybean, Tea | Lepidoptera, thrips, whitefly, leaf miner, flea beetle and mites | | |
| **Recent History:**  Isoxazoline insecticide with new mode of action and reduced impact to pollinators. Registration is expected in Japan and Korea, with development also taking place for other Asian markets. Construction of a new $12 m. manufacturing plant in Onada, Yamaguchi has commenced with completion scheduled for July 2018. Initial launch is expected for the product in 2019. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Inpyrfluxam**  **S-2399** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other-Pyrazole carboxamide | R&D | R&D |
| **Key Manufacturer / Brand:**  Sumitomo Chemical | **Other Manufacturers:** | | | **Structure** | |
|  |  | | |
| **Application** | **Timing:** |  | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
|  |  | | |
| **Recent History:**  Fungicide in early development by Sumitomo Chemical. Analysis of the core chemical structure indicates that the molecule could potentially operate via the SDHI mode of action. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ipfentrifluconazole** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | SBI - Other azole | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| BASF |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  |  | | |
| **Recent History:**  Fungicide being developed by BASF. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Isoflucypram**  **BCS-CN88460** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other-Pyrazole carboxamide | R&D | R&D |
| Key Manufacturer / Brand:Bayer Crop Science | Other Manufacturers: | | | Structure | |
|  |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Turf | Rapid blight, pink snow mould | | |
| **Recent History:**  Pyrazole carboxamide fungicide under development at Bayer. References in the literature include use against rapid blight (*Labyrinthula terrestris*) and pink snow mould (*Monographella nivalis var. nivalis*). | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Lancotrione-Sodium**  **SL-261** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | Other | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Ishihara |  | | |
| **Application** | Timing: | Pre- and post-emergence | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Rice | Grass, Broadleaf weeds and Sedges | | |
| **Recent History:**  Under development for use in the Japanese market. Initial commercialisation scheduled from 2017 onwards. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Mefentrifluconazole** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | SBI - Other azole (isopropylazole) | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| BASF (Revysol) |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Cereals, other row crops, speciality crops | Septoria, rusts | | |
| **Recent History:**  The regulatory dossier for mefentrifluconazole was submitted to the EU in 2016, whilst in 2017, BASF submitted dossiers in the US, Canada and Mexico. A US registration decision is anticipated in early 2019. The company is planning to launch the a.i. in some 50 countries including the Asian region. Launch is currently planned for 2019/2020. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Pyrapropoyne**  **NC-241** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other-pyrazole carboxamide | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Nissan Chemical |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Vegetables, Vine, Pome and stone fruit | Ascomycetes diseases | | |
| **Recent History:**  Currently undergoing official trials in Japan. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NF-180** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other |  |  |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Nippon Soda |  | | |
| **Application** | Timing: | Foliar | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Pome fruit, Vine, Vegetables, Rape, Rice, Turf | Broad spectrum (*Venturia, Botrytis, Sclerotinia*, blast, Anthracnose, others) | | |
| **Recent History:**  Fungicide being developed by Nippon Soda. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Pyraziflumid**  **NNF-0721** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other - Anilide | R&D | R&D |
| **Key Manufacturer / Brand:** | **Other Manufacturers:** | | | **Structure** | |
| Nihon Nohyaku  (Parade) | None | | |
| **Application** | **Timing:** | Foliar | **Rate – (g/ha):** 100-375 |
| **Crops** | **Main Pests** | | |
| Rice, Turf , Vegetables, Vine, Pome | Powdery mildew, Scab, Grey mould, Sclerotinia rot, Ring spot, Blotch, Dollar Spot | | |
| **Recent History:**  Expected to be launched in 2018 in Japan, with subsequent launch in the US expected in 2021. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Quinofumelin**  **ARK-3010** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Fungicide | | Other - Quinoline | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Mitsui Chemicals Agro |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  |  | | |
|  | |
| **Recent History:** | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SL-1201** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | Other | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Ishihara |  | | |
| **Application** | Timing: | Pre-emergence | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Soybean, Cereals, Potato | Grass and Broadleaf weeds | | |
| **Recent History:**  Under development for use in major markets. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Spiropidion**  **SYN546330** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other- tetramic acid | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Syngenta |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  |  | | |
| **Recent History:**  Tetramic acid insecticide being developed by Syngenta | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Kappa-tefluthrin** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Pyrethroid | R&D | R&D |
| **Key Manufacturer / Brand:** Cheminova | **Other Manufacturers:** | | | **Structure** | |
|  |  | | |
| **Application** | **Timing:** |  | **Rate – (g/ha):** |
| **Crops** | **Main Pests** | | |
|  |  | | |
| **Recent History:-**  Resolved isomer version of the insecticide tefluthrin under development by Cheminova. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tetraniliprole**  **BCS-CL73507** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other – Diamide | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Bayer |  | | |
| **Application** | Timing: | Foliar, soil, seed | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Maize, F&V, Rice, Potato, Broadacre crops | Lepidoptera, Coleoptera, Diptera | | |
| **Recent History:**  New diamide insecticide currently under development for foliar, soil and seed uses with broad pest spectrum and low application rates. First launch expected in 2019, whilst the US registration decision is anticipated in March 2019. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tiafenacil**  **DCC-3825** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | Other – Uracil | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| FarmHannong |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  | Non selective, annual grasses, broad-leaved | | |
| **Recent History:**  The company plans to launch the herbicide as Terrad'or in South Korea in 2018, with global launches planned for 2020. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tioxazafen** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other – Nematicide | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Monsanto |  | | |
| **Application** | Timing: | Seed treatment | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Maize, Soybean, Cotton, Vegetables | Nematodes, soybean cyst, root knot, and reniform nematodes in soybean; lesion, root knot, and needle nematodes in corn; and reniform and root knot nematodes in cotton | | |
| **Recent History:**  Tioxazafen belongs to the 3,5-disubstituted-1,2,4-oxadiazole class. Acquired as part of the Divergence acquisition in 2011. US registration was achieved in 2017 with launch in that market expected in 2018. Registration approval was proposed in Canada in 2017 as MON 102133 SC. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Trifludimoxazin** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Herbicide | | Other - Triazinone | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| BASF |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  |  | | |
| **Recent History:** | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Triflumezopyrim**  **DPX-RAB55** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| DuPont (Pyraxalt) |  | | |
| **Application** | Timing: | Foliar | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
| Rice | Plant hoppers | | |
| **Recent History:**  Triflumezopyrim interacts with the acetylcholine binding site and modifies nicotinic acetylcholine receptor function in a manner which deviates from that of existing neonicotinoids. The product is being developed for use on rice, particularly against brown planthoppers (*Nilaparvata lugens*). Regulatory dossiers have been submitted in key rice growing regions including China, South Korea and the Philippines. Currently under review for registration in the USA with decision due in December 2017. US import tolerances for rice grain and rice hulls were granted in 2017. First sales of the a.i. are expected in 2018. | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tyclopyrazoflor**  **XDE-607** | **Product Type:** | | **Class:** | **Sales ($m.):** | **Launch Date:** |
| Insecticide | | Other-pyridinyl pyrazole | R&D | R&D |
| Key Manufacturer / Brand: | Other Manufacturers: | | | Structure | |
| Dow AgroSciences |  | | |
| **Application** | Timing: |  | **Rate – (g/ha):** |
| Crops | **Main Pests** | | |
|  |  | | |
| **Recent History:**  Pyridinyl pyrazole insecticide from Dow AgroSciences being developed as X12317607 and XDE-607 | | | | | |