Table 1. Chemical group of fungicides active ingredients registered for the control of peanut leaf spot and rates used in this study by treatments for peanut smut control

|  |  |  |
| --- | --- | --- |
| **Chemical group** | **Active ingredients** | **Rate g ai/ha** |
| QoI | Picoxystrobin | 120 |
| QoI | Azoxystrobin | 135 |
| QoI | Kresoxim-Methyl | 190 |
| QoI | Pyraclostrobin | 150 |
| DMI | Difenoconazole | 160 |
| DMI | Propiconazole | 200 |
| DMI | Cyproconazole | 75 |
| DMI | Tebuconazole | 300 |
| SDHI | Penthiopyrad | 120 |
| EBDC | Mancozeb | 1700 |
| MBC | Thiophanate-Methyl | 750 |
| Chloronitriles | Chlorothalonil | 1500 |

Table 2. Severely damaged pods, control efficiency, and corresponding statistics for the effect of different active ingredients using for the control of peanut smut on semi-controlled condition experiment in 2015 and 2016.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2015** | | | | |  |  | **2016** | | | | |
| **Active ingredients** | **SDPa** | **CLLb** | **CLUb** | **CEc** |  | **Active ingredients** | | | **SDP** | **CLL** | **CLU** | **CE** | |
| Azoxystrobin | 0.30 | 0.23 | 0.39 | 58.9 |  | Azoxystrobin | | | 0.04 | 0.02 | 0.09 | 92 | |
| Difenoconazole | 0.43 | 0.36 | 0.51 | 41.1 |  | Cyproconazole | | | 0.09 | 0.06 | 0.14 | 82 | |
| Tebuconazole | 0.51 | 0.44 | 0.58 | 30.1 |  | Tebuconazole | | | 0.13 | 0.08 | 0.19 | 74 | |
| Picoxystrobin | 0.54 | 0.46 | 0.61 | 26 |  | Picoxystrobin | | | 0.19 | 0.14 | 0.25 | 62 | |
| Cyproconazole | 0.56 | 0.48 | 0.63 | 23.3 |  | Propiconazole | | | 0.27 | 0.2 | 0.35 | 46 | |
| Kresoxim-Methyl | 0.60 | 0.52 | 0.67 | 17.8 |  | Mancozeb | | | 0.28 | 0.21 | 0.36 | 44 | |
| Thiophanate-Methyl | 0.65 | 0.57 | 0.72 | 11 |  | Difenoconazole | | | 0.29 | 0.22 | 0.36 | 42 | |
| Mancozeb | 0.65 | 0.58 | 0.71 | 11 |  | Kresoxim-Methyl | | | 0.32 | 0.26 | 0.39 | 36 | |
| Pyraclostrobin | 0.67 | 0.60 | 0.73 | 8.2 |  | Pyraclostrobin | | | 0.39 | 0.33 | 0.47 | 22 | |
| Propiconazole | 0.71 | 0.63 | 0.78 | 2.7 |  | Penthiopyrad | | | 0.43 | 0.36 | 0.5 | 14 | |
| Penthiopyrad | 0.72 | 0.63 | 0.79 | 1.4 |  | Check | | | 0.5 | 0.44 | 0.56 | 0 | |
| Check | 0.73 | 0.65 | 0.80 | 0 |  | Thiophanate-Methyl | | | 0.51 | 0.43 | 0.58 | 0 | |
| Chlorothalonil | 0.74 | 0.68 | 0.80 | 0 |  | Chlorothalonil | | | 0.52 | 0.45 | 0.59 | 0 | |

a Proportion of severely damaged pods (disease classes: 3 - deformed pod, with one single kernel completely smutted and 4 - deformed pod with two kernels completely smutted).

b Lower (CIL) and upper (CIU) limits of 95% confidence interval around SDP estimated mean.

c Percentages of control efficiency of active ingredients calculated in relation to the non-treated check.

Table 3. Severely damaged pods, control efficiency, and corresponding statistics for the effect of different active ingredients using for the control of peanut smut on field experiments in harvest 2015 and 2016.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2015** | | | | |  |  | **2016** | | | |
| **Active ingredients** | | **SDPa** | **CLLb** | **CLUb** | **CEc** |  | **Active ingredients** | **SDP** | **CLL** | **CLU** | **CE** |
| Cyproconazole | | 0.21 | 0.19 | 0.23 | 47.7 |  | Azoxystrobin | 0.26 | 0.24 | 0.29 | 39.5 |
| Azoxystrobin | | 0.25 | 0.22 | 0.27 | 37.2 |  | Propiconazole | 0.33 | 0.31 | 0.35 | 23.7 |
| Mancozeb | | 0.29 | 0.27 | 0.31 | 25.8 |  | Cyproconazole | 0.34 | 0.32 | 0.37 | 20.9 |
| Pyraclostrobin | | 0.31 | 0.29 | 0.34 | 20.7 |  | Picoxystrobin | 0.38 | 0.35 | 0.40 | 13.8 |
| Picoxystrobin | | 0.32 | 0.29 | 0.35 | 18.9 |  | Difenoconazole | 0.38 | 0.35 | 0.40 | 13.3 |
| Propiconazole | | 0.32 | 0.30 | 0.34 | 17.9 |  | Thiophanate-Methyl | 0.38 | 0.35 | 0.41 | 12.4 |
| Chlorothalonil | | 0.33 | 0.30 | 0.35 | 16.8 |  | Chlorothalonil | 0.38 | 0.36 | 0.41 | 12.2 |
| Kresoxim-Methyl | | 0.33 | 0.30 | 0.35 | 16.6 |  | Mancozeb | 0.38 | 0.35 | 0.41 | 12.0 |
| Thiophanate-Methyl | | 0.35 | 0.32 | 0.37 | 11.7 |  | Kresoxim-Methyl | 0.39 | 0.36 | 0.43 | 9.9 |
| Difenoconazole | | 0.36 | 0.34 | 0.38 | 8.2 |  | Penthiopyrad | 0.40 | 0.38 | 0.42 | 7.8 |
| Tebuconazole | | 0.36 | 0.34 | 0.39 | 7.4 |  | Pyraclostrobin | 0.42 | 0.40 | 0.45 | 3.2 |
| Penthiopyrad | | 0.37 | 0.35 | 0.40 | 4.8 |  | Check | 0.44 | 0.41 | 0.46 | - |
| Check | | 0.39 | 0.36 | 0.42 | - |  | Tebuconazole | 0.45 | 0.42 | 0.48 | 0 |

a Mean of the proportion of severely damaged pods (disease class 3 and 4)

b Lower (CLL) and upper (CLU) limits of 95% confidence interval around SDP

c Percentages of control efficiency of active ingredients calculated in relation to the untreated check treatment.



Figure 1. Mycelial growth inhibition curves according to fungicide concentration (μg a.i./ml) for active ingredients evaluated. Numbers on the central point-line corresponds at EC50.



Figure 2. Proportion of severely damaged pods for different active ingredients used for the control of peanut smut on semi-controlled condition experiment in 2015 and 2016.



Figure 3. Proportion of severely damaged pods for different active ingredients used for the control of peanut smut on field experiments in 2015 and 2016.