# Air borne rust inoculum over western Canada in 1977[1]

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Early in the 1977 growing season southerly winds brought the usual number of stem rust urediospores into western Canada. Stem rust spore counts increased rapidly later in the season and greatly exceeded the 11-year mean. Many more leaf rust urediospores than usual were carried into western Canada early in the season but leaf rust spore counts increased slowly later in the season, and the mean number of spores present was less than the 11-year mean.

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Au debut de la saison de vegetation de 1977, les vents du sud ont amene dans-l'ouest du Canada le nombre habituel d'uredospores de la rouille de la tige. Les numerations des spores ont augmente rapidement par la suite et ont depasse de beaucoup la moyenne de 11 ans. Par ailleurs l'afflux d'urbdospores de la rouille de la feuille en debut de saison a été beaucoup plus important que d'habitude dans l'ouest du Canada, mais les numerations de spores n'ont augmente que lentement par apres, si bien que le nombre moyen de spores a ete inferieur a la moyenne de 11 ans.

The relative numbers of air-borne urediospores over western Canada in 1977 were estimated by the methods described in earlier reports published annually in the Canadian Plant Disease Survey (1) except that in 1977 the spore trap slides were coated with silicone oil instead of Vaseline.

The number of stem rust spores carried into western Canada from the south during June (Table 1) was about the same as in 1976 but there were many more leaf rust spores than in 1976 (1). As the season progressed the rate of increase in the numbers of leaf rust spores was slower than usual and the total numbers of spores on the slides at most locations were similar to 1976 (Table 1). In contrast, the numbers of stem rust spores increased rapidly and greatly exceeded the numbers reported for 1976. The mean number of leaf rust spores observed per slide (48-hour exposure) was much less than the 11-year mean (1966-76) but the mean number of stem rust spores greatly exceeded the 11-year mean (Table 2), especially over the eastern prairies.

The failure of leaf rust spore counts to increase at the usual rate in 1977 was probably caused by unfavorable weather conditions, especially by hot weather early in the growing season that restricted leaf rust development in farm fields. Stem rust was scarce in farm wheat fields but it was abundant in oat fields. The relatively large numbers of stem rust spores observed in 1977 probably originated in heavily infected oat fields.

Table 1. Number of urediospores of stem rust and leaf rust per square inch (6.5 $cm^2$) observed on silicone oil-coated slides exposed for 72-hour periods at three locations in Manitoba and three locations in Saskatchewan in 1977

| | Winnipeg | | Morden | | Brandon | | Indian Head | | Regina | | Saskatoon | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust |
| June 1-4 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 1 |
| June 4-7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 6 |
| June 7-10 | 0 | 1 | 1 | 4 | 0 | 2 | 2 | 5 | 0 | 7 | 0 | 2 |
| June 10-13 | 0 | 3 | 0 | 3 | 1 | 5 | 0 | 4 | 0 | 4 | 0 | 11 |
| June 13-16 | 0 | 1 | 1 | 2 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 0 |
| June 16-19 | 0 | 4 | 0 | 8 | 0 | 0 | 0 | 14 | 2 | 10 | 0 | 4 |
| June 19-22 | 0 | 1 | 1 | 5 | 0 | 7 | 1 | 5 | 1 | 13 | 1 | 23 |
| June 22-25 | 0 | 5 | 1 | 11 | 1 | 8 | | 0 | 1 | 18 | 0 | 13 |
| June 25-28 | 0 | 9 | 1 | 8 | 1 | 8 | 0 | 2 | 1 | 7 | 0 | 5 |

(continued)

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Table 1. Number of urediospores of stem rust and leaf rust per square inch (6.5 $cm^2$) observed on silicone oil-coated slides exposed for 72-hour periods at three locations in Manitoba and three locations in Saskatchewan in 1977 (concluded)

| | Winnipeg | | Morden | | Brandon | | Indian Head | | Regina | | Saskatoon | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust | Stem rust | Leaf rust |
| June 28-1 | 2 | 6 | 0 | 5 | 1 | 12 | 0 | 0 | 3 | 20 | 0 | 21 |
| June total | 2 | 30 | 5 | 48 | 4 | 48 | 3 | 31 | 8 | 87 | 2 | 86 |
| July 1-4 | 1 | 5 | 8 | 15 | 2 | 6 | 2 | 11 | 2 | 33 | 1 | 23 |
| July 4-7 | 0 | 4 | 2 | 14 | 0 | 8 | 0 | 8 | 1 | 15 | 0 | 23 |
| July 7-10 | 2 | 6 | 6 | 33 | 0 | 0 | 0 | 1 | 2 | 14 | 7 | 63 |
| July 10-13 | 7 | 21 | 4 | 15 | 0 | 8 | 0 | 3 | 0 | 3 | 4 | 34 |
| July 13-16 | 13 | 28 | 45 | 125 | 0 | 11 | 8 | 38 | 1 | 9 | 0 | 33 |
| July 16-19 | 54 | 138 | 56 | 180 | 4 | 15 | 2 | 7 | 8 | 110 | 2 | 84 |
| July 19-22 | 12 | 73 | 40 | 145 | 10 | 43 | 3 | 45 | 5 | 113 | 2 | 30 |
| July 22-25 | 67 | 145 | 38 | 139 | 14 | 84 | 2 | 57 | 1 | 221 | 7 | 26 |
| July 25-28 | 53 | 122 | 115 | 100 | 19 | 27 | 12 | 46 | 9 | 186 | 2 | 7 |
| July 28-31 | 122 | 81 | 100 | 115 | 3 | 2 | 1 | 1 | 23 | 470 | 5 | 141 |
| July total | 331 | 623 | 414 | 881 | 52 | 204 | 30 | 217 | 52 | 1174 | 30 | 464 |
| Aug. 31-3 | 184 | 87 | 29 | 33 | 11 | 10 | 3 | 7 | 7 | 253 | 15 | 37 |
| Aug. 3-6 | 122 | 18 | 224 | 156 | 69 | 131 | 0 | 0 | 19 | 162 | 0 | 3 |
| Aug. 6-9 | 181 | 46 | 155 | 108 | 133 | 163 | 22 | 54 | 43 | 487 | 0 | 0 |
| Aug. 9-12 | 394 | 142 | 359 | 144 | 120 | 171 | 131 | 159 | 21 | 691 | 0 | 11 |
| Aug. 12-15 | 276 | 104 | 251 | 61 | 138 | 79 | 64 | 99 | 40 | 627 | 5 | 49 |
| Aug. 15-18 | 249 | 117 | 190 | 58 | | | 53 | 120 | 50 | 263 | 2 | 28 |
| Aug. 18-21 | 308 | 121 | 169 | 56 | 42 | 16 | 56 | 98 | 36 | 352 | 45 | 604 |
| Aug. total | 1714 | 635 | 1377 | 616 | 513 | 570 | 329 | 537 | 216 | 2835 | 67 | 732 |
| 1977 Total | 2047 | 1288 | 1796 | 1545 | 569 | 822 | 362 | 785 | 276 | 4096 | 99 | 1282 |
| 1976 Total | 50 | 1056 | 95 | 1124 | 35 | 888 | 19 | 774 | 39 | 2174 | 157 | 4284 |

Table 2. Mean number of urediospores of stem rust and leaf rust observed on slides exposed for 48-hour periods at six locations in western Canada from July 1 to August 15 in the years 1966 to 1976 and in 1977

| | Stem rust | | Leaf rust | |
|---|---|---|---|---|
| Location | 1966-76 mean | 1977 mean | 1966-76 mean | 1977 mean |
| Winnipeg | 16.6 | 66.1 | 170.5 | 45.3 |
| Morden | 14.7 | 63.6 | 242.4 | 61.5 |
| Brandon | 4.0 | 23.2 | 127.6 | 33.7 |
| Indian Head | 4.2 | 11.1 | 294.2 | 23.8 |
| Regina | 5.1 | 8.1 | 861.5 | 150.8 |
| Saskatoon | 3.6 | 2.2 | 232.5 | 25.1 |

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**Literature cited**

1. Green, G.J. 1976. Air-borne rust inoculum over western Canada in 1976. Can. Plant. Dis. Surv. 56: 117-118.