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## Aphid Management in Cereals

**Trial ID:** AM0908

**Location:**

Yallaroi

**Trial Year:** 2009

**Investigator:**

Anthony Mitchell

|                                        |                                                                                                                                                     |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective:</b>                      | To evaluate the impact and control of aphids in winter cereals                                                                                      |
| <b>Planting Date:</b>                  | 12/06/2009                                                                                                                                          |
| <b>Fungicide Seed Treatment:</b>       | Equivalent fungicide treatment on all seed:<br>Barley: triadimenol 22.5 g ai/100 kg seed, Bread and durum wheat: tebuconazole 2.5 g ai/ 100 kg seed |
| <b>Insecticide Seed Treatment:</b>     | Imidacloprid at 72 or 144 g ai/100 kg seed                                                                                                          |
| <b>Foliar Insecticide Application:</b> | Pirimor 150 g/ha on 19/08/2009 (aphid populations >10/tiller)                                                                                       |
| <b>Keywords:</b>                       | Aphid, wheat, barley , durum                                                                                                                        |

**Table 1: Emergence and Aphid Counts 38 and 54 DAP**

| Trt No. | Crop & Variety       | Seed Treatment<br>Insecticide/ 100 kg Seed | Foliar Insecticide/<br>ha | 6/07/2009 24 DAP                   | 20/07/2009 38 DAP    |                            | 5/08/2009 54 DAP     |                            |
|---------|----------------------|--------------------------------------------|---------------------------|------------------------------------|----------------------|----------------------------|----------------------|----------------------------|
|         |                      |                                            |                           | Emergence<br>Plants/m <sup>2</sup> | Oat Aphids/<br>Plant | % of Plants<br>with Aphids | Oat Aphids/<br>Plant | % of Plants<br>with Aphids |
| 1       | Barley cv. Fitzroy   | -                                          | -                         | 93bcde                             | 0.4                  | 16.7                       | 23.7a                | 100a                       |
| 2       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | -                         | 102ab                              |                      |                            | 1.4b                 | 57b                        |
| 3       | Barley cv. Fitzroy   | Imidacloprid 144 g ai                      | -                         | 97abc                              |                      |                            | 1.9b                 | 57b                        |
| 4       | Barley cv. Fitzroy   | -                                          | Pirimor 150 g             | 96abcd                             |                      |                            |                      |                            |
| 5       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | Pirimor 150 g             | 110a                               |                      |                            |                      |                            |
| 6       | Wheat cv. Livingston | -                                          | -                         | 76fg                               | 0.3                  | 16.7                       | 24.1a                | 100a                       |
| 7       | Wheat cv. Livingston | Imidacloprid 72 g ai                       | -                         | 77fg                               |                      |                            | 3.6b                 | 83ab                       |
| 8       | Wheat cv. Livingston | Imidacloprid 144 g ai                      | -                         | 80efg                              |                      |                            | 1.8b                 | 63b                        |
| 9       | Wheat cv. Livingston | -                                          | Pirimor 150 g             | 71g                                |                      |                            |                      |                            |
| 10      | Wheat cv. Livingston | Imidacloprid 72 g ai                       | Pirimor 150 g             | 83cdefg                            |                      |                            |                      |                            |
| 11      | Durum cv. Bellaroi   | -                                          | -                         | 96abcde                            | 1.0                  | 23.3                       | 20.7a                | 97a                        |
| 12      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | -                         | 97abcd                             |                      |                            | 1.8b                 | 70ab                       |
| 13      | Durum cv. Bellaroi   | Imidacloprid 144 g ai                      | -                         | 81defg                             |                      |                            | 1.3b                 | 53b                        |
| 14      | Durum cv. Bellaroi   | -                                          | Pirimor 150 g             | 89bcdef                            |                      |                            |                      |                            |
| 15      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | Pirimor 150 g             | 100ab                              |                      |                            |                      |                            |
|         |                      |                                            | P =                       | 0.00                               | 0.71                 | 0.92                       | 0.00                 | 0.01                       |
|         |                      |                                            | LSD =                     | 16.2                               | nsd                  | nsd                        | 6.8                  | 30.3                       |

nsd= No significant difference

DAP = days after planting

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Table 2: Aphid Counts 67 DAP

| Trt No. | Crop & Variety       | Seed Treatment<br>Insecticide/ 100 kg Seed | 18/08/2009 67 DAP |                    |                          |                          |
|---------|----------------------|--------------------------------------------|-------------------|--------------------|--------------------------|--------------------------|
|         |                      |                                            | Oat Aphids/Tiller | Corn Aphids/Tiller | Rose-Grain Aphids/Tiller | % of Tillers with Aphids |
| 1       | Barley cv. Fitzroy   | -                                          | 17a               | 7.0a               | 0.9a                     | 100a                     |
| 2       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | 4c                | 0.0b               | 0.0b                     | 92abc                    |
| 3       | Barley cv. Fitzroy   | Imidacloprid 144 g ai                      | 2cd               | 0.0b               | 0.0b                     | 70bcd                    |
| 6       | Wheat cv. Livingston | -                                          | 8b                | 0.0b               | 0.0b                     | 98ab                     |
| 7       | Wheat cv. Livingston | Imidacloprid 72 g ai                       | 1d                | 0.0b               | 0.0b                     | 64bcd                    |
| 8       | Wheat cv. Livingston | Imidacloprid 144 g ai                      | 1d                | 0.0b               | 0.0b                     | 39d                      |
| 11      | Durum cv. Bellaroi   | -                                          | 13a               | 0.3b               | 0.0b                     | 98ab                     |
| 12      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | 2cd               | 0.1b               | 0.0b                     | 56cd                     |
| 13      | Durum cv. Bellaroi   | Imidacloprid 144 g ai                      | 2d                | 0.0b               | 0.0b                     | 67bcd                    |
| P =     |                      |                                            | 0.00              | 0.00               | 0.05                     | 0.04                     |
| LSD =   |                      |                                            | Arcsin detransf   | Arcsin detransf    | Arcsin detransf          | Arcsin detransf          |

Table 3: Aphid Counts 83 DAP/ 15 DAA

| Trt No. | Crop & Variety       | Seed Treatment<br>Insecticide/ 100 kg Seed | Foliar Insecticide<br>/ ha | 3/09/2009 83 DAP/ 15 DAA |                       |                             |                             |
|---------|----------------------|--------------------------------------------|----------------------------|--------------------------|-----------------------|-----------------------------|-----------------------------|
|         |                      |                                            |                            | Oat<br>Aphids/Tiller     | Corn<br>Aphids/Tiller | Rose-Grain<br>Aphids/Tiller | % of Tillers with<br>Aphids |
| 1       | Barley cv. Fitzroy   | -                                          | -                          | 0.0                      | 0.5a                  | 0.7                         | 33bcde                      |
| 2       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | -                          | 0.0                      | 0.0b                  | 1.4                         | 61a                         |
| 3       | Barley cv. Fitzroy   | Imidacloprid 144 g ai                      | -                          | 0.1                      | 0.0b                  | 1.3                         | 50abc                       |
| 4       | Barley cv. Fitzroy   | -                                          | Pirimor 150 g              | 0.0                      | 0.0b                  | 0.2                         | 11e                         |
| 5       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | Pirimor 150 g              | 0.0                      | 0.0b                  | 0.4                         | 22de                        |
| 6       | Wheat cv. Livingston | -                                          | -                          | 0.0                      | 0.0b                  | 1.0                         | 28cde                       |
| 7       | Wheat cv. Livingston | Imidacloprid 72 g ai                       | -                          | 0.0                      | 0.0b                  | 0.5                         | 17de                        |
| 8       | Wheat cv. Livingston | Imidacloprid 144 g ai                      | -                          | 0.0                      | 0.0b                  | 1.6                         | 56ab                        |
| 9       | Wheat cv. Livingston | -                                          | Pirimor 150 g              | 0.0                      | 0.0b                  | 0.1                         | 11e                         |
| 10      | Wheat cv. Livingston | Imidacloprid 72 g ai                       | Pirimor 150 g              | 0.0                      | 0.0b                  | 0.1                         | 17de                        |
| 11      | Durum cv. Bellaroi   | -                                          | -                          | 0.0                      | 0.0b                  | 0.2                         | 17de                        |
| 12      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | -                          | 0.1                      | 0.0b                  | 0.5                         | 33bcde                      |
| 13      | Durum cv. Bellaroi   | Imidacloprid 144 g ai                      | -                          | 0.0                      | 0.0b                  | 0.7                         | 39abcd                      |
| 14      | Durum cv. Bellaroi   | -                                          | Pirimor 150 g              | 0.0                      | 0.0b                  | 0.4                         | 28cde                       |
| 15      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | Pirimor 150 g              | 0.0                      | 0.0b                  | 0.3                         | 17de                        |
| P =     |                      |                                            |                            | 0.57                     | 0.00                  | 0.15                        | 0.00                        |
| LSD =   |                      |                                            |                            | nsd                      | 0.1                   | Arcsin detransf             | 25.7                        |

nsd= No significant difference

DAP = days after planting

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Table 4: Head Count and Yield

| Trt No. | Crop & Variety       | Seed Treatment<br>Insecticide/ 100 kg seed | Foliar Insecticide<br>/ ha | 14/10/2009 124 DAP   | Yield    |
|---------|----------------------|--------------------------------------------|----------------------------|----------------------|----------|
|         |                      |                                            |                            | Heads/m <sup>2</sup> | t/ha     |
| 1       | Barley cv. Fitzroy   | -                                          | -                          | 480 a                | 3.4 d    |
| 2       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | -                          | 540 a                | 3.9 ab   |
| 3       | Barley cv. Fitzroy   | Imidacloprid 144 g ai                      | -                          | 538 a                | 3.9 ab   |
| 4       | Barley cv. Fitzroy   | -                                          | Pirimor 150 g              | 531 a                | 3.7 abcd |
| 5       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | Pirimor 150 g              | 542 a                | 3.7 abcd |
| 6       | Wheat cv. Livingston | -                                          | -                          | 269 bc               | 3.4 cd   |
| 7       | Wheat cv. Livingston | Imidacloprid 72 g ai                       | -                          | 289 b                | 3.5 cd   |
| 8       | Wheat cv. Livingston | Imidacloprid 144 g ai                      | -                          | 289 b                | 3.6 bcd  |
| 9       | Wheat cv. Livingston | -                                          | Pirimor 150 g              | 236 cd               | 3.5 cd   |
| 10      | Wheat cv. Livingston | Imidacloprid 72 g ai                       | Pirimor 150 g              | 257 bc               | 3.3 d    |
| 11      | Durum cv. Bellaroi   | -                                          | -                          | 201 d                | 3.7 abcd |
| 12      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | -                          | 234 cd               | 3.5 cd   |
| 13      | Durum cv. Bellaroi   | Imidacloprid 144 g ai                      | -                          | 236 cd               | 4.1 a    |
| 14      | Durum cv. Bellaroi   | -                                          | Pirimor 150 g              | 231 cd               | 4.0 a    |
| 15      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | Pirimor 150 g              | 237 c                | 3.8 abcd |
| P =     |                      |                                            |                            | 0.00                 | 0.01     |
| LSD =   |                      |                                            |                            | Log detransf         | 0.46     |

cv yield = 7.4%

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Table 5: Grain Quality

| Trt No. | Crop & Variety       | Seed Treatment<br>Insecticide/ 100 kg seed | Foliar<br>Insecticide/ ha | Screenings<br>% | Test Weight<br>kg/hL | Grain Weight<br>g / 1000 Grains |
|---------|----------------------|--------------------------------------------|---------------------------|-----------------|----------------------|---------------------------------|
| 1       | Barley cv. Fitzroy   | -                                          | -                         | 5.6a            | 74e                  | 43a                             |
| 2       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | -                         | 4.4ab           | 75d                  | 43a                             |
| 3       | Barley cv. Fitzroy   | Imidacloprid 144 g ai                      | -                         | 4.4ab           | 75d                  | 43ab                            |
| 4       | Barley cv. Fitzroy   | -                                          | Pirimor 150 g             | 4.3b            | 75de                 | 43ab                            |
| 5       | Barley cv. Fitzroy   | Imidacloprid 72 g ai                       | Pirimor 150 g             | 4.2b            | 75de                 | 41abc                           |
| 6       | Wheat cv. Livingston | -                                          | -                         | 4.1b            | 85a                  | 41abc                           |
| 7       | Wheat cv. Livingston | Imidacloprid 72 g ai                       | -                         | 4.0b            | 85a                  | 41abc                           |
| 8       | Wheat cv. Livingston | Imidacloprid 144 g ai                      | -                         | 3.9b            | 86a                  | 40bc                            |
| 9       | Wheat cv. Livingston | -                                          | Pirimor 150 g             | 3.9b            | 85a                  | 40bc                            |
| 10      | Wheat cv. Livingston | Imidacloprid 72 g ai                       | Pirimor 150 g             | 3.4b            | 86a                  | 40c                             |
| 11      | Durum cv. Bellaroi   | -                                          | -                         | 1.3c            | 83b                  | 36d                             |
| 12      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | -                         | 1.1c            | 83b                  | 34de                            |
| 13      | Durum cv. Bellaroi   | Imidacloprid 144 g ai                      | -                         | 1.1c            | 83bc                 | 34de                            |
| 14      | Durum cv. Bellaroi   | -                                          | Pirimor 150 g             | 1.0c            | 82c                  | 33de                            |
| 15      | Durum cv. Bellaroi   | Imidacloprid 72 g ai                       | Pirimor 150 g             | 1.0c            | 83b                  | 31e                             |
| P =     |                      |                                            |                           | 0.00            | 0.00                 | 0.00                            |
| LSD =   |                      |                                            |                           | 1.3             | 0.7                  | 2.9                             |