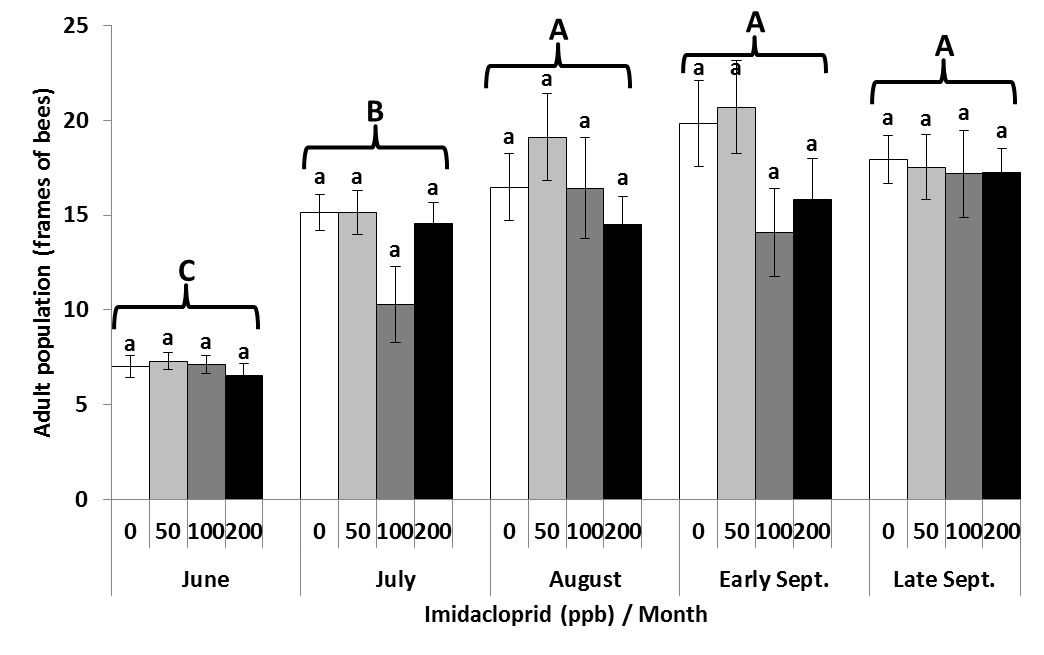
**Summary of 2011 Cig results:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Measurements** | | | |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| **Adult population** (frames of bees) | 53.38 (4, 129), <0.0001) | 1.43 (3, 34). 0.2362 | 1.69 (12, 129), 0.0752 |
| **Sealed brood area** (pupae) | 23.04 (4, 128), <0.0001) | 4.95 (3, 34), 0.0028 | 1.92 (12, 128), 0.0372 |
| **Open brood area** (1-5th instar larvae) | 33.32 (4, 129), <0.0001 | 0.59 (3, 34), 0.6224 | 0.96 (12, 129), 0.4881 |
| **Total brood area** (open + sealed) | 35.35 (4, 129), <0.0001) | 3.06 (3, 34), 0.0414 | 1.50 (12, 129), 0.1303 |
| **Pollen area** | 10.65 (4, 129), <0.0001 | 11.38 (3, 34), <0.0001) | 7.35 (12, 129), <0.0001 |
| **Mean missing cell area** | 6.98 (4, 118), <0.0001 | 3.06 (3, 34), 0.0412 | 1.51 (12, 118), 0.1309 |
| **Brood pattern** | 5.60 (4, 117), 0.0004 | 2.35 (3, 34), 0.0901 | 1.61 (12, 117), 0.0967 |
| ***Nosema* spp.levels** | 15.05 (4, 130), <0.0001 | 4.85 (3, 34), 0.0065 | 2.02, (12, 130), 0.0269 |
| ***Varroa destructor* levels** | 64.18, (3, 96), <0.0001 | 1.49 (3, 34), 0.2358 | 1.09 (9, 96), 0.3761 |
| **Total returning foragers** | 11.17 (2, 64), <0.0001) | 1.79 (3, 34), 0.1670 | 0.78 (6, 64), 0.5881 |
| **Percent returning pollen foragers** | 7.68 (2, 64), 0.0010 | 6.42 (3, 34), 0.0015 | 1.09 (6, 64), 0.3808 |
| **Dead bees** | 32.82 (3, 98), <0.0001 | 0.90 (3, 34), 0.4528 | 1.03 (9, 98), 0.4219 |
| **Consumption 48 hours** | 36.64 (3, 98), <0.0001 | 2.98 (3, 34), 0.0450 | 2.30 (9, 98), 0.0216 |
| **Consumption 1 week** | 29.06 (3, 98), <0.0001 | 3.07 (3, 34), 0.0407 | 2.74 (9, 98), 0.0068 |
| **Queen replacement (Date: ChiSquare, P value)** | Aug 31-Sept 22: 8.02, 0.0456 | Total June-Sept: 3.20, 0.3625 | Sept 22-Jan 12: 6.26, 0.0998 |

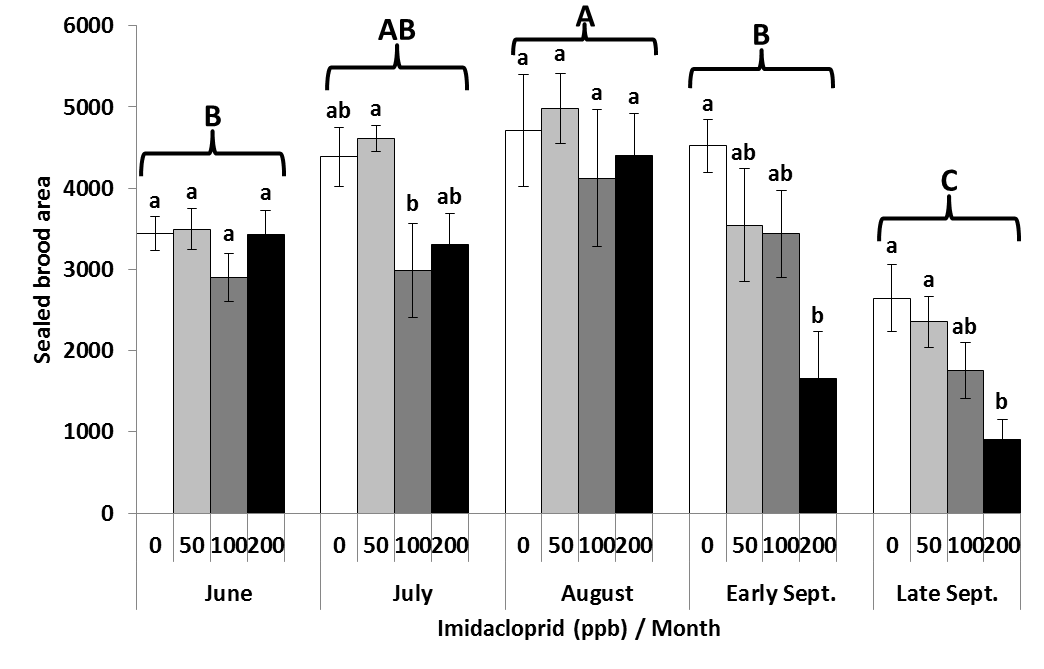
**Figure 1 Frames of bees**

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| **Adult population** (frames of bees) | 53.38 (4, 129), <0.0001) | 1.43 (3, 34). 0.2362 | 1.69 (12, 129), 0.0752 |



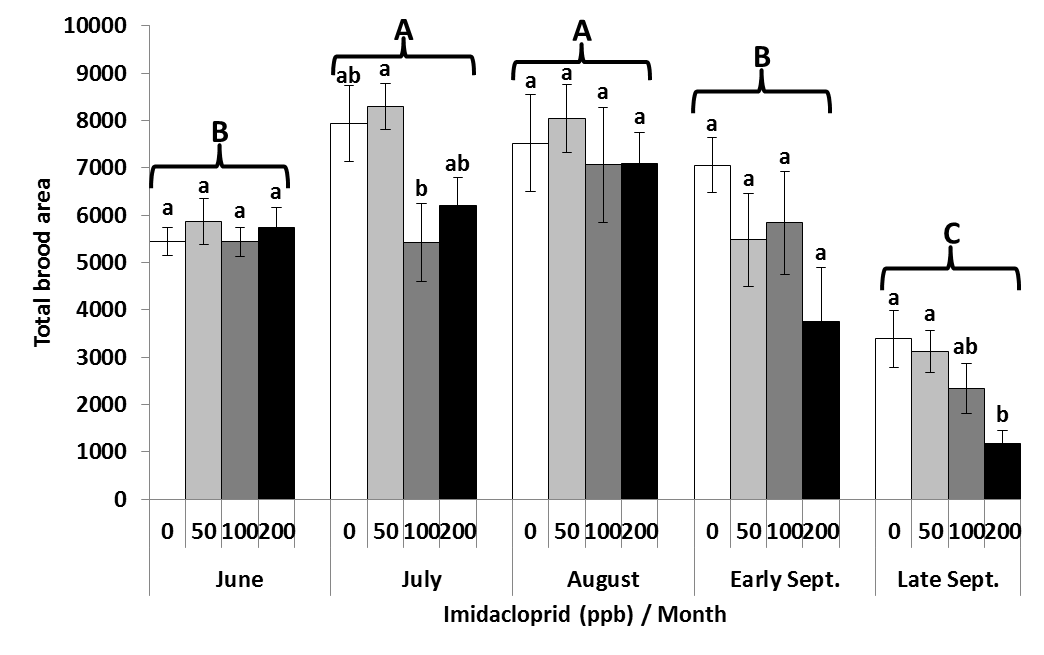
**Figure 2 Sealed brood**

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| **Sealed brood area** (pupae) | 23.04 (4, 128), <0.0001) | 4.95 (3, 34), 0.0028 | 1.92 (12, 128), 0.0372 |



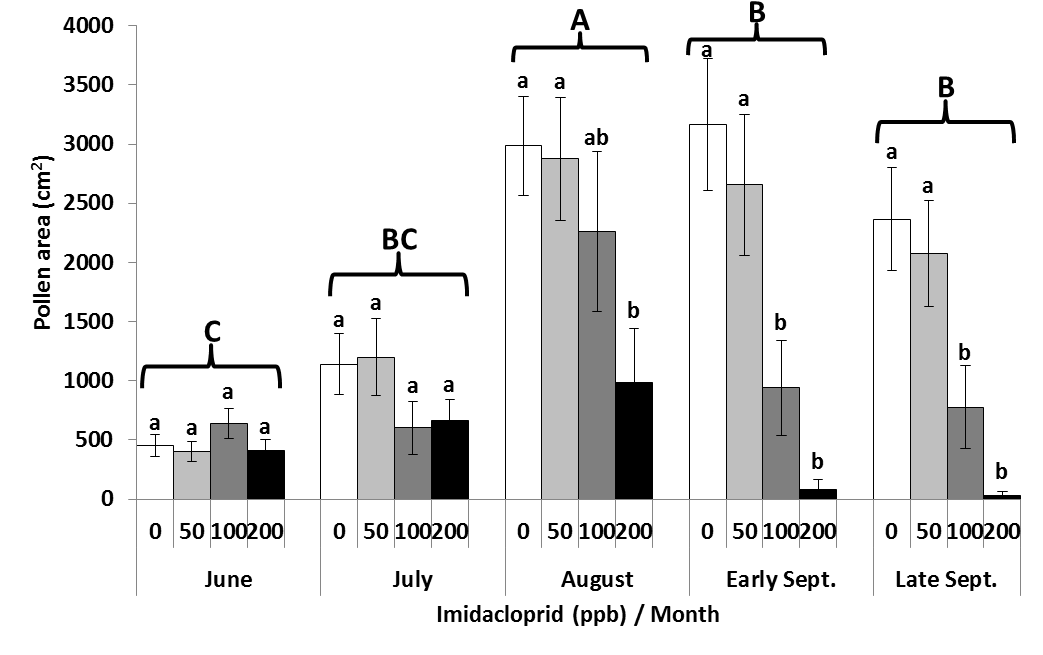
**Figure 3 Total brood area**

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| **Total brood area** (open + sealed) | 35.35 (4, 129), <0.0001) | 3.06 (3, 34), 0.0414 | 1.50 (12, 129), 0.1303 |



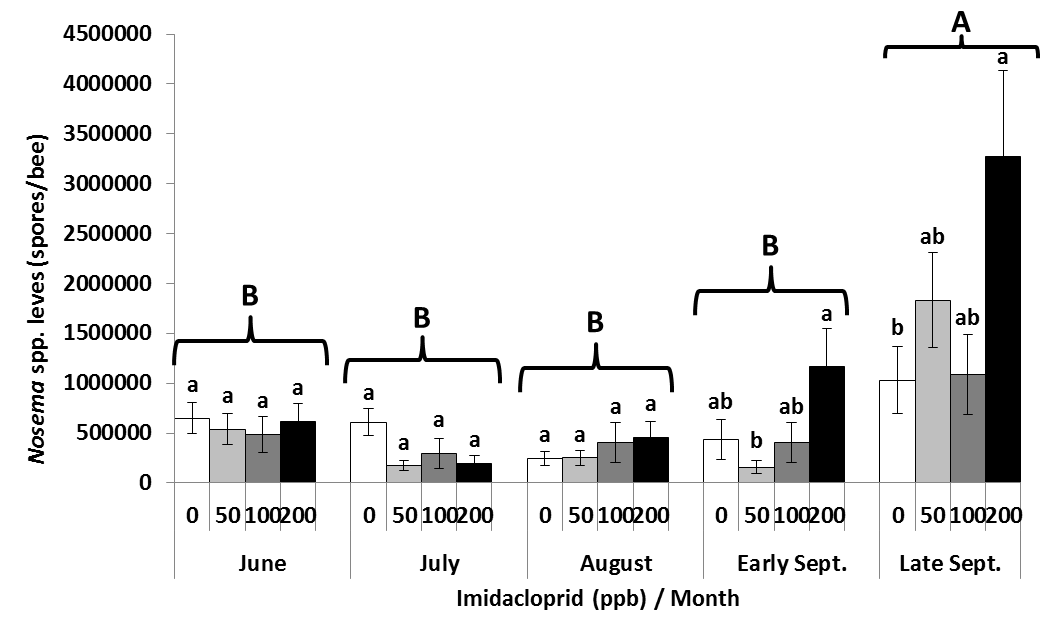
**Figure 4 Pollen area**

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| **Pollen area** | 10.65 (4, 129), <0.0001 | 11.38 (3, 34), <0.0001) | 7.35 (12, 129), <0.0001 |



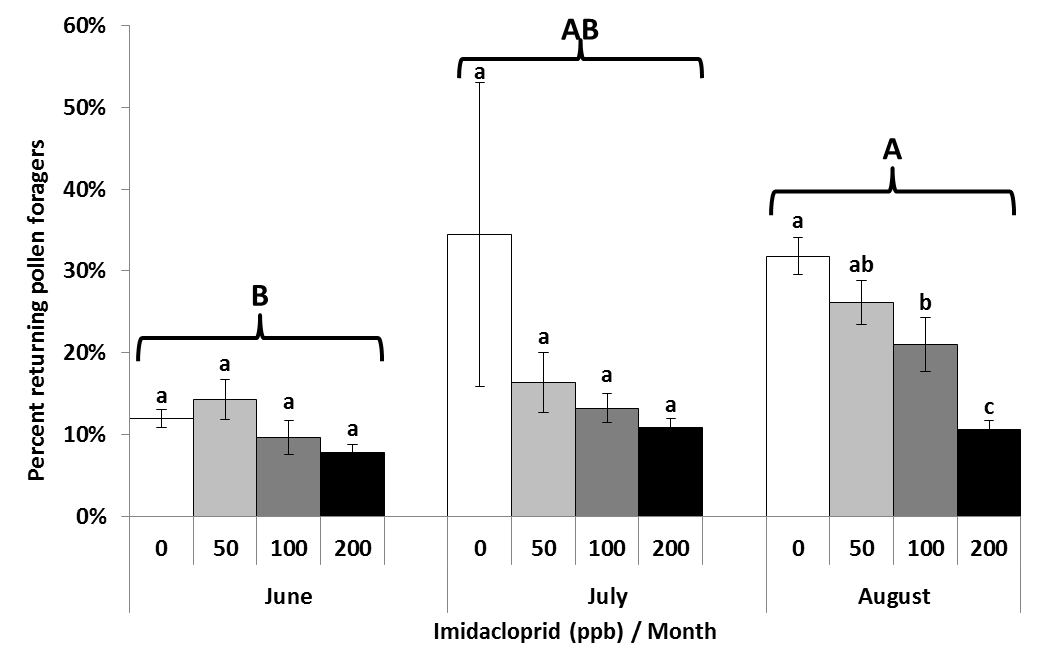
**Figure 5 *Nosema***

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| ***Nosema* spp.levels** | 15.05 (4, 130), <0.0001 | 4.85 (3, 34), 0.0065 | 2.02, (12, 130), 0.0269 |



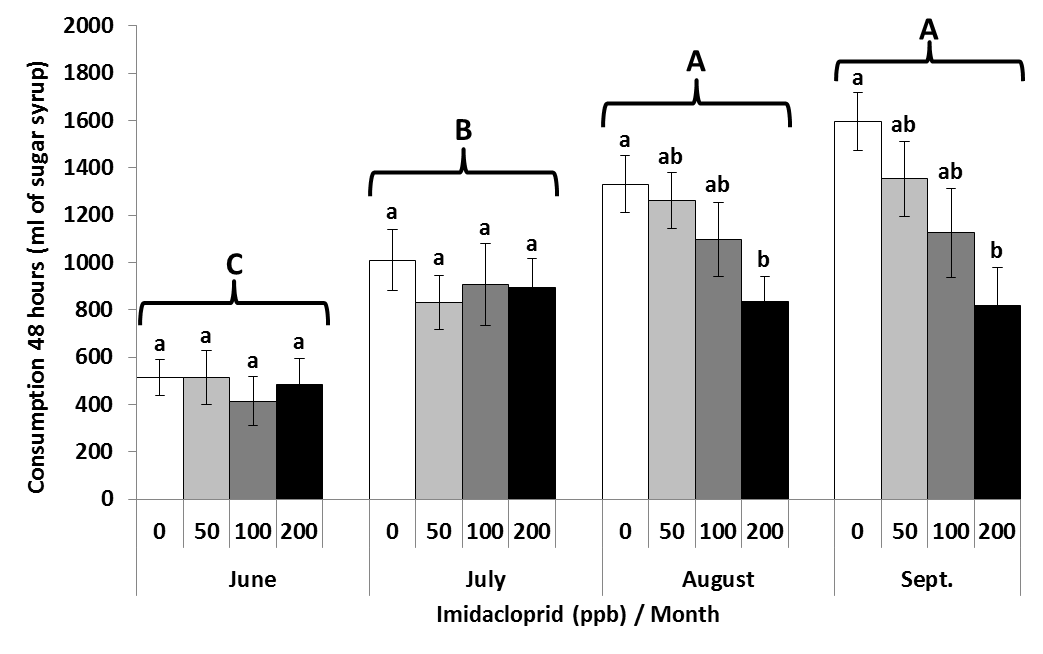
**Figure 6 Returning foragers**

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| **Percent returning pollen foragers** | 7.68 (2, 64), 0.0010 | 6.42 (3, 34), 0.0015 | 1.09 (6, 64), 0.3808 |



**Figure 7 Colony consumption 48 hrs**

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31, Sept 22** | F (df), P  Month | F (df), P  Treatment | F (df), P  Interaction |
| **Consumption 48 hours** | 36.64 (3, 98), <0.0001 | 2.98 (3, 34), 0.0450 | 2.30 (9, 98), 0.0216 |



**Figure 8 Queen replacement**

|  |  |  |  |
| --- | --- | --- | --- |
| **June-Sept: 5 assessments**  **June 8, July 6, Aug 3, Aug 31,**  **Sept 22** | **F (df), P**  **Month** | **F (df), P**  **Treatment** | **F (df), P**  **Interaction** |
| **Queen replacement (Date: ChiSquare, P value)** | **Aug 31-Sept 22: 8.02, 0.0456** | **Total June-Sept: 3.20, 0.3625** | **Sept 22-Jan 12: 6.26, 0.0998** |

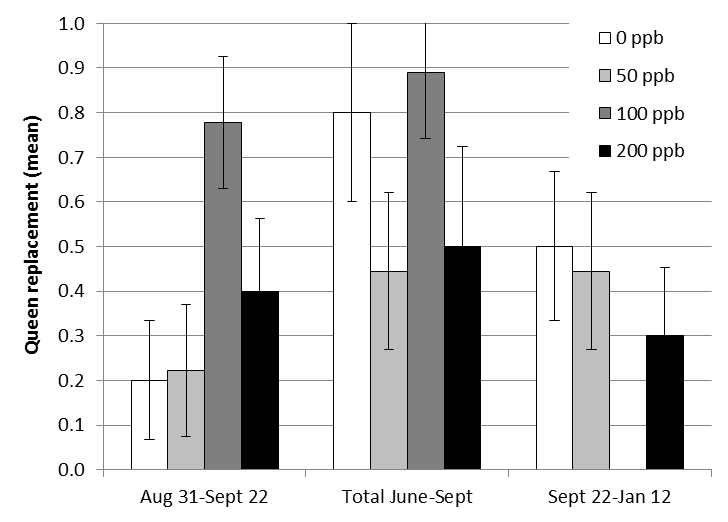


Figure 9

