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Report Date:

7/20/20

QUEEN QUALITY REPORT

Date Processed: 7/15/20 Date Received: 7/15/20

Client: Comfort

Num. of Groups:

Queen morphometrics:

| В | Weight (mg) | Head Width (mm) | Thorax Width (mm) | | |
|---------|-------------|-----------------|----------------------|--|--|
| Average | 194.6 ± 3.3 | 3.75 ± 0.02 | 4.81 ± 0.03 | | |
| Max | 236.6 | 3.94 | 5.11 | | |
| Min | 156.4 | 3.47 | 4.42 | | |
| %Global | 38.1% | 54.7% | 58.6% | | |

Insemination quality:

| В | Total Sperm (x10^6) | Sperm Viability | Spermatheca % Filled | | | | | |
|---------|------------------------|-----------------|-------------------------|--|--|--|--|--|
| Average | 5.55 ± 0.23 | 79.9 ± 1.4% | 57.2 ± 1.8% | | | | | |
| Max | 8.56 | 93.7 | 78 | | | | | |
| Min | 3.06 | 58.6 | 32.6 | | | | | |
| %Global | 53.7% | 39.9% | 56.3% | | | | | |

OVERALL ASSESSMENT

Num. of Queens: 34



Comments:

Large queens are an indication of strong and well-fed cell builders. These queens appear to have been raised i good cell builders The total number of stored sperm is very high. The sperm stored in the spermathecae of these queens is of moderate viability at the time of processing.

How do your queens stack up?

Increasing Queen Quality

Key:

Your Queens Global Queens

This histogram shows the overall scores for all the queens in our database with your queens in red for reference. Placement and spread are important indicators of quality and



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Group Means:

| Group | Weight (mg) | Head Width (mm) | Thorax Width (mm) | Total Sperm (x10^6) | Sperm Viability % | Spermatheca % Filled | Overall Score | Morpho Grade | Insemination Grade | Overall Grade |
|-------|-------------|-----------------|-------------------|------------------------|----------------------|-------------------------|------------------|-----------------|-----------------------|------------------|
| А | 196.6 ± 6.6 | 3.75 ± 0.02 | 4.85 ± 0.04 | 5.68 ± 0.41 | 81 ± 1.4 % | 57.8 ± 3.4 % | 66.8% | В | В | В |
| С | 193.9 ± 6.4 | 3.75 ± 0.03 | 4.77 ± 0.07 | 5.43 ± 0.45 | 78.2 ± 2.9 % | 55.4 ± 3.5 % | 64.6% | В | В | В |
| В | 192.9 ± 3.6 | 3.74 ± 0.04 | 4.8 ± 0.05 | 5.58 ± 0.32 | 81.1 ± 2.3 % | $58.5 \pm 2.3~\%$ | 67.5% | В | В | В |
| D | 199.3 ± 0 | 3.74 ± 0 | 4.85 ± 0 | 5.24 ± 0 | 71.7 ± 0 % | 56.6 ± 0 % | 62.5% | A- | B- | В |
| | | | | | | | | | | |

Key and Instructions for Interpretation

Average The average score for the set of queens measured in the current group

Maximum The *maximum* score for the set of queens measured in the *current* group

Minimum The minimum score for the set of queens measured in the current group

% GLOBAL The percentile of the average score within the entire population of all queens measured

Group MeansIf you've included information about batch, yard, or other grouped characteristics, the queens for that group appear in agregate here

Individual Means These are the raw values for each queen in the whole analyses

| | | Global Avg. +/- Std Dev |
|---------------------------------|----------------------------------------------------------------------------------------------------|-------------------------|
| Morphological Meas | ures | |
| Weight (mg) | Wet weight of adult queen, assumed to be mated. Expected greater weight if <i>actively</i> laying. | 202.1 ± 24.7 |
| Thorax width (mm) | The distance between the two widest points across the thorax. | 4.7 ± 0.3 |
| Head width (mm) | Maximum width of the head. | 3.7 ± 0.2 |
| Insemination Succes | s and Mating Number | |
| % Viability | The percentage of the sperm stored in the queens' spermathecae that are | 83.4 ± 14.1% |
| Sperm count (x10 ⁶) | Total number of stored sperm, in millions. Fully mated queens are expected to have >5 mil. | 5.29 ± 2.87 |
| % filled | The proportion of the theoretical maximum number of sperm that can fit in the spermatheca. | 52.6 ± 29.1% |

Thank you for working with the Honey Bee Queen & Disease Clinic, part of the Apiculture program at NC State!

If you have any questions, please don't hesitate to contact us.



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Individual Queens:

| # | QC | Queen | Group | Weight (mg) | Head Width (mm) | Thorax Width (mm) | Total Sperm (x10^6) | % Sperm Viability | % Filled | Overall Score |
|----|---------|-------|-------|----------------|--------------------|----------------------|---------------------|----------------------|----------|------------------|
| 1 | QC 1687 | 26 | С | 172.2 | 3.52 | 4.58 | 3.06 | 83.0% | 32.6% | 54.5% |
| 2 | QC 1688 | 6 | В | 181.8 | 3.64 | 4.69 | 5.34 | 86.8% | 56.0% | 68.8% |
| 3 | QC 1689 | 27 | В | 205.8 | 3.85 | 4.84 | 5.71 | 93.7% | 48.6% | 89.1% |
| 4 | QC 1690 | 29 | С | 233.1 | 3.67 | 5.06 | 5.85 | 78.9% | 69.8% | 70.5% |
| 5 | QC 1691 | 25 | В | 174.1 | 3.68 | 4.68 | 5.24 | 79.3% | 56.6% | 56.2% |
| 6 | QC 1692 | 2 | В | 207.0 | 3.87 | 4.97 | 7.70 | 79.1% | 69.5% | 69.7% |
| 7 | QC 1693 | 32 | С | 197.3 | 3.89 | 4.87 | 7.75 | 83.1% | 65.5% | 71.6% |
| 8 | QC 1694 | 19 | В | 192.2 | 3.70 | 4.72 | 4.41 | 82.6% | 54.2% | 66.2% |
| 9 | QC 1695 | 22 | Α | 236.6 | 3.70 | 5.01 | 6.11 | 84.2% | 69.3% | 76.7% |
| 10 | QC 1696 | 11 | В | 171.9 | 3.75 | 4.67 | 4.58 | 83.9% | 62.1% | 60.1% |
| 11 | QC 1697 | 1 | В | 195.3 | 3.94 | 4.97 | 4.76 | 66.1% | 45.1% | 60.3% |
| 12 | QC 1698 | 7 | Α | 220.1 | 3.83 | 4.86 | 8.56 | 80.1% | 68.8% | 72.5% |
| 13 | QC 1699 | 4 | Α | 181.9 | 3.62 | 4.83 | 4.59 | 80.1% | 40.3% | 59.8% |
| 14 | QC 1700 | 5 | D | 199.3 | 3.74 | 4.85 | 5.24 | 71.7% | 56.6% | 62.5% |
| 15 | QC 1701 | 31 | Α | 203.3 | 3.79 | 4.89 | 5.38 | 71.0% | 60.5% | 63.6% |
| 16 | QC 1702 | 28 | С | 209.6 | 3.86 | 4.78 | 5.68 | 58.6% | 52.9% | 63.9% |
| 17 | QC 1703 | 12 | С | 211.3 | 3.75 | 4.55 | 3.88 | 66.2% | 45.0% | 60.5% |
| 18 | QC 1704 | 24 | Α | 168.2 | 3.66 | 4.66 | 7.05 | 84.4% | 78.0% | 61.1% |
| 19 | QC 1705 | 17 | В | 200.4 | 3.73 | 4.85 | 6.14 | 67.9% | 63.6% | 62.7% |
| 20 | QC 1706 | 30 | Α | 212.7 | 3.84 | 4.80 | 4.88 | 80.9% | 52.2% | 70.4% |
| 21 | QC 1707 | 15 | С | 208.2 | 3.82 | 5.01 | 7.73 | 84.7% | 64.9% | 76.4% |
| 22 | QC 1708 | 34 | Α | 194.3 | 3.77 | 4.97 | 6.48 | 89.1% | 57.7% | 79.3% |
| 23 | QC 1709 | 9 | С | 166.7 | 3.70 | 4.42 | 3.51 | 69.5% | 39.9% | 43.3% |
| 24 | QC 1710 | 16 | С | 161.0 | 3.65 | 4.44 | 5.24 | 73.9% | 57.1% | 44.9% |
| 25 | QC 1711 | 13 | В | 196.2 | 3.69 | 4.81 | 5.22 | 81.4% | 55.8% | 67.3% |
| 26 | QC 1712 | 10 | В | 189.2 | 3.47 | 4.43 | 4.78 | 88.7% | 71.3% | 68.1% |
| 27 | QC 1713 | 21 | В | 208.2 | 3.88 | 5.11 | 7.52 | 82.8% | 60.7% | 73.8% |
| 28 | QC 1714 | 8 | Α | 193.9 | 3.79 | 4.80 | 5.51 | 76.4% | 47.1% | 62.8% |
| 29 | QC 1715 | 3 | Α | 189.3 | 3.79 | 4.89 | 6.28 | 84.5% | 66.0% | 70.0% |
| 30 | QC 1716 | 14 | Α | 205.9 | 3.81 | 5.05 | 4.37 | 83.3% | 51.0% | 71.9% |
| 31 | QC 1717 | 18 | С | 195.0 | 3.86 | 5.01 | 4.80 | 83.2% | 55.8% | 69.2% |
| 32 | QC 1718 | 33 | С | 202.7 | 3.78 | 5.05 | 6.00 | 91.1% | 55.9% | 84.9% |
| 33 | QC 1719 | 23 | С | 175.4 | 3.74 | 4.71 | 6.26 | 88.6% | 69.8% | 70.4% |
| 34 | QC 1720 | 20 | Α | 156.4 | 3.62 | 4.63 | 3.27 | 76.6% | 45.5% | 46.5% |
| 35 | | | | | | | | | | |
| 36 | | | | | | | | | | |
| 37 | | | | | | | | | | |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | | | |
| 40 | | | | | | | | | | |