# APPENDICES

Appendix 1: Area, production and yield of potato in Nepal

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Area (ha)** | **Production (Mt)** | **Yield (Mt/ha)** |
| 2009/10 | 185,342 | 2,517,696 | 13.58 |
| 2010/11 | 182,600 | 2,508,044 | 13.74 |
| 2011/12 | 190,250 | 2,584,301 | 13.58 |
| 2012/13 | 197,234 | 2,690,421 | 13.64 |
| 2013/14 | 205,725 | 2,817,512 | 13.70 |
| 2014/15 | 197,037 | 2,586,287 | 13.13 |
| 2015/16 | 199,971 | 2,805,582 | 14.03 |
| 2016/17 | 185,879 | 2,591,686 | 13.94 |
| 2017/18 | 195,268 | 3,088,000 | 15.81 |
| 2018/19 | 193,997 | 3,112,947 | 16.05 |
| 2019/20 | 188,098 | 3,131,830 | 16.65 |

Source: ( Ministry of Agriculture and Livestock Development, 2021)

Appendix 2: Area, production and yield of potato in Bhaktapur district

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Area(ha)** | **Production(Mt)** | **Productivity(Mt/ha)** |
| 2005/06 | 1050 | 19850 | 18.9 |
| 2006/07 | 1050 | 19850 | 18.9 |
| 2007/08 | 1100 | 20750 | 18.86 |
| 2008/09 | 1100 | 22079 | 20.07 |
| 2009/10 | 1150 | 23287 | 20.24 |
| 2010/11 | 1050 | 23287 | 22.18 |
| 2011/12 | 1528 | 23939 | 15.67 |
| 2012/13 | 1145 | 20700 | 18.08 |
| 2013/14 | 1145 | 20700 | 18.08 |
| 2014/15 | 2298 | 42607 | 18.54 |
| 2015/16 | 1336 | 28839 | 21.58 |

(Source: Statistical Year Book, 2017)

Appendix 3: Analysis of variance of infestation points per tuber in relation to treatments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sources of variation | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| Variety | 2 | 11.6439 | 5.8219 | 35.1814 | 1.36e-08\*\*\* |
| Biopesticides | 4 | 28.7596 | 7.1899 | 43.4478 | 4.56e-12\*\*\* |
| Variety: Biopesticides | 8 | 0.9573 | 0.1197 | 0.7231 | 0.6699 |
| Residuals | 30 | 4.9645 | 0.1655 |  |  |

Appendix 4: Analysis of variance of infested eyes per tuber in relation to treatments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sources of variation | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| Variety | 2 | 0.4961 | 0.24803 | 4.4855 | 0.01976\* |
| Biopesticides | 4 | 6.7529 | 1.68823 | 30.5313 | 3.46e-10\*\*\* |
| Variety: Biopesticides | 8 | 0.5449 | 0.06811 | 1.2318 | 0.31509 |
| Residuals | 30 | 1.6588 | 0.05529 |  |  |

Appendix 5: Analysis of variance of physiological loss in weight in relation to treatments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sources of variation | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| Variety | 2 | 430 | 215.01 | 48.256 | 4.22e-10\*\*\* |
| Biopesticides | 4 | 6166 | 1541.5 | 345.973 | < 2.2e-16\*\*\* |
| Variety: Biopesticides | 8 | 332.6 | 41.58 | 9.331 | 2.32e-06\*\*\* |
| Residuals | 30 | 133.7 | 4.46 |  |  |

Appendix 6: Analysis of variance of emergence of PTM adults in relation to treatments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sources of variation | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| Variety | 2 | 3048.9 | 1524.44 | 16.538 | 1.44e-05\*\*\* |
| Biopesticides | 4 | 11422.6 | 2855.65 | 30.98 | 2.91e-10\*\*\* |
| Variety: Biopesticides | 8 | 953.5 | 119.19 | 1.293 | 0.2843 |
| Residuals | 30 | 2765.3 | 92.18 |  |  |

Appendix 7: Analysis of variance of tuber damage index in relation to treatments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sources of variation | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| Variety | 2 | 1.5 | 0.751 | 0.3057 | 7.39e-01 |
| Biopesticides | 4 | 1189.89 | 297.472 | 121.1239 | < 2.2e-16\*\*\* |
| Variety: Biopesticides | 8 | 97.76 | 12.219 | 4.9755 | 0.000551\*\*\* |
| Residuals | 30 | 73.68 | 2.456 |  |  |

Appendix 8: Analysis of variance of decay loss in relation to treatments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sources of variation | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| Variety | 2 | 29.046 | 14.523 | 4.7902 | 1.57e-02\* |
| Biopesticides | 4 | 164.495 | 41.124 | 13.564 | 2.00e-06\*\*\* |
| Variety: Biopesticides | 8 | 10.296 | 1.287 | 0.4245 | 0.89702 |
| Residuals | 30 | 90.955 | 3.032 |  |  |

Appendix 9: Analysis of variance of tuber damage score in relation to treatments

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sources of variation | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| Variety | 2 | 3.246 | 1.6228 | 14.0236 | 5.01e-05\*\*\* |
| Biopesticides | 4 | 36.698 | 9.1745 | 79.2806 | 1.65e-15\*\*\* |
| Variety: Biopesticides | 8 | 1.567 | 0.1959 | 1.6926 | 0.1413 |
| Residuals | 30 | 3.472 | 0.1157 |  |  |

Appendix 10: Score of tuber damage according to the maximum damaged area on the cross- section of tuber of potato in Bhaktapur

|  |  |  |
| --- | --- | --- |
| Score | Diagram | Criteria |
| 1 | C:\Users\Anupa\Downloads\Photo\IMG_20211116_112931_722-01.jpeg | 0% |
| 2 | C:\Users\Anupa\Downloads\Photo\IMG_20210531_145156_312-01.jpeg | 5%> |
| 3 | C:\Users\Anupa\Downloads\Photo\IMG_20210531_133851_502-01.jpeg | 5-30% |
| 4 | C:\Users\Anupa\Downloads\Photo\IMG_20210531_150238_063-01.jpeg | 30-50% |
| 5 | C:\Users\Anupa\Downloads\Photo\IMG_20210531_133132_886-02.jpeg | 50%< |

|  |  |
| --- | --- |
| Appendix 11: Glimpse of study |  |
| C:\Users\Anupa\Downloads\Photo\IMG_20210417_085519_242-01.jpeg  **One day larva used for artificial infestation** | C:\Users\Anupa\Downloads\Photo\IMG_20210511_173020_274-02.jpeg  **Adults emerged from infested tubers** |
| C:\Users\Anupa\Downloads\Photo\IMG_20210418_105116_984-01.jpeg  **Potato tubers coated with *Bt* solution** | C:\Users\Anupa\Downloads\Photo\IMG_20210418_114548_101-01.jpeg  **Potato tubers coated with *Acorus calamus* powder** |
| **Varied level of infestation in different tubers** | **Experimental setup** |