249, 251, 253, 255, 257, 259, 275-472, 473, 478, 483, 488, 493, 498, 503, 513, 515, 517, 519, 521, 533-575, 576, 581, 586, 591, 596, 601, 603, 605, 607, 609, 621-767, 768, 773, 778, 783, 788, 793, 795, 797, 799, 801, 813-862, 863, 868, 873, 878, 883, 888, 890, 892, 894, 896, 908-1040, 1041, 1046, 1051, 1056, 1061, 1071, 1073, 1075, 1077, 1079, 1081, 1083, 1085, 1087, 1089, 1091, 1093, 1095, 1097, 1099, 1101, 1103, 1105, 1107, 1109, 1111, 1113, 1161-1571, 1572, 1577, 1582, 1587, 1592, 1597, 1602, 1607, 1612, 1617, 1622, 1627, 1632, 1637, 1642, 1647, 1652, 1657, 1662, 1667, 1672, 1677, 1682, 1684, 1686, 1688, 1690, 1692, 1694, 1696, 1698, 1700, 1702, 1704, 1730-2039, 2040, 2045, 2050, 2055, 2060, 2065, 2070, 2075, 2080, 2085, 2090, 2095, 2100, 2102, 2104, 2106, 2108, 2120-2338, 2339, 2344, 2349, 2354, 2359, 2364, 2366, 2368, 2370, 2372, 2384-2460, 2461, 2466, 2471, 2476 and 2481. In one embodiment, a double stranded ribonucleotide sequence is produced from the expression of a polynucleotide sequence, wherein contact of said ribonucleotide sequence by a pest inhibits the growth of said pest. In a further embodiment, contact of the sequence inhibits expression of a nucleotide sequence substantially complementary to said sequence. In another embodiment, a cell is transformed with the polynucleotide. In a further embodiment, the cell is a bacterial, yeast, or algal cell. In a still further embodiment, a food product, such as stored grains, pet food, or powdered chocolate, comprises the cell transformed with the polynucleotide. In yet another embodiment, a composition, such as a spray, powder, pellet, gel, capsule, food product, garment bag, and book, comprising the polynucleotide. In yet another embodiment, the invention provides a pesticide comprising the polynucleotide. In another embodiment, the invention provides a method for protecting an object, such as wood, tree, book binding, cloth, and a food storage container, from pest infestation, comprising treating said surface with a composition comprising the polynucleotide.

[0009] In another aspect, the invention provides a method for controlling pest infestation, comprising exposing a pest to a composition comprising a polynucleotide sequence that inhibits a pest biological activity. In one embodiment, the polynucleotide sequence is set forth in any of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 49-158, 159, 160, 163, 168, 173, 178, 183, 188, 193, 198, 203, 208, 215, 220, 225, 230, 247, 249, 251, 253, 255, 257, 259, 275-472, 473, 478, 483, 488, 493, 498, 503, 513, 515, 517, 519, 521, 533-575, 576, 581, 586, 591, 596, 601, 603, 605, 607, 609, 621-767, 768, 773, 778, 783, 788, 793, 795, 797, 799, 801, 813-862, 863, 868, 873, 878, 883, 888, 890, 892, 894, 896, 908-1040, 1041, 1046, 1051, 1056, 1061, 1071, 1073, 1075, 1077, 1079, 1081, 1083, 1085, 1087, 1089, 1091, 1093, 1095, 1097, 1099, 1101, 1103, 1105, 1107, 1109, 1111, 1113, 1161-1571, 1572, 1577, 1582, 1587, 1592, 1597, 1602, 1607, 1612, 1617, 1622, 1627, 1632, 1637, 1642, 1647, 1652, 1657, 1662, 1667, 1672, 1677, 1682, 1684, 1686, 1688, 1690, 1692, 1694, 1696, 1698, 1700, 1702, 1704, 1730-2039, 2040, 2045, 2050, 2055, 2060, 2065, 2070, 2075, 2080, 2085, 2090, 2095, 2100, 2102, 2104, 2106, 2108, 2120-2338, 2339, 2344, 2349, 2354, 2359, 2364, 2366, 2368, 2370, 2372, 2384-2460, 2461, 2466, 2471, 2476 and 2481.

[0010] In other embodiments, the invention provides for the use of the isolated nucleotide sequence, the double stranded ribonucleotide sequence, the cell, the composition, or the pesticide for preventing or treating an infestation, such as insect, nematode, or fungal infestation.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. **1**-LD: Survival of *L. decemlineata* on artificial diet treated with dsRNA. Insects of the second larval stage were fed diet treated with 50 μl of topically-applied solution of dsRNA (targets or gfp control). Diet was replaced with fresh diet containing topically-applied dsRNA after 7 days. The number of surviving insects were assessed at days 2, 5, 7, 8, 9, & 13. The percentage of surviving larvae was calculated relative to day 0 (start of assay). Target LD006: (SEQ ID NO: 178); Target LD007 (SEQ ID NO: 183); Target LD010 (SEQ ID NO: 188); Target LD011 (SEQ ID NO: 193); Target LD014 (SEQ ID NO: 198); gfp dsRNA (SEQ ID NO: 235).

[0012] FIG. **2**-LD: Survival of *L. decemlineata* on artificial diet treated with dsRNA. Insects of the second larval stage were fed diet treated with 50 μl of topically-applied solution of dsRNA (targets or gfp control). Diet was replaced with fresh diet only after 7 days. The number of surviving insects was assessed at days 2, 5, 6, 7, 8, 9, 12, & 14. The percentage of surviving larvae was calculated relative to day 0 (start of assay). Target LD001 (SEQ ID NO: 163); Target LD002 (SEQ ID NO: 168); Target LD003 (SEQ ID NO: 173); Target LD015 (SEQ ID NO: 215); Target LD016 (SEQ ID NO: 220); gfp dsRNA (SEQ ID NO: 235).

[0013] FIG. **3**-LD: Average weight of *L. decemlineata* larvae on potato leaf discs treated with dsRNA. Insects of the second larval stage were fed leaf discs treated with 20 μl of a topically-applied solution (10 ng/μl) of dsRNA (target LD002 or gfp). After two days the insects were transferred on to untreated leaves every day.

[0014] FIG. **4**-LD: Survival of *L. decemlineata* on artificial diet treated with shorter versions of target LD014 dsRNA and concatemer dsRNA. Insects of the second larval stage were fed diet treated with 50 μl of topically-applied solution of dsRNA (gfp or targets). The number of surviving insects were assessed at days 3, 4, 5, 6, & 7. The percentage of surviving larvae were calculated relative to day 0 (start of assay).

[0015] FIG. **5**-LD: Survival of *L. decemlineata* larvae on artificial diet treated with different concentrations of dsRNA of target LD002 (a), target LD007 (b), target LD010 (c), target LD011 (d), target LD014 (e), target LD015 (f), LD016 (g) and target LD027 (h). Insects of the second larval stage were fed diet treated with 50 μl of topically-applied solution of dsRNA. Diet was replaced with fresh diet containing topically-applied dsRNA after 7 days. The number of surviving insects were assessed at regular intervals. The percentage of surviving larvae were calculated relative to day 0 (start of assay).

[0016] FIG. **6**-LD. Effects of *E. coli* strains expressing dsRNA target LD010 on survival of larvae of the Colorado potato beetle, *Leptinotarsa decemlineata*, over time. The two bacterial strains were tested in separate artificial diet-based bioassays: (a) AB309-105; data points for pGBNJ003 and pGN29 represent average mortality values from 5 different bacterial clones, (b) BL21DE3); data points for pGBNJ003 and pGN29 represent average mortality values from 5 different and one single bacterial clones, respectively. Error bars represent standard deviations.

[0017] FIG. **7**-LD. Effects of different clones of *E. coli* strains (a) AB309-105 and (b) BL21(DE3) expressing dsRNA target LD010 on survival of larvae of the Colorado potato beetle, *Leptinotarsa decemlineata,* 12 days post infestation. Data points are average mortality values for each clone for pGN29 and pGBNJ003. Clone 1 of AB309-105 harbouring plasmid pGBNJ003 showed 100% mortality towards CPB at this timepoint, Error bars represent standard deviations.