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https://www.100test.com/kao_ti2020/124/2021_2022_GRE_C2_B794-10_c86_124139.htm The defoliation of millions of acres of trees by massive infestations of gypsy moth caterpillars is a recurring phenomenon in the northeastern United (5) States. In studying these outbreaks, scientists have discovered that affected trees fight back by releasing toxic chemicals, mainly phenols, into their foliage. These noxious substances (10) limit caterpillars growth and reduce the number of eggs that female moths lay. Phenols also make the eggs smaller, which reduces the growth of the following year s caterpillars. (15) Because the number of eggs a female moth produces is directly related to her size, and because her size is deter- mined entirely by her feeding success as a caterpillar, the trees defensive (20) mechanism has an impact on moth fecundity. The gypsy moth is also subject to attack by the nucleo-polyhedrosis virus, or wilt disease, a particularly (25) important killer of the caterpillars in outbreak years. Caterpillars contract wilt disease when they eat a leaf to which the virus, encased in a protein globule, has become attached. Once (30) ingested by a caterpillar, the protein globule dissolves, releasing thousands of viruses, or virions, that after about two weeks multiply enough to fill the entire body cavity. When the (35) caterpillar dies, the virions are released to the outside, encased in a new protein globule synthesized from the caterpillar s tissues and ready to be picked up by other caterpillars. (40) Knowing that phenols, including tannins, often act by associating with and altering the

activity of proteins, researchers focused on the effects on caterpillars of ingesting the virus and (45) leaves together. They found that on tannin-rich oak leaves, the virus is considerably less effective at killing caterpillars than when it is on aspen leaves, which are lower in phenols. (50) In general, the more concentrated the phenols in tree leaves, the less deadly the virus. Thus, while highly concentrated phenols in tree leaves reduce the caterpillar population by (55) limiting the size of caterpillars and consequently, the size of the female's egg cluster, these same chemicals also help caterpillars survive by disabling the wilt virus. Forest stands of red (60) oaks, with their tannin-rich foliage, may even provide caterpillars with safe havens from disease. In stands dominated by trees such as aspen, however, incipient gypsy moth outbreaks (65) are quickly suppressed by viral epidemics. Further research has shown that caterpillars become virtually immune to the wilt virus as the trees on which they (70) feed respond to increasing defoliation. The trees' own defenses raise the threshold of caterpillar vulnerability to the disease, allowing populations to grow denser without becoming (75) more susceptible to infection. For these reasons, the benefits to the caterpillars of ingesting phenols appear to outweigh the costs. Given the presence of the virus, the trees' (80) defensive tactic apparently has backfired. Which of the following statements best expresses the main point of the passage? Recurring outbreaks of infestation by gypsy moth caterpillars have had a devastating impact on trees in the northeastern United States. A mechanism used by trees to combat the threat from gypsy moth caterpillars has actually made some trees

more vulnerable to that threat. Although deadly to gypsy moth caterpillars, wilt disease has failed to significantly affect the population density of the caterpillars. The tree species with the highest levels of phenols in their foliage are the most successful in defending themselves against gypsy moth caterpillars. In their efforts to develop new, methods for controlling gypsy moth caterpillars, researchers have focused on the effects of phenols in tree leaves on the insects growt 100Test 下载频道开通，各类考试题目直接下载。详细请访问 www.100test.com