As a high quality graduate statistics student, I need to carefully consider what conclusions can be drawn from a randomized experiment.

The key elements in this scenario are:

- Random assignment of 60 fish to treatment or control groups

- Statistically significant difference found between groups

- Proper significance testing was conducted

Answer: (D) There is evidence that the herbicide causes higher levels of the enzyme for these fish.

Justification:

Random assignment is the critical element that allows for causal inference. By randomly assigning fish to either receive the herbicide or not, the researcher has created groups that are expected to be probabilistically equivalent on all confounding variables. The statistically significant result indicates that the observed difference is unlikely to have occurred by chance alone.

Option (A) is incorrect because random assignment enables causal inference, not merely association.

Option (B) is incorrect because the sample size adequacy is determined by statistical power, not by an arbitrary threshold. Since the test detected a significant difference, the sample size was sufficient for this particular effect.

Option (C) is incorrect because significance testing does not "prove" causal relationships with absolute certainty. Rather, it provides evidence for rejecting the null hypothesis at a specified confidence level.

Option (D) correctly acknowledges both the causal inference permitted by the experimental design and the appropriate scope of the conclusion (limited to "these fish" rather than generalizing beyond the sample).