CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Matthew P. Crockett

Project Number
J1105

Project Title
How Can Weight and Stress Strengthen or Weaken Standard Fishing Line and How Long It Takes to Break?

Abstract

Objectives/Goals
My goal was to determine if the five top-selling brands of 10 lb. test fishing line were all the same strength. I hypothesized that each brand would vary in strength based four weight tests- static, knotted, shock, and abrasion.

Methods/Materials
The following materials were used for this experiment: 1) Pens & pencils; 2) Colored markers; 3) Five brands of 10 lb. fishing line; 4) 16 oz. plastic cup; 5) 15 gal. bucket; 6) 60 lbs. of sand; 7) Light grit sandpaper; 8) Roll of duct tape; 9) Fishing knot book; 10) Line-tie platform;and 11) Books on various fishing knots, & how they are tied.

Five top-selling brands of 10 lb. test fishing line were tested: 1) Yozuri Hybrid; 2) Stren; 3) P-Line; 4) Maxima; and 5) Fireline. Each brand of line was tested using four tests: 1) Static tensile strength; 2) Knotted static tensile strength; 3) Shock strength; and 4) Abrasion static tensile strength.

Results
My experiment yielded the following results: Only three of the 10 lb. fishing lines tested, met or exceeded the manufacturer#s static tensile strength. All five brands varied in strength based on the test-type performed. In step one (static tensile strength); Fireline was the strongest line testing at 273 oz. The weakest line was P-Line at 97 oz. In step two (knotted tensile strength); Maxima brand line was the strongest line testing at 168 oz. The weakest line was P-Line at 57 oz. In step three (abrasion resistance), Yozuri Hybrid brand line was the strongest line testing at 30 seconds. The weakest line was Fireline at 4 seconds. In step four (shock strength), all five brands tested equal at 1 drop each. Overall, Yozuri Hybrid and Maxima brand lines rated highest in overall strength. P-Line tested the weakest.

Conclusions/Discussion
This data demonstrated that fishing line is not the same strength. Weight, knots, abrasion & shock affect the strength of all fishing lines & tested differently.

Further discussion in this area of study might include the following: 1) Provide test results to the manufacturers & obtain their test procedure, data collection & analysis. 2) Conduct multiple trials of this experiment to determine variations & averages. 3) Conduct trials of other test weights from the same manufacturers, using the same procedures to determine variances or consistency by brand. 4) Determine other test procedure methodologies currently in use through literature research & manufacturer reports.

Summary Statement
My project is a about whether five top-selling brands of 10 lb. test fishing line are of equal strength based on four tests.

Help Received
My parents, Chris Crockett, who helped me set-up & run the experiment. Cathy Crockett for proofreading & helping me with my display board. I also wish to thank Adam McAndrews at Coyote Bait & Tackle in San Jose, Ca. for donating the fishing line used in my experiment.