

4-28-2017

Natural Soy Graffiti Remover

Cole Becker

Iowa State University, becker@iastate.edu

Andrew Eden

Iowa State University, adeden@iastate.edu

Brandon Hamerlinck

Iowa State University, brando@iastate.edu

John Parker

Iowa State University, jpparker@iastate.edu

Joseph R. Vanstrom

Iowa State University, vanstrom@iastate.edu

See next page for additional authors

Follow this and additional works at: <https://lib.dr.iastate.edu/tsm416>



Part of the [Bioresource and Agricultural Engineering Commons](#), and the [Industrial Technology Commons](#)

Recommended Citation

Cole Becker, Andrew Eden, Brandon Hamerlinck, John Parker, Joseph R. Vanstrom, and Jacek A. Koziel. Natural Soy Graffiti Remover. Final Report. TSM 416 Technology Capstone Project, April 28, 2017.

This Article is brought to you for free and open access by the Undergraduate Theses and Capstone Projects at Iowa State University Digital Repository. It has been accepted for inclusion in TSM 416 Technology Capstone Projects by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.

Natural Soy Graffiti Remover

Problem Statement

Natural Soy Products is based out of Brooklyn, IA. They are a smaller, more locally known company supplying soy based products. The products range from basic degreasers and cleaners to hydraulic oil, and everything in-between. The problem that Natural Soy presented us with is that they needed a third party to test their soy based graffiti remover, and give them un-biased data to present to potential customers. Natural Soy needed a third party to test the product to create an un-biased opinion on the capabilities of the product. The testing did not cost the company very much, and the results of the study may allow them to have a greater selling point when trying to get the product on the market.

Disciplines

Bioresource and Agricultural Engineering | Industrial Technology

Authors

Cole Becker, Andrew Eden, Brandon Hamerlinck, John Parker, Joseph R. Vanstrom, and Jacek A. Koziel

IOWA STATE UNIVERSITY

Department of Agricultural and Biosystems Engineering (ABE)

TSM 416 Technology Capstone Project

Natural Soy Graffiti Remover

Cole Becker ^a, Andrew Eden ^b, Brandon Hamerlinck ^c, John Parker ^d, Joseph F. Vanstrom ^{e*}, and Jacek A. Koziel ^{f*}

^aAgricultural Systems Technology, ABE, ISU, becker@iastate.edu

^bAgricultural Systems Technology, ABE, ISU, adeden@iastate.edu

^cAgricultural Systems Technology, ABE, ISU, brando@iastate.edu

^dAgricultural Systems Technology, ABE, ISU, jpparker@iastate.edu

^e*Dept. of Agricultural and Biosystems Engineering, ISU, 2321 Elings Hall, Ames, IA 50011,*
vanstrom@iastate.edu, 515-294-9955

^f*Dept. of Agricultural and Biosystems Engineering, ISU, 4350 Elings Hall, Ames, IA 50011,*
koziel@iastate.edu, 515-294-4206

*course instructors and corresponding authors.

Client: Ken Budke, Owner, pat@cedarfallsconstruction.com

1 PROBLEM STATEMENT

Problem Statement

- Natural Soy Products is based out of Brooklyn, IA. They are a smaller, more locally known company supplying soy based products. The products range from basic degreasers and cleaners to hydraulic oil, and everything in-between.
- The problem that Natural Soy presented us with is that they needed a third party to test their soy based graffiti remover, and give them un-biased data to present to potential customers.
- Natural Soy needed a third party to test the product to create an un-biased opinion on the capabilities of the product. The testing did not cost the company very much, and the results of the study may allow them to have a greater selling point when trying to get the product on the market.

Business Case Statement

- A. Natural Soy needed a third party to analyze the effectiveness of their product and provide un-biased feedback.
- B. This was not a very extensive problem, since all the company requested is for us to test their graffiti remover to validate that it works.
- C. The overarching problem for Natural Soy was that due to the prior lack of validation of the effectiveness of the product, their graffiti removal product did not have many sales.

- D. It made sense to address this problem for the company by testing and reviewing their product. With that they will have un-biased data to use when selling the soy based graffiti remover.
- E. Natural Soy as a company cared about this problem, as well as anyone wanting a non-toxic biodegradable graffiti removal product. These people cared about the validation because they wanted a product that works, and is safer for the environment than other products currently on the market.

2 GOAL STATEMENT

- **Main Objective(s) and Specific Objectives**
 - The main objective was to test Natural Soy's graffiti product against the competitors. This study was intended to provide Natural Soy with a third party un-biased validation of their product.
 - Specific objectives included: purchasing the test samples, painting said test samples, and testing the graffiti removal products.
 - Potential areas for injury were: lifting of heavy objects, eye injuries, and minor cuts and scrapes.
 - Actions to reduce the risks included: proper lifting techniques, wearing proper PPE, and always being cautious of the surroundings.
- **Rationale**
 - Now that testing is completed, we are able to report the effectiveness of Natural Soy's graffiti removal product.

3 PROJECT PLAN/OUTLINE

A. Methods/Approach

- **Data collection:**
 - In order to gather the information needed, we used online resources and industry professionals.
- **Skills:**
 - A few of the skills needed include, but are not limited to; fabrication, problem solving, innovation, and painting skills.
- **Solutions:**
 - To evaluate the effectiveness of the product, we used side-by-side comparison and digital RGB values. The effectiveness of the products was determined by how well the graffiti was removed, visually and numerically. Pictures were taken of every sample and input into the program Digimizer. By importing the sample pictures into Digimizer, we were able to use a numerical (RGB) value to show how much graffiti was removed.
 - Our solution to providing a third-party validation of this product meets the client's expectations and is consistent with our objectives and scope of the project.

- **Organization:**
 - Tasks were assigned to each team member that best fit their qualifications.
 - A few major milestones for our project consisted of receiving our test stand, building test samples, painting test samples, testing graffiti removal products, and analyzing the results.

B. Results/Deliverables

- Our deliverables consisted of visual and numerical results, written observations, and product comparisons.
- Our deliverables are consistent with the project objective and our scope.

C. Timeline

- January – Received test stand, determined the proper sample size for the test stand
- February – Built test samples
- March – Tested the products, natural soy vs. competitor
- April – Applied finishing touches to the project, created final presentation/report

4 BROADER OPPORTUNITY STATEMENT

- A. Our project may appeal to anyone, but will mainly help natural soy with selling their product. This project can easily be understood by anyone who knows what graffiti is.
- B. Our project addresses the needs that natural soy presented us with (to provide third party testing and validation of their product). This study can potentially provide solutions to bigger challenges within the world of graffiti, since the Natural Soy Graffiti Remover is a non-toxic, biodegradable product that is better for the environment than some of the other leading graffiti removal products.
- C. Everyone should care that this product is safe for the environment as compared to the competitors, who do not advertise their product as environmentally safe.
- D. This product can be widely used by many different entities, such as city municipalities, state & national parks, and schools/universities.

5 PROJECT SCOPE

- A. The boundaries of this project were to test Natural Soy graffiti remover vs. competitor products.
- B. Natural Soy Products paid for all testing supplies, and provided their graffiti removal product.
- C. Test materials not included by Natural Soy are the Digimizer software and space for testing.

6 GRAPHICAL ABSTRACT

