



CSS

Bringing New Life to Food

Sustainable Pet Food
Overview

OCTOBER 2021



Overview

Food waste is a **\$200B+ per year** problem

CSS's proprietary processing and patented technology recovers food before it becomes waste and turns it into marketable products.

CSS's H2H enzymatic digestion processes are ideally suited for pet food ingredients that are:

- ✓ **Highly palatable**
- ✓ **Easily digestible**
- ✓ **Hypo-allergenic**
- ✓ **Competitively priced**



Approx. 40%
of the food grown in the
United States ends up wasted

The Food Waste Problem

Food waste is a \$200B per year problem. Approximately 40% of the food grown in the United States ends up wasted. This means that more than 60 million tons of perished food ends up in landfills every year.

The problem is so severe that the United Nations FAO reports that if food waste were a country, it would be the number three greenhouse gas emitter after the United States and China.



**Over 60
Million Tons**
of perished food ends up in
landfills every year

The CSS Solution: Upcycled Grocery Food

California Safe Soil (CSS) was founded in 2012 with the mission to bring a meaningful solution to the food waste problem by bringing new life to food. Utilizing proprietary processes, CSS collects the produce and meat from supermarkets that can no longer be sold or donated, brings it back to the CSS plant, and turns it into marketable pet food ingredients with its patented H2H enzymatic digestion process.



**Supermarket
Produce & Meat**



**CSS Plant
H2H Technology**



**Pet Food Ingredient
Solutions**

Supermarkets in the United States have some of the highest quality produce and meats in the world. Supermarkets have a \$100/ton problem in disposing produce and meat that can no longer be sold or donated. CSS saves the supermarkets money while promoting sustainability and hygiene by collecting the usable, but unsellable meats and produce. CSS leverages existing logistics to collect the supply from the Supermarkets in specialized, double walled, insulated totes and refrigerated trucks to maintain the cold chain during transport from the Supermarkets

back to the CSS plant keeping the meats and produce fresh.

CSS keeps the meat and produce separate to ensure product quality control. The CSS patented enzymatic digestion process turns the diverse inputs into homogenous outputs. The resulting liquid and dry "Harvest to Harvest" or "H2H" products are laboratory tested to ensure high quality and consistency.



CSS Recovers Fresh Food Before it Goes to Waste

- Supermarket produce aisles and butcher counters sell high quality food
- CSS recovers the food that can't be sold or donated
- CSS utilizes its H2H technology to produce
 - ✓ Organic Fertilizer
 - ✓ Pet Food Ingredients
- Supermarkets gain value:
 - ✓ Save money
 - ✓ Demonstrate sustainability

Supermarkets have a **\$100/ton** problem



CSS Recovers Usable but Unsellable USDA Meat



Post-dated Meat



Meat Trimmings

CSS Collection Logistics Maintains the "Cold Chain" Keeping Meat and Produce Fresh

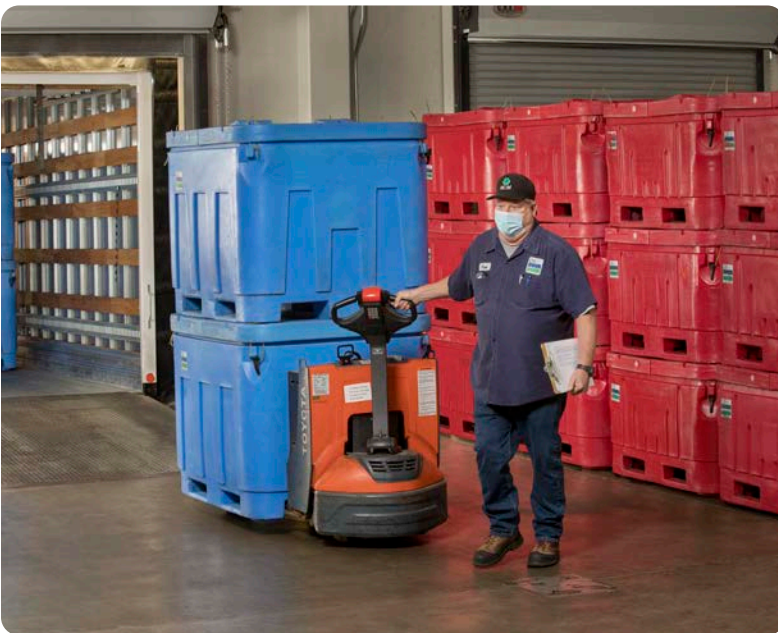


Refrigerated Trucks



Customized Insulated Totes

CSS's Plant Processes the Meat (Red) and Produce (Blue) to Ensure Consistent Quality Control



CSS starts product quality control with separate meat and produce sourcing



CSS Sorting line turns diverse inputs into homogenous outputs

CSS Patented Enzymatic Digestion: Process Controls Make a Consistent Product



H2H™ Processed Product



Liquid and Dried Products



CSS Laboratory Testing QA/QC

Pet Food Opportunity

CSS has proven its H2H technology through nine years of operations. The H2H process demonstrates the Maillard reaction, making it ideally suited for pet food ingredient production. CSS has proven that its process of recovering fruits, vegetables and meats from grocery stores and using its proprietary H2H enzymatic digestion process creates pet food ingredients that are:

The H2H enzymes convert the protein, fats and carbohydrates into amino acids, organic acids, and simple sugars. The Maillard reaction binds the amino acids and sugars making for a highly palatable pet food ingredient. The output is hypoallergenic due to the breakdown of proteins into amino acids. The resulting product is easily digestible, given that it has already been through a digestive process, with an excellent nutritional profile. CSS testing and process controls have shown that the outcomes are consistently homogenous with a high quality nutrition profile.



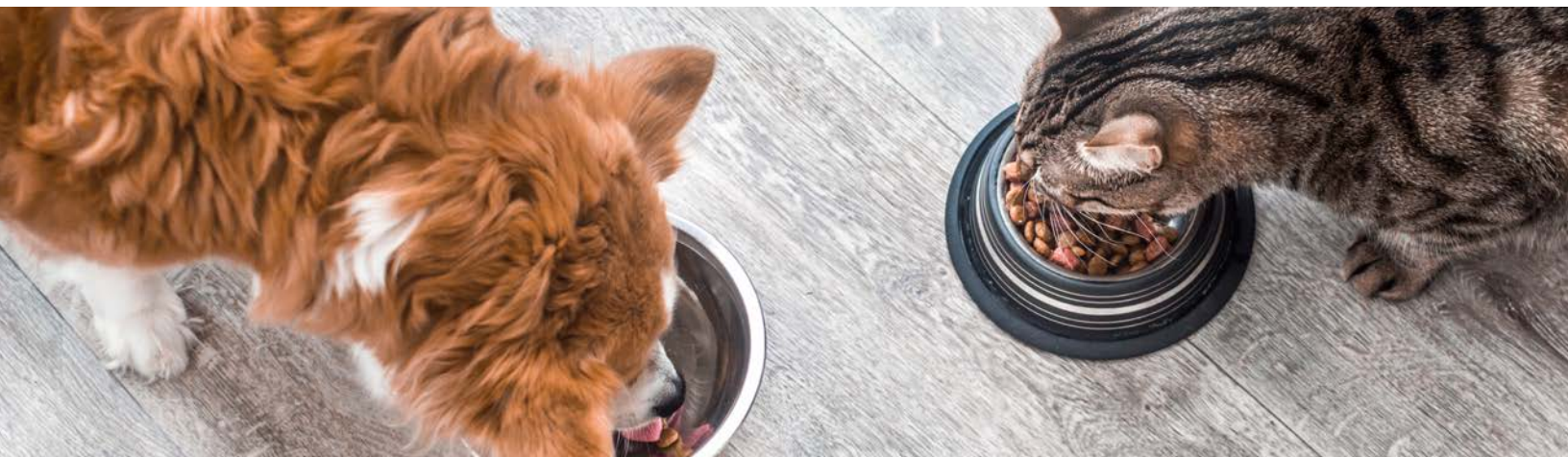
Easily Digestible



Hypoallergenic



Very Tasty



Product Testing & Food Safety

CSS products have been thoroughly tested to ensure consistency of product and food safety. CSS follows a uniform supplier feedstock collection program that maintains the cold chain ensuring produce and meats stay fresh. Production is batch formulated and inspected for the specifically desired nutritional content. CSS's controlled hydrolysis and pasteurization assures food safety standards are met. The product is controlled for fiber content and centrifuged

for fatty acid control. Products can be customized to specification. Products may be dried for flavor, shelf-stability, and ease of transport. The liquid product is stabilized to ensure food safety and shelf-stability. Through every step of the process, CSS prioritizes QA/QC throughout the production cycle. See: [UC Davis Study \(2018\)](https://www.sciencedirect.com/science/article/abs/pii/S0377840118303237) (<https://www.sciencedirect.com/science/article/abs/pii/S0377840118303237>)



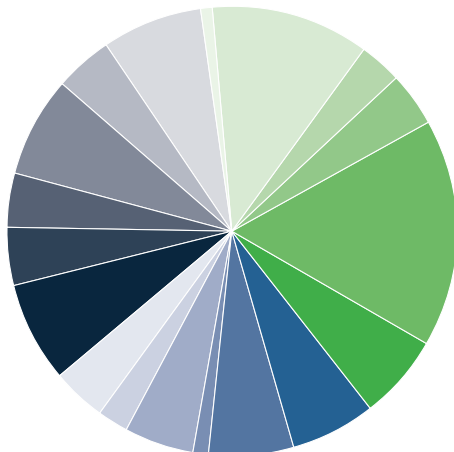
Nutritional Profile

CSS products are highly palatable with balanced nutritional profiles.

Produce Only Liquid Palatant	Typical Analysis
Moisture	84.2%
Protein	2.8%
Fat	2.5%
Ash	1.6%
pH	2.9

Meat Only Liquid Palatant	Typical Analysis
Moisture	74.7%
Protein	14.6%
Fat	3.8%
Ash	4.4%
pH	2.9

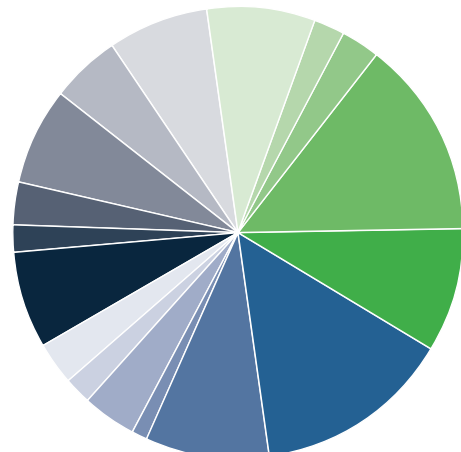
Typical Produce AA Profile



Custom blends to
meet customer
specifications

1% Tryptophan	5% Valine
11% Aspartic Acid	2% Methionine
3% Threonine	4% Isoleucine
4% Serine	7% Leucine
16% Glutamic Acid	4% Tyrosine
6% Proline	4% Phenylalanine
6% Glycine	7% Lysine (total)
6% Alanine	4% Histidine
1% Crystine	7% Arginine

Typical Meat AA Profile



0% Tryptophan	4% Valine
8% Aspartic Acid	2% Methionine
2% Threonine	3% Isoleucine
3% Serine	7% Leucine
14% Glutamic Acid	2% Tyrosine
9% Proline	3% Phenylalanine
14% Glycine	7% Lysine (total)
9% Alanine	5% Histidine
1% Crystine	7% Arginine

Promoting Sustainability

CSS has created the opportunity for a sustainable process, recovering human grade fruits, vegetables and meats to create customized pet food ingredients. CSS can work with a pet food manufacturer to promote sustainability by formulating products that qualify as “Upcycled Certified.” (<https://www.upcycledfood.org/>). Research has shown that consumers are favorably responding to the “Upcycled” label and increasingly demanding sustainable products. Pet food qualifies for the “Upcycled” label with 10% or more upcycled ingredients. CSS can create “Upcycled” pet food products that are:



**Human Grade
Quality**



**Highly
Nutritional**



**Highly
Palatable**



**Easily
Digestible**



**Highest Standards
of Food Safety**



**Competitively
Priced**



CSS Team & Recognition

CSS is led by a team of seasoned industry leaders in manufacturing, pet food and sustainability. Over the years, CSS has been recognized for its leadership in sustainability.



Get in Touch With CSS

Reach out to CSS to:

- Align priorities and sustainability initiatives
- Engage with product development to understand implications of "upcycled" ingredient
- Outline pilot program: near-term palatant and ingredient products with a path toward "hero" ingredient
- Implement pilot program



CSS can work with a pet food manufacturer to create sustainable pet food products that provides a meaningful solution for the global food waste problem.

Contact

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