

Keeping Animal Agriculture Sustainable

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Basics:

- Use all of every animal for the highest purpose
- Stop “badmouthing” by-products
- Stop “badmouthing” meat by-products in poultry and livestock diets
- Produce efficiently and conserve resources
- Respect the environment
- Treat people right



What is Sustainability?

- The ability to sustain, to endure
- An ongoing non-static maintenance of systems
- Meeting the needs of the present without compromising the ability of future generations to meet their own needs
- The ability to produce food now and into the future with the smallest possible environmental footprint



The ability to produce animal and pet food that provides sufficient energy and the amounts of essential nutrients required to maintain good health now and into the future with the smallest possible environmental footprint.



Inherent in this definition is the assumption that the products would necessarily be affordable for the customer while maintaining a profit margin by which the supplier can remain in business.



Sustainable Ingredient Sourcing for Livestock Feed or Pet Food Must Include Rendered Products



What is Rendering?

- Simply Cooking and Drying
- Recycling for the Highest Use
- Essential to Public Health
- Fundamental to Sustainability of Animal Agriculture



The Rendering Industry (U.S. and Canada)

- 170 facilities in the U.S. and 10 in Canada
- \$10 billion annual revenue (at least, depending...)
- 27.5 MMT (62 billion lb) raw material each year
- 77 million kg raw material each day



U.S. Animal Agriculture Annual Production

- 29.3 million cattle (49% of live wt. not used for human food)
- 115.5 million hogs (44% not used for human food)
- 2.3 million sheep and lambs (46% not used for human food)
- 8.8 billion chickens (37% not used for human food)
- 232.4 million turkeys (36% not used for human food)
- 27.7 million ducks (30% not used for human food)

More than 56 billion lb. rendering raw material produced in the U.S.

More than 6 billion lb. produced in Canada.

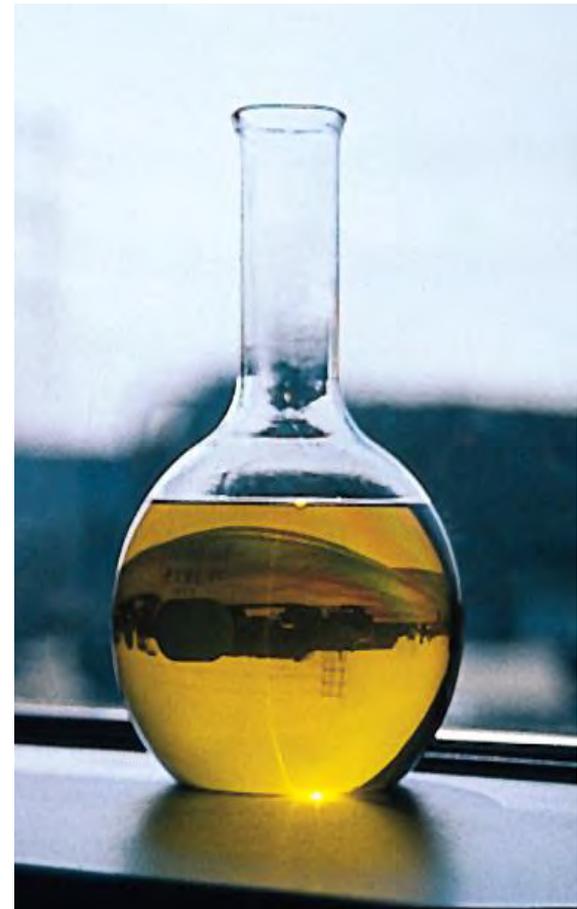
2015 USDA slaughter numbers data; dressing percentage estimates from literature. Processing methods vary.



The industry converts more than 27.5 MMT (62 billion lb.) of animal by-products into usable commodities annually.

More than 5 MMT each:

- Highly valued protein supplements for livestock, poultry, pets
- Tallow and animal fats for the manufacture of fatty acids and as a source of energy in feed rations.



Raw Materials

- Offal
- Bones and fat
- Trim from meat cuts
- Blood
- Feathers
- Animals dead on arrival, in transit or on farms
- Restaurant grease
- Recalled meat
- Outdated retail meat
- Butcher shop scraps



Examples of a Few Finished Products



**Stabilized Poultry
Fat**

**Hydrolyzed Poultry
Feather Meal**

**Stabilized Pet Food
Poultry Fat**



**Stabilized
Poultry
Protein Meal**

**Low Ash Pet Food
Poultry Protein Meal**

**Pet Food Poultry
Protein Meal**

Rendering Industry Trends

- Species separation into dedicated lines or plants
- Lines or plants dedicated to fallen stock
- Lines or plants dedicated to pet food ingredients
- Additional specifications common
- New premium animal protein definitions desired



Rendering is Cooking and Drying

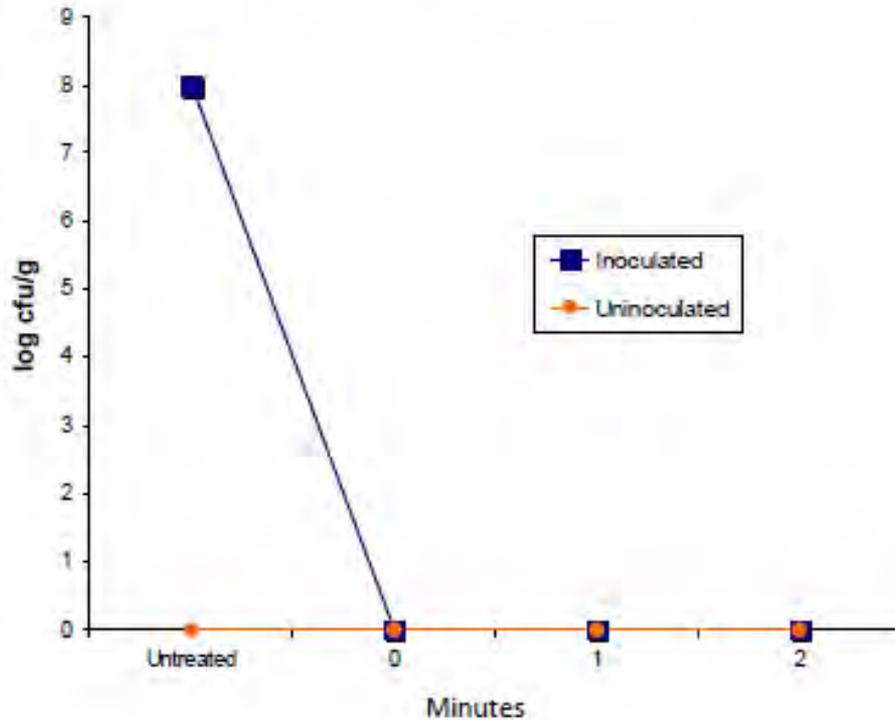


- Continuous flow or batch
- Steam cookers
- 115° to 145° C. for 40 to 90 minutes (245° to 290° F.)
- Inactivation of bacteria, viruses, protozoa, and parasites.



Cooking and Drying Works

Destruction of *Salmonella* cocktail at 240°F



- Continuous flow or batch steam cookers
- 245° to 290° F for 40 to 90 minutes
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Sustainability Challenges

- Meat consumption worldwide is expected to increase to about 45.3 kg per capita by 2030, up dramatically from the 1964-1966 amount of 24.2 kg per capita (FAO, 2009).
- This large increase is mostly due to the increase in meat consumption by people in developing countries.
- Meat is likely to be a major part of the worldwide diet, long-term.
- The sustainability of animal agriculture depends upon a reasonable and practical use of by-products



Sustainability Challenges

- Ownership and total expenditures on dogs and cats is high in the U.S. and Europe, and growing fast in many emerging markets, such as Brazil and China.
- There are:
 - 95.6 million pet cats in the U.S.
 - 83.3 million pet dogs in the U.S. (APPA, 2014)
 - Sales of pet food in U.S. was \$21.6 billion (2013)

What should these animals be fed?



Sustainability Challenges

- The availability of rendered products for animal feeds depends on regulation and the market.
- If animal by-products are restricted from animal feed, structural shifts in rendering infrastructure will likely occur.
- Diminished supplies of ingredients and choices for animal feed could result, along with higher prices for pet food, meats, poultry, and eggs.



Sustainability Challenges

- Pet food consumers' expectations will impact the use of certain raw materials, the economics of finding alternatives, and the overall sustainability of animal agriculture.
- These expectations are influenced by marketing of pet foods “with no by-products” and by marketing of poultry, beef, and pork “fed vegetarian diets.”



Tenets of Rendering

What do we do? What do we stand for?

- Produce safe animal food
- Practice environmental stewardship and operate efficiently
- Care for local communities and employees
- Rendering helps feed a hungry world by recycling responsibly



Metrics of Rendering

- What to measure?
- How do you measure the metrics?
- How do you share and report data?
- Do you certify that members meet industry standards?



What's Our Story?

- The Rendering Industry Has Estimates of Greenhouse Gases Avoided by Utilizing By-Products
 - Dr. Gooding's "Carbon Footprint Model" (published scientific work utilizing industry averages funded by FPRF)
 - The industry can publish averages
 - Companies can compare themselves to this benchmark
- The Rendering Industry Has Excellent Arguments
 - Dr. Gooding's "Comparison of the Safety and Sustainability of Methods ..." (published scientific work)
 - Meeker & Meisinger's "Rendered ingredients significantly influence sustainability, quality, and safety of pet food" (published scientific work)
- Individual Companies Can Develop Metrics and Comparisons Relating to All Tenets and Control Their Own Data



Rendering and Sustainability

- At least 62 billion lb. of meat by-products and used cooking oil are rendered in the U.S. and Canada annually.
- Renderers efficiently convert them into ingredients for a host of new products.
 - High value animal feed
 - Bioenergy
 - Personal care and industrial products
- All U.S. landfills would be full in four years without rendering
 - Serious public health and environmental problems
- While providing these essential services
 - Rendering plants boost sustainability
 - Reduce greenhouse gas emissions
 - Conserving fuel and other natural resources
 - Contribute to their local economies and communities



Rendering Produces Safe Animal Food

Industry sustainability metric: All rendered products in the U.S. and Canada meet regulatory animal food safety standards. More than 90% of rendered products in the U.S. and Canada exceed these government requirements by following the Rendering Code of Practice.



Rendering Practices Environmental Stewardship

Industry sustainability metric: Greenhouse gas (such as carbon dioxide) sequestered from the environment via rendering is five times that emitted by the rendering process.

Industry sustainability metric: Rendering's contribution to carbon emission reduction in the U.S. and Canada is equivalent to removing more than 12 million cars annually from the road.



Rendering Practices Environmental Stewardship

Industry sustainability metric: Rendering evaporates water from animal by-products during cooking. This large quantity of water meets federal, state and local standards when returned to rivers and streams.



Renderers Care for Their Community and Employees

Odor Control:

Industry sustainability metric: Renderers in the U.S. and Canada invest more than \$500,000 annually in research by the Fats and Proteins Research Foundation to seek solutions to challenges such as odor control.





Renderers Care for Their Community and Employees

Community:

Industry sustainability metric: Rendering companies and their employees are longstanding members of their communities, improving the quality of life by volunteering and supporting local charities, providing jobs and offering essential recycling services for farmers, restaurants and food service.

Industry sustainability metric: Without renderer pickup of used cooking grease/oil, municipal sewer and wastewater systems can become clogged, resulting in millions of dollars in damage and repairs while compromising water quality.



Renderers Care for Their Community and Employees

Workforce:

While often doing tasks suitable of being featured on the “Dirty Jobs” TV show, the people working in rendering plants usually enjoy their work, receive good compensation packages that include health benefits, and participate in training and continuing education valuable to their lives.

Individual rendering companies may provide data on employee retention, years of service, turnover rates, and educational investments.

Rendering Helps Feed the World by Recycling Responsibly

Renewable Fuels:

Industry sustainability metric: Rendered fats and oils account for 30 percent of the feedstock used in biodiesel and renewable diesel production in the U.S.





Rendering Helps Feed the World by Recycling Responsibly

*Rendering Produces Large Volumes of Animal Food
Ingredients:*

Industry sustainability metric: Rendered fats and proteins used for animal feed ingredients replace corn and soybeans from 6.3 million acres of average quality U.S. crop land.



Rendering Helps Feed the World by Recycling Responsibly

Rendering services restaurants by picking up used cooking oils:

Industry sustainability metric: The rendering industry recycles 2.4 billion pounds of used cooking oils from foodservice operations, much of which is used for biodiesel production, representing 4.7 million acres of U.S. average quality soybean land from which soy oil is produced.

Industry sustainability metric: Recycled cooking oil is also used for animal food ingredients equivalent to the production of corn on 619,000 acres of U.S. average quality corn land.

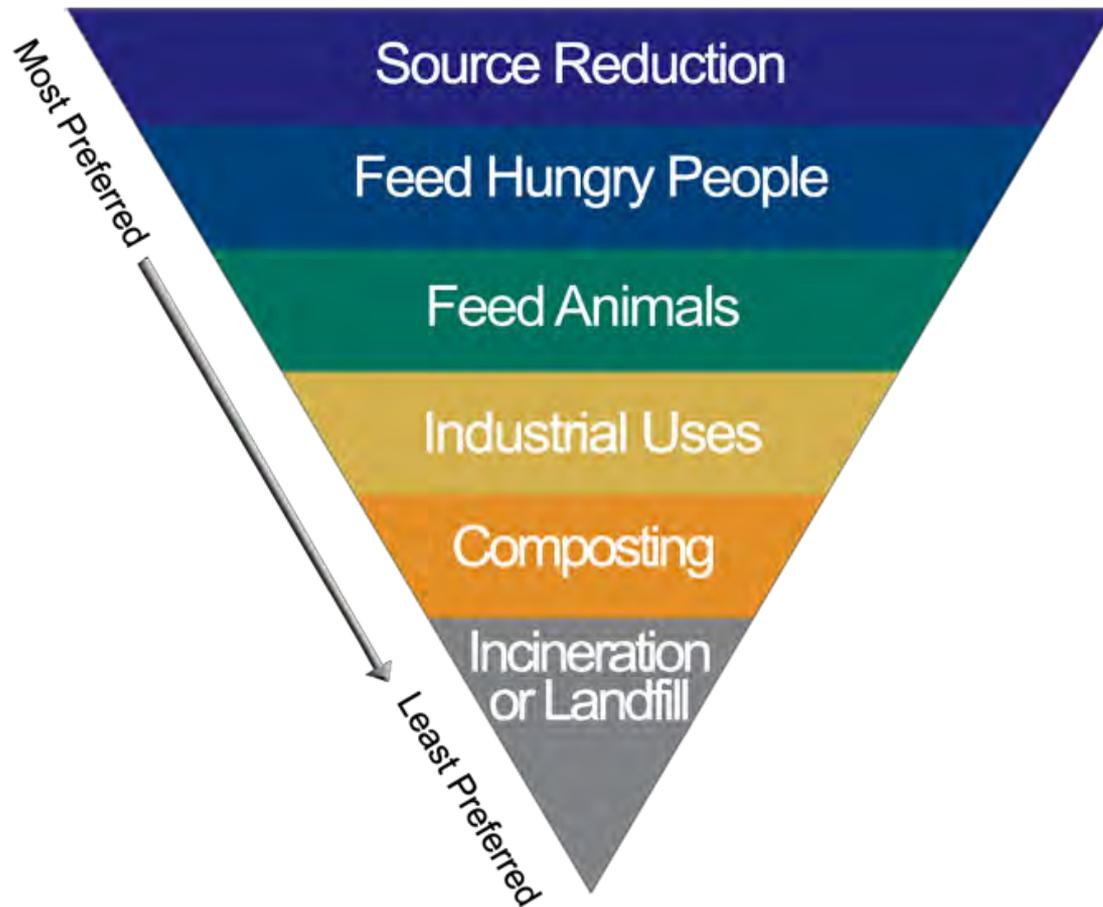
Rendering Helps Feed the World by Recycling Responsibly

Rendering is part of the solution to food waste:

Industry sustainability metric: The rendering industry recycles 2.3 billion pounds of meat and poultry from retail food waste which is used for animal food ingredients equivalent to the production of soybeans on 400,000 acres of U.S. average quality soybean land.



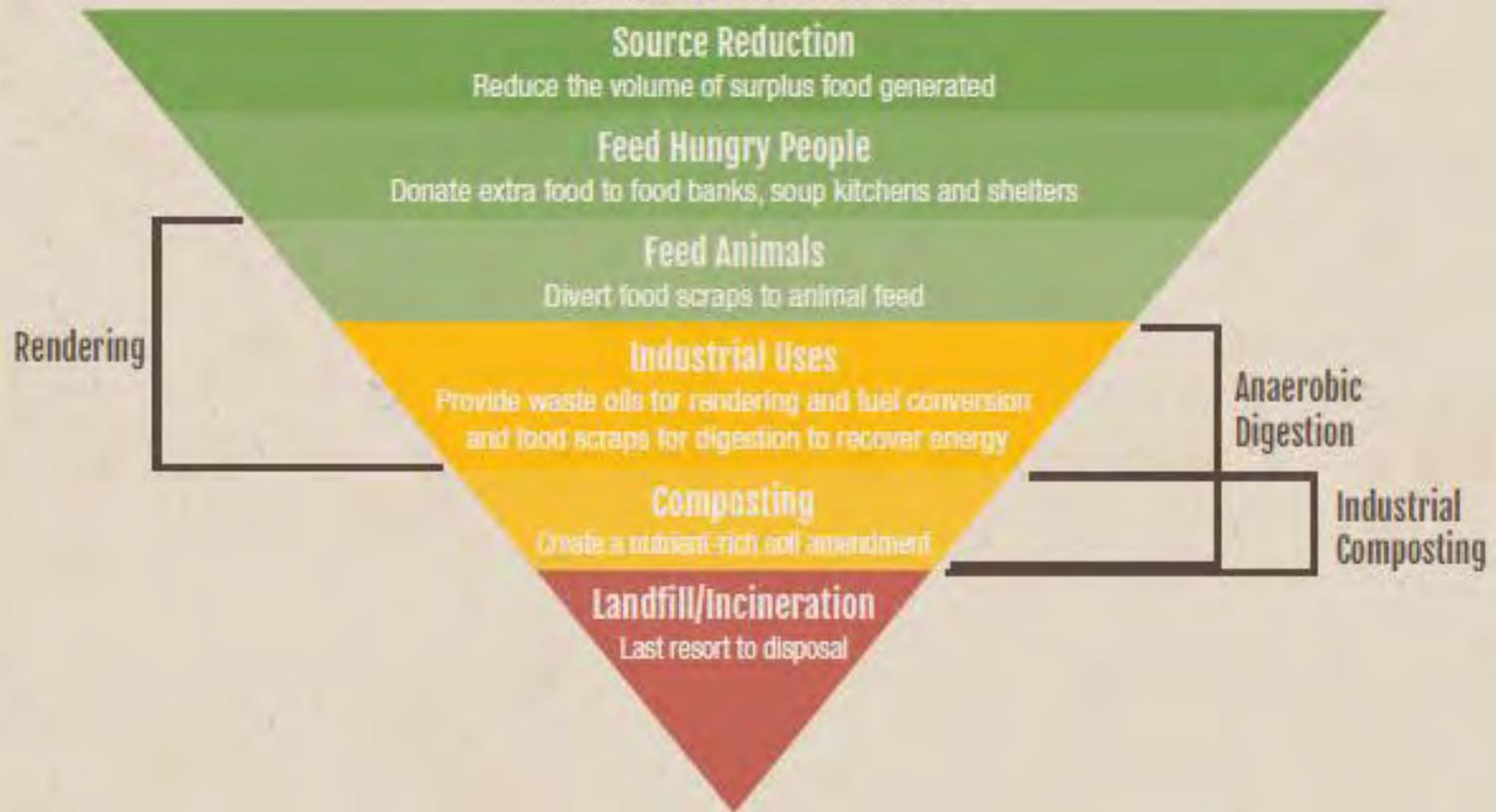
Food Recovery Hierarchy



www.epa.gov

Food Recovery Hierarchy

www.epa.gov/foodrecoverychallenge



Pay attention to rendering!



What is fed to animals if by-products are not used?

- Unused by-products = wasted food
- Food suitable for humans would be used for pets
 - More acres, resources needed for food
 - Higher food prices
 - Less food availability for poor people



What More Could be Done?

- Nearly all by-products from commercial food animal slaughter, including offal, fat, and carcass trimmings are rendered, but 4.3% is landfilled and 1.2% is composted.
- As meat production increases to meet global demand, rendering by-products should be chosen over less sustainable disposal options.





What More Could be Done?

- By-products generated from butcher shops, grocery stores, and other facilities that perform the final processing steps for meat amounts to 857,000 t, but this is just 70% of the total volume of meat, poultry, and seafood loss generated at the retail level.
- If retail firms were to separate all meat products from other wastes and direct them to rendering, these unwanted food items could be put to better use, thereby increasing sustainability.

The drive for retail efficiency, state regulations, and misplaced incentives are working against us!

What More Could be Done?

- 'Fallen animals' or livestock that die outside of slaughter facilities amount to only 3.75% of all rendering raw material.
- Approximately 60% of the cattle that die each year in the U.S. are not rendered, but buried, deposited in landfills, or otherwise left to decompose.
- Providing incentives to render the additional cattle would equate to taking an additional 200,842 cars off the road each year.



What More Could be Done?

- Additional gains in sustainability could be made by rendering a greater percentage of swine and poultry that die on farms.
- A robust and efficient fallen animal collection system beyond what renderers can now economically provide could further enhance the sustainability of food animal production by reducing the amount of GHG released with no benefit.
- A dependable market with high values for by-products from fallen animals would provide financial incentives to redevelop this collection system.



Conclusions

- Meat consumption by humans increases as median income rises. By-products from meat production are inevitable and responsible use is imperative.
- The by-products from food animal production can be rendered into safe and nutritious pet food ingredients.
- Feeding animals is a greater value use for by-products than other alternative uses such as energy or fertilizer.
- Feeding by-products to animals improves the sustainability of the industries from which the by-products are derived.





Conclusions

- AAFCO has been pressured by activists to ban certain raw materials from pet food for aesthetic and emotional reasons rather than nutritional, environmental, or safety concerns rooted in science.
- An increased amount of food suitable for humans would have to be used in the manufacture of pet food.
- The price of many pet food products and food for people would rise (likely impacting poor people more than affluent people), and force more by-products into less sustainable uses or less environmentally friendly disposal endpoints.
- Underutilized by-products have the same impacts on the environment and sustainability as wasted food.



Conclusions

- Most people will agree that pets (dogs and cats) are higher on the food chain than livestock and animals produced for food.
- Many would agree that some materials could be excluded from dog and cat foods even if those excluded products are rendered safe by cooking and screening processes.
- New definitions for preferred ingredients could be developed to accommodate customer preferences regarding such exclusions.
- The sustainability of the entire food chain would be lessened if products of lower preference were to be banned by regulation or legislation.



Conclusions

- There should be a place in low-priced pet food or livestock feed for ingredients that have nutritional value and are safe for animals.
- Consumer information and marketing materials should include the positive impact the use of by-products in pet food has on sustainability.
- Rendered products are especially valuable to the livestock and pet food industries because they contain important nutrients at a relatively low cost.
- The use of these reclaimed and recycled materials in pet food is a much more sustainable model than using human food for pets.



Summary

- Animal agriculture is more sustainable with rendering.
- It is safe to use rendered by-products in animal and pet food.
- It is sustainable and economical to use rendered by-products in animal and pet food.
- The biggest enemy of sustainability in pet food is the attitude that by-products are bad.
- Most websites purporting to tell the “truth” about by-products or pet food don’t.

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- Stop “badmouthing” by-products
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FPRF/CSU Pet Food Research Alliance Working Groups for 2018

- Oxidation and Maintenance of Product Quality
- Salmonella and Other Threats to Product Safety
- Consumer Perception
- Industry Sustainability



FPRF/CSU Pet Food Research Alliance

Action Items for 2018

- Oxidation and Maintenance of Product Quality
 - Determine why PV is utilized and what threshold is used
- Salmonella and Other Threats to Product Safety
 - Develop RFP around industry practices
 - Develop GMPs around transportation and storage
 - Gather info about human supply chain—do they follow the same rules?
 - Develop RFP regarding mitigants of Salmonella in pet food
- Consumer Perception
 - Engage AAFCO to set the stage for change
 - Invite more pet food companies to PFA Meetings
 - Begin pet food focus groups to better understand the market
- Industry Sustainability
 - Generational Engagement
 - * Alliance housed structure for undergraduate fellows/interns (2019)
 - * Develop projects, identify institutions and develop budget (2018)
 - Identify model for bridging generations and transitioning into new eras



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