READYCYCLE | INDUSTRY REPORT

What is the best sustainable packaging solution for the present and future?

Key Messages

The world's current packaging solutions are not sustainable.

- We will run out of oil in ~50 years, but fossil fuels make up about 84% of the world's energy
- There are over 5 trillion pieces of plastic (made from fossil fuels) in our oceans
- Bioplastic is equally damaging
- Both plastics and bioplastics are di˜cult to recycle
- Glass only has a 31.3% recycle rate

Corrugated paperboard is an inherently eco-friendly solution.

- Almost all paperboard packaging includes recycled materials
- The rest comes from SFI-certified trees
- The paper market is not depleting forests; it's the reason why 1.7 million trees are planted daily and we have 20% more trees in the USA today than we did in the '70s

Paperboard is easy for companies and end users to dispose of.

- 96% of corrugated material produced in 2018 was recovered
- Paperboard can be easily composted in the brown layer at home
- The small amount of paperboard that ends up in landfills biodegrades in less than 6 months

Sambrailo created ReadyCycle® to create change in the industry.

- Sambrailo has been in the agricultural packaging industry for ~100 years
- ReadyCycle is our commitment to reduce single-use plastic
- Made from 100% recyclable and home-compostable materials
- 30% of our ReadyCycle packaging is created from recycled material
- Vegetable-based inks eliminate the need for labels and adhesives

The world needs change, now more than ever.

- Sustainable packaging will expand at a rate of 5.3% until at least 2026
- Each generation cares more and more about eco-friendliness
- We are collectively being pushed to make decisions for a healthier planet and communities

More Than Ever, the World Needs Sustainable Solutions

The Intergovernmental Panel on Climate change, a group of over a thousand independent experts, came together under the United Nations to conclude that there is a 95% probability that human activity has contributed to climate change. Currently, our ocean contains over 5.25 trillion pieces of plastic. It is estimated that we will run out of oil and natural gas in about 50 years, and yet, according to the Statistical Review of World Energy (a review put out by BP) fossil fuels still make up 84% of world energy.

There is an idea from the Iroquois called The Seventh Generation Principle, which says to think seven generations ahead when making decisions. In other words, how will the decisions we make today a ect our children 's children and beyond? It is an idea we need to take more to heart than ever -- because the truth is, humanity's current practices are not sustainable. But we are not here to just point out problems. In this report, we want to o er a partial solution to the sustainability issue that is threatening our collective wellbeing. A big piece of the sustainability puzzle is the issue of sustainable packaging. Almost everything we buy comes in packaging. As a result, the ecological footprint from packaging is massive. Let's take a look at the options available today, and what direction conscious companies are taking.

Plastic is one of the most familiar packaging solutions available. What most people are not familiar with is only a small percentage of plastic is recovered for recycling. An estimated eight million metric tons of plastics enter our ocean every year. And when it enters a landfill? Plastic bags can take up to 20 years to decompose, while plastic water bottles can take upwards of 450 years. In addition, plastic is made from fossil fuels and therefore is nonrenewable.

That being said, there has been some innovation in plastic. Bioplastics, or renewable plastics, are plastics made from renewable biomass sources like vegetable oils, straw, woodchips, and sawdust, as well as recycled food waste. They are frequently touted as being eco-conscious because they emit a smaller carbon footprint, decompose faster, and do not contain the toxic chemical known as BPA. However, a study from the University of Pittsburgh found that bioplastics are more damaging to the ozone, require vast amounts of farmland, and actually result in more pollutants due to the fertilizers used to treat crops and the chemicals needed to transmute biomass into plastic. Consequently, there is doubt as to whether bioplastics are actually any better than plastic.

There is no consensus as to how bioplastics can (and should) be recycled. An industry debate rages on: Can bioplastics be recycled within a PET stream? PET refers to plastic resin, and this is currently the most widely recycled form of plastic in the world. Some industry experts hold that PLA (the most popular form of bioplastics, made from glucose) can be mixed into a PET stream, sorted out, and then sent to end markets. However, PLA being a bioplastic contaminates PET recycle streams and not all recycling facilities have optimal sorters automated and labor to do so. As technology improves, bioplastics may become a more viable packaging solution, but currently, there isn't unanimous buy-in from those on the recycling side. There is very little global infrastructure geared towards bioplastics.

In fact, the market for sustainable packaging is expanding globally, and market research has concluded that it will continue to do so at a rate of 5.3% until at least 2026.

While bioplastics like PLA are compostable, they are not biodegradable. What is the di¸erence ? PLA will break down into biomass after just a few months in the right conditions, best done at industrial composting centers where the use of heat and microbes break the material down. Under normal conditions, it breaks down just as slowly as regular plastic. When composted at home, however, PLA still raises the acidity of surrounding compost. That means we have just transformed the issue, not addressed it. For bioplastics to be a good solution, we would need to recycle them correctly or risk contaminating the existing PET stream.

The issue with this is that only 8.5% of plastics are recycled, according to the EPA.
We run into a similar problem with glass packaging, which has a recycling rate of only 31.3%. Glass is an excellent product in the sense that it is 100% recyclable and can be recycled endlessly without ever losing it is purity. However, the actual process of recycling glass is complicated: glass is easily contaminated; expensive to transport (because it is heavy); has to be sorted by color in order to be recycled; and lacks end markets.

Reviewing our options thus far: bioplastics aren't sustainable; plastics are neither eco-conscious nor renewable; and glass has its obvious shortcomings. So, where does that leave us?

The Power of Paperboard

There is one material gaining more sustainable traction in all industries: Paperboard, the world's most recycled packaging material. According to Corrugated.org, 96% of corrugated material produced in 2018 was recovered. Paperboard is an inherently renewable and recyclable packaging solution. It was created in the 18th century with the invention of the Fourdrinier Machine, and has been used to mass-produce packaging ever since.

Since its inception, paperboard has evolved into many di¸erent forms and grades. T oday, it is used to make all kinds of paper products -- everything from medical packaging and aseptic drink boxes to stand-up displays and produce boxes. As the Paperboard Packaging Council says, sustainability is at the heart of the paperboard story.

Good for the Earth

First, we will clear up a common misconception: The rainforest is not being cut down to make paper products. The majority of paper is farmed. That's right -- paper is a crop, just like pumpkins or potatoes. Virgin paperboard is harvested from certified tree farms, and is highly renewable. In fact, milling paper from trees actually increases the number of trees on the planet. According to the American Forest and Paper Association, for every tree harvested from a tree farm, five more are planted: That's a whopping 1.7 million trees planted daily! So paperboard is renewable, unlike packaging solutions that rely on fossil fuels (like plastics). After all, the United States plants more trees than it harvests. Did you know we have 20% more trees in this country today than we did in 1970? In fact, the majority of paperboard produced in the United States is SFI-certified. The SFI certification is given by the Sustainable Forestry Initiative, an organization that supports sustainable forestry practices in the United States. To attain the certificate, farms must adhere to rigorous sustainability standards.

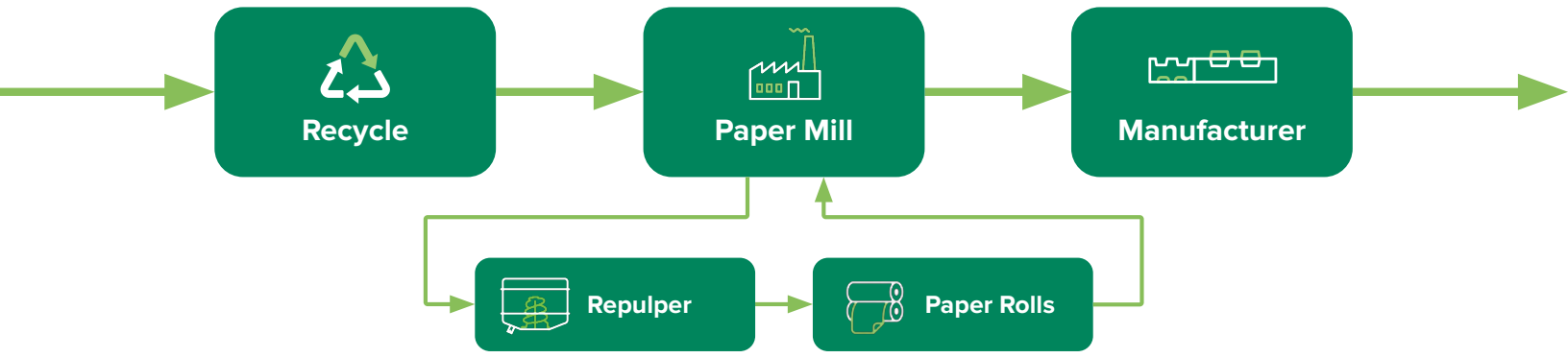
On top of being renewable, paperboard accounts for around 96 percent of corrugated produced in 2018 was recovered for recycling and almost all of that material was used to make new products. Part of the reason plastic is so much less likely to be recycled is because, on the consumer side, some degree of cleaning and sorting is required. On the side of recycling facilities, there are seven resin codes and thousands of variations of plastic with di¸erent chemical compositions. In other words, plastic is easily contaminated and actually not easy to recycle. Whereas the process for recycling plastic is long and labor-intensive, recycling paperboard is much simpler.

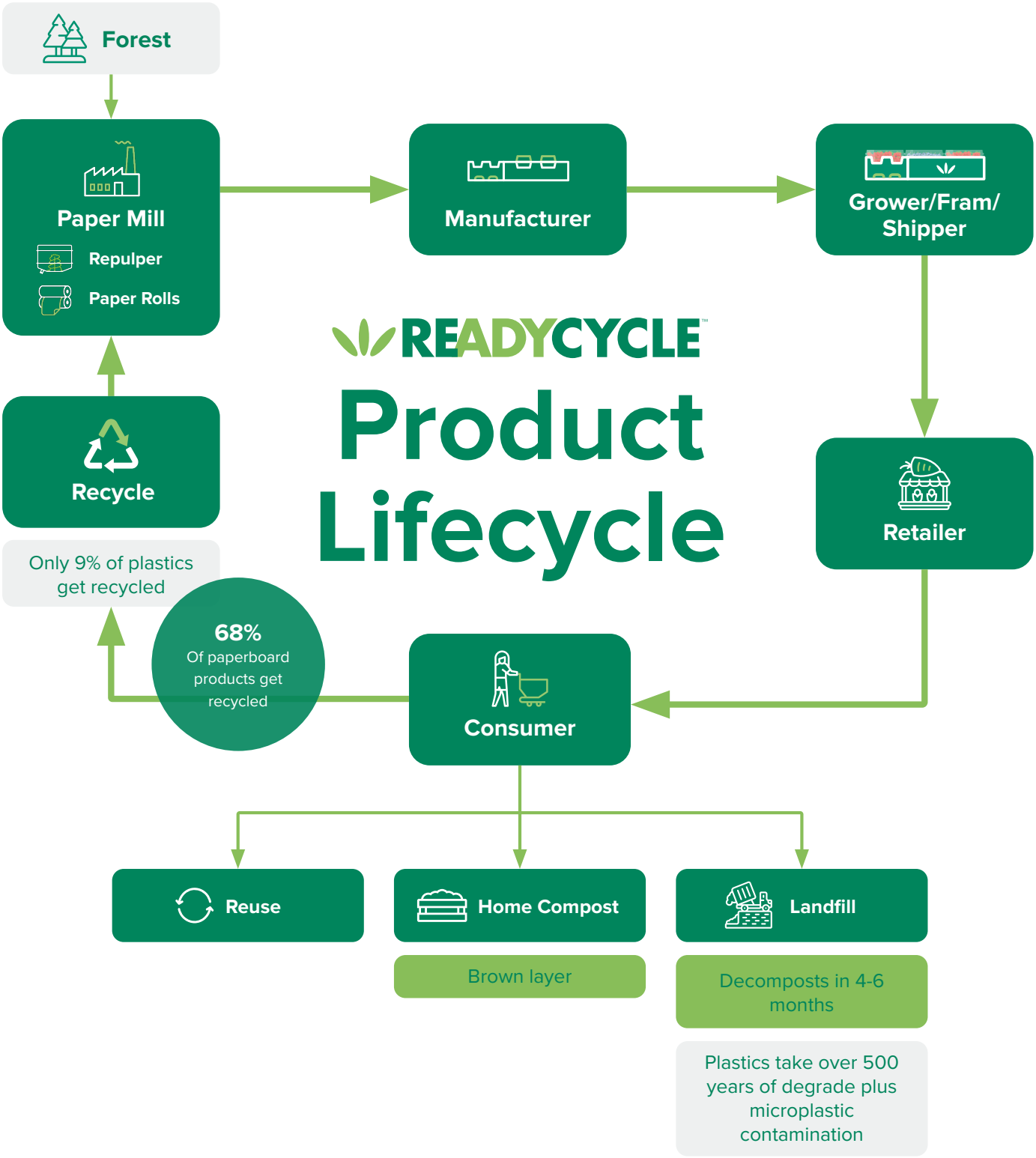
Sustainable, From Beginning to End

So while there is a need for some fresh fiber, much of corrugated materials are recycled material. Old corrugated boxes are collected -- often from mixed recyclables. In order to be recyclable, these boxes have to be relatively clean (i.e., they cannot be wet, or have food or wax on them).

Once the boxes are salvaged, they are compacted and baled so as to be more space-e˜cient during transportation. These bales are taken to a paper mill, where they are put into a repulper (a machine that functions like a giant blender) and mixed with water. The fiber and water is then stirred to create “slurry.” Once it is in this liquid-y form, the slurry is passed through various machines that screen out contaminants. Then, the water is drained, leaving a fiber mat. This mat is pushed through a dryer, heated, and rewound into paper rolls. That’s the end of the recycling process.

At this point, the freshly recycled paper rolls are shipped to a boxing facility. Transporting these rolls (and paperboard material in any form) has a notably lower impact on the environment. Transporting plastic and glass not only costs more, but the heavier weight means that it takes more fuel to move from point A to point B. At the boxing facility, the rolls are transformed into corrugated paperboard by essentially sandwiching three pieces of the paperboard together. The middle layer is softened with steam and put through a machine that gives it the characteristic fluted ridges. Starch adhesive (which is much more recyclable than synthetic adhesives because they leave little to no residue). Then the corrugated sheets are printed, scored, dyed, cut, and folded. Since they are shipped flat, corrugated boxes are extremely space-e˜cient. And then it is just a rinse and repeat.





SOCIETY IS MOTIVATED
to reduce environmental impacts of paper and paperboard production

- Less material routes to landfill
- Decreased need for fresh fiber

HIGH QUALITY OF RECYCLED MATERIALS

- Non-wax
- Non-adhesive
- Recyclable ink

ECONOMIC DEMAND
for recovered paper products

Visit readycyclepackaging.com

Corrugated paperboard is inherently functional: Those iconic ridges and grooves provide cushioning and airflow. That means produce stays safe during transit and lasts longer on the shelf. And as we touched on previously, paperboard is also inherently sustainable...no matter where it ends up. 96% of corrugated materials are recovered. As for the small amount that ends up in landfills? Paperboard decomposes in less than six months. Additionally, paperboard can be easily composted at home in the brown layer. After six to eight months, composted paperboard is excellent for use in the garden. This makes paperboard the single most sustainable packaging solution on the market.

At ReadyCycle® sustainable packaging, we have taken the power of paperboard, a century of experience in the produce-packaging, and created both an innovative and realistic solution. Using the concept of paperboard packaging as our base, we have stripped out the features that do not serve our mission and implemented ones that do. We use food-grade adhesives and vegetable-based inks for double-sided print messaging so our clamshells, pints, and trays o˛er zero to xicity and 100% recyclability. In other words, ReadyCycle products are carefully crafted to do what is best for the planet, people, and produce.

Good for Business & Consumers

Sustainable packaging is not just good for the environment: It also happens to be good for business. In a report by Sustainability, it was found that businesses that align their goals with sustainability initiatives benefit. Being sustainable gives a competitive edge and bolsters long-term success. It could be said that at this point, sustainability plays a key role in a brand's success. According to Nielson, 90% of Millennials are willing to pay a premium for sustainable products, organic ingredients, or other socially responsible items. Gen Z is shaping up to be even more eco-conscious. In fact, it is likely that each subsequent generation will become more focused on sustainability because it is more ingrained in their purchasing decisions. As a result, many businesses are evaluating their product portfolios with these things in mind.

In addition to making customers happy, retailers and growers benefit from the fact that paperboard is excellent for advertising. Thanks to high-resolution imagery and two-sided print, paperboard acts as an attractive billboard. it is easily stacked and stored, making it highly space-e˜cient and easy for retailers and customers to break it down for recycling after use.

Best of all, a material like paperboard connects with what consumers value. 69% of Millennials and Gen Zers will boycott a brand for not using sustainability practices, so material like paperboard (which everyone is familiar with and understands how to recycle) is an excellent choice for businesses.

As of 2020, made up 40% of working adults

Gen Z fears climate change more than anything else

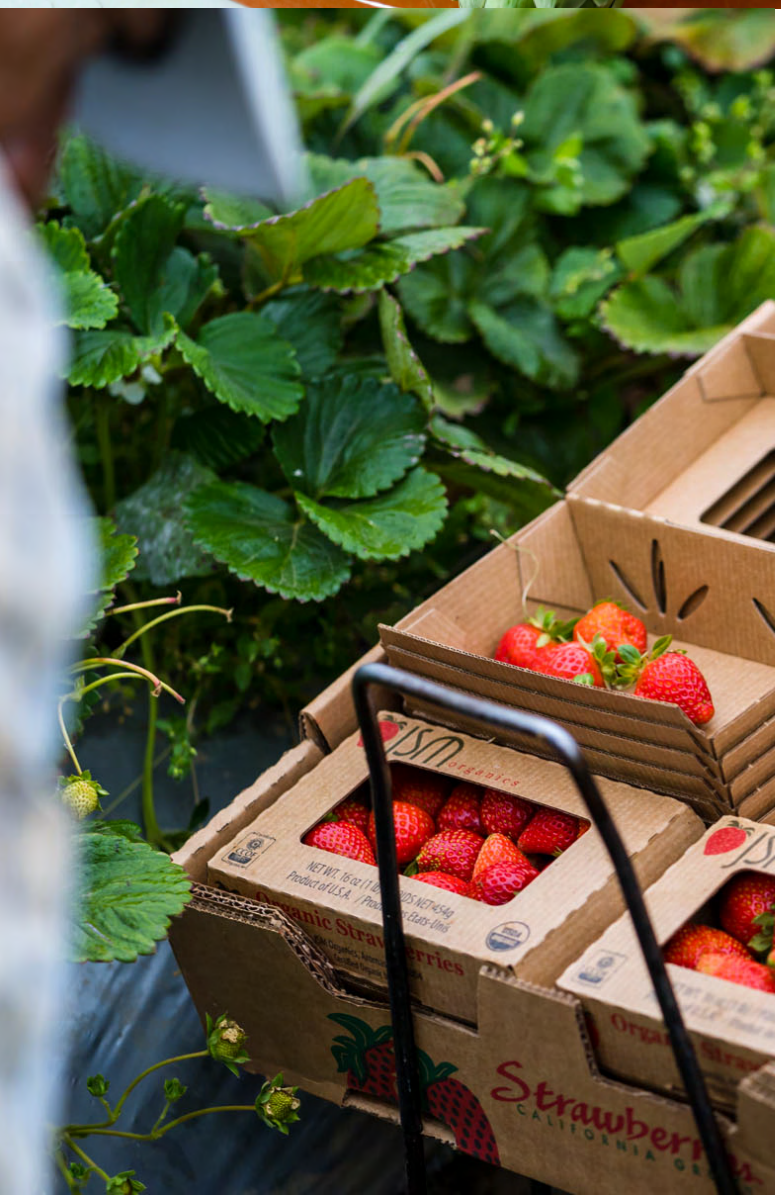
87% of Gen Zers are worried about the environment

What is ReadyCycle?

ReadyCycle is a corrugated paperboard solution that has been thoughtfully engineered to meet the needs of growers, sellers, and consumers. It consists of 100% recyclable and home-compostable materials, sustainable everything, no wax, no labels, and vegetable-based inks. ReadyCycle is the physical embodiment of Sambrailo's commitment to reduce single-use plastic. Having been in the agricultural packaging industry for just about a century, Sambrailo is an industry leader with a legacy. What initially launched us to this position was the innovation of the world's first berry clamshell packaging. Our reputation for long-lasting partnerships, successful customer packaging experiences, and more innovative solutions continues today. As the demand for organic fresh produce has increased, so has the demand for sustainable packaging.

In fact, the market for sustainable packaging is expanding globally, and market research has concluded that it will continue to do so at a rate of 5.3% until at least 2026.

What does it mean for packaging to be sustainable? The UN defines sustainability as meeting "present needs without compromising the ability of future generations to meet their needs." In other words, it is up to us to think seven generations ahead. It's more important than ever to be selling and shopping sustainably. That is why more growers, retailers, and consumers are making the switch from traditional plastic to paperboard. At the end of the day, paperboard is more sustainable and more convenient. Plastic recycling is a complex mosaic of county and city government centers and waste/recycling facilities. Although these facilities report to the government hub, information is unstructured and not well-articulated. As a result, the burden of understanding is placed on the consumer...which is a large part of the reason why only 8.7% of plastic was recycled in 2018.



At Sambrailo, we have built our legacy on innovative plastic packaging, but we realize the world needs change. The agricultural industry we have served for decades needs change. And we want to do our part. In our current times, environmental concerns heavily outweigh the convenience of the status quo. As long-time leaders in plastic packaging, we feel an obligation to influence our industry in the direction of a healthier planet and communities. We are always evolving alongside the agriculture industry, so we can continue to serve you with the same innovativeness that we always have. We are constantly adapting with the agriculture industry, this is a motto we have embodied to maintain servicing customers and the end consumer with the best packaging experience possible. We have been -- and always will be -- a resource for you, and are eager to share the products and inspiration that will enable you to be part of this collective industry shift toward a more sustainable future.

Here's to a Better Future

In conclusion, our world collectively needs to think seven generations ahead. This is true for every industry -- but those of us in packaging have a unique responsibility because so much of the waste going to our landfills and oceans comes from packaging. What can we be doing to mitigate this? What innovative solutions can we come up with in order to create a better world for people, communities, and businesses? While it is true that there is no silver bullet, it is clear that traditional plastic packaging is not the way forward. Bioplastics come with their own laundry list of shortcomings. As far as sustainability over the course of a lifecycle, corrugated paperboard is the winner for time being.

No matter what walk of life we come from, we all want the same thing: A better future for the world and its inhabitants.

- **The care with which we source materials from SFI-certified farms;**
- **The fact that 30% of our ReadyCycle packaging is created from recycled materials; and**
- **Our choice to use food-grade adhesives and vegetable inks in order to eliminate labels.**

There are a lot of daunting challenges facing our world today, but we can each make a contribution -- choice by choice, and package by package. At Sambrailo we are on a mission, and we hope you join us!

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