Coop's stance on bioplastics and biodegradable materials (BM); as at 2020

1. Coop's stance

**Coop has a critical view of bioplastics because**
- There is only added value for consumers in a minority of cases,
- In terms of sustainability there are no obvious advantages over plastics produced from crude oil,
- They lead to problems with green waste recovery due to potential confusion,
- The cost is generally considerably higher,
- Bioplastics labelling and advertising is a very sensitive area and consumers can become confused.

**Coop does not permit the use of the following materials:**
- Products and packaging based on starch (e.g. from wheat, corn or potatoes)
- Products and packaging made from PLA (polylactic acid, also based on corn and other raw materials containing starch)
- Products and packaging made from sugar (molasses), known as bio-PE or bio-PET.

**The following materials are assessed on a case-by-case basis:**
- Plastics containing fibres
- Bioplastics produced from industrial waste products (foodstuffs and non-foodstuffs)
- Products made of fibrous materials such as moulded pulp produced from cellulose or bagasse

**Observation of continuing developments**
The development of new materials and products made from renewable materials is highly dynamic and the industry is constantly launching new innovations on the market. Coop is closely following these developments and the related opportunities for replacing crude oil-based materials, and will reconsider its stance should the situation change considerably.

New materials and products are assessed according to the following criteria:
- No direct or indirect land-use competition with food production
- Production using secondary raw materials (second-generation bioplastics) wherever possible
- More favourable Life Cycle Analysis results, or
- Comparable costs in the case of a comparable environmental impact
- Product labelling such as “made from renewable materials” is permitted; mention of biodegradability or compostability is only permitted for products with “grid print” packaging in line with the consensus document on biodegradable materials.
- If there is any doubt such products are not introduced.

2. Terms

Bioplastics, or biopolymers, are divided into two categories depending on whether they are produced from
- Renewable raw materials (starch, oils, sugar, cellulose fibre, other plant fibres, etc.) or
- Biodegradable fossil resources.
Combinations of the two groups are possible and are available on the market.

The following graphic shows the categorization of various bioplastics and differentiates them from conventional plastics:

![Bioplastic Categorization Diagram]

The term "bioplastic" does not indicate that either the raw materials or the products are produced by organic agricultural methods.

3. Applications

A large number of products and packaging materials based on bioplastics are now available on the market. They can be roughly divided into film products and moulded products.

Film products

- The main plastic film products on the market are packaging materials. Bioplastics can already be used for almost all packaging applications, and biodegradable plastic bags and bioplastic packaging for fresh produce with a short shelf life have become popular. An example of such products on the Swiss market are compost bags (compobags), also stocked by Coop. In neighbouring countries carrier bags and other bags made from bioplastics (both degradable and non-degradable) are widely used.
- Bioplastic film or thermoformed packaging is used for meat trays and trays for ready or convenience meals. Some of these are made of (partly) biodegradable material, while others are made of non-degradable plastics.
Moulded products
- Pot-shaped packaging products such as yoghurt and ice-cream pots, catering containers, flowerpots
- PET bottles, some containing renewable materials
- Coffee capsules
- More recently, entire household articles, such as dustpan and brush sets or other household items.

Material composition
It is often difficult to determine the precise material composition of bioplastics. The manufacturers do not provide much information because many recipes are trade secrets. This also makes the conducting of a meaningful Life Cycle Analysis more difficult. Most manufacturers declare a crude oil-based percentage of up to 80%.

4. Ecological considerations

Entire life-cycle
Life Cycle Analysis generally show that the environmental impact of bioplastics is similar to that of conventional plastics. In terms of climate protection (total emissions of CO₂ equivalents) and consumption of fossil resources, bioplastics are naturally better than crude oil-based plastics, but in terms of over-fertilization and acidification of soil and watercourses, they are worse.

Biopolymers based on molasses (a sugary syrup from sugarcane refineries used in PET or PE, for example) are generally fare worse in Life Cycle Analysis than PET produced from crude oil. However, the environmental impact must always be considered on a case-by-case basis.

By contrast, fibrous materials obtained from wood or sugarcane which are used to manufacture moulded pulp products, for example, can be better for the environment than the equivalents produced from crude oil-based polymers (e.g. bagasse pulp trays compared to polypropylene trays).

Cultivation
At present, the renewable raw materials used to produce bioplastics (corn, wheat, potatoes, rice, sugarcane, cellulose-rich plants) are generally not cultivated using sustainable methods. Moreover, in North America, over 90% of the corn starch is obtained from GM corn. It is currently almost impossible to obtain detailed information on how these raw materials are cultivated.

Disposal
As far as the disposal of biodegradable plastics is concerned, the focus thus far has been on whether or not the materials are compostable.

For example, the EN 13432 standard with its associated product labels, e.g. from DIN CERTCO or Vinçotte, sets out biodegradability and product labelling requirements, such as "biobased xy%", "ok compost HOME" or "ok compost INDUSTRIAL". However, these are relevant only to composting, and experience so far of the compostability and fermentability of biodegradable plastics has varied. Modern composting plants in particular have a much faster
throughput than older plants, so even products that conform to the above standard are not always completely broken down. There are still no generally valid tests or standards for the fermentability of biodegradable plastics. For this reason, composting and fermentation plants currently either do not accept degradable plastics, or remove them along with other plastics and dispose of them by incineration. Switzerland does not have a binding legal basis. The Swiss Ordinance on the Avoidance and the Disposal of Waste (ADWO) and its guideline contain a list of waste that is suitable for composting or fermentation.

Although biodegradable plastics can be recycled in theory when separated properly, if they are collected with conventional plastics they disrupt the recycling process and prevent the high-quality recovery of those plastics (e.g. PET or PE).

The method of disposal has little influence on the overall environmental impact; neither composting nor fermentation improves the environmental impact as biodegradable plastics generally have no value and do not contain any nutrients that can be extracted. They primarily break down into water and CO₂. By contrast, if they are incinerated in a waste incineration plant, some of the energy they contain can be reclaimed for heat and electricity production. Concerning fermentation as a disposal method, results are varied, but what is certain is that biodegradable plastics do not make a significant contribution to the generation of biogas.

5. Social aspects
In addition to the environmental impact, the social effects of bioplastics must also be taken into account. This is not possible via eco-audits.

**Competition with foodstuffs**
- Like biofuels, bioplastics can compete with foodstuffs for land, drive up the price of foodstuffs and worsen the food situation in developing countries.
- However, the proportion of the overall plastics market represented by bio-based plastics is negligible, and the agricultural area they require still limited. Even if the number of their applications increased considerably, there would still be far less pressure on agricultural land from bioplastics than from biofuels.

**Littering/pollution of the oceans**
- The risk of using packaging made from bioplastics, particularly for convenience products, is that it promotes littering, since the labels “biodegradable” and “compostable” encourage people to drop the products as litter in public spaces. If the products are disposed of in this way, however, they cannot necessarily biodegrade.
- The argument that using biodegradable plastics can reduce the problem of plastic waste in the oceans (marine littering) is not relevant in Switzerland, as in this country most of this waste is burnt in waste incineration plants and hardly any plastic packaging finds its way into the environment. Moreover, the degradability of such plastics in water is still considerably worse than in the ground or even in composting and fermentation plants.

6. Labelling of bioplastics

**Communicating the attributes of bioplastics**
When stating the qualities of bioplastics, extreme care must be taken. In several instances in Germany (e.g. Danone yoghurt pots and sugarcane-based plastic bags from Lidl and Rewe), claims that bioplastic products were sustainable have already led to court cases. The court
verdicts are clear: bioplastics, whether they are compostable or not, must not be labelled as environmentally friendly or sustainable.

"Biodegradable" label
As part of the round table on biodegradable materials, Coop worked with other retailers, bioplastics/BM producers, Biomasse Suisse, Swiss Recycling, the Swiss Federal Office for the Environment (BAFU), the Swiss Organization for Municipal Infrastructure, recycling companies and other organizations to produce a consensus document on the labelling of biodegradable materials. Uniform labelling is intended to ensure that as little contamination of green waste as possible occurs (see Link).

The consensus document produced by the round table on BM recommends that any communications regarding bioplastics should focus not on biodegradability via composting/fermentation, but rather on the use of renewable raw materials.

7. Profitability/cost
Thus far, bioplastic packaging solutions consisting of either film or moulded products are considerably more expensive than conventional plastic products. This is because production processes have not yet been optimized and because production quantities are relatively small.

8. Consumer preferences and benefits
According to the Coop market research study conducted in 2006 ("Bio Study"), consumers are in favour of biodegradable packaging, particularly for organic products, although they are not willing to pay extra for such packaging.

Bioplastic packaging only really offers added value for consumers if it is easier to dispose of. However, due to problems with its disposal, this is currently only the case for a minority of products such as compost bags or plant pots.

9. Outlook
From a long-term point of view, the need to use renewable materials rather than fossil resources in the plastics industry is undisputed. The focus is on the use of renewable raw materials rather than on whether or not these can be composted/fermented. Where the plastics produced from renewable raw materials (e.g. sugarcane) are chemically identical, material recycling is a better option, while for degradable plastics, disposal via household waste collections with some of the energy recouped via incineration will remain the most feasible solution.

In the future, second-generation bioplastics produced from production waste and leftovers in the same way as second-generation biofuels could offer an interesting alternative, provided there is no other high-quality recycling possible for these by then. Examples primarily include fibre-based raw materials such as grass from marginal agricultural land, FSC-certified cellulose, sugarcane fibre (bagasse) and bamboo fibre.