FARM is addressing the agricultural plastic waste challenge. It will make catalytic investments to supplant the use of agriculture petroleum based plastic with environmentally friendly bioplastics. The fund will also invest in promoting feedstock growth to support the bioplastics industry. These regenerative agricultural practices incentivize farmers to use alternative materials, farmers to produce inputs for such materials and the bioplastics industry to develop.

**CHALLENGE**

Agriculture polyethylene (PE) mulch films have been used for decades to increase agricultural crop yield by controlling weeds, soil temperature and water usage. While initially thought to be cost-effective for vegetable farming but these thin PE mulch films are non-biodegradable, non-recyclable and non-reusable. The immediate post-harvest phase sees residual accumulation during removal, which over the years causes soil quality degradation. The mulch that is successfully removed is often stock-piled and burnt or end up in landfills, due to low scope for recycling. Additionally, corn farmers have seen a continuous decline in their profit margins driven by low prices and high commodity volatility and supply outstripping demand.

The two key challenges thus are (1) specialty crop farmers to internalize the high direct and indirect costs of using plastic products and (2) corn farmers to get an alternate, stable and high source of income. Currently the direct and indirect costs associated with the use of PE agriculture mulch are currently not valued appropriately. There are high labor costs to remove the mulch after every harvest season, loss in yields due to reduced soil fertility, presence of micro and nano plastics in the soil due to inappropriate and ineffective disposal methods - all add to not only a dire environmental impact, but also socio-economic impacts in terms of low yields and profits for farmers.

**SOLUTION**

Our solution aims to supplant the usage of plastic agriculture films with an environmentally friendly alternative, by creating financial incentives to both producers and consumers of alternative solution.

A sustainable alternative to PE mulch is biodegradable plastic mulch (BDM). BDM made from bioplastics perform the similar function of increasing crop yields, do not require removal since they’re biodegradable. This provides a multi pronged benefit – reduced labor costs related to mulch removal, reduction in microplastics in the soil, added fertility of the soil, and reduced waste associated with burning or dumping mulch. Experimental studies suggest that BDM mulch tilled into the soil lead to consumption of less water, increased retention of heat in the soil, and increased crop yields by 20% and improved workload and waste management.

Our fund aims to solve agriculture plastic waste challenge, by linking large farmers and BDM producers through an input credit program and the same bioplastic producers with feedstock farmers through a transitional loan program. This provides the demand base that the BDM producer needs to scale up the technology, and the farmer needs to switch to a new agriculture practice and feedstock farmers to get additional revenue streams.

**INVESTMENT THESIS**

Our Fund aims to create a virtuous circular cycle by creating linkages and incentives for all players in the bioplastics value chain. We will provide transitional loan assistance to corn farmers to become ‘sustainable biofeedstock providers’ and divert a proportion of their produce for sale to bioplastics producers. We will also provide input loans to vegetable farmers to switch from current plastic based agriculture practices to bioplastics. These loans will be repaid at a marginal spread over current USDA farm loans. Additionally, both sets of farmers also receive technical assistance and network connection benefits.

**FUND STRUCTURE**

**CHALLENGE**

**SOLUTION**

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**FUND STRUCTURE**
Our Pilot Fund of USD 65 million is at proof of concept magnitude and our Fund I offering is expected to have USD 320 million AUM, which is above average AUM of private debt impact funds. The business model and large fund ensures scalability across crop markets in the US and that the fund can be evergreen in operations, while giving an opportunity to invest in creation of a sustainable circular economy.

Global Agricultural films market, a $9Bn opportunity in 2018 is expected to grow at CAGR of 6% to reach $16.1 Bn by 2028. As the benefits of rising agricultural yields and declining adoption costs spread across farmlands in developed markets, this adoption will spread to emerging markets such as China. Rising environmental concerns and regulatory bans over use of PE mulches such as a recent one announced by China will also drive demand for BDM.