

Annapurna Farm

Annapurna Farm is the largest certified organic farm in the community. The farm was established 37 years ago on a barren piece of land about 8 kms away from the Auroville city center. The farm currently produces rice, dairy products, and fruits/composites for the community. Additionally, Annapurna serves as the granary of Auroville by storing and processing grains from other Auroville and bio-regional farms.

The farm's production goal is to provide healthy food for the community while maintaining social, ethical and ecological values. Annapurna Farm & Dairy is certified organic by IMO. It is a part of the Auroville Dairy group.

The farm maintains activity logs extensively to quantify investments into various activities of the farm such as labour hours, cultivation inputs, machinery hours and fuel consumption. The farm also keeps records of certain crops to study how to improve their quality and yields. Animal logs and milk figures from the dairy are also kept to understand herd performance.

Outreach

The farm is partly supported by a corpus fund set up by its well-wishers and reaches out to the community with the weekly farm basket and newsletter.

The farm does not have a specific volunteer program but prefers long term, student volunteers. The farm has previously worked with Wageningen University & Research, Netherlands to host masters students for their ecological studies.

Labour

No of Aurovilians: 2 & 1 newcomer

Manager: Tomas and Andre

Regular Workers: 18 (including 2 supervisors), who work across various functions of the farm such as field work, dairy, processing, granary, upkeeping infrastructure, irrigation, harvesting and distribution.

6 Men: ₹480-₹675/ day

12 Women: ₹395 - ₹565/day

Bonuses: ₹1000 /month for attendance, Diwali and Pongal Bonus, overtime, Sewa registered

Seasonal Workers: 1-3 women (Off season); 15-20 women (Peak season) at ₹415/day, seasonal workers are mainly involved with the paddy and other field works.

Land

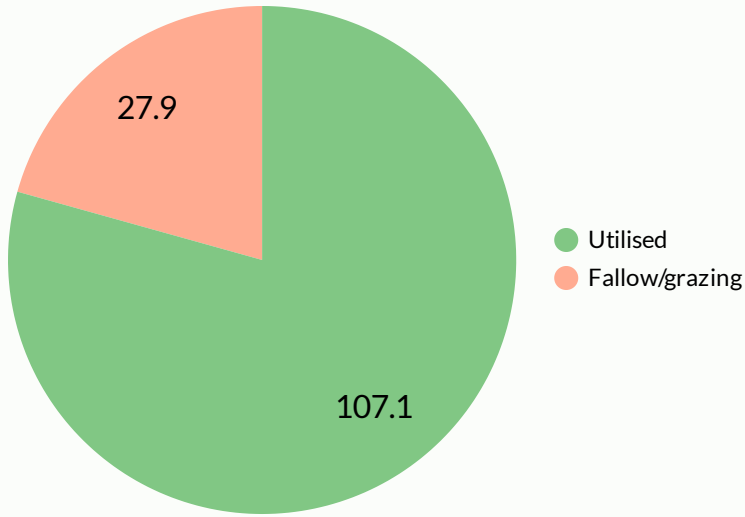


Chart 1: Utilised area vs Fallow area

Total Acres under management: 135

Acres under Cultivation: 49.1

Acres Utilised: 107.1

Acres Irrigated: 34

34 acres is irrigated and used to intensively cultivate paddy, fruits and fodder. Biomass/dry land fodder is cultivated in non irrigated areas.

The rest of the utilised land serves the farm indirectly through activities such as water harvesting (5 acres of ponds) and infrastructure.

Of the 27.9 acres that is uncultivated is fallow and utilised for grazing cows.

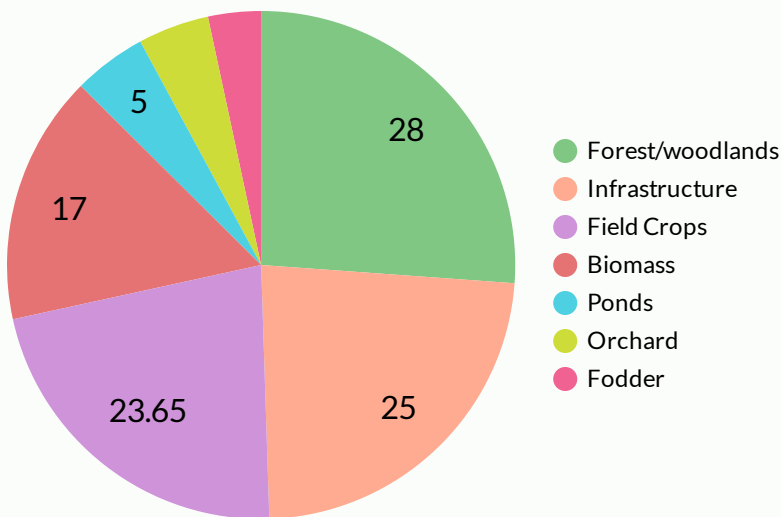


Chart 2: Breakup of utilised area

By investing in water harvesting, Annapurna has reduced its dependence on ground water considerably. Annapurna farm has a rainwater harvesting system that includes **three ponds** covering 5 acres (including embankments) with a total capacity of **50,000 cubic meters (5 Crore Litres)**. These ponds are the main source of irrigation for the farm.

Additionally, the farm has two borewells that are used mainly to supply water to domestic and to the food processing units as well as serving as a backup in case of insufficient rainwater in the ponds.

Flood irrigation is used for paddy, while fruits and fodder are irrigated using sprinklers. The farm grows dryland crops such as rosella, sesame, ulundu, green gram, mustard, gliricidia (fodder).

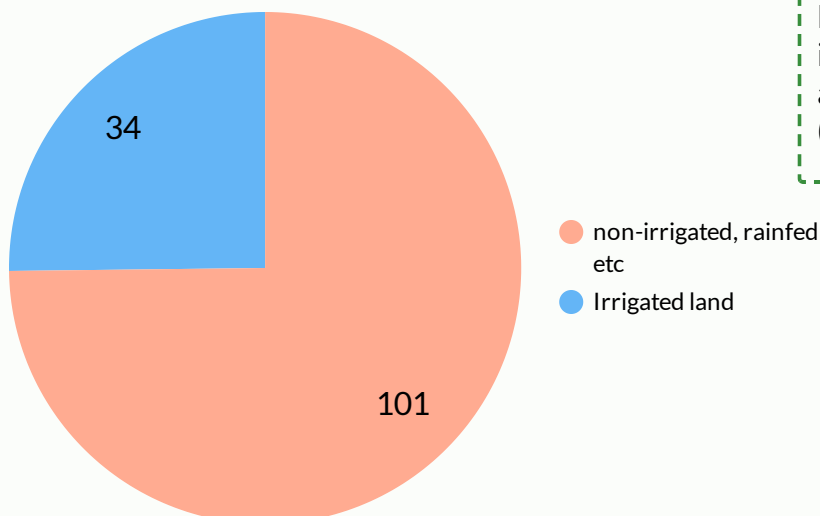


Chart 3: Proportion of irrigated Land

Production

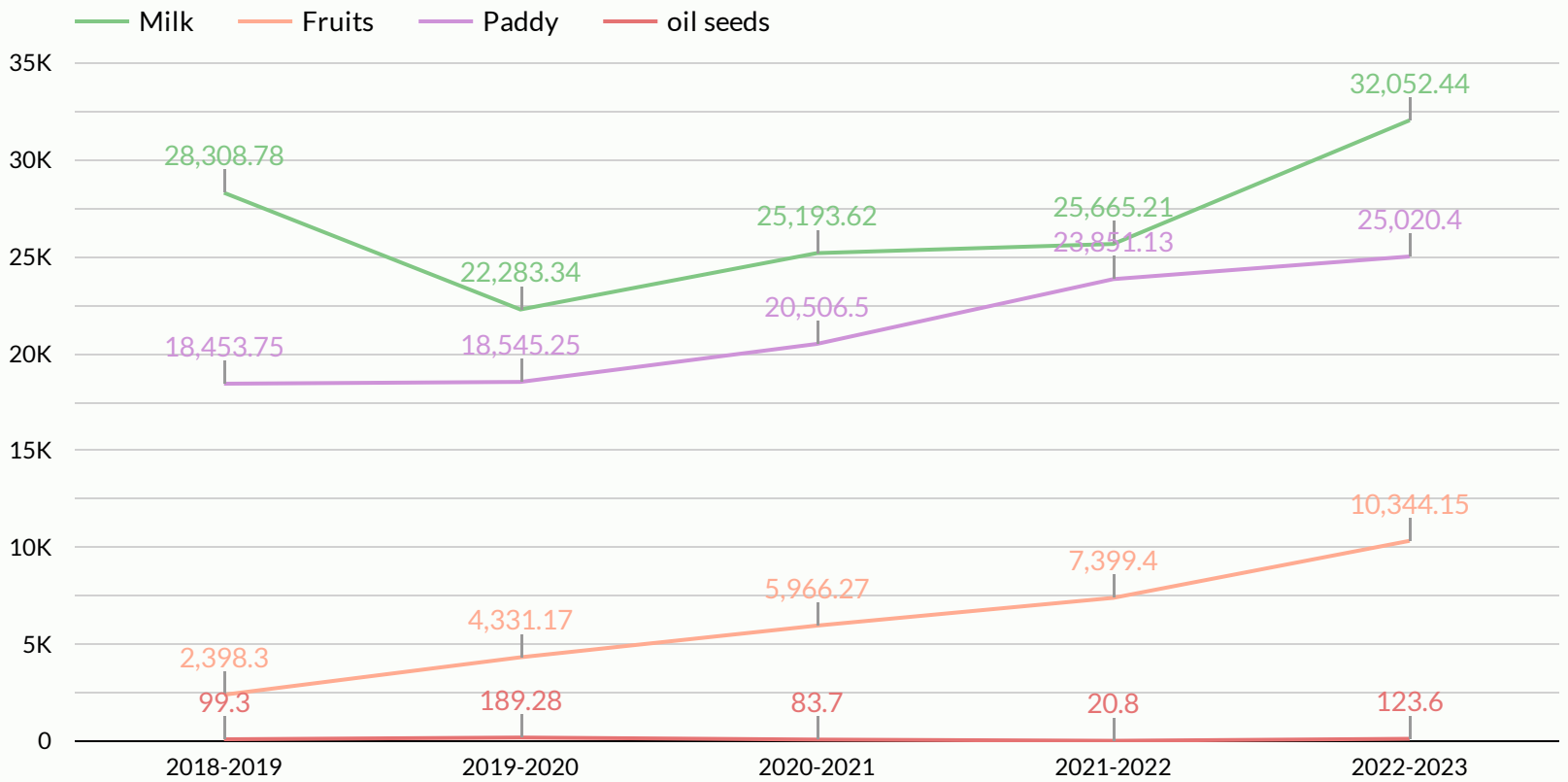


Chart 4: production in Kgs per category of food type across 5 years

The chart above shows the trends for the unprocessed crop produced at the farm. Over the last 5 years, fruit production has gone up due to the investments in new banana plantations. Milk production stays fairly consistent. The fluctuations in paddy production is due to weather conditions and not acreage.

Annapurna processes most these raw materials into other products at the farm. Most of the dairy is converted into yoghurt and cheeses, fruit is converted into jams and compotes and paddy is milled into polished rice and flour. Annapurna predominantly brings its produce through foodlink to PTDC, Solar Kitchen and other eateries. A small quantity of processed goods is sold outside Auroville to commercial outlets for a premium.

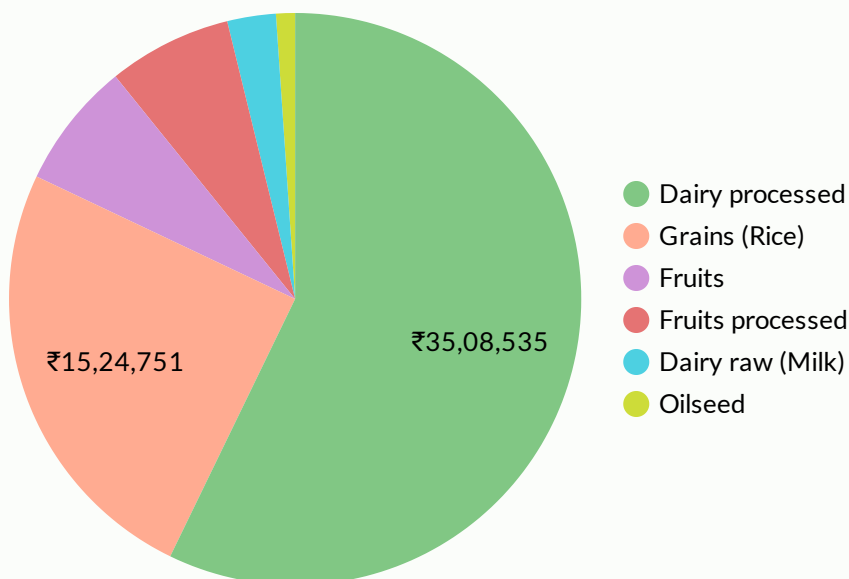


Chart 5: Breakup of Sales in FY 22-23

Type	Qty Sold
Rice	15,715.66
Yoghurt	8,339.37
Fresh Fruit	6,915.29
Milk	3,501.5
Fruit Compote (Jar)	2,670
Paneer	1,546.36
Cheese	598.68
Cheese Spread	546.9
Gomasio	79.5
Field Crops	44.72
Rice Pudding	21.9
Butter	1.9

Chart 6: Products Sold in FY 22-23

Dairy

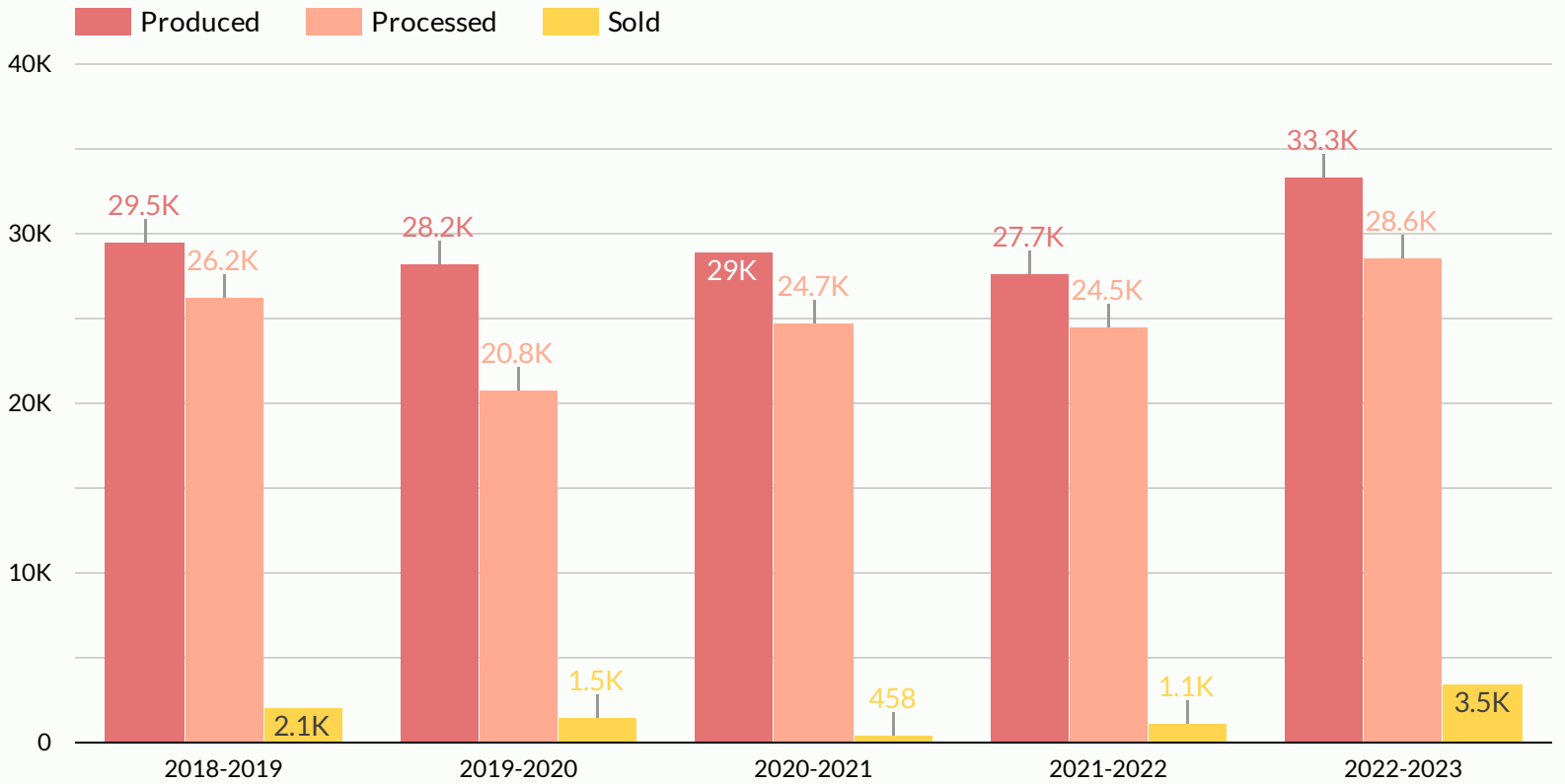


Chart 7: Milk Produced, Processed and Sold in last 5 years

In FY22-23 33,322L of Milk was produced. Of this 28,551L were processed into other products and 3500L was sold as milk.

The chart below shows the dairy sales by product in the last 5 years.

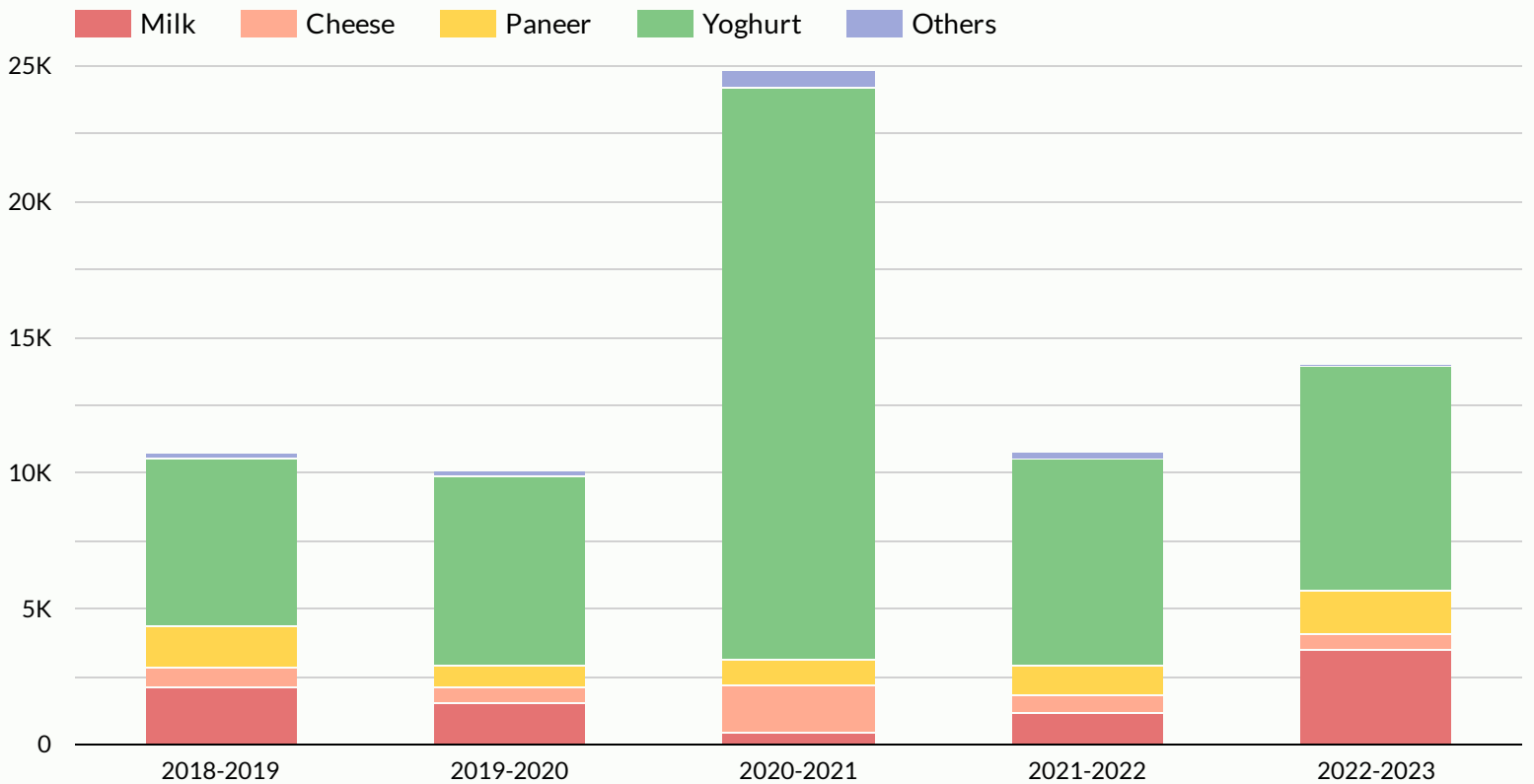


Chart 8: Dairy Sales in last 5 years

The dairy is the economic backbone of Annapurna farm benefitting the farm directly with milk production and processing.

Annapurna farm dairy is certified under IMO and consists of 28 animals, including 17 milking cows, 5 heifers, 2 retired cows, 2 female calves and 1 bull.

The dairy fodder is grown on the farm using perennial and seasonal systems, including irrigated and rain-fed methods. The fodder includes cowgrass, tree fodder, wild grasses, fodder sorghum and legumes; avg of 127 tonnes of fodder is cut throughout the year (about 15- 18 kg/day for each milking cow). The herd grazes throughout the farm in rotations with a portable electric fence.

The farm sources raw grains, predominantly millets, and mills them as grain feed for the herd. The grains/millets are destoned, sieved, and milled to mix. The feed is bagged and stored for fortnightly use. The feed grain/millet purchase is one of the highest expenses for the farm, and about an average of 23 tonnes of grain concentrate is fed to the dairy throughout the year (about 4 kg/day for each milking cow) .

The farm keeps 90% of the calves away from their mothers. Female calves are selected for the farm, while male calves are sold. Calves that stay on the farm are fed 4 litres/day milk for the first 100 days and then slowly weaned off the milk. The calf does not suckle on the mother but is given milk in a suckling milk box.

The herd at Annapurna consists of mixed breeds (part exotic and part indigenous) as it is selected for production as well as climate resilience and health. The farm raises a bull on the farm and replaces it every 6-7 years to avoid inbreeding. Artificial insemination is done if required. Aged cows that were highly productive are retired on the farm, while low productive animals are sold.

Annapurna dairy relies on a balanced diet, basic care, decent housing, and homeopathy as a way of medication. Antibiotics are used occasionally, and the milk during any antibiotic treatment is discarded for double the duration as the IMO prescribed withdrawal period.

The farm also has a small flock of country chickens that produce eggs for the community and for CSA basket subscribers. The flock grazes around the cowshed and the corral area and their diet includes waste grains from the granary, millets and farm-bred cockroaches for protein. Recently, ducks have been integrated into the farm to support paddy crops -potentially to offset the weeding cost which is one of the highest expense of the paddy cultivation as well as foreseeing the future of farm labour being scarce. The farm is currently working with about 150 ducks to understand their behaviour and impact on the paddy ecosystem - ecologically and economically. .

Fruits

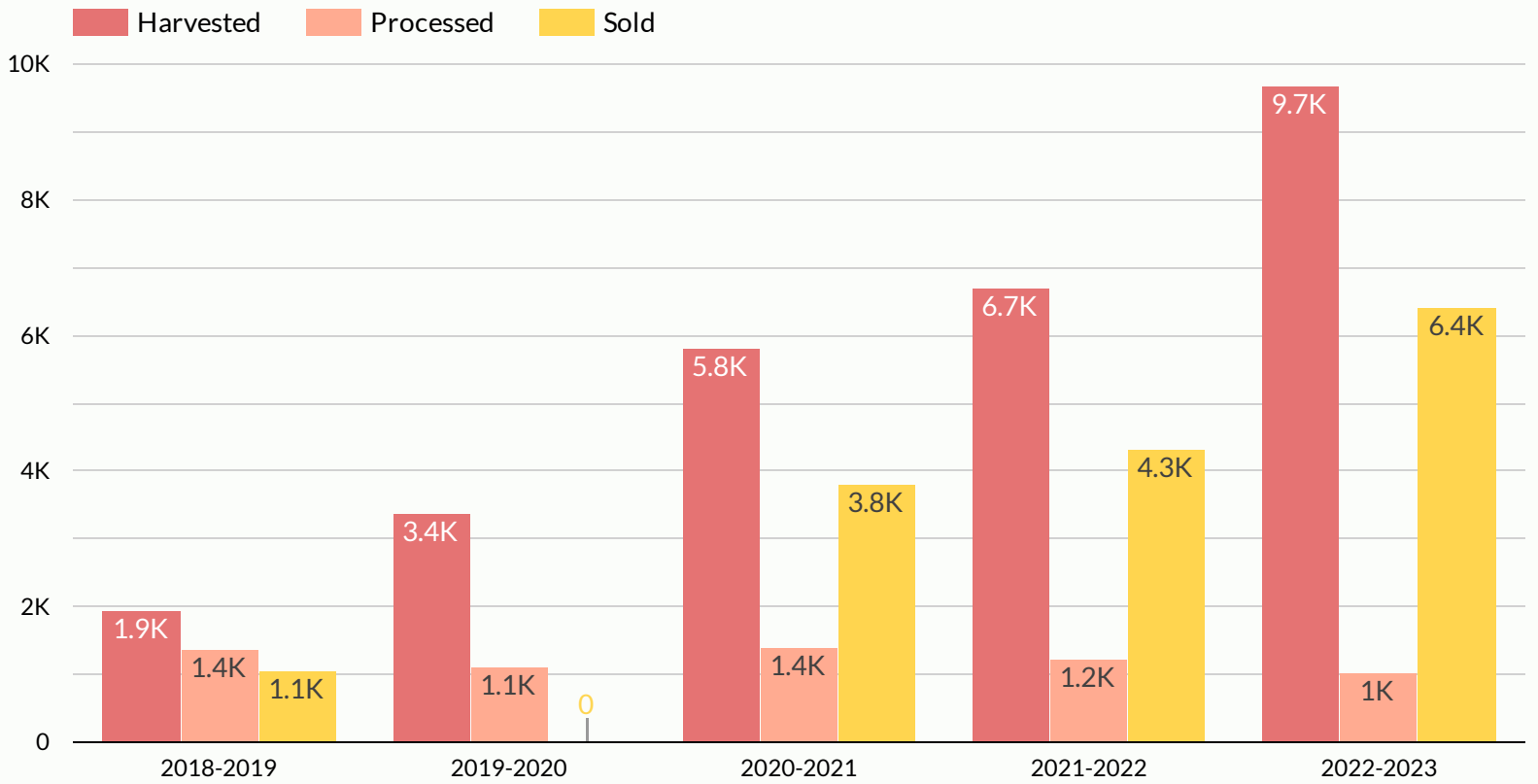


Chart 9 : Fruits Produced, Processed and Sold in last 5 years (Kgs)

Fruit production has risen consistently in the last 5 years mainly due to an increase in banana production. From FY20-21 most of this harvested fruit is sold as fresh fruit and the amount of fruit processed has stayed at the same level in these 5 years.

The below chart shows the number of processed fruit jars (compotes and jams in 300g jars) made and sold. Not all the jars made in a year are sold in the same year.

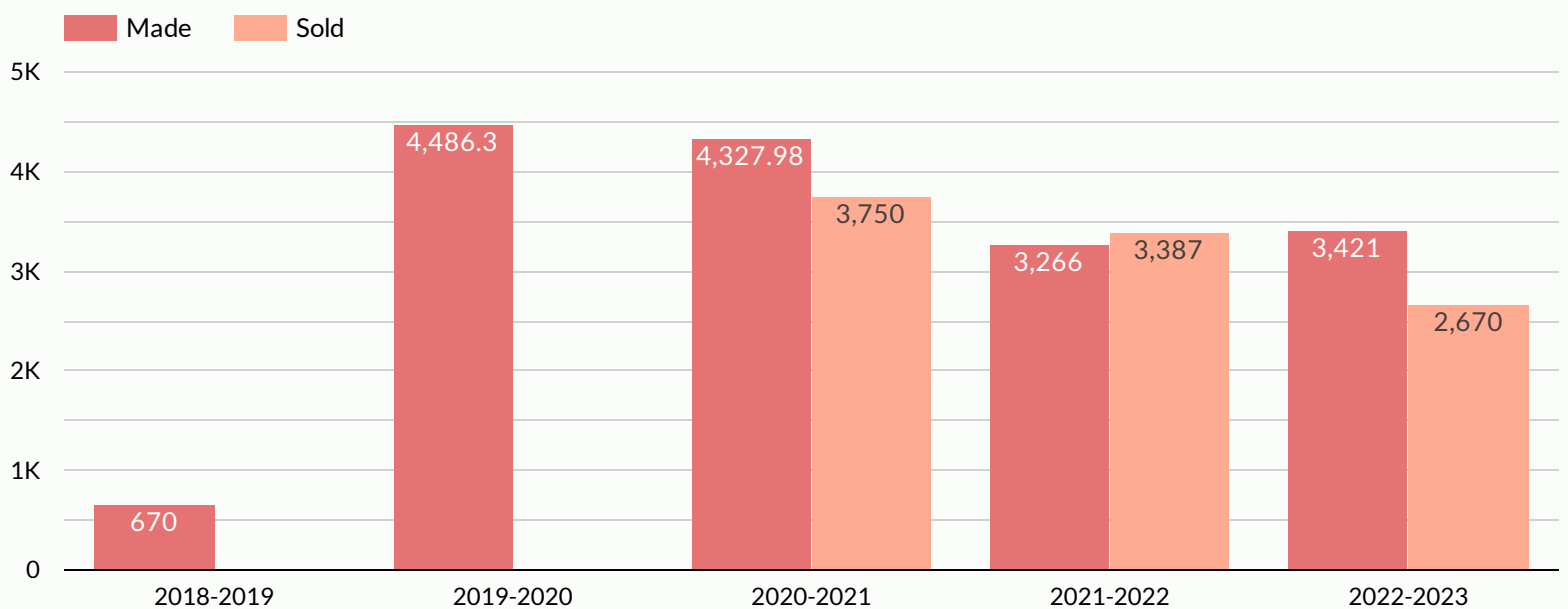


Chart 10: Processed Fruit Jar sales in last 5 years (no. of jars)

The ages of fruit trees range from 40-50 years (mango, tamarind), 30 years (coconuts), 6-7 years (guava), 0 - 4 years (bananas). There are also lime and kumquat trees on the farm. Young fruit trees are irrigated, while older fruits are rain-fed.

The farm currently produces bananas in 2.5 acres of land, which is rotated with seasonal fodder. The bananas are irrigated using micro sprinklers. Cover crops of Nitrogen fixing legumes are established to build biomass and suppress weeds in the plantations. Recently, a mixed crop of corn, butternut squash, and black velvet bean was experimented with. Annapurna grows the Karpuravalli variety of banana after trying other varieties such as Poovan, Udayan, etc.

Most of the bananas are sold as fruit in Auroville, while smaller fruits are processed into sugar-free fruit compotes. Additionally, there is 1 acre of guava plantation which is irrigated with micro sprinklers. The guavas are mostly used for processing fruit compote.

Kumquats are manually irrigated with grey water from the processing facility.

Apart from using compost at an early stage, leguminous cover crops, mulching, and occasionally dairy effluent are used to maintain fertility in the orchards.

The fruit tree saplings are farm-grown, purchased from the Auroville Botanical Garden or occasionally sourced from the local nursery.

In the past, pheromone traps were used as a way of controlling fruit flies, but it was not very effective. Currently, only electric fences are used to protect the plantations from wildlife and trespassing.

Grains

Paddy

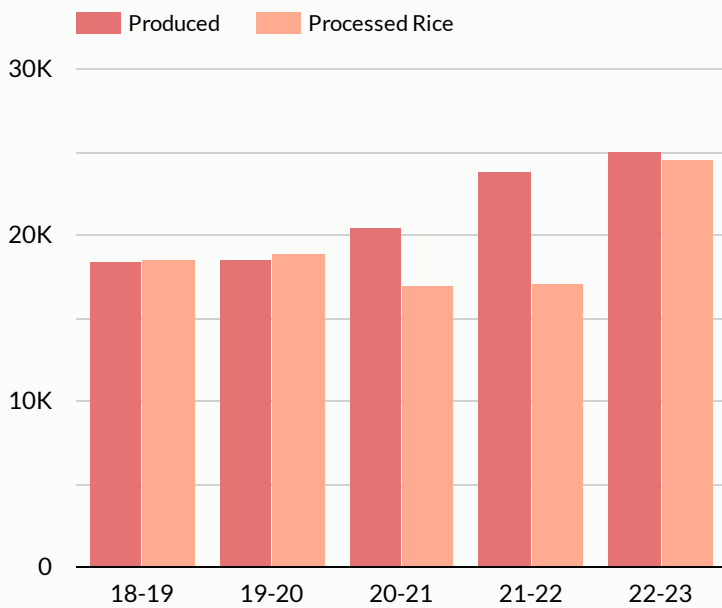


Chart 11: Paddy Produced, Processed and Sold in last 5 years

Rice

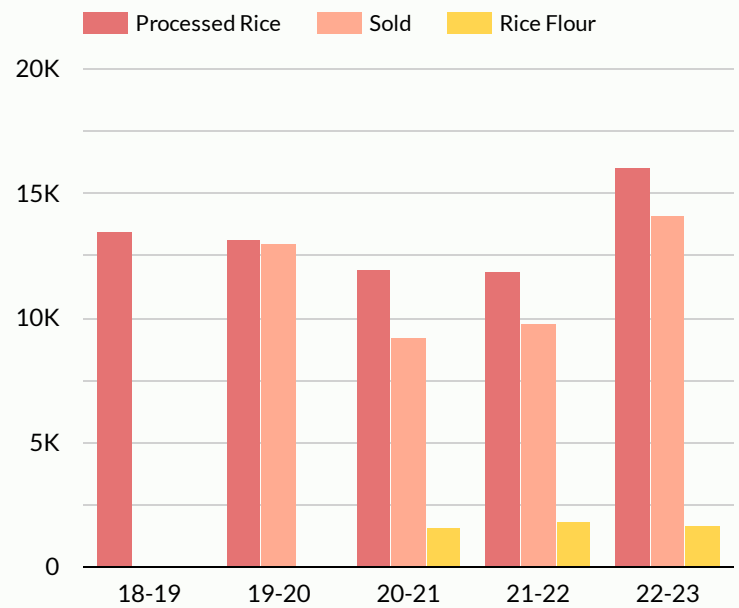


Chart 12: Rice Made, Sold and Processed in last 5 years (Kgs)

Paddy is unhusked rice that is stored in the godown after the harvest between in January-March every year. As per community demand, this paddy is milled into complete, parboiled and semi-polished rice ('Processed Rice' in Chart 11 & 12). Any broken rice is then further processed into rice flour ('Rice Flour' in Chart 12).

Other Grains (White sesame, mustard and Greengram)

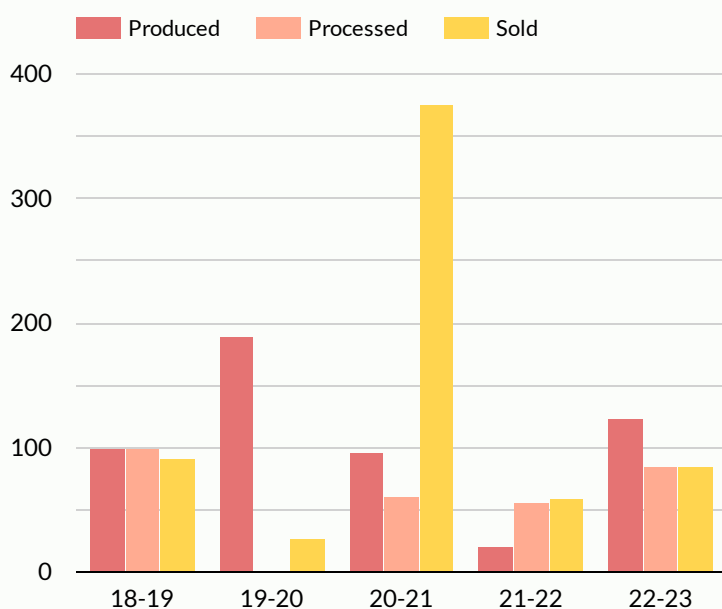


Chart 13: Other grains Produced, Processed and Sold in last 5 years (Kgs)

The 'Produced' in Chart 13 is primarily White Sesame. In FY22-23, 120.1kg of white sesame was produced and only 3.5kg of mustard. The white sesame is mostly processed into Gomasio which is also represented in the 'Sold' metric. Gomasio processed in one year may be sold in others which is why you see such a high sales number in FY20-21.

In FY20-21, 12.5kg of Green Gram was also produced. 8.72kg of this was sold in FY22-23.

Annapurna farm has increased its paddy production to 20 acres over the years along with building rainwater harvesting capacity, a machine park, rice milling capacity, and a storage/drying space for post-harvest processing.

The farm mainly grows three varieties of paddy, which are – 'Farmer's select-Annapurna' (brown/complete rice), Poovan Samba (red rice), and CO43 (parboiled-semi-polished rice). Every season, the farm tests different varieties for variables such as seasonality, plant-lodging, yields, seed saving, etc. The paddy growing season starts in mid-August (field preparation) and ends in early March (last harvest).

The farm follows a mandatory prerequisite soil fertility measure by cultivating green manure before the paddy season. These pre-paddy fields are partially irrigated (depending on the pond capacity) and predominantly rain-fed (summer rains). During the summer, these paddy fields are also used by the cows to graze.

The farm makes compost using cow dung, biomass (shredded gliricidia branches), crop residues, and occasional loads of chicken manure. This compost fulfils around 40% of the fertility needs of the paddy field (application rate: 6-7 tons/acre), while the remaining required compost is purchased from the bio-region. Based on the paddy variety and its physiology, dairy effluent is also used for fertigation. Neem cake is also used occasionally.

The paddy is flood-irrigated using water from the rain harvesting ponds. The farm plans the season to find an optimum balance between irrigated and rain-fed conditions by sowing multiple seedbeds of paddy. and the paddy is transplanted and weeded manually while the harvest is done using a combine harvester if the weather favours and manually if not. After harvest, the paddy is sun-dried and stored in gunny bags. It is processed in small batches when Auroville needs rice. Processing of a crop of paddy into rice happens from a few months to 1-2 years after harvest, depending on demand.

The farm prepares a nursery of 5000 or more Gliricidia seedlings to plant on lands that are not intensively cultivated due to lack of resources. Annapurna grows dryland sesame between these gliricidia plantations. This sesame is mainly processed into Gomasio. Rosella is another field/cash crop for Annapurna, raised primarily rainfed. The rosella is mainly processed into jams.

Annapurna farm also manages the Auroville Granary which stores and processes the paddy/pulses/millets from Annapurna and other Auroville grain farms as well as millets from the bio-regions. The granary is where grains are dried, cleaned, stored, and processed (milling, parboiling, etc). The crop is stored in Annapurna's storerooms until there is a demand from the community. It is then transported for further distribution to Foodlink.

Annapurna Farm also generates some income by selling firewood and occasionally timber. Dead wood is harvested and used for the parboiling process of the paddy, while the remaining wood is sold to a wood broker yearly. In addition, the farm cultivates its own wood, such as acacia and casuarina (in the past), which is used for infrastructure purposes like cow shed roofs and poles for electric fencing.

Finances

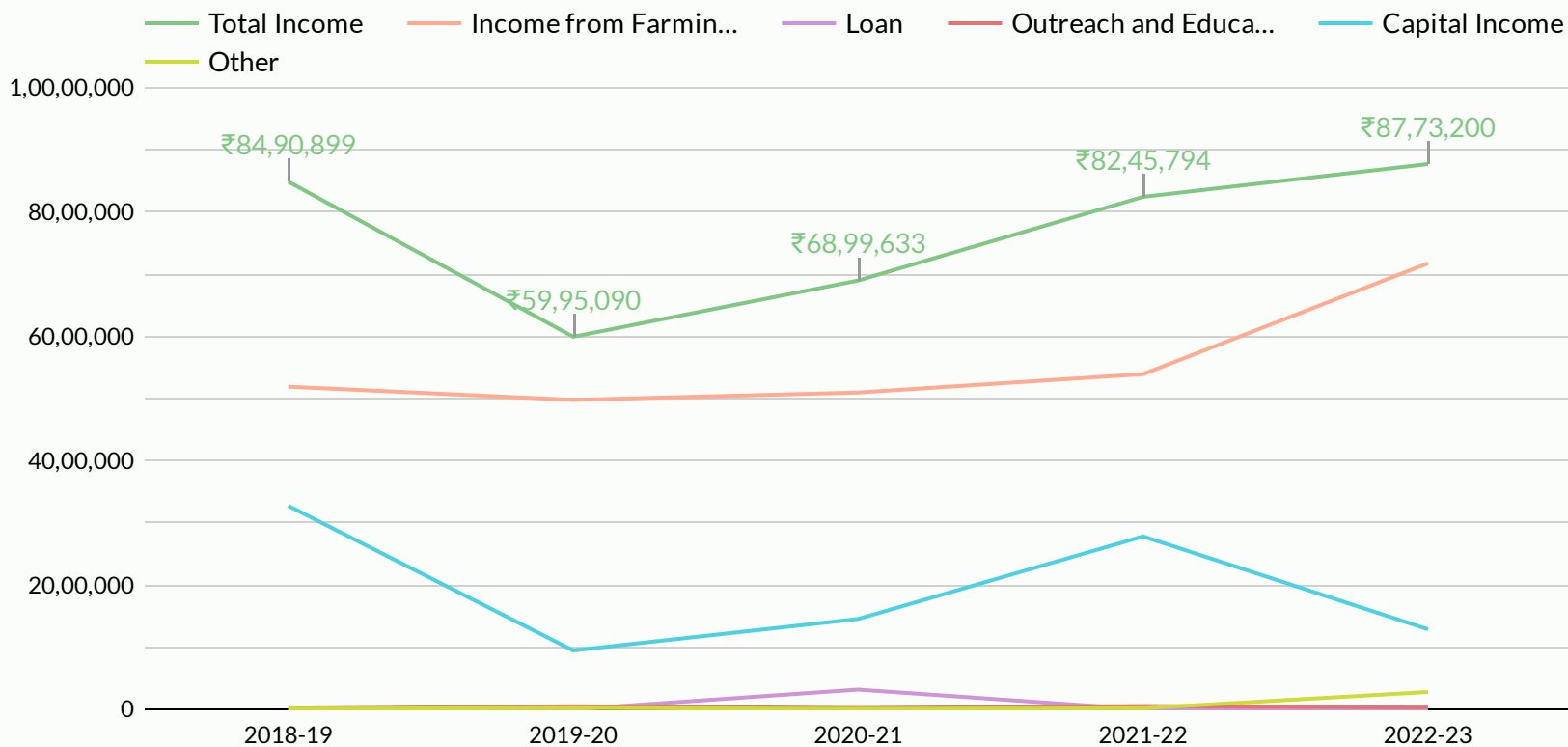


Chart 15: Break-up for farm income during 2017-23.

Farming Activities form the backbone of income generation for Annapurna farm. This has been fairly consistent since 2018 while seeing a considerable rise last financial year. This rise comes from a **₹11 Lakhs rise in product sales** due to a greater diversity of products being produced and a small expansion of their market outside Auroville as well as **₹7 Lakhs from Casuarina sales**. The other major source of income for this farm is from donations and grants. The 2 maintenances provided for the managers are mostly donated to the farm.

Farming Expenses have been generally higher than income apart from FY22-23. The farm consistently invests into infrastructure, machinery and repair and maintenance which are necessary for the farm to produce efficiently.

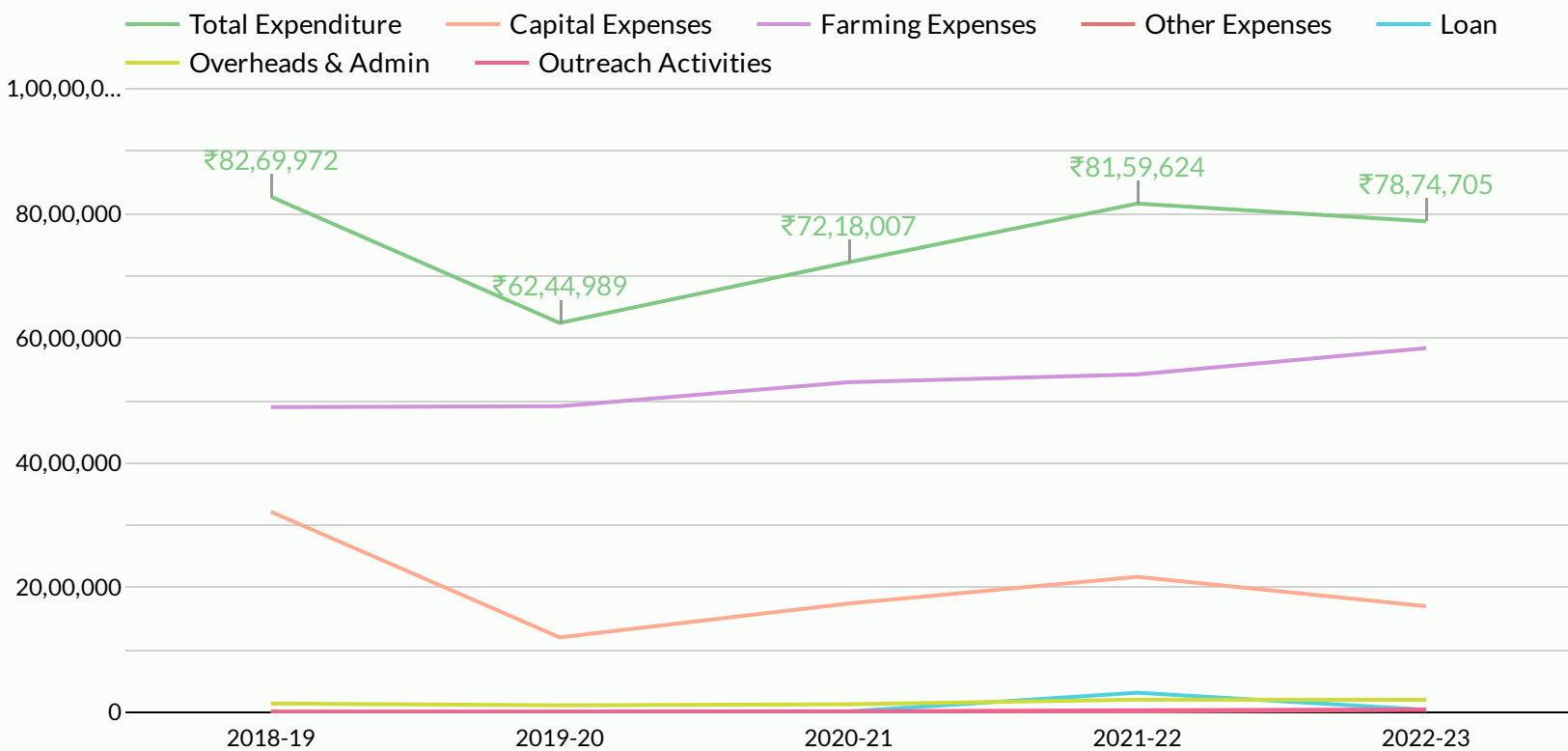


Chart 16: Expenses across years 2017 - 23

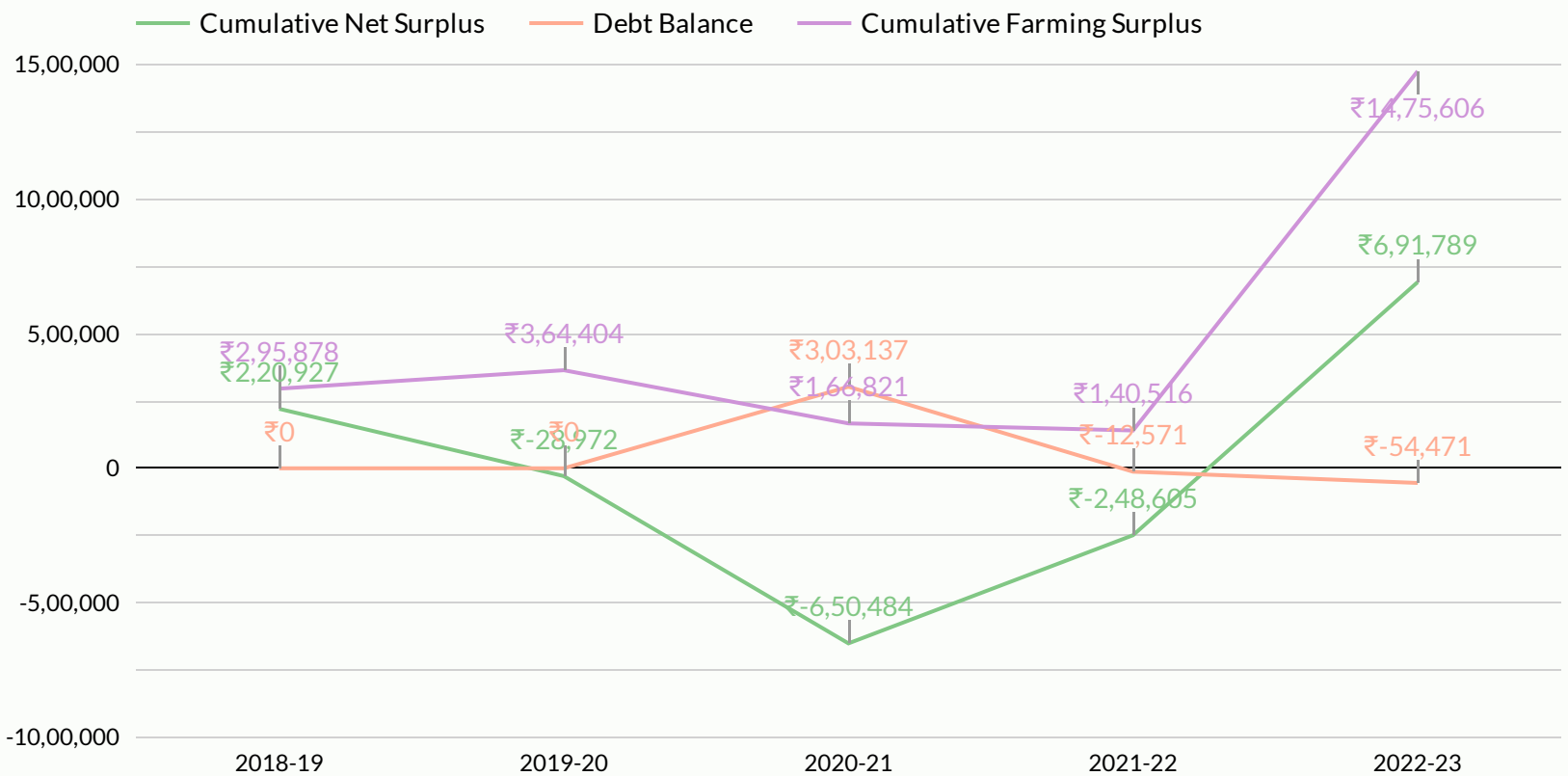


Chart 17: Cumulative Net Surplus, Cumulative Farming Surplus and Debt Balance

Farming activity has been profitable for 3 of 5 assessed years with FY22-23 giving over ₹13 Lakh in farming surplus. The farms net surplus has also seen a considerable rise in FY22-23 (Above ₹9 Lakhs).

In the 5 assessed years, a loan amount of around ₹3.18 Lakhs was seen. 1 Lakh of this is from the managers and the rest is a loan from a well wisher which was paid back by the next year. We see the "debt" go into the negative as the managers have taken back a little bit of the money they had invested into the farm in previous years for a tractor and cold room. As of today Annapurna has no outstanding debt.

As Annapurna receives a large amount in the form of donations and grants, it is not as reliant on external loans in the same way other farms may be.

Net surplus is the "total income" - "total expense" of a farm for a year. This does not include any debt. The chart shows this number cumulatively starting from 2017-18.

Farming Surplus is "farming Income" - "farming expenditure". This is the surplus a farm is able to generate from its activities alone. Chart is cumulative starting from 2017-18.

Debt Balance is the remaining debt that the farm owes. This "debt" can be in the form of external loans or personal investments by the farmer. Chart is cumulative starting from 2017-18.

Challenges and Needs

The farm is home to various wild animals, including wild boar, peacock, deer, and civet cats, thanks to the water and protection from the surrounding developing lands. During the dry season, cows and goats from nearby villages graze through the living fences, and occasionally, trespassers are spotted.

The farm is mainly surrounded by living fences, with a small part near the entrance protected by barbed wire fencing. To safeguard every cultivated crop, fodder, and fruit plantation, the farm uses electric fences, which incur a high expense due to the labour and fuel-intensive maintenance.

In the last couple of years, the farm has been testing and expanding its own pillar and slab fence. For more information, please visit <https://annapurnafarm-auroville.org.in/2022/11/10/the-annapurna-wall/>

In addition to fencing with the boundary wall, Annapurna farm is in need of capable individuals who can contribute to various functions and levels to help the farm progress. To attract such human resources, the farm requires investment in housing, staff quarters, and city service maintenances. The farm needs the support of the community to participate in discussions regarding food systems that can mitigate financial risks within the food sector.

Conclusion

Annapurna is the largest farm in Auroville and produces a significant amount of rice, bananas and dairy products consistently. Being a community oriented farm, it also manages the central granary for Auroville. The farm does a good job in keeping its own records and data which it uses to improve its practices. It is commendable that the paddy, which is a highly water intensive crop, is primarily irrigated using harvested rainwater significantly reducing its environmental impact.

Given the size of the farm, its infrastructure and the natural resources at its disposal, it is well positioned to contribute towards Auroville's food security. However, due to this size, it requires large capital investments and skilled human resources to expand its activities. Investments are required in fencing, machinery (for cultivation and processing), storage facilities and irrigation infrastructure to utilise more of its land.

Another strength of Annapurna is its ability to fundraise in order to afford its activities thereby reducing any need for debt.

A major weakness of Annapurna is that it is far away from the main Auroville area which makes it difficult for people from the community to work in the farm. More accommodation facilities can help more people to work and contribute to the farm without having to commute everyday.

Tomas and Andre are in their 60s. Given the diverse activities of the farm, a younger managerial team will be required to take over for when the current managers decide to stop working. Fundraising is an important part of Annapurna that will need to be taken up by the new managers.