A Case of Farmers Mitigation towards Addressing Fodder Crisis

For any dryland farmer, livestock forms critical part of their income. And for farmers in Ayyavaripally village cows do the job. Every household has one or two cows, or even more, depending on the resources they have. Per cow, roughly, they earn between ₹ 35000 to 48300 from a cow in each calving period.

So, in their ecosystem, dry fodder forms the most critical aspect in milk production. In fact, those who could not afford dry fodder sold their cattle off at lower price – something like distress sale.

Usually, residues of crops like paddy, millets and pulses are used as fodder between March and June. Farmers say each cow needs 600 kilograms of dry fodder [@ ₹5 kg/day] and 1200 kg green fodder in that period.

But in Ayyavaripally village, sourcing fodder from their lands – grazing and agricultural – was getting difficult. For, one, the tomato cultivation area has increased, and two, groundwater levels have fallen. These two reasons and others led to shortage of fodder in the village.

In February, 2019, they travelled to Srikalahasti, a place nearly 130 kilometers away from their village to buy fodder. At ₹ 10/kg, farmers spent ₹ 6,000 on each cow. Everyone in the village, together, spent an estimated ₹1,500,000 in just one season.

To understand what led to this issue and how the farmers addressed, we need to understand how they maintained the cattle in the past.

Milk Yield Crossbred Cow

No of days	Milk yield per day in liters	Total quantity in liters
90	12	1080
60	10	600
60	10	420
180	2	320
Total liters per calving period		2420 liters
Price of milk ₹ 28 / liter [2420 liters x ₹28]		67760

Expenditure on Fodder for 4 Months (March - June) or 120 days

Type of Feed	Feed per day / kg / price / no. of days	Total cost
Dry grass	5 kg x ₹ 6 x 120 days	3600
Green grass	10 kg x ₹ 5 x 120 days	6000
Concentrate feed	1 kg x ₹ 24 x 365 days	8760
Healthcare management		1000
Total cost		19360
Grass income from sale on Milk		67760
Net income from the sale of milk (per calving period)		48400

Where Do The Cattle Graze?

FROM JULY TO FEBRUARY

It depends on the resources village has, and an individual farmer has. Often, cattle graze in the fallow lands or common lands from July to February. It is completely wet fodder. Species like Ravi, Neem (collected from common lands and hillocks), Balisi (*Canthium parviflorum*), Pedda garaka (*Dactyloctenium aegyptium*) Garaka (*Cynodon dactylon*), Gunugu (*Celisoia argentea*), Oopa gaddi (*Heteropogon Contortus*), Utla gaddi (*Digitaria sanguinalisis*), Tamarind and Avisa.

FROM MARCH TO JUNE

Unlike the other months, providing only green fodder is difficult. So, farmers give a little of each – per day, 10 kilograms of green fodder and 5 kilograms of dry fodder. Those who have water resource grow their own fodder – both dry and green, and those who do not have buy it. In fact, growing fodder is an important economic activity in this village. For example, it costs ₹1,000 to buy fodder cultivated in 2.5 cents land, or for every 100 kilograms of 'Ghana Jeevamrita' given to cultivator, 500 kilograms of wet fodder is given in return. In addition, the cattle go out for grazing at least for a few hours in the morning. Otherwise, people here believe, the milk yield goes down.

Plus, throughout the year cattle are stall-fed with formula feed – typically bought from market.

Erratic Rainfall and Changes in Cropping Pattern

The village is in Vayalapadu aka Valmikipuram mandal of Chittoor district. The place received 292 mm rainfall so far, according to Andhra Pradesh State Development Planning Society website. It is 54% less than the actual rainfall. Also, there was delay, a trend that is being noticed everywhere.

Traditionally, farmers here cultivated millets and pulses. A few decades ago, they switched to groundnut, a cash crop. In either case, the crop residue was carefully stored and used when fodder in common and fallow lands exhausts.

But, for a host of reasons – delay in rains, meager economic gains from millets, pulses and groundnut – farmers are skeptical about sowing/cultivating itself. For instance farmers say, as they got rains after Arudhra Karthi, they didn't sow groundnut. But what they didn't notice is how not sowing/cultivating would affect their cattle, until last summer.

Fodder under Rainfed conditions

Now, in addition to cultivating millets, pulses and vegetables, farmers focused on growing fodder crops. That is, cultivating multiple crops – bajra, jowar, cow pea, horse gram, and other lentils.

Rationale:- For fodder, all it needs is one or two showers for vegetative growth. And if it can be done in ways that were employed previously – mixed cropping, landraces with heavy vegetation – farmers can provide highly nutritious fodder, which has essential energy supplements.

What could be achieved with focusing on growing fodder in village itself?

- ✓ Harness rain for vegetative growth,
- ✓ Secure fodder supply,
- ✓ Optimal use of individual/private fallow lands Reduce distress sale.

Ayyavaripally Initiative...

Around Rs. 92,000 worth assistance was given to 90 farmers – provided seeds and plowing assistance.

- The seeds includes bajra, jowar, horse gram, cowpea and other lentils
- Multiple crop combinations were followed – all five crops together, bajra and horse gram, jowar and horse gram etc. as per farmers choice
- According to farmers, each cow consumes 5 kilograms, and each sheep consumes 0.5 kilograms of dry fodder every day between March and June.
- For the animals in the village [only cows and sheep have been taken into account] for four months, the dry fodder required is 190 tonnes. For five months it is 237 tonnes.
- According to the initial crop cutting experiments [15 days before maturity], in different possible combinations, dry fodder of horse gram is lowest – 2,400 kilograms per acre – and jowar is highest – 4,800 kilograms per acre.
- In this case, for observation, we have taken conservative estimates – rounded off dry fodder to 2,000 kilograms per acre.
- From what was sowed in the current cropping season, fodder would be sufficient for all the cows, sheep and other animals in the village.

Apart from the Ayyavaripalli village other 14 villages of farmers have done similar initiative on fodder development. Horse gram grown in 108.75 acres, Millets and pulses together 289.5 acres and mixed crop grown by 73 farmers by hiring land in lease.

With the above initiative estimated to produce 572 tons of fodder for 1897 Small ruminants and and 1396 cows to secure for 4 summer months. The estimated fodder production arrived after crop cutting experiments done in farmers fields of Ayyalavaripalli.

If we caliculate the value of green fodder Rs 5000/ per tone, then the total would be Rs 28.5lakhs worth of green fodder produced with just 0.92Lakhs investment.

Rythumitra groups of Ayyalavaripalli are looking for financial support to install a Chaff cutter to store grass in the form of silage.

Fodder Production Details Crop Wise

Type of fodder	Cluster / Village(s)	Land category	No. of farmers	Total acres	Total fodder estimated in tonnes	Sheep	Cows
Horse gram as Solo crop	Ayyavaripalli (Velagapalli, Ayyavaripalli, Tekulapalem, Bommana cheruvu, Cherukuvaripalli, Thappanagaripalli, Chinthapartivaripalli	Private fallow land own land	74	108.75	120	440	265
Mixed (jowar, bajra, horsegram, cow pea and field bean	Ayyavaripalli Kanduru Thambalapalli Bomana Cheruvu (Ayyavaripalli Bommana cheruvu Cherukuvaripalli Chinagangulavaripalli Chinthapartivari palli Eddulavaripalli Gajjalavaripalli Jennevaripalli Kummarapalli Mutravaripalli Pagadalavaripalli Tekulapalem Thappannagari palli Velagapalli)	Private fallow own land	269	289.5	166	1117	943
Mixed crops	Ayyavaripalli Kanduru (Velagapalli Pagadalavaripalli Thappannagari palli)	Private fallow leased in land	6	73	286	340	188
TOTAL			**349**		**572**	**1897**	**1396**