Fallows to Fodder

Collective Action to Address Fodder Crisis Using Natural Farming Methods

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WASSAN

How Ayyavaripalli moved from Fodder Deficit to Sufficiency


CRZBNF
2018 - 19

From Deficit to Sufficiency...

Community Action to Address Fodder Crisis; Ayyavaripalli showed a path

Just 3 years back, it was a predominantly rainfed and fodder scarce village; majority of the households used to purchase fodder. Quick realization of the impending crisis followed by a crisp collective action has transformed that into a situation of plenty. Ayyavaripalli is now into fodder surplus, supplying fodder to nearby villages. Apart from addressing the fodder deficits, this effective community led action brought in many complementary benefits. Farmers now show their daily receipts of milk supplied – pointing out to the increased fat content in the milk getting them higher price; better conception rates of livestock and increased body weight for small ruminants. Fallow lands are now revived into fodder plots and in several cases brought back into cultivation with increased soil fertility.

The multi-species fodder development in fallow lands using natural farming methods made the difference in Ayyavaripalli, a small rainfed village in Chittoor District of Andhra Pradesh.

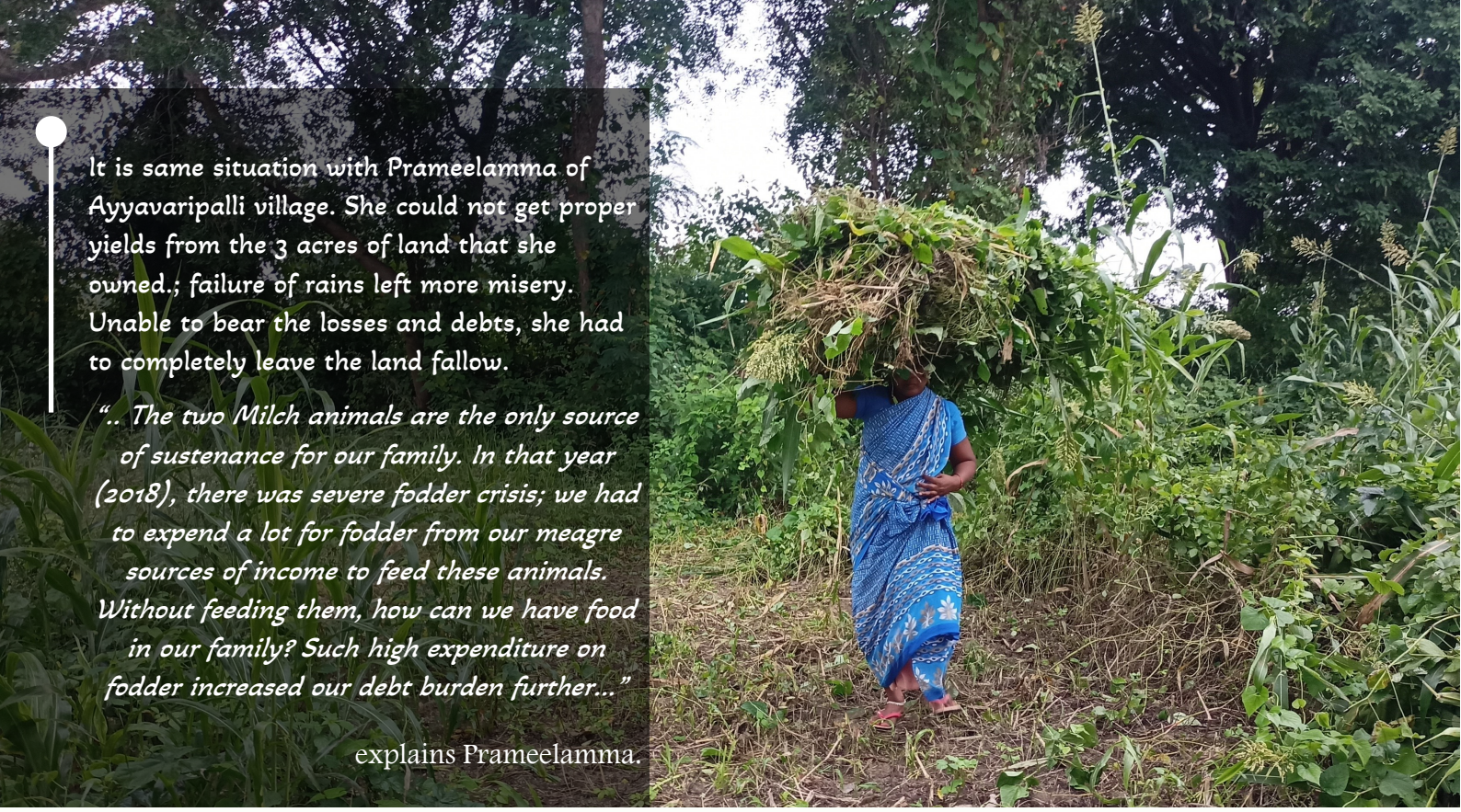
Ayyavaripalli predominantly survives on milk based economy. It is situated in Vayalapadu / Valmikipuram Mandal of Chittoor district. All the 129 families in this village have milch animals. With the the milk economy gaining ground, Desi breeds of cows are replaced by Jersey and other breeds over time with stall feeding practice. Fodder thus became the most critical aspect in their eco-system and economy.

Earlier farmers used to cultivate millets and pulses in a multi-crop system. A few decades ago, they switched to monocrop of groundnut, a cash crop. In either case, the crop residues were carefully stored and used as fodder along with using the common and fallow lands. Over time erratic rain-fall patterns, meagre economic gains from millets, pulses, reduced yields of groundnut etc., subjected farmers to periodical distress. In some years, when rains were delayed till Arudra Karthi, they did not even sow groundnut leaving the lands fallow. Such situations led to acute fodder scarcity!

The year 2018 was devastating! Ayyavaripalli did not see such a severe crisis in the past that has put their livestock, particularly milch animals into a total distraught. It was the year of a severe fodder crisis which shattered the economy of all the families and entire village. The village received 292 mm rainfall in that year, 54% less than the actual rainfall.

"...Though we have 4 acres of rainfed land, we used to cultivate only two acres with groundnut crop. Due to lack of investment capacity, we kept other 2 acres as fallow. We were not certain of harvesting a crop even in those two acres. With our four milch animals we were able to sustain our family by selling milk. Recurring monsoon failures resulted in losses in cultivation of groundnut crop. While living such hard life, this fodder crisis in 2018 further added to our problems. As each animal requires nearly five Kgs of dry fodder per day, we need at least 9.71 Tonnes of fodder per year for our milch animals. We used to get3.8 Tonnes of fodder from the groundnut and jowar crops, and another 2 Tonnes through other local sources. It amounted to 5.8 Tonnes of total fodder availability; this was sufficient for nearly 8 months; leaving us short of 3.9 tons for the balance 4 months period..."

says Girinath Reddy of Boyapalli village of Ayyavaripalli cluster in Chittoor District, recollecting that crisis period in 2018. He had to expend nearly more than Rs 32000 to fill that fodder gap. She purchased fodder from a far off place like Srikalahasti, at a rate of Rs 16000/- per tractor load.



It is same situation with Prameelamma of Ayyavaripalli village. She could not get proper yields from the 3 acres of land that she owned.; failure of rains left more misery. Unable to bear the losses and debts, she had to completely leave the land fallow.

".. The two Milch animals are the only source of sustenance for our family. In that year (2018), there was severe fodder crisis; we had to expend a lot for fodder from our meagre sources of income to feed these animals. Without feeding them, how can we have food in our family? Such high expenditure on fodder increased our debt burden further..."

explains Prameelamma.

There were many such farmers in Ayyavaripalli and other surrounding villages who faced lot of problems with fodder crisis. Some who could not afford to buy fodder had to sell their cattle at very low prices; it was a kind of distress sale. At one end, there was insufficiency of fodder. At the other end, cattle, sheep and goats were not eating that available feed fondly, due to its low quality. Many farmers sold off their sheep and goats thinking that it is better to sell them even at lower prices, rather than feed them with heavy costs on fodder.

explains Prameelamma.

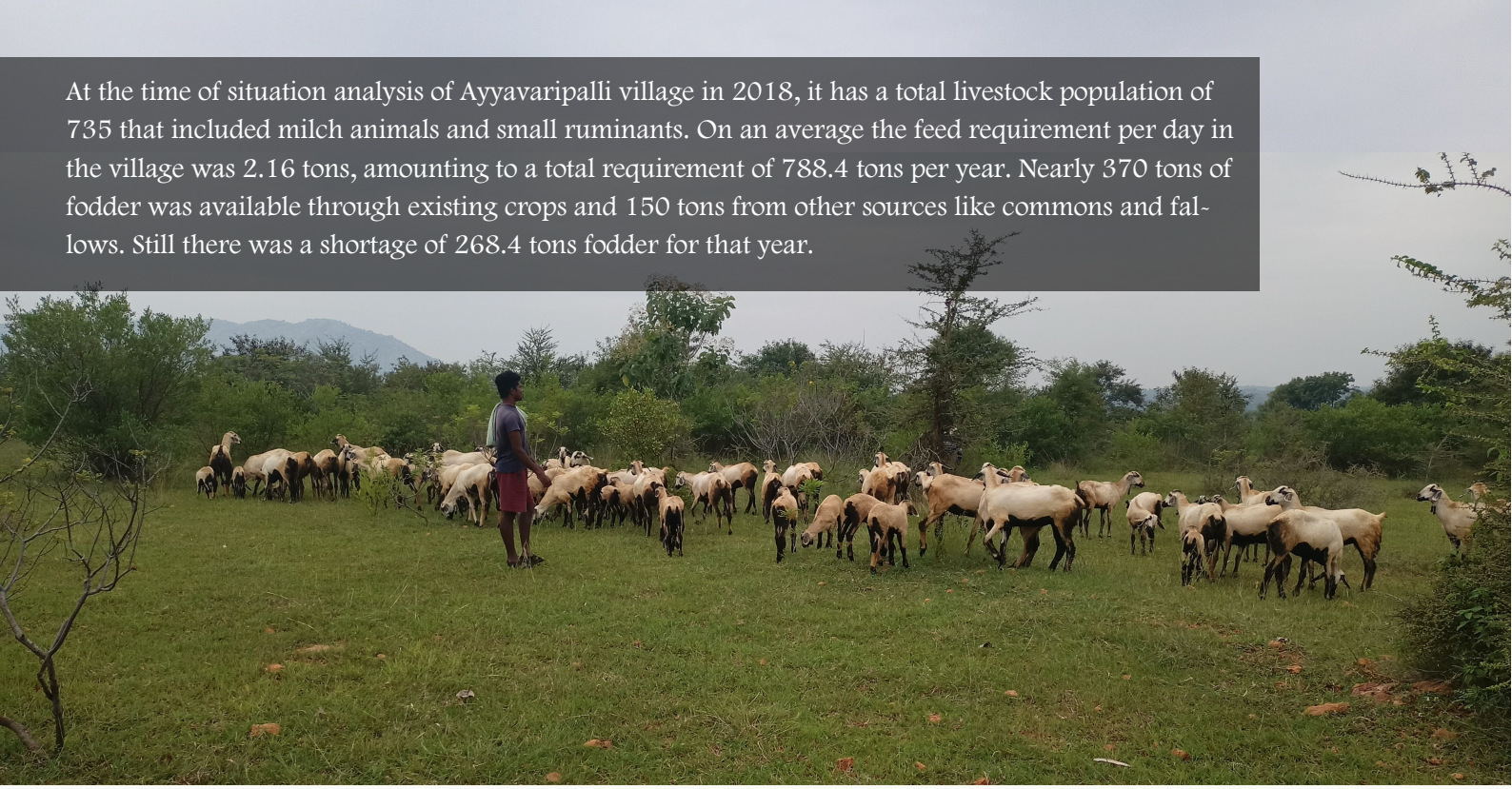
"...Since few years, WASSAN has been implementing various activities in these villages as part of Zero Based Natural Farming (now called as CNF). While interacting with community we came to know about this fodder crisis and we wanted to explore some options to mitigate this issue... For understanding the gravity of the situation, we organized focused group meetings at village level. The interactions with the people revealed that almost all the families in Ayyavaripalli (V) have been in one or other way affected by this severe fodder crisis in 2018...",

says Sudhakar, local team leader of WASSAN.

Ayyavaripali village consists of 129 households, with a total population of 354. The total geographical area of the village is 395 acres out of which private land is 339 acres and the remaining 56 acres is common land. Out of the total private land, 124 acres is rainfed and only 39 acres have irrigation facility. 164 acres of land is left fallow. Common land consists of Revenue hillocks with 36 acres of area. Apart from the fodder sourced from the crops, these hillocks used to support the local livestock rearers as grazing areas. The livelihoods of the people in this village is predominantly based on milch animals. Every household in this village has at least one or two cows; some families have more than depending on their financial strength. Each of these families earn an average of Rs. 35,000/- to 48300/- income every year on selling Milk.

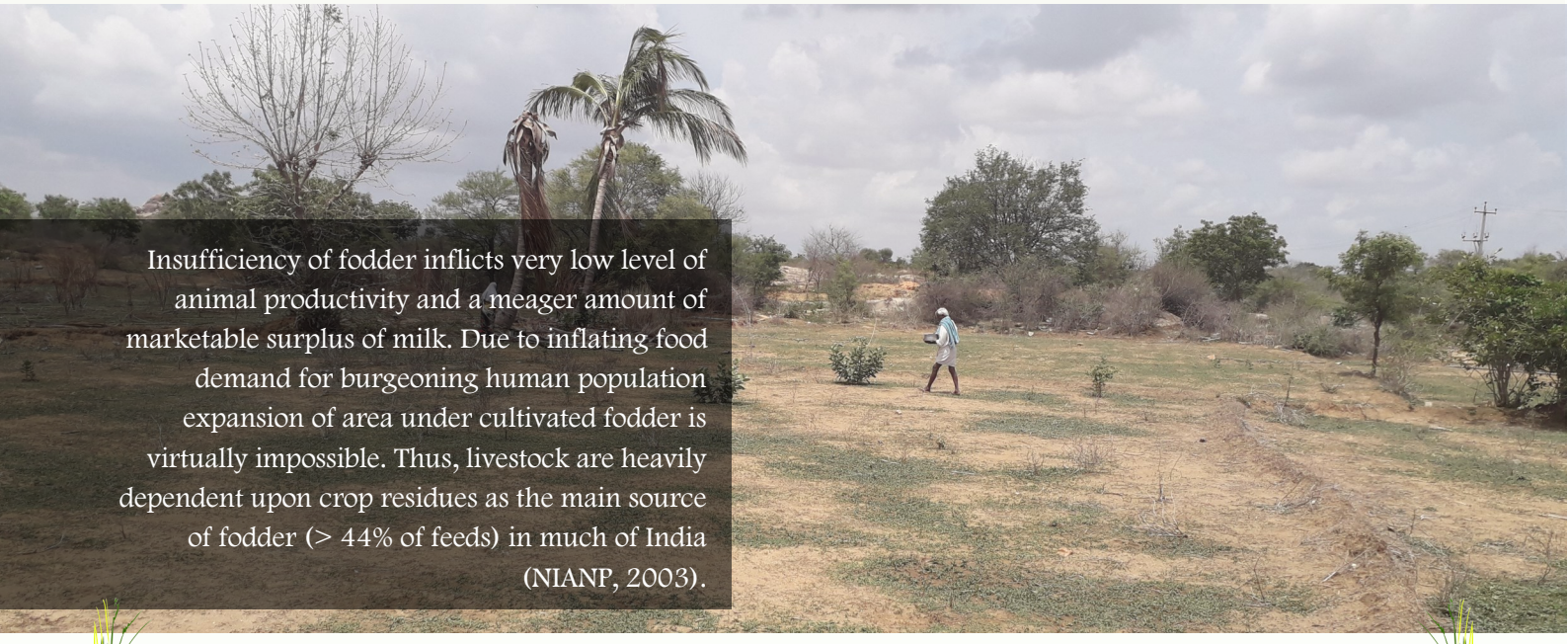
And it all depends on the availability of quality fodder

At the time of situation analysis of Ayyavaripalli village in 2018, it has a total livestock population of 735 that included milch animals and small ruminants. On an average the feed requirement per day in the village was 2.16 tons, amounting to a total requirement of 788.4 tons per year. Nearly 370 tons of fodder was available through existing crops and 150 tons from other sources like commons and fallows. Still there was a shortage of 268.4 tons fodder for that year.



Fodder shortage – a serious bearing on resource poor families!

Scarcity of feed and fodder is one of the most serious impediments in the way of sustainable livestock development, which has direct bearing on the income and livelihood of numerous resource poor livestock keepers. Green fodder is the essential component of feeding animals to make them healthy and productive, particularly to obtain desired level of milk production. The constraints like scarcity of feed, fodder and concentrates affect the potential of livestock and cause enormous losses in terms of production and depletion of livestock. Evidences indicate that feed related problems accounted for about 36 percent loss (per annum in value terms) in dairy animals and losses due to scarcity of dry and green fodder were estimated to be 11.6 percent and 12.3 percent, respectively (Birthal and Jha 2005). Mitigating scarcity of dry fodder and managing availability of green fodder round the year is a serious challenge for the livestock keepers as majority are marginal and small holders unable to produce and store livestock feed and forage and face acute shortage during certain periods. The working group on Animal Husbandry and Dairying foresees that at national level there would be a gap of about 65 percent between the demand and supply of green fodder and 25 percent for dry fodder by the year 2025.



Insufficiency of fodder inflicts very low level of animal productivity and a meager amount of marketable surplus of milk. Due to inflating food demand for burgeoning human population expansion of area under cultivated fodder is virtually impossible. Thus, livestock are heavily dependent upon crop residues as the main source of fodder (> 44% of feeds) in much of India (NIANP, 2003).

The effects of non-availability of fodder and water during the summer season are immense. Those who can afford to buy the fodder will bring it from outside. And those who cannot do that will sell their cattle. The crisis started during 2015 and has further worsened in subsequent years. During the drought, government has organized cattle feed shelters to some extent but such help was insufficient. In Ayyavaripalli, situation was much worse as the feed for their Jersey Breed Cows was highly insufficient. Farmers recall that their cows and sheep had to eat whatever available at that time in the hillocks, including plants like Aloe Vera!!

The Story of Nagarimadugu Bhaskar

A local sheep rearer presents the severity of that situation. He belongs to Dalit community with no source of land and livelihood. He used to do agricultural works to sustain his family, consisting of wife and two girl children. Thinking that it is impossible to earn enough income through his labour for children's education and marriages, he approached local landlord Damodar Reddy to help him to procure a flock of sheep; he made an agreement with landlord that he will rear and take care of the flock and finally give half of the flock to landlord. They came into agreement and as per that Damodar Reddy invested Rs 4.22 Lakhs to buy a flock of sheep (50 sheep and 1 Ram) in 2007; Ever since Bhaskar and his wife have been rearing that flock. They graze the flock in local fallows, commons and nearby hillocks during rainy season. In summer it used to be very difficult for them. Due to the shortage of rains, it became difficult even during rainy season and it forced them to take the flock to far off places. However, factors like thefts, predation, non-availability of food and accommodation, inability to stay away from home for longer spells etc. have forced the family to stay locally in the village. In the meanwhile fodder crisis hit this family. "… I purchased 2 tractor loads of fodder from Yerpedu, near Srikalahasti. Each tractor load amounted to nearly Rs 16000/-. I have also purchased a load of Horse gram locally with an investment of Rs 6000/- Thus I had to incur an expenditure of Rs 38000/- to procure fodder to protect my sheep", Bhaskar explains his problems. For a person like him who entirely depends on his hard labour, that is a indeed a big financial burden. But he knows that if he had not done that, he would have to face much bigger financial costs in the event of any causality to his sheep flock.

According to local farmers, the entire village has invested Rs 29.73 Lakhs for procuring 202.5 Tonnes of fodder, during that crisis year (2018). They have got it from far off places like Srikalahasti. 13 families who have sheep procured 25.5 Tonnes of fodder worth of Rs 3.87 lakhs. And 105 families purchased 177 Tonnes of fodder investing Rs 25.86 Lakhs for that purpose. In between 2017-19, these people have purchased Rs 98 Lakhs worth of fodder from outside places like Srikalahasti and Rayachoti, each lorry load fodder costing in between Rs 17000-Rs 21000. It was a huge outflow of money from the village, just to feed and protect their livestock.

Exploring Options - Extending Fodder area with available borewells (in Rabi 2018)

Understanding the crisis, WASSAN team tried to explore option to address this issue at least to some extent for that Rabi season (2019). During the interactions, it came to know that there are 28 farmers having bore wells in the village. 15 bore wells were functioning well. These bore well farmers were able to raise some fodder crops during the summer, with the available source of water, so as to feed their livestock. Mostly they were raising Co1 and Co2 type of varieties of fodder, each in 10 guntas of land, for that purpose. It was thought off to utilize this available water in a way that benefits more number of farmers who were in desperate need of fodder for their livestock. A proposition was made to the bore well owning farmers to increase their fodder cultivating area, so that more fodder is available locally. In return they were offered some support for ploughing that extra land (Rs 750/- per acre) and also different varieties of seeds.

Seeds given to farmers for fodder crop combination

1 Kg Jowar	1 Kg Bajra	1/2 Kg Field Beans
2 Kgs Horsegram	1/2 Kg Cowpea	

Thus, an agreement was facilitated between these farmers to provide 1 Kg of fodder in return to every 5 Kgs of Ghana Jeevamrutham. It was also agreed that each of the fodder growing farmer should provide fodder to at least 10 farmers. On the whole, nearly 90 farmers in the village have benefitted as they could get sufficient quantity of fodder for the summer. The yields were not uniform among all the farmers and some farmers could not extend fodder support to all the 10 farmers to whom they have agreed to give. This is mainly due to insufficiency of water in the bore wells during the year. Most of the farmers could provide fodder to at least 6-8 farmers, though in different quantities. These farmers could fill that gap by purchasing the needed fodder, with less cost burden.

Fodder Development Plots

Converting Fallows into Fodder Fields in other Clusters (in Kharif 2019)

The initial experience of farmers during Rabi to cultivate fodder in fallow lands gave a new direction to address the fodder issue in Ayyavaripalli and other villages/clusters. Why not bring all fallow lands to intensive fodder production in natural farming methods? This idea led farmers to extend fodder production to fallow lands in kharif season to meet summer scarcity.

"...We intended to prepare early to face the crisis in summer. Then we thought off cultivating fodder in fallows during Kharif itself. Our idea was utilize the rains and bring out fodder from existing fallows. For growing fodder, all it needs is one or two showers for vegetative growth. And if it can be done in ways like mixed cropping, landraces with heavy vegetation – we can get highly nutritious fodder, which has essential energy supplements. We met one local veterinary doctor and clarified our doubts regarding the maintenance of nutrients till summer with this Kharif harvest. Doctor informed us that if the harvested wet grass is dried in shade, instead of sunlight, the loss of nutrients would be minimal... And we followed that suggested process after harvesting..."

Suresh Kumar, a local resource person in Ayyavaripalli village.

Individual fallow lands in Ayyavaripalli were identified and brought into fodder cultivation. As such, they could cultivate different varieties of fodder crops in an area of 117.5 acres out of the 141 acres of total fallows in these villages. Nearly 587. 50 Tonnes of wet fodder was produced from the fallow lands in that season. Those landless farmers who needed fodder were provided nearly 52000 Kgs of *Ghanajeevamrutham* which was applied in those fodder fields. This effort resulted into availability of 274.75 Tonnes of good nutritional value dry fodder that was sufficient for the village livestock, for at least 3 to 4 months. Apart from bringing some life into that fallow lands, it has helped the farmers not to purchase fodder from outside at a higher cost. Seeing the results of these efforts, *Rythu Sadhikaaratha Samstha (RySS)*, expanded the initiative to several clusters in the district.

Combining all the 4 clusters, a total of 641 acres of fallows, that belongs to 504 farmers, were converted into fodder fields in the Kharif season.

Extensive Planning with Multiple Options of Fodder Cultivation (Kharif 2020)

FODDER BUDGETING:

Almost a year-long efforts, both during Rabi and Kharif (2019), provided the needed foresightedness to address the crisis and a direction for result oriented action. It prompted WASSAN team to evolve a comprehensive action plan to mitigate the fodder crisis, not only in Ayyavaripalli, but also of 3 other Clusters – Kanduru, Bommanacheruvu and Thambalapalli. As part of that planning, gap/shortage of fodder was quantified on yearly basis, considering the availability of fodder from different sources and actual requirement on the basis of total existing livestock. The total fodder requirement per year was 1577 Tonnes; the availability of fodder from crops was 513 Tonnes; nearly 350 Tonnes of fodder was available from other sources. Thus, the total availability of fodder was 863 Tonnes, still resulting into a shortage of 714 Tonnes (the details are in tables). In addition to cultivating millets, pulses and vegetables, farmers were encouraged on growing fodder crops like - bajra, jowar, cow pea, horse gram, and other lentils to mitigate this gap.

Availability of Fodder in a Year (during Kharif and Rabi)

S. No	Source particulars	KHARIF		
		Total Area (ac)	*Qtls /ac*	*Total Yield (qtls)*
A.	**RAINFED**	***130.70***		**2,929.00**
1	Groundnut	100.70	20.00	2,014.00
2	Ragi	5.00	13.00	65.00
3	Jowar	15.00	30.00	450.00
4	Horsegram	10.00	40.00	400.00
B.	**IRRIGATED**	**32.00**		**1,205.00**
1	Paddy	20.00	35.00	700.00
2	Maize	7.00	40.00	280.00
3	Fodder	5.00	45.00	225.00
	Total	**162.70**		**4,134.00**
	Tons			**413.40**

S. No	Source particulars	RABI		
		Total Area (ac)	*Qtls /ac*	*Total Yield (qtls)*
A.	**RAINFED**			
1	Paddy	10.00	35.00	350.00
2	Maize	5.00	40.00	200.00
3	Tomato	8.00	-	-
4	Fodder	10.00	45.00	450.00
	Total	**33.00**		**1,000.00**
	Tons			**100.00**
	Total Availability of Fodder ***(Kharif + Rabi - Tonnes)***			**513.40**

Gap between Availability and Requirement of Fodder (Total Livestock basis - in tonnes)

Sl No	Category of Existing Livestock	Existing No	Conversion factor	Equivalent livestock units	Feed requirement per unit / day dry feed (Kgs)	Total requirement of feed (Kgs)
1	Work animals	9	1.33	12	5.00	59.85
2	CB cows	577	1.33	767	5.00	3,837.05
3	Sheep	850	0.20	170	2.50	425.00
Total		**1,436**				**4,321.90**
Total feed requirement per Year (Tons)				**4,321.90**	**365**	**1,577**
Fodder available from Crops						**513.40**
Fodder available from other sources						**350.00**
Total available fodder						**863**
Shortage of fodder						**714**

To address this demand-supply gap, multiple options were explored for cultivating fodder. These include;

1. Promotion of Fodder development in 'Individual' irrigated and fallow lands
2. Promotion of Fodder development in 'common' lands through seed dribbling
3. Promotion of Fodder development in "leased fallow lands"
4. Promotion of cultivating Millets & Pulses for "Dhaana" preparation
5. Promotion of Biomass "fodder plants" on Field Bunds

Farmers were given support basically in the form of some financial input (Rs650-Rs750 per acre) for ploughing the fallow land, apart from providing multiple varieties of seeds like jowar, bajra, horse gram, cowpea and field beans (costing Rs 250-Rs300 per acre). Farmers were encouraged to prepare natural and bio fertilizers like *Ghana Jeevamrutham* and *Drava Jeevamrutham*. Depending upon the model of cultivation to promote fodder, appropriate arrangements and agreements were facilitated involving local community and farmers.

As supporting organization, WASSAN field team and Cluster level Resource Persons (CRPs) took all needed steps to prepare the farmers for grounding the strategy. These include - identification of farmers and collecting their details before 30th April; ensuring the completion of ploughing operations in the identified land by first week of May; ensuring the purchase/procurement of fodder seeds in required quantum and supply them in packs to the farmers; ensuring the sowing of seed with- in stipulated time; payment of support amount to the farmers once the seeds are germinated, as per the bills submitted by them along with details of the field, photo and GPS location etc.; ensuring crop cutting experiments to assess the yields of different varieties of fodder in farmers' fields.

Principles/conditions to be followed by Farmers

- Residing in the village;
- Following principles of zero-based natural farming (ZBNF);
- Cultivating fodder in an area not less than an acre;
- Complementing own financial resources to the support extended by program;
- Mandatory cultivation of all 5 varieties of fodder seed as mixed crops, as per the decided ratio;
- Taking up some varieties of fodder plants (like *Avisa, Subabul, Resham* etc.) on field bunds;
- Harvesting the fodder in staggered manner and drying it up in the shade for storage;
- Cooperating to the crop cutting experiments for assessing the yields and recording the data;
- Following the prescribed management practises likes application of *Ghana* and *Drava Jeevamrutham*;
- Attending the meetings and training programs as part of program.

The critical processes involved in implementing this comprehensive strategy are as below;

- Identification of farmers with fallow lands and encourage them to go for fodder crops in those lands
- Assessing the feasibility of fodder promotion in identified fallow lands through field visits.
- Facilitating formation of area wise Common Interest Groups for Fallow lands, Common lands, Dhaana making, Preparation and Supply of *Ghanajeevamrutham* etc.)
- Facilitating appropriate agreements between farmers – like in the case of fodder promotion in fallow lands – agreement between farmers having water facility with those having livestock who can provide *Ghana Jeevamrutham* to share the fodder in the ratio of 1 Kg Fodder to 5 Kgs of *Ghana Jeevamrutham*. And in the case of Fodder promotion in Leased Lands – agreement between land owners and those who take land on lease
- Collection and consolidation of data related to area and yield estimation of fodder
- Estimation of budget requirement – for supporting ploughing, seeds and maintenance cost etc.
- Making available of quality fodder seeds of multiple varieties; ensuring the availability of tractors for ploughing
- Preparation of rules and regulations, payment systems and farmer contribution and project support.
- Ensuring preparation and application of *Ghanajeevamrutham, Bheejamrutham, Dravajeeva-mrutham* and mulching.
- Conducting crop cutting experiments in famer's fields for estimating the yields of different varieties of fodder crops.
- Ensuring staggered harvesting of different fodder varieties as per the need of the farmers;
- Ensuring drying up the fodder in proper shade and over-looking storage process to use it in summer crisis.

Promotion of Fodder development in 'Individual' irrigated and fallow lands

The initiative was taken up by 269 farmers belongs to 4 Clusters – Ayyavaripalli, Kanduru, Bommagani Cheruvu and Thamballapalli, covering a total extent of 289.5 acres. A total of 1612.4 Kgs of Seed (5 varieties – Bajra, Jowar, Horse gram, Cowpea and Lentils) has been given to these farmers with which they could produce 584.04 Tonnes of Fodder.

Details of seed distributed and fodder yields in individual lands

Total No. of farmers	Extent of Area (Acres)
269	289

Distributed Seed in Kgs					
Jonna	Sajja	Ulavalu	Alasanda	Anapa	Total
434.3	432	497	112.3	137.6	**1612.4**

Total Livestock population of Farmers							Fodder Production	
Goats	Sheep	Rams	Cows	HF Cows	Bullocks	Total	Quintals	Tonnes
106	1011	0	184	759	17	2077	584043	**584.04**

Promotion of Fodder development in 'common' lands through seed dribbling

There were two hillocks surrounding Ayyavaripalli village, covering an area of nearly 15 acres. Local farmers have been using them as grazing areas for so many years. With an intention to increase the availability of fodder in these hillocks, farmers went for seed dribbling. However, this effort could not get desired result. Though nearby farmers were assigned the responsibility to take care of the plants, it could not be materialized properly. All the plants got damaged due to some pest, at the seedling stage itself, leading to no result.

Promotion of Fodder development in 'leased fallow lands'

This activity was promoted basically to help those families who have livestock, but no land to grow fodder. The idea is to enable such families to evolve a sustainable arrangement to feed their livestock by encouraging them to take some land on lease and cultivate fodder in it. Such families expending huge amounts to purchase fodder and it is more severe burden during the summer. When they take their livestock to far off places for grazing, they have been facing more difficulties in the form of thefts, predation and other family related issues. It is intended that this activity would address such issues to an extent as these families would stay back in their own villages, taking care of their dependent livestock. Common Interest Groups were formed with these families to take up land on lease basis. It has helped in sharing the costs for lease.

Details of seed distributed and fodder yields in leased fallow lands

Total No. of farmers	Extent of Area (Acres)
53	73

Distributed Seed in Kgs					
Jonna	Sajja	Ulavalu	Alasanda	Anapa	Total
110	109.5	125.5	26.5	35.3	**406.3**

Total Livestock population of Farmers							Fodder Production	
Goats	Sheep	Rams	Cows	HF Cows	Bullocks	Total	Quintals	Tonnes
0	340	0	2	188	1	531	158582	158.5

Nagarimadugu Bhaskar is one such rearer who was desperately exploring support. He along with 7 other landless families formed a group in Ayyavaripalli village and took 16 acres of land on lease. This land was kept barren for last 10 years. A total of Rs 8000/- was paid as lease amount to the landlords, on the basis of Rs 500/- per acre. Group members on their part shared this amount. Further, they had expended Rs 12,800/- for clearing the land and removing the bushes. For plough- ing the land, they incurred Rs 25,600/-, out of which they got program support to an extent of only Rs 8000/- Balance amount they paid it on their own. Likewise, while they got an expenditure of Rs 9600/- for 240 Kgs of Seed, they got support to an extent of Rs 5600/- from the program. On the whole, they have got a total expenditure of Rs 96,800/- for bringing that fal- low land into cultivation. Out of which they got Rs 12,000/- from program and the balance Rs 84,800 was paid by them. Their effort and expenditure has given them desired result as they could produce nearly 32 Tonnes of fodder from that land. As per their estimation, it is worth of Rs 2, 92,000/-!! On cost benefit terms it is almost in the ratio of 1:3.

Promotion of cultivating Millets & Pulses for 'Dhaana' (feed mix) preparation

While interacting with farmers, it was identified that some farmers were spending significant amount for purchasing 'Dhaana' from outside market. This is given as supplemental nutritious feed for the livestock. A pack of feed mix costs around Rs 800- 900/- in the market. For addressing the needs of such farmers, an idea was mooted to cultivate Millets and Pulses in some part of their land, along with fodder varieties. Each of these farmers was motivated to cultivate such crops at least in 10-20 cents of land. Normally fodder crops are harvested in staggered manner, as grass, during the mid-crop season. Unlike these fodder crops, the crops raised for Dhaanaa are supposed to be grown till grains are attained. With these grains they can make good quality feed mix, by combining some salt, mineral mix and paddy husk etc. Thus they can make nutritious feed mix on their own, with a little cost of less than Rs 100/-. It was estimated that each farmers thus would get atleast 10 bags of feed from 15 -20 cents of land, which can be sufficient for their 2-3 animals, for atleast 4-5 months.

With the above objective in mind, though 78 farmers have taken up this activity in an extent of 108.5 acres of land; nearly 594 Kgs of seed was given to them. However, most of them could not wait until the end. Except 10-12 farmers, all the others have harvested fodder during the mid-crop season itself.

Promotion of Biomass "fodder plants" on Field Bunds

This activity was promoted to make use of the field bunds to grow fodder. Seed dribbling was done in an extent of 115 acres, belongs to 99 farmers. 6 kgs of seed was used for this purpose. This also failed in giving results due to pest incidence.

Finally meeting the Gap

Out of the five proposed activities, three could provide desired results in terms of fodder production. Cultivation of fodder in individual cultivating lands, fallows and lands those were taken on lease has given expected results, without much investment support. Finally, there was a cumulative production of 742.62 Tonnes of Fodder in these four Clusters, which is sufficient for all the cows, sheep and other animals in the village for the crisis period.

Details of seed distributed and fodder yields in leased fallow lands

Sl.No	Name of the Cluster	Individual Lands			Leased Lands			Total		
		No of Farmers	No of acers	Fodder production in Tons	No of Farmers	No of acers	Fodder production in Tons	No of Farmers	No of acres	Fodder production in Tons
1	Ayyavaripalli	103	125	247.72	13	32	70.74	116	157	318.46
2	Bommanachervu	92	93.5	169.66	26	26	57.1	118	119.5	226.76
3	Kandur	54	52.5	125.72	10	10	19.43	64	62.5	145.15
4	Thamballapalli	20	18.5	40.94	4	5	11.31	24	23.5	52.25
	TOTAL	**269**	**289.5**	**584.04**	**53**	**73**	**158.58**	**322**	**362.5**	**742.62**

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, while jowar is highest – 4,800 kilograms per acre. On conservative estimates, the yields of dry fodder is 2,000 kilograms per acre. While cultivating fodder in fallows, a landless farmer with livestock has got Rs. 2400/- worth of fodder by giving Rs. 840/-worth of *Ghana Jeevamrutham*. If we calculate the value of green fodder Rs 5000/ per tonne, then the total would be Rs 37.14 Lakhs worth of green fodder produced with just 0.92 Lakhs (Ploughing support + Seed support) Investment.

Incremental Returns

This activity was promoted basically to help those families who have livestock, but no land to grow fodder. The idea is to enable such families to evolve a sustainable arrangement to feed their livestock by encouraging them to take some land on lease and cultivate fodder in it. Such families expending huge amounts to pur- chase fodder and it is more severe burden during the summer. When they take their livestock to far off places for grazing, they have been facing more difficulties in the form of thefts, predation and other family related issues. It is intended that this activity would address such issues to an extent as these families would stay back in their own villages, taking care of their dependent livestock. Common Interest Groups were formed with these families to take up land on lease basis. It has helped in sharing the costs for lease.

Just few years back, there was distress sale of livestock in Ayyavaripalli village; now the situation changed to increased number of productive animals. During the peak crisis in 2018, Ayyavaripalli village had a total of 256 Milk yielding Cows and 600 sheep. Now the number of Cows has increased to 430 and number of sheep has grown to nearly 1000; this is apart from about 200 rams that were sold in the last 2-3 years. The rams that were sold also got good price due to the healthy weight.

There is significant increase in Milk yields; it is almost 4-5 times more than the earlier years; In 2018, there was only on Milk Collection Centre in Ayyavaripalli village, that used to collect 175-200 Liters of Milk per day. Now there are 5 Milk Collection Centres in this village, being operated by private dairy companies. Nearly 1000 Litres of Milk is being collected daily through these centres. Thus this fodder initiative not only reduced the costs, but also improved the incomes of the local community.

During the previous Kharif (2021), 400 farmers have taken up fodder cultivation in 400 acres with program support. Another 195 farmers have taken up this activity on their own in 222 acres in these 4 Clusters; On the whole, effort was there to cultivate fodder in an extent of 622 acres; in a way it indicates how far these farmers have accepted the strength in this concept of exclusive cultivation of multi-variety fodder crops to mitigate the possible crisis during summer, for their livestock. Now they are not leaving any chance for such crisis what they tasted three years back.

Year Wise Fodder Promotion in Chittoor - Summary Details

Sl.No	Name of the Cluster	No of Villages	Rabi' 2018		Kharif' 2019		Rabi' 2019	
			No of Farmers	Acres	No of Farmers	Acres	No of Farmers	Acres
1	Ayyavaripalli	6	19	19.00	240	357	32	40
2	Bommanachervu	9	8	10.00	147	177	16	22
3	Kandur	8	15	16.50	82	75	20	22
4	Thamballapalli	6	6	5.00	35	32	10	15
5	Kotavaripalli	3	20	20.00	0	0	0	0
	TOTAL		**68**	**70.50**	**504**	**641**	**78**	**99**

Sl.No	Name of the Cluster	No of Villages	Kharif'2020		Rabi'2020		Kharif'2021			
			No of Farmers	Acres	No of Farmers	Acres	With program support		Farmer own	
							No of Farmers	Acres	No of farmers	Acres
1	Ayyavaripalli	6	276	276	102	95	**100**	**100**	**84**	**104**
2	Bommanachervu	9	192	200	81	67	**100**	**100**	**42**	**54**
3	Kandur	8	190	199	64	58	**100**	**100**	**39**	**36**
4	Thamballapalli	6	125	125	20	17	**100**	**100**	**30**	**28**
5	Kotavaripalli	3	0	0	0	0	**0**	**0**	**0**	**0**
	TOTAL		**783**	**800**	**267**	**237**	**400**	**400**	**195**	**222**

*"...Now the livestock in our village is fondly eating this multi variety fodder like we eat **'BIRYANI!** The nutritional strength in this fodder is very good as it is seen in their health and quality of milk they give. Local milk collection centres regularly check the quality and percentage of fat content etc. They are always giving positive remarks on the quality of the milk. Even local Veterinary Doctors are also acknowledging the improved health of the milch animals. There is one incident regarding recovery of a cow from a lethal disease (locally known as 'Paraboyina Jabbu') that even surprised local Veterinary Doctor. No animal survived with that disease earlier in our village. Doctor said the recovery might be due to the healthy, nutritious fodder. Now we realized that this multi-variety fodder has given multi-dimensional benefits..."*

~ Raja Reddy, a farmer, Ayyavaripalli Village.

"...Our family has been in sheep rearing activity for many years. Normally we sell Rams, what we additionally have and keep Ewes for increasing our flock. Earlier the price used to be Rs 10000-12000 for a pair of Rams. The fodder and feed what we have given in recent times has helped in quick weight gain among Rams in our flock. I have sold nearly 10 pairs of Rams in last 2 years and I have got a price in the range of R. 14000-15000. We clearly noticed the healthy growth of sheep with good weight in a quick time. And we think that this is due to the quality of feed they are having. After all it is the food that determines the health of these animals!!..."

~ Anand, a sheep rearer, Ayyavaripalli Village.

What we can learn from the Experience

A small support can change the crisis into an opportunity! Mediation among community members to share resources – land, labour and material like dung, making the crisis and options visible through exercises like **'Fodder Budgeting'**, facilitating negotiated solutions, intensive support in initial experiments for people to see the results on ground and natural farming methods that have low input costs and high returns can help communities to move from deficits to surplus. These are the lessons emerging from the Ayyavaripalli experience and the later spread of the model into several other villages.

The experience provides a strategic mainstream option to focus on enabling increased access fallow lands in the villages to livestock farmers under negotiated agreements as demonstrated in the case study. Access to few irrigations to such lands improve the productivity. The natural farming methods of production – using *Ghana/ Drava Jeevamrutam*, pre-monsoon dry sowing with mulch, livestock penning, using multi-species crop mix - with a mix of cereals, millets, pulses for balanced nutrition aided by access to life saving irrigation can be the technological package.

Such a strategy brings in multiple benefits:

1. Reviving the fallow lands and arresting land degradation in private lands through natural processes,
2. Meeting the regular fodder scarcity and scarcity induced by extreme weather events,
3. Aiding diversification of the economy with livestock,
4. Increased productivity and higher value for livestock products and above all,
5. Collective action leading to collaborative communities.

Investments in such initiatives have high cost-benefit ratios of around 1:4; and, much higher social cost-benefit ratios especially in drought prone rainfed areas.





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