Tamil Nadu Veterinary and Animal Sciences University
Directorate of Extension Education
ICAR - KRISHI VIGYAN KENDRA
Veterinary College and Research Institute Campus,
Namakkal - 637 002.

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Technical Bulletin

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डॉ. शेक एन. मीरा
Dr. Shaik N. Meera
निदेशक/ Director

Foreword

The livestock sector plays a pivotal role in the Indian economy, contributing about 5.5% to the nation's Gross Value Addition (GVA). With an estimated 536 million livestock heads—nearly 20% of the global population—India holds a unique position in the world. However, despite this numerical strength, the productivity of milk and other livestock products in the country remains comparatively low. This gap is largely attributed to malnutrition and under-nutrition of animals, in addition to inherent genetic potential constraints.

One of the critical challenges confronting the sector is the acute shortage of green fodder, currently estimated at a deficit of 36%. This shortage is primarily due to the limited availability of quality seeds. Forage crops, being shy seed producers, are often harvested before seed setting to meet immediate feed requirements. Compounding the issue, farmers and agencies show limited interest in producing their own seed, relying instead on external sources. This has created a substantial gap between demand and supply in forage seed availability across the country.

To address this pressing issue, Krishi Vigyan Kendra (KVK), Namakkal, took a pioneering step in 2010 by initiating fodder seed production through a Public-Private Partnership (PPP) model. Since then, 126 farmers across 15 districts of Tamil Nadu have joined hands with KVK under formal MoUs to engage in fodder seed and slip production. With KVK's technical guidance and a guaranteed buy-back arrangement, farmers have been empowered to produce quality seed materials, ensuring both seed security and sustainable livestock productivity.

The impact of this initiative has been remarkable. Till date, 3,052 quintals of fodder seeds and 47 lakh fodder slips have been supplied, valued at ₹11.66 crores, covering an area of 34,336 hectares across Tamil Nadu and neighbouring states. This intervention has not only enhanced fodder availability and improved livestock productivity but has also generated significant socio-economic benefits. Farmers engaged in seed production have realized an average net income of ₹0.9–1.3 lakh per acre annually, while generating nearly 3,000 man-days of employment each year.

The present technical bulletin on *Fodder Seed Production through Public-Private Partnership Mode* is a timely and well-documented effort by KVK, Namakkal. It encapsulates valuable experiences, practical strategies, and the fodder seed production value chain in a concise manner, serving as a useful reference for institutes and stakeholders aiming to strengthen forage seed production activities.

I place on record my sincere appreciation to the authors and the entire KVK, Namakkal team for their sustained efforts and commitment to livestock promotion through innovative approaches in fodder seed production. This booklet will certainly inspire replication of similar models across the country, contributing to sustainable livestock development.

28/3/2025

(Shaik N. Meera)

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Content

Introduction

Livestock plays an important role in the rural economy of India by providing employment and supplementary family income and it provides balanced and nutritional food in the form of milk, meat and egg to millions of people. Present livestock population in India is around 536 million heads and is expected to grow at the rate of 0.55% in the coming years and would reach about 780.7 million by the year 2050. The country accounts for 15% of world's livestock population in 2% of world's geographical area indicating huge pressure on land (Ghosh, 2014).

Although India has very large population of livestock, the productivity of milk and other livestock product per animal is relatively very low compared to many other countries around the world. One of the main reasons for the low productivity of our livestock is either malnutrition or under-nutrition or both, besides the inherent genetic potential of the animals.

The total area under fodder cultivation is 8.3 million hectares in India. It is estimated that the area devoted to fodder production is around 4 to 5 per cent of the total cultivated area. At present, the green fodder demand (817mt) and supply (526mt) in India do not match and leaves a shortfall of 36 per cent and demand will reach to 1012 million tonnes by the year 2050.(Ghosh, 2014).In Tamil Nadu, land area utilized for growing fodder is very meagre(1.72 lakh ha) accounting to only 3.2 per cent of the total cultivated area and the deficit of green fodder has been

Dr. S.Alagudurai - Dr. K.Velmurugan - Dr. Shaik N. Meera - Dr. A.Bhaskaran

worked out as 42.6 per cent to the total demand (Season and Crop Report, 2020).The depletion in green fodder availability is mainly due to rapid urbanization and shrinkage in grazing lands. Further, with the increase in the pressure of land for growing food grains, oilseeds and cash crops, the gap between the demand and supply of green fodder gets widened

One of the reasons for deficit of green fodder production is due to non availability of quality seeds. The major problems in forage seed production are that forage crops are shy seed producers and harvested before seed setting to feed animals. Besides, farmers and other agencies do not take much interest to produce seed for their requirement and prefer to purchase from other sources. Therefore, there is a big gap between the requirement and availability of seeds in the country.

The gap in the fodder requirement for livestock is met only through crop residues. Indian government has introduced many national level fodder development schemes to boost fodder production and livestock performance. However, the demand remains to be met. Livestock farmers face many constraints in achieving the fodder production owing to unavailability of quality seeds, lack of knowledge in cultivation techniques, land, water, etc.

Namakkal district is drought prone area and get sufficient income from crop cultivation is very difficult due to uncertainty of rainfall during crop growth period. Farmers getting additional income from dairy farming to met out the

crop cultivation expenses. Most of the dairy farmers have cultivating green fodder in a small area for their fodder requirement. Similarly, but the gap in availability of quality seeds/ Planting materials is still wide open.

To solve the heavy demand of fodder seeds in Tamil Nadu, Krishi Vigyan Kendra (KVK), Namakkal, initiated fodder seeds production through revolving fund scheme during 2007. Through revolving fund scheme, 12.16 lakhs setts of Bajra Napier hybrid grasses (CO3 & CO4), 2.64 lakhs of Guinea grass rooted slips (CO(Gg)3), 1220 kg of multi cut fodder sorghum seeds (COFS29), 262 kg of Fodder cowpea seeds(COFC8), 379 kg of Hedge Lucerne seeds, 137 kg Subabul seeds and 121 kg of Sesbania seeds were produced by KVK and supplied to needy farmers to cultivate fodder in an area of 940 acres. But year by year the demand for fodder seeds by farmers visiting KVK has increased from 12 to 33.4%. The importance of feeding quality fodder for high yielding Dairy cows, Sheep and Goat has been sensitized by Animal Husbandry extension workers. But the gap in availability of fodder seeds/slips is still wide open. To meet the growing demand a Public Private Partnership mode of fodder seed/setts production has been initiated at KVK, Namakkal during 2010 with objectives of to produce the quality seed materials with guaranteed buy back agreement and it ensure the employment and income generation for rural farming community.

Good practices adopted

The fodder seed production was initiated at KVK in 2010 to supply seeds to the State Department of Animal Husbandry, Tamil Nadu, under State Fodder Development Scheme.

To start with, the following new varieties of fodder crops were tested initially in on-farm trials and frontline demonstrations in the district.

- Grass type fodder: Bajara Napier CO4, CO5 and Guinea grass (COGG-3)
- Grain type fodder: Fodder Sorghum (COFS-29 / CO-31/ CSV 33MF)
- Legume fodder: Hedge Lucerne (CO1), Fodder cowpea (CO8 / CO9)
- Fodder for rain fed pasture land: Cenchrus and Stylosanthus hamata

FLD, OFT on fodder crops

Table .1. Details on FLD, OFT conducted by KVK, Namakkal

S. No	Year	Title of FLD/OFT	Area (ha)	No. of farmers / trials	Budget (Rs)
1.	2007	Popularization of fodder sorghum CoFS.29	4.0 ha	10	4000
2.	2007	Cereal fodder based intercropping system	2.0 ha	04	8000
3.	2008	Popularization of fodder cowpea CoFC.8	1.0 ha	10	10000
4.	2010	Popularization of Guniea grass Co(Gg)-3	2.0 ha	25	16,000
5.	2010	Mixed pasture model for weaned kids under irrigated and rainfed conditions	2.0 ha	10	10000
6.	2011	Popularization of multi crop fodder production model for cross breed dairy cows	2.0 ha	25	9000
7	2014	Fodder sorghum-CO.31 seed production techniques	10 ha	25	20500
8	2015	Demonstration of new Cumbu Napier hybrid grass CO.5 and seed production	2.0 ha	20	33000
9	2017	Assessment of suitable single cut fodder sorghum varieties.	2.0 ha	05	4000
10	2017	Assessment of suitable single cut fodder sorghum Varieties for rainfed condition.	2.0 ha	10	9,700
11	2020	Assessment of hybrid Napier grass varieties for yield and anti-nutritional factor for livestock health(Co.4& Co.5)	2.0 ha	05	8000
Total				149	132,200

The Growth and yield parameters of various fodder crops were studied. Based on the results, on- and off-campus training programmes were conducted to educate farmers about cultivation of green fodder for fodder as well as seed production. The successful outcome of these programmes was shared with other farmers through different activities conducted by KVK, Namakkal.

Public Private Partnership (PPP)

Production, processing and marketing in agriculture are dynamic in nature due to continuous change in consumer's demand and expectation. An innovative approach is essential to meet the current challenges of agriculture. Currently, Public Private Partnership (PPP) is one of the best experimented strategies to achieve the specified goals within the time frame and modernize public services and infrastructure in agriculture. Through PPP approach, impossibilities are made possible with the contribution of both public and private partners resulting in better economic conditions and livelihood of target population (Ponnusamy,2013). Hybrid tomato seed production was successfully taken in Napel through PPP mode (S. Gairhe et al,2016) According to Kiran Sharma et al, 2013, ICRISAT, Hyderabad, India through its various approaches in the form of PPP has been focusing on the development of smallholder farmers by providing them with the latest farm technologies, new seed materials for multiplication and revenue generation.

The Public - Private - Partnership (PPP) will help to produce the seeds of hybrids / varieties released recently by ICAR / SAUs which in turn helps to increase the productivity in crops. This can help to reduce the usage of farm saved seed and to minimize the mismatches. The Public - Private - Partnership plays a great role in technology development, sharing the location specific hybrids / varieties developed recently by public sector with private sector seed companies.(Vilas A. Tonapi,2015)

Production and marketing of fodder and fodder seeds are economically viable option for farmers and seed producers. To encourage Livestock /Agricultural farmers to produce forage seed/setts, tested for quality and supplied to needy farmers/departments through KVK under Public Private Partnership Mode was initiated by KVK, Namakkal.

Totally, 126 farmers from 16 districts of Tamil Nadu have signed MoU with KVK for fodder seeds/slips production. Fodder crop seeds such as multi cut Fodder Sorghum (COFS-29, 31), Hedge Lucerne (CO -1,2), Fodder Maize (African Tall), Fodder Cowpea (COFC-8,9), Sesbania, Subabul, Anjan grass and Stylosanthus (*Hemata, scabra*) and forage slips like Bajra Napier grass (CO.4,CO.5) and Guinea grass(CO GG.3) were produced by farmers with technical support of KVK and KVK agreed to purchase of farmers seed materials with fixed rate. Sales Price Fixed by committee constituted by TANUVAS and based on cost of production of concern seeds.

Farmers selection

With increasing awareness about fodder seed production, many farmers got interested in it and they volunteered to initiate the activity. Based on their land availability, irrigation facilities, soil type and their interest, the KVK selected farmers who desired to grow the following fodder crops

a. Grasses (Cumbu Napier hybrid (CO4,CO.5), Guinea Grass (COGg3), Anjan grass)

b. Cereals (Fodder Sorghum (COFS29,CO.31), Fodder Maize (African tall)

c. Legumes (Hedge Lucerne, Lucerne, Stylosanthus, Fodder cowpea) and

d. Tree fodder (Subabul, Gliricidia sp., Sesbania sp.,)

KVK scientist also visited the farmer's fields before the farmers start cultivating fodder.

Establishment of MoU

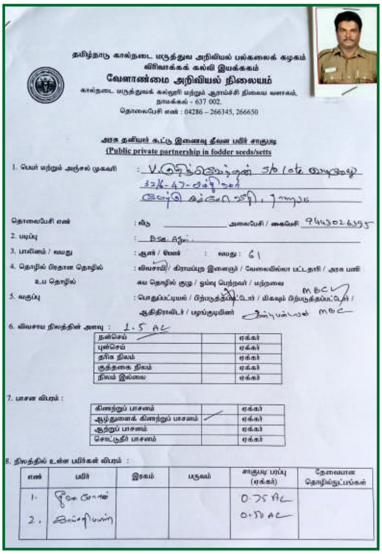
The KVK signed a Memorandum of Understanding (MoU) with the farmers. Initially, Tripartite agreement made between farmers (PRODUCER),Department of Animal Husbandry, Government of Tamil Nadu (PURCHASER) and KVK (CO-ORDINATOR).The respective role of KVK and the farmers, area under cultivation, type of fodder to be cultivated, the quality of seeds to be given and the procurement price are mentioned in the MoU.

Salient features of MoU

1. Farmers should produce the fodder seeds such as as per specifications with 10% moisture level and handover the same to the Krishi Vigyan Kendra, Namakkal.
2. Krishi Vigyan Kendra, Namakkal should train and demonstrate on fodder seed production to the fodder seed producers and check the quality of seeds before supplying to Department of Animal Husbandry, Government of Tamil Nadu.
3. Department of Animal Husbandry, Government of Tamil Nadu should inform their needs to the Krishi Vigyan Kendra in advance. So that Krishi Vigyan Kendra can procure seeds from the farmers and then supply the same to Department of Animal Husbandry, Government of Tamil Nadu.
4. Department of Animal Husbandry, Government of Tamil Nadu should pay the amount within thirty days from the date of purchase. The amount should be paid in the form of demand draft. A 15% service charge will be credited to Krishi Vigyan Kendra, Namakkal for conducting training, demonstration, seed testing, cleaning of seeds, packing and forwarding.

Later on seed supplied to Dairy Co-operatives, District Watershed agencies, Private dairy industries, Private seed companies,ICAR and SAU Research Stations, KVKs, NGOs and interested farmers based on their demand.

Fodder seed production through Public Private Partnership (PPP) mode



தமிழ்நாடு கால்நடை மருத்துவ அறிவியல் பல்கலைக் கழகம்
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வேளாண்மை அறிவியல் நிலையம்
கால்நடை மருத்துவக் கல்லூரி மற்றும் ஆராய்ச்சி நிலைய வளாகம்,
நாமக்கல் - 637 002.
தொலைபேசி எண் : 04286 – 266345, 266650

அரசு தனியார் கூட்டு இணைவு தீவன பயிர் சாகுபடி
(Public private partnership in fodder seeds/setts

1. பெயர் மற்றும் அஞ்சல் முகவரி : [illegible]

தொலைபேசி எண் : வீடு ______ அலைபேசி / கைபேசி 9443026395

2. படிப்பு : [illegible]
3. பாலினம் / வயது : ஆண் / பெண் : வயது : 61
4. தொழில் பிரதான தொழில் : விவசாயி / கிராமப்புற இளைஞர் / வேலையில்லா பட்டதாரி / அரசு பணி
   உப தொழில் : சுய தொழில் குழு / ஓய்வு பெற்றவர் / மற்றவை
5. வகுப்பு : பொதுப்பட்டியல் / பிற்படுத்தப்பட்டோர் / மிகவும் பிற்படுத்தப்பட்டோர் / ஆதிதிராவிடர் / பழங்குடியினர் MBC
6. விவசாய நிலத்தின் அளவு : 1.5 AC

நன்செய்		ஏக்கர்
புன்செய்		ஏக்கர்
தரிசு நிலம்		ஏக்கர்
குத்தகை நிலம்		ஏக்கர்
நிலம் இல்லை		ஏக்கர்

7. பாசன விபரம் :

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ஆற்றுப் பாசனம்		ஏக்கர்
சொட்டுநீர் பாசனம்		ஏக்கர்

8. நிலத்தில் உள்ள பயிர்கள் விபரம் :

எண்	பயிர்	இரகம்	பருவம்	சாகுபடி பரப்பு (ஏக்கர்)	தேவையான தொழில்நுட்பங்கள்
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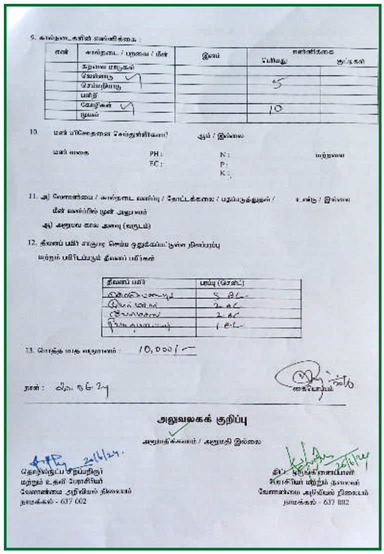

9. கால்நடைகளின் எண்ணிக்கை :

எண்	கால்நடை / பறவை / மீன்	இனம்	எண்ணிக்கை: பெரியது	குட்டிகள்
	கறவை மாடுகள்			
	வெள்ளாடு ✓		5	
	செம்மறியாடு			
	பன்றி			
	கோழிகள் ✓		10	
	முயல்			

10. மண் பரிசோதனை செய்துள்ளீர்களா? ஆம் / இல்லை
    மண் வகை PH : EC : N : P : K : மற்றவை
11. அ) வேளாண்மை / கால்நடை வளர்ப்பு / தோட்டக்கலை / பதப்படுத்துதல் / மீன் வளர்ப்பில் முன் அனுபவம் உண்டு / இல்லை
    ஆ) அனுபவ கால அளவு (வருடம்)
12. தீவனப் பயிர் சாகுபடி செய்ய ஒதுக்கப்பட்டுள்ள நிலப்பரப்பு மற்றும் பயிரிடப்படும் தீவனப் பயிர்கள்

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13. மொத்த மாத வருமானம் : 10,000/-

நாள் : [illegible] கையொப்பம்

அலுவலகக் குறிப்பு

அனுமதிக்கலாம் / அனுமதி இல்லை

தொழில்நுட்ப சிறப்பறிஞர்
மற்றும் உதவி பேராசிரியர்
வேளாண்மை அறிவியல் நிலையம்
நாமக்கல் - 637 002

திட்ட ஒருங்கிணைப்பாளர்
பேராசிரியர் மற்றும் தலைவர்
வேளாண்மை அறிவியல் நிலையம்
நாமக்கல் - 637 002

Model MoU Format

Seed processing and packing

Training, field visit and technical advisories

Training programmes on green fodder cultivation and seed production were conducted for the selected farmers and foundation / certified seeds of different fodder varieties purchased from Tamil Nadu Agriculture University were supplied to these farmers.

Periodical visits were made by the KVK scientists to the fodder fields to monitor plant growth, seed setting, harvesting and processing and to offer technical guidance to seed producers.

Training on Fodder Seed / setts production

Field Visit by scientist - fodder seed farm

Seed certification

Seed production and processing training was given to needy farmers and quality seed material (breeder/foundation seed) provided by KVK to produce truthful and certified seeds in coordination with the State department of Seed certification. Seed certification officials periodically inspect the registered farmers field to ensure the quality seed production. Farmers produced seed materials are procured by KVK and physically screened for

...12...

moisture, purity, presence of weeds, sand etc., and sent for germination test at district seed testing laboratory. The approved seeds are labelled and tagged for certification.

Seed testing, Seed license and sale

The fodder seed samples are tested for purity, germination, moistures level in seed testing laboratory, Namakkal before labelling. The Germination percentage, presence of dead seeds and impurities are screened. The approved seeds are labelled and tagged for sale. KVK Obtained seed license from Deputy Director of Seed Inspection, Salem for seed sale. Periodically the Seed Inspector inspects by collecting random samples which are separately sent for seed testing. After that the quality seeds were distributed to various departments like Animal Husbandry, Dairy Co-operatives, District Watershed agencies, Private dairy industries, ICAR and SAU Research Stations, KVKs and interested farmers The fodder seeds were also kept for sale at the KVK sales counter. Farmers were paid within three months from the date of germination result.

Table-2 Minimum Germination Percentage for fodder seeds

S.No	Crop Name	Germination percentage (%)
1	Fodder Sorghum CoFS 29/31 and CSV 33 MF	75
2	Fodder maize	90
3	Hedge Lucerne	75
4	Fodder Cowpea	75
5	Stylo	70
6	Lucerne	80

Fodder Seed Processing Unit at KVK, Namakkal

Germination Test

Procedure for fixation of price

Every year the selling cost of seeds are fixed by committee constituted by University based on local market price and cost of cultivation

Table.3. Fodder Seeds/ Setts cost at KVK, Namakkal (2024-2025)

S.No.	Name of the fodder seeds	Cost(Rs)
1	Bajra Napier grass - CO(CN)4, CO.5	1.00 Rs. /sett
2	Guinea grass –CO(Gg)3	1.50 Rs. /rooted slip
3	Hedge Lucerne	550/Kg
4	Multi-cut Fodder Sorghum - COFS29	410/Kg
5	Fodder Cowpea –COFC8	150/Kg
6	Lucerne	850/Kg
7	Stylosanthushamata	450/Kg
8	Anjan grass	400/Kg
9	Subabul	350/Kg
10	Agathi	1100/Kg
11	Fodder Maize – African tall	100/Kg

Seed production under PPP Mode from 2010-11 to 2024-25

Crop wise target allocated to MoU signed farmers during annual plan meeting organised by KVK. Quality seed materials including new varieties supplied to farmers. Periodical field visit, advisories, seed production and seed processing techniques given to all participating farmers in coordination with the state department of seed certification to ensure quality seed production.The seeds are procured by KVK and physically screened for moisture, purity, presence of weeds, sand etc., and send for germination test at district seed testing laboratory. Farmers are more interest to produce multicut fodder sorghum and desmanthus seed due to easy cultivation and more seed yield. Among the 126 farmers, fodder sorghum COFS 29/31 was produced by 116 farmers, recorded average yield of 375kg/acre and achieved gross income of Rs. 1.30 lakh / acre. Quantity of fodder seed/setts supplied by KVK from 2010-11 to 2024-25 depicted in Table 4. And Fig.1

Fig.1.Quantity of Fodder seeds supplied(Q) from 2010-11 to 2024-25

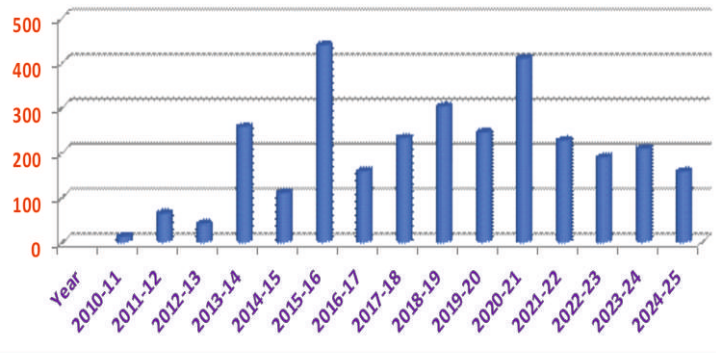


Table.4. Fodder Seeds / Setts sold or supplied by KVK, Namakkal under Public Private Partnership mode (2010-11 to 2024-25)

Year	Quantity of Fodder seeds supplied(kgs)	Value of Fodder Seeds sold (Rs.)	No. of farmers supplied	No. of farmers benefited
2010-2011	1313	5,79,718.00	18	1715
2011-2012	6402	24,29,063.00	19	11804
2012-2013	4156	34,44,917.00	24	9396
2013-2014	25693	1,05,39,439.00	34	26427
2014-2015	11012	41,35,995.00	46	18058
2015-5016	43887	1,05,62,623.00	55	31415
2016-2017	15827	61,62,180.00	41	13718
2017-2018	23209	66,76,910.00	52	13546
2018-2019	30257	1,23,98,206.00	61	12491
2019-2020	24465	1,11,78,164.00	54	12678
2020-2021	40921	1,94,47,856.00	56	30,454
2021-2022	22662	92,95,410.00	51	18424
2022-2023	18918	75,54,940.00	47	14115
2023-2024	20855	64,18,221.00	43	15322
2024-25	15718	57,26,889.00	41	12568
Total	**305295**	**11,65,50531.00**	**18-56 farmers**	**242131**

The quantity of fodder seed supply has been increased from 1313 kg (2010-11) to 43887 kg (2015-16). So far 1320 q of multi cut fodder sorghum seeds (COFS29/31), 831 q of Desmanthus seeds, 315.84 q of fodder maize (African Tall), 148.3 q of Fodder cowpea seeds (COFC8/9), 118.55 q of anjan grass seeds,60 q of stylo seeds and 92.3 q of sesbania and subabul seeds were produced and supplied. (Table.5 & Fig.2).

More than 2.42 lakhs farmers were benefitted for purchase of quality fodder seed materials. From 2010-2025, 3052 q of seed materials and 47 lakhs of fodder slips have been supplied to a value of Rs. 11.66 crores. Based on the seed rate per acre and seed supplied covered an area of 34336 ha of fodder cultivation carried out in Tamil Nadu and neighboring states for sustaining livestock production.

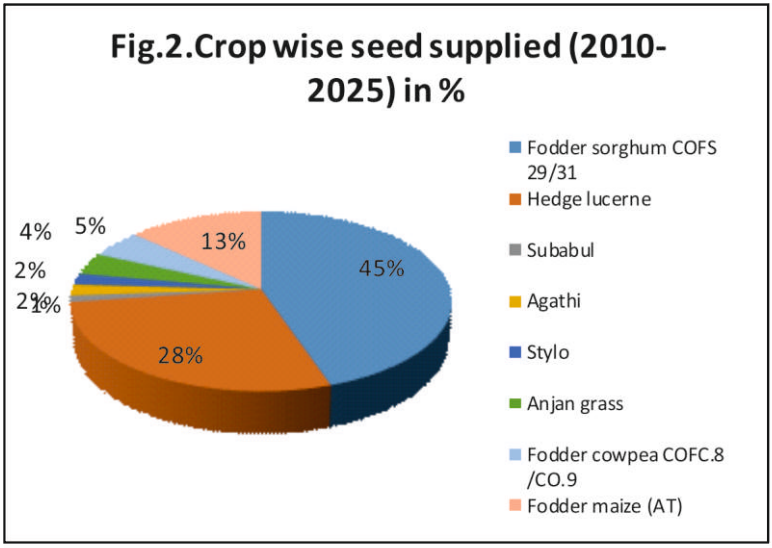


Table .4. Crop wise seed supplied in kg (2013-2025)

S. No	Crop/variety	Year wise seed supplied (Kg)											
		2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total
1	Fodder sorghum COFS 29/31 /CSV-33MF	16561.33	4708.70	13331.22	9415.40	16060.42	14204.80	10488.26	8949.70	11585.00	7785.00	10603.83	9427.79	133121.44
2	Hedge lucerne	6133.68	2475.85	6384.75	3149.35	6251.70	10392.85	11160.95	24228.10	4106.00	2815.00	4046.73	1944.63	83089.59
3	Subabul seed	329.88	364.205	223.85	239.84	490.65	381.87	382.10	458.30	396.00	1.00	0.00	99.20	3366.89
4	Agathi seed	354.64	465.285	333.06	590.99	708.82	573.37	805.00	406.70	409.00	380.00	566.00	269.80	5862.66
5	Stylo seeds	171.78	239.95	139.10	0.00	409.65	478.40	885.65	1439.70	1068.00	804.00	41.09	324.75	6002.07
6	Anjan grass	207.50	456.80	69.60	0.00	857.75	953.25	1618.00	1902.10	2815.00	1753.00	560.82	661.20	11855.02
7	Fodder cowpea COFC.8 seed	1127.00	451.65	7440.56	808.15	1011.85	974.75	682.85	814.40	672.00	594.00	37.50	215.00	14829.71
8	Luceme seed	37.40	3.75	0.00	0.00	471.60	481.10	609.95	450.90	0.00	146.00	167.53	137.39	2505.62
9	Fodder maize (AT) seed	499.00	1635.20	15915.85	1623.75	2340.55	2042.75	969.75	2272.00	1611.00	2674.00	4831.65	2638.00	39053.50
10	CumbuNapier grass CO 4, CO.5 setts	364620.00	477600.00	397300.00	354750.00	5550.00	75000.00	112000.00	104000.00	4800.00	10100.00	5900.00	27750.00	1939370.00
11	Guinea grass CO (GG)3 slips	14100.00	22400.00	22900.00	25400.00	28000.00	34000.00	46000.00	42000.00	0.00	0.00	0.00	2400.00	237200.00

Fig. 3 Fodder Seed Distribution (State wise) 2011-2024

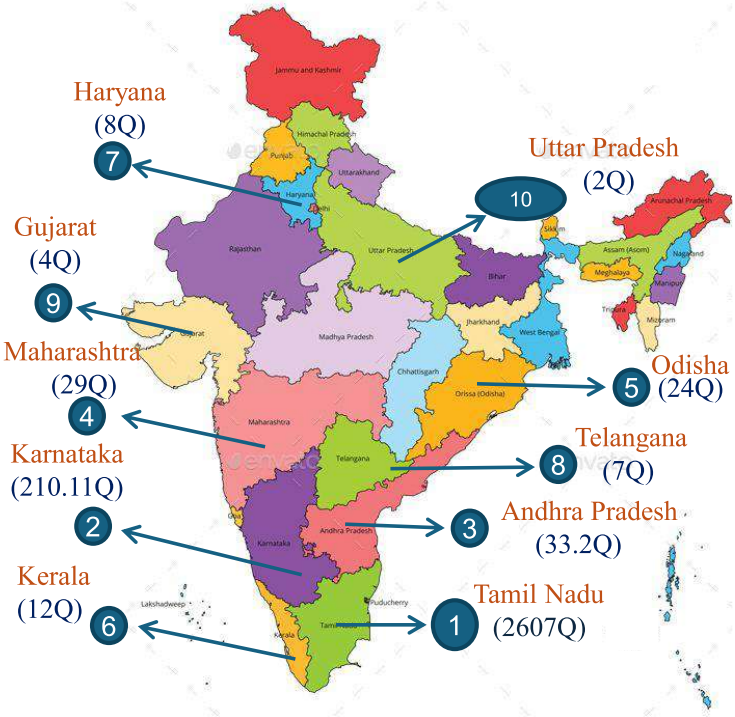
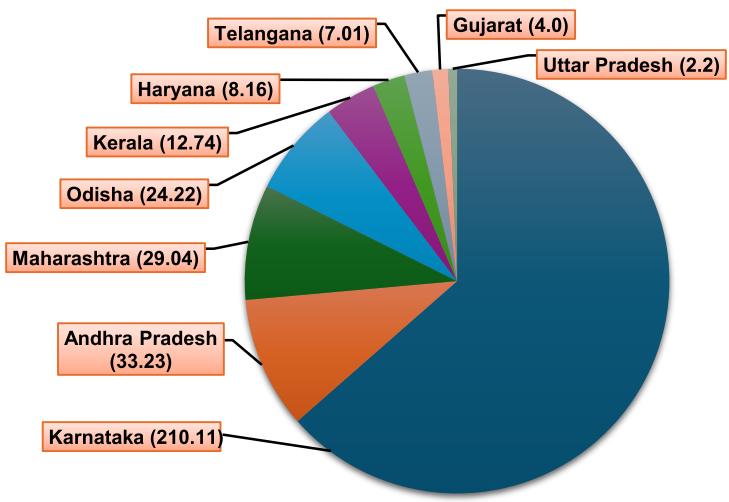


Fig. 4 Fodder Seed Distribution other than Tamil Nadu



The number of farmers are increasing only for certain fodder varieties leading to more supply than demand. Enrolment is low for cenchrus, stylo, sesbania and Lucerne seed production. There is a need to involve more farmers to grow these crops and in their seed production.

Success factors

By converting the land for fodder seed production, majority of the seed producing farmers felt that the income generation through this activity is twice more than income produced in other agricultural crops. Majority of the farmers maintain multi cut variety sorghum in rainfed condition and it yields 300 kg of seeds approximately in one acre that fetches Rs.1,02,000 whereas in irrigated conditions the farmers get 500-600kgs and receiveRs.2,04,000 from one acre.

Fodder production fetches more profit to farmers which motivates them to continue the operation. Some farmers produce all the four types of fodder seeds (grass, grain, leguminous and tree fodder). Producing seeds not only made them successful, but they become self-sustained in green fodder production, which could then be fed to their animals that results in reduced feeding and high production. Also, they create awareness among other farmers about green fodder production and the benefits of feeding these to dairy cattle and small ruminants.

The scheme addressed the problems that the farming sector today faces. Firstly, the availability of green fodder for animals, secondly, the shortage of fodder seeds, and thirdly, the lack of good income from farming.

Shrinking grazing lands have forced farmers to purchase more feed for animals, amounting to about 60% of their production costs.

Livestock plays a major role even in drought situation to support the livelihood of farmers. In that situation, if a farmer cultivates green fodder on a piece of land, it helps to rear animals in a more profitable manner.

Apart from farmers in Namakkal, farmers from other districts including Erode, Dharmapuri, Thoothhukudi, Krishnagiri, Trichy, Dindigul and Karur in Tamil Nadu have also become members of the scheme.

Challenges

Though the scheme addressed the problem of getting quality fodder seeds, there are certain challenges to be addressed in the scheme.

Lack of production in drought/poor rainfall conditions:

The number of farmers enrolled for Cofs29/31 seed production under rain-fed condition is high and it is a fact that Namakkal is a drought prone district. When the seasonal rain is poor or fails or when there were unseasonal rains, farmers couldn't harvest seeds due to crop failure. During that time, the KVK couldn't get needed quantity of seeds from the farmers to meet the demand.

Stagnation of seeds without sales:

When rainfall is good and timely, seed arrival will be surplus. Since farmers are under an MoU, seeds can't be

denied. Sometimes, seed availability will be more than the demand. In such situations, seeds spoiled and payment to producers resulted in loss to the KVK.

Short shelf life of seeds:

Certain seeds like African Tall maize and fodder cowpea have short shelf life and easily spoil even when treated. The seeds can't be kept for more than three months from the date of purchase. If no demand is raised and seeds get old, it can't be sold. But, payment has to be made to farmer producers.

Unexpected demands during lean season:

Normally, the seeds will be in surplus during monsoon owing to more demand at that time. In the lean season (March – June) seeds will be kept in limited quantity to meet regular demand and counter sales. Sometimes, government/private organizations raise demand in large quantities during lean season that couldn't be met out due to non-availability of seeds.

To address these challenges

- Periodical meetings are being conducted to fix the target for seed production and the time duration for supply of seeds.
- MoU is revised every year with the farmers so that the number of farmers who can supply the seeds for that particular year could be assessed before committing to the demand.
- Seeds with short shelf life are procured in limited

quantity and purchased thrice in a year. Based on this, the farmers are advised to cultivate either in rabi or kharif season instead of cultivating all at the same time.

- Other seeds are always kept in surplus to meet unexpected demands

Economics of fodder seed production

Seed production on fodder crops is more economic than other field crops due to higher unit price (eg fodder sorghum @ Rs.410/kg, desmanthus @ Rs.550/kg). Average seed yield of 300 kg, 250 kg and 1000 kg obtained from fodder sorghum, desmanthus and fodder maize crop, respectively.(Table.6) Farmers are getting net profit of rs.50000 to 200000 based on their crop cultivation.

Table.6. Economics of fodder seed production by famers

S.No.	Type of fodder seed/ sett	Selling cost (Rs).	Cost of production per acre (Rs.)	Quantity of seeds/ Setts produced/ year	Total returns (Rs.)	15% service charge	Net profit/ year/ acre (Rs.)
1	Bajra Napier Grass (Co4)	1.00/ sett	1,20,000	6,00,000	6,00,000	90,000	3,90,000
2	Guinea grass Co(GG)-3	1.50/ rooted slip	60,000	2,00,000	3,00,000	45,000	1,95,000
3	Multi cut Fodder Sorghum (CoFS29)	410/kg	50,000	400 kg	1,64,000	24,600	89,400
4	Desmanthus (Hedge Lucerne)	550/kg	60,000	400 kg	2,20,000	33,000	1,27,000
5	Fodder maize (African Tall),	100/kg	25,000	1000 kg	100,000	15,000	60,000*
6	Fodder cowpea(COFC8)	150/kg	20,000	500 kg	75,000	11,250	43,750*

* Single harvest only

An average net income of Rs. 90,000 to 1,30000 per acre per year earned by a farmer in addition to the availability of green and dry fodder. A 15% service charge is paid to KVK by farmers for grading, processing, packing and distribution of fodder seeds. Apart from revenue generation, employment generation of around 3000 man days engaged annually through fodder seed production activities.

Mode of seed sales and payment

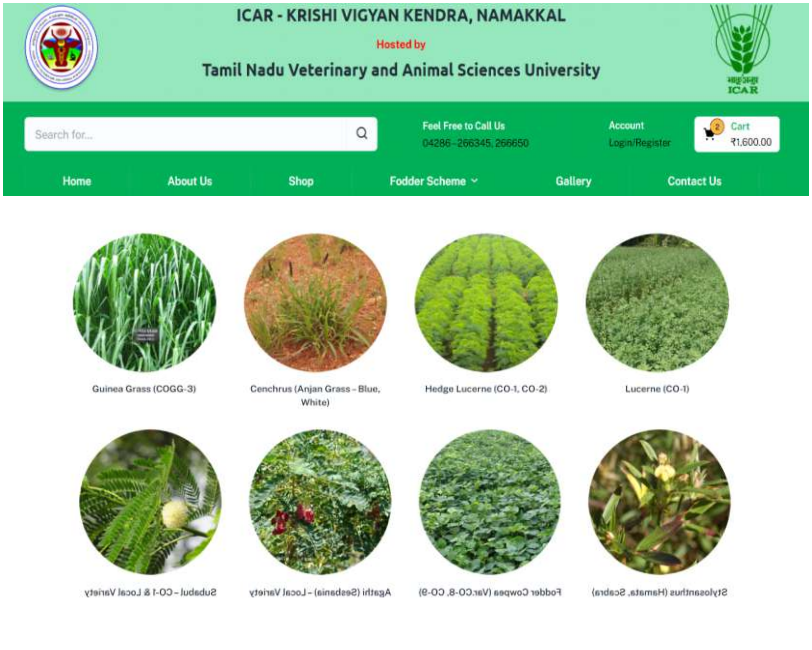
- Seed sold through KVK Sales counter in all working days and based on email request, seed despatched through courier and parcel servces
- Recently KVK,Namakkal developed fodder mobile app in tha name of “KVK Namakkal fodder” to know fodder production technologies and purchase of fodder seeds through online .Through this App, KVK supply fodder seeds across the country for promotion of livestock farming.
- The fodder seeds can be procured by parcel service payment may be made by means of Cheque (AT PAR at all Branch) / Demand draft drawn in favour of " The Senior Scientist & Head, Krishi Vigyan Kendra, Namakkal " payable at Namakkal, Tamil Nadu.
- Payment may be Transfer to Online / NEFT transfer in favour of " The Senior Scientist & Head, Krishi Vigyan Kendra, Namakkal " payable at Namakkal, Tamil Nadu and send to this our Kendra Account Union Bank of India,

Namakkal Branch,Tamil Nadu. our S.B.A/c.No.54880 20100 11503, IFSC Code: UBINO554880.

- For delivery of fodder seeds through courier service below 10 kg with in Tamil Nadu, additional amount of Rs.50/kg to be sent along with the seed cost.
- The seeds will also be sent by parcel service on "To pay" basis. The Demand draft with the requisition letter to be sent to “The Senior Scientist & Head, Krishi Vigyan Kendra, Veterinary College and Research Institute Campus, Namakkal-637 002,Tamil Nadu".
- KVK developed QR Code for digital payment

Exhibition - showcasing technology & sales

Sales Counter at KVK, Namakkal



KVK - Krishi Vigyan Kendra, Namakkal

UNIT OF TANUVAS

ICAR - Krishi Vigyan Kendra (KVK) is a district-level farm science center established by the Indian Council of Agricultural Research (ICAR) under the host institute of Tamil Nadu Veterinary and Animal Sciences University, Chennai.

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Mobile App - KVK Namakkal Fodder & QR Code

Conclusion

So for none of the private seed producing companies are involved in fodder seed production activities for a longer period. Hence, KVK, Namakkal initiated and continuously doing fodder seed production since 2010, to meet the livestock farmers demand. Fodder seed production and supply through Public Private Partnership mode implemented by KVK, Namakkal has sustaining the fodder cultivation and livestock production in Tamil Nadu.

So far 3052 q of fodder seeds and 47 lakhs of fodder slips and setts have been supplied to a value of Rs. 11.66 crores since 2010 with an area of 34336 ha of fodder cultivation in Tamil Nadu and neighbouring states and this leads to supply green fodder to the 434950 nos of dairy animals (or) 18.83 lakhs nos of sheep and goat.

Seed producing farmers are getting an average net income of Rs. 90,000 to 1,30000 per acre per year and employment generation around 3000 man days engaged annually through fodder seed production activities. Recently KVK developed fodder mobile app to know fodder technologies and purchase of fodder seeds through online and KVK supply fodder seeds across the country for promotion of livestock farming.

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Contributors of PPP Model fodder scheme at KVK, Namakkal from inception

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2			**Dr.N.Akila,** Professor and Head	January 2016 Aug-2021
3	**Dr.P.Murugan** Assistant Professor (Agronomy)	July 2017- April 2023	**Dr.C.Sharmila bharathi** Assistant Professor and Head	Aug-2021- Feb,2022
4			**Dr.S.Alagudurai,** Associate Professor and Head	March 2022 –April 2023
5	**Dr.S.Alagudurai,** Professor (Agronomy)	May 2023 to till date	**Dr.K.Velmurugan** Professor and Head	May 2023 to till date

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