

Effectiveness of training -cum- demonstration on TNAU coconut tonic for the management of nutrient deficiencies and physiological disorders in coconut

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Tamil Nadu Agricultural University released TNAU Coconut tonic during the year 2002 which plays a vital role in reducing the nutritional disorders and in improving the nut production at a cheapest cost. It is also useful for the rejuvenation of coconut palms affected by pest and diseases.

Introduction

Coconut is referred to as *Tree of Heaven, Tree of Abundance and Kalpavriksha*. This crop plays an important role in socio-economic structure of the country. Coconut is extensively grown in about 92 countries of the world with a total production of over 59 billion nuts. India ranks first in the world with 15.84 billion nuts per year accounting for 27 per cent of the world production. The productivity of the crop is the highest in India with 8165 nuts/ha with an area of 1.95 million hectares. Among the coconut growing states, Tamil Nadu ranks second in area as well as production and productivity. It is grown in an area of 3.75 lakh hectares and the total production was 5430 million nuts with an average yield of 14495 nuts/ha. In Salem district, Veerapandi, Nangavalli, Ayodhyapattinam, Pedanaicken-

palayam, Thalaiwasal and Kadayampatti blocks are major coconut growing areas. Coconut cultivated area, production and productivity details of Salem district are presented in figure 1. In recent times the yield potential of coconut varieties has reached a plateau owing to several constraints like water stress, lack of nutrition, hormonal imbalance, pest, diseases etc. The most important among them is the deficiency of nutrients noticed throughout the country. Tamil Nadu Agricultural University released TNAU Coconut tonic during the year 2002 which plays a vital role in reducing the nutritional disorders and in improving the nut production at a cheapest cost. It is also useful for rejuvenation of coconut palms affected by pest and diseases. Considering the proven success of this product in Coimbatore region, Krishi Vigyan Kendra, Salem has

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taken initiatives to popularize the TNAU coconut tonic during 2003.

The tonic solution will be absorbed from 30 minutes to 24 hours depending upon the moisture content of the soil.

Dosage

600 ml coconut tonic is to be applied to a tree in a year (200 ml each at 4 months interval). Tonic is available in the form of 200ml packet costing Rs. 5.00. Root feeding can be done after the soil application of fertilizers viz., farmyard manure : 50 kg, Urea 1.3 kg, Superphosphate 2kg, and Potash 2 kg

Advantages of using coconut tonic

1. Tree becomes healthy
2. Shedding of fertilized female flowers will be reduced
3. Button shedding will be controlled
4. Cracking on the nut will be controlled
5. Nut size will increase
6. Rejuvenation of tree affected by pest and disease
7. Kernel thickness will increase
8. Nut yield will increase

Take care activities

1. Root not to be broken
2. Tonic must be used within a month from the manufacturing date
3. Coconuts plucked from tree can be used even after 5 minutes of tonic application because it contains nutrients.

TNAU Coconut tonic is formulated with different macro nutrients viz., N, K, Mg, Na and micronutrients like Zn, Fe, B, Cu,

Mn and Mo. Hormones viz., Naphthalene acetic acid and salicylic acid is also added in the tonic to correct the hormonal disorders. In coconut, yellowing of leaf is caused by magnesium and potassium. Crown chocking, nut cracking, button shedding and poor formation of pericarp were nutritional disorders which are micronutrient deficiencies especially Boron and Zinc (Thangaraj. 2000).

Coconut produces fronds and nuts throughout the year and hence, demands continuous supply of nutrients (Khan, 1993). The average nutrients taken by the coconut tree per year is 321, 69, 406, 196 and 72 grams of N, P, K, Ca and Mg respectively. (Pillai and Davis. 1963; Ouverier and Ochs, 1978).

Indrajit *et al.* (2008) reported that Boron and Zinc are essential for cell division, flower formation plant hormone secretion, phenol metabolism, auxin (IAA) tissue differentiation, membrane function, Pollen germination and pollen tube growth and involved in carbohydrate and protein metabolism. Potassium and Boron are involved in the translocation of sugars and synthesis of nucleic acids in coconut.

George *et al.*, (2009) reported that leaf area contributes more towards the production of female flowers and nut yield. They have also reported that spraying of 2 ml salicylic acid on the newly opened inflorescence was found to have beneficial effect in controlling button shedding of coconut.

Metraux. *et al.*, (1990) suggested that exogenous application of salicylic acid could induce both pathogenic resistant proteins and

resistance to pathogen attack. Where resistance to a pathogen is associated with localized necrotic lesion, the plant will subsequently immunized so that further infection will either exhibit increased resistance or reduced disease symptoms (Ryals *et al.* 1996).

The coconut tree must nourish with all nutrients and hormones. TNAU coconut tonic contains balanced macro, micro nutrients, and hormones including salicylic acids. So the root feeding of TNAU coconut tonic is a supreme technology to improve the productivity and quality and also resistance development to various pest and diseases.

Steps taken by KVK Salem for popularization of coconut tonic

(i) Venture capital scheme

This tonic is available in the name of 'TNAU Thennai Tonic' only in the Department of Crop Physiology, Tamil Nadu Agricultural University, Coimbatore. This is not available in any of the local private agro based shops or Government Departments all over India. This tonic is familiar in Coimbatore region but not known in Salem / Namakkal districts. So a venture capital scheme was started at KVK, Sandhiyur in September 2003 to produce the TNAU coconut tonic and to popularize among the Salem district farmers to ensure easier availability in the area and to enable them to get all the benefits of using TNAU coconut tonic.

(ii) Training cum demonstration organized by KVK

An outline of the trainings organized by KVK Salem on



TNAU coconut tonic over a period of five years is presented in Table 1. Initially, the field training programmes were implemented in the form of awareness campaigns with orientation motive. Then intensive demonstrations were done. In the last stage trainings have been refined as per location specific. Trained farmers were selected and trainings were given to other farmers in their villages through them. Few of the coconut growers of Salem district came to know about coconut tonic and approached us individually and some farmers through Department of Agriculture with some fundamental doubts on using and getting TNAU coconut tonic. Perhaps, it was altogether a new thing to the farmers to have better result. A common consensus emerged from the farmers for obtaining training on the use of TNAU coconut tonic. Subsequently training were imparted to the farmers in the village itself. A total number of 148 training cum demonstrations have been conducted in Salem district benefiting 2802 coconut growers (Table 1). Every month, scheduled observations were made and a field day was organized before harvesting nuts. Several women farmers have attended and asked to replicate the same on their field too.

Table 1. Trainings and demonstrations

Year	No. of trainings cum demonstrations	No. of beneficiaries
2003	45	827
2004	38	724
2005	26	425
2006	22	394
2007	17	292
Total	148	2802

(iii) Training to the Extension personnel

KVK is organizing monthly zonal workshop for the extension personnel of State Agriculture and Horticulture departments. During these workshops progress of work done, constraints and problems faced were discussed and solutions will be given according to their field problems. Suggestions are also given to overcome the constraints. Message on new technologies viz., root feeding of TNAU coconut tonic, SRI technique etc will be delivered in monthly zonal meeting regularly for popularization and adoption. So eight trainings on root feeding of coconut tonic were given to the extension personnel and this technology was included in their crop production guide. Extension officials act as location specific mediator for the popularization of coconut tonic.

(iv) Farm Advisory Services

Whenever the coconut farmers visited KVK to discuss about nutrient management practices or any nutrient problem faced by them Kendra scientists had well explained about TNAU coconut tonic and created awareness.

v) Field diagnostic visit

Coconut farmers contacted the Kendra scientists over phone, through letters and in person. When the nutrient related problems were acute and affected major area of

coconut, then Kendra scientist team visited the field, diagnosed, explained and demonstrated the root feeding technology in the problem field itself.

(vi) On farm testing

This programme has been implemented to test and evaluate the root feeding of TNAU coconut tonic technology at the farmer's field and to refine or modify the technologies if required for better adoption. During 2003-04, this technology with recommended fertilizer management practices (Table 3) were tested in 10 different locations of Salem district. Finally it was found that, coconut tonic performed best in increasing the yield, reducing the button shedding with lower eriophyid mite incidence. One of the excellent result obtained was that 600 ml of coconut tonic per tree per year has completely replaced the 2.5 kg of coconut micronutrient mixture as soil application and the yield increased 30%.

(vii) Front Line Demonstration

The aim of FLD is to demonstrate or disseminate the production potentialities of the newly developed technologies in farmer's field for popularization. Button shedding was controlled upto 80%.

(viii) Field Days

Field days under the FLD programme were regularly conducted. The coconut growers who adopted the root feeding technology of coconut tonic were asked to share their knowledge, skill obtained and economic and yield advantages achieved by using coconut tonic with the fellow farmers and neighbours.



(ix) Mass Media

Television, newspaper, magazines on popularization of coconut tonic has been found to be one of the important and effective approaches for information dissemination to the mass of farmers and to different areas. Radio talks were also recorded and broadcasted frequently on TNAU coconut tonic by the scientists of the Kendra for the farmer's interest and specific importance.

- | | |
|----------------------|----|
| 1. Newspaper message | 12 |
| 2. Magazines article | 9 |
| 3. Success Stories | 4 |
| 4. KVK news letter | 3 |
| 5. Radio programme | 2 |

(x) Other Programmes

The KVK is actively involved in organizing and participating in farmers day, agricultural exhibitions, seminars etc .In all the programmes coconut tonic was exhibited and its importance was well explained by the scientists of Kendra.

(xi) RAWE training programme

The KVK , Salem is one of the training centre of RAWE (Rural Agricultural Work Experience) training programme for the B.Sc. (Agri) students of the Agricultural Colleges under the Tamil Nadu Agricultural University. The students are given ample opportunities for interacting with farmers, visiting different farming situations in the district and conducting trainings to the farmers. During a period of one month the root feeding of TNAU coconut tonic was also popularized by them in all parts of Salem district.

(xii) Linkages with other Organization

Government Collaboration

KVK, Salem actively collaborated with district level coordination committee of the State Department of Agriculture, Farmers Training Centre (FTC), District Rural Development Agency (DRDA), State Department of Horticulture, Animal Husbandry and Nationalized Banks. Many trainings cum demonstrations on root feeding of TNAU coconut tonic were conducted to popularize the technology through the above said government organizations.

NGO Collaboration

In the past five years it was felt that research and extension in agriculture under the public system has some how failed to adequately address the needs of the farmers. The idea of collaboration between government and non governmental organizations was rooted at this time to cut the cost and make this system more effective. It was thought that non-government at orgnaizations could be able to effectively play an intermediary role in orgnizing farmer groups of skill development, to develop farmers ability to articulate needs and also to assist government bodies in responding to farmers needs. On the other hand the government organizations would provide financial and technical support and wide geographical coverage. So this coconut tonic was popularized through NGOs also.

Innovative Methodologies adopted by KVK Salem for popularization of coconut Tonic

All through the 5 years, KVK has tried out many approaches to transfer

the technology of root feeding of coconut tonic. A few significant novel attempts are listed below.

(i) Catch them Young Programme

The innovative methodology of transfer of root feeding technology of coconut tonic aims at imparting the basic know-how of various aspects of coconut tonic to the young generation. In this programme tonic packets were distributed to the NSS school students and explained about the technology and asked them to apply the tonic to coconut trees in their house. This programme has been successfully implemented in and around most of the schools in Salem.

(ii) Commodity Approach


Coconut growers of Salem district were selected and formed into a group of coconut commodity group in each blocks. Training cum demonstration was given to this group at each block and the coconut tonic was popularized. KVK still continues to have feedback from these commodity groups who look into the nutrient management of coconut in their areas.

(iii) Display posters placement

Posters were exhibited in uzhar sandhai, milk societies, private agro centres and State Agricultural Departments for creating awareness where the farmers are likely to gather.

(iv) Supply of tonic in farmers field itself

TNAU tonic is a new product which is available only at KVK, Salem. For increasing the awareness, Kendra supplied tonic from farm to farm delivery mode. Through this



farmers acquired more knowledge, skill and mental attitude and they have used the tonic on a large scale.

(vi) Providing Technology Disseminator

Interested rural youth were selected from each block of Salem district. Intensive trainings were given to them on root feeding of TNAU coconut tonic repeatedly for clear understanding of the technology and skill development. The trained rural youth were treated as technology disseminators and they joined the root feeding of TNAU coconut tonic technology dissemination process. They served as *Para technician* in block levels for the popularization of this technique

(v) Electronic media preparation

For quick adoption and fast dissemination, speedy diffusion of technology through modern electronic gadgets were made. It blended with traditional folk medium prepared on root feeding of TNAU coconut tonic and success stories of farmers in mini documentary films were produced.

By all these above said methods KVK popularized the coconut tonic since the past five years. Despite of these efforts and proven success in Coimbatore district, we faced much difficulty to make the farmers to adopt the TNAU coconut tonic in other places. But after seeing the advantages and the differences within 3 months of first application, the farmers noticed the retardation of button shedding and observed the yield increase and quality improvement within a year of application.

Now the coconut tonic produced at KVK, Salem is becoming more popular among the farmers. This is evident from the increasing sale of coconut tonic every year. In this background, it was felt necessary to explore the impact of this new technology, root feeding of TNAU Coconut Tonic for Coconut production and productivity. A study in this direction was undertaken with the following objectives.

1. To study the profile characteristics of coconut growers
2. To assess the awareness and knowledge level of farmers on root feeding of TNAU coconut tonic
3. To estimate the extent of adoption of root feeding of TNAU coconut tonic technology
4. To assess the impact of root feeding of TNAU coconut tonic on coconut production and productivity
5. To analyze the socio economic impact caused due to adoption of TNAU coconut tonic
6. To assess the constraints faced by the coconut growers in the adoption of root feeding of TNAU coconut tonic in coconut cultivation.

Methodology

1. Data collection

A well structured interview schedule was prepared for the collection of data on dependent and independent variables. The interview schedule was pre tested in a non sample area and was finalized for the study. After contacting the respondents, the collected data were subjected to statistical test to get the meaningful interpretations.

2. Sampling design

The sampling unit was coconut tonic adopted coconut growers. In the selected taluks, there were 270 coconut growers selected. Proportionate random sampling was employed in selecting the 90 respondents from the Salem district.

3. Statistical tools used

For analyzing the data collected the following statistical tools were used.

1. Percentage analysis
2. Cumulative frequency
3. Standard deviation
4. Simple correlation studies

Results and Discussion

I. Socio Personal and Psychological Characters

Majority of the farmers in study area were old aged (46.67 %) had secondary level education (27.77 %) and their primary occupation is agriculture (82.22 %). The farm status of the majority of the respondents was medium level and their annual income ranged from medium to low levels. Nearly fifty per cent of the respondents had medium level of social participation, mass media exposure and extension agency contact. It could be concluded that the socio psychological behaviour of respondents was medium scientific orientation and innovativeness with high economic motivation (Fig. 1). As there was difference in characteristics among the respondents the null hypothesis was rejected.

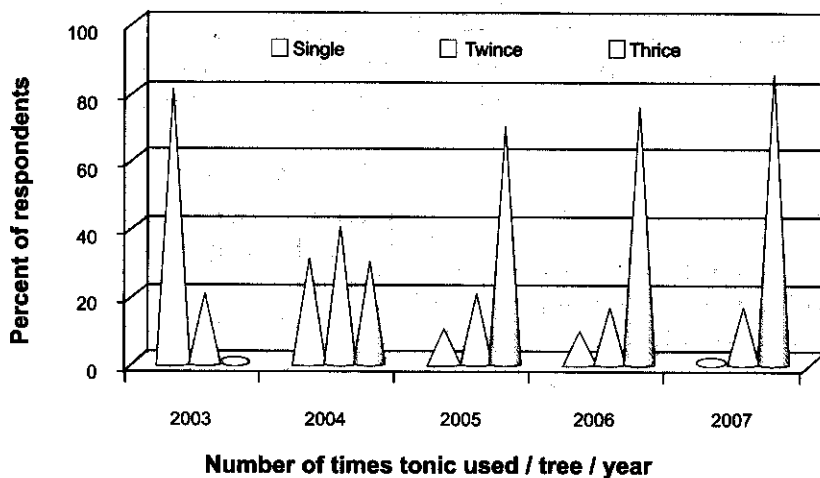


Fig. 1 Adoption of coconut tonic by the respondents

II. Before the adoption of coconut tonic

i). Nutrient management practices followed by the coconut respondents before adoption of coconut tonic

It is observed from Table 2 that before adopting coconut tonic 59 respondents (65.55 %) followed only farm yard manure application, 17 respondents (18.88%) practiced only inorganic fertilizer application

and 14 respondents (15.55%) practiced micronutrient application. None of the respondent followed the biofertilizer application. This might be due to low level of extension agency contact and mass media exposure.

ii). Problems faced by coconut respondents in coconut cultivation

Before the adoption of coconut tonic (Table 3), 80 per cent of

Table 2. Distribution of respondents according to their nutrient management practices

Management practice	Respondents (n=90)	
	No.	Percentage
Farm Yard manure application	59	65.55
Biofertilizer application	-	-
Inorganic fertilizer application	17	18.88
Micronutrient application	14	15.55

Table 3. Distribution of respondents according to the problems faced in coconut cultivation

Problems in coconut cultivation	Percentage of Respondents
Button shedding	80
Trees looking sickly	40
Small size of nuts	60
Less number of nuts	70
Nut cracking	45
Pest and diseases incidence	60
Water problem	45
Low yield	90
Others specify: pencil tip disorder	55

coconut growers expressed button shedding as the major problem in coconut cultivation, lesser number of nuts (20%), small size nuts and pest and disease incidence (60%), pencil tip disorder (55%), nut cracking and water stress (45%), trees looking sickly appearance (40%) which is considered with low yield (90%). These problems might be due to non adoption of balanced nutrient application.

III. After Adoption of TNAU Coconut Tonic

It is interesting to note from Table 4 that most of the selected respondents know about coconut tonic only during 2003 and 2004. Awareness on coconut tonic was high during 2004 (42 Nos) followed by 2003 (30 Nos). It is very meagre in other years of 2002, 2005 and 2006. 84 respondents expressed that they know about the production of coconut tonic at KVK, Salem during 2003- 2004.

Nearly 50 per cent of the selected coconut respondents have got knowledge and developed skill on root feeding technique of coconut tonic from scientists of KVK, Salem. Remaining fifty per cent of the selected coconut respondents developed knowledge and skill through other organizations. Among these, farmers training centre (16.66%) and district rural development agency (11.11%) involvement was high rather than others like State Department, TNAU Research Stations, friends, fellow farmers etc.

It is surprising to note that during 2003 none of the farmers applied tonic for three times. At the same time most of them followed three times of application during 2007.



Table 4. Distribution of respondents according to their awareness of TNAU coconut tonic

Questions	Respondents (n=90)					
	2002	2003	2004	2005	2006	2007
When you came to know about coconut tonic	3	30	42	13	2	-
When you came to know about coconut tonic being produced at KVK, Salem	-	30	54	6	-	-

This might be due to high awareness and knowledge developed on TNAU coconut tonic and success seen by the farmers over a period of years from 2003 to 2007.

Correlation studies

Simple correlation studies were conducted to assess the relationship between economic motivation and adoption rate, economic motivation and age.

Highly significant and positive correlation was observed between the socio personnel characteristics of age group and adoption rate of coconut tonic (Fig. 2). Similarly the

new technologies with high motivation. This might be the reason for high significant & positive correlation obtained between those characters.

IV. Impact caused due to adoption of TNAU coconut tonic

1. Impact on coconut tree

The root feeding of TNAU

Table 5. Average yield, Income and expenditure obtained by coconut respondents due to the adoption of coconut tonic over a period of time

Particulars	Before adoption of coconut tonic	After adoption of coconut tonic			
		2004	2005	2006	2007
Yield (No. of nuts/ha)	17425	21530	22032	23275	24575
Gross income(Rs/ha)	80000	107650	110162	116375	122875
Net income (Rs/ha)	64000	82650	85162	91375	97875
Marginal benefit cost ratio (Rs/ac)	-	1:2.49	1:2.71	1:2.91	1:3.04

income from Rs.64,000 to Rs.97,875. Marginal benefit cost ratio also gradually increased from 1:2.49 to 1:3.04 over a period of time (Table 5).

From Table 6, it is seen that cent percent of the respondents told that button shedding in coconut tree was significantly reduced. 97.77% of the respondents accepted economic advantages of coconut tonic followed by number of nuts per tree (96.66%), trees looking green and healthy (90.00%), number of spathes increased (84.44%), fetch fair market price (82.22%), no cracking of nuts and reduced flower shedding

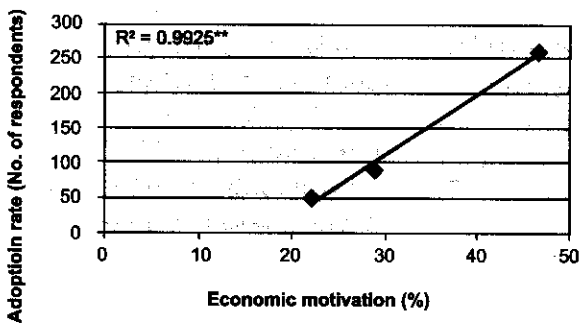


Fig. 2. Relationship between economic motivation and adoption rate

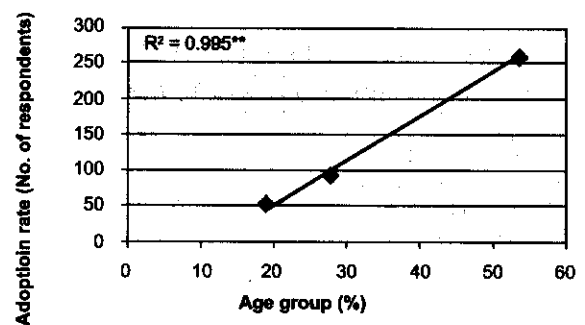


Fig. 3. Relationship between age group and adoption rate

socio psychological characteristics of economic motivation and adoption rate of coconut tonic are positively and significantly correlated with each other (Fig. 3). The old aged group people (above 45 years) are having high experience and interact to adopt

coconut tonic shows its supremacy in increasing yield gradually from 17425 nuts to 24575 nuts/year/ hectare after adoption of coconut tonic over a period of 4 years. This effect leads to gradual increase of gross income from Rs.80,000 to Rs.1,22,875 and additional net

(80%). It is also noticed that all the respondents felt that out of 13 parameters, nine parameters related to yield in coconut were positive and ranged from 80 to 100 per cent. Other four parameters were also positive and it ranged from 60 to 72.22 per cent.

Table 6. Distribution of respondents according to parameter wise results obtained in coconut tree

Parameters	Results obtained		
	Nos	%	Rank
Trees looking green and healthy	81	90	IV
Reduced flower shedding	72	80	VII
Reduced button shedding	90	100	I
Shining of nuts	64	71.11	IX
Increased the thickness of pericarp	58	64.44	XI
No cracking in the nuts	72	80.00	VII
No of spath increased /tree	76	84.44	V
No of nuts increased /tree	87	96.66	III
Low pest and disease incidence	65	72.22	VIII
Rejuvenation of trees	60	66.66	X
Fetch fair market price	74	82.22	VI
Economic advantages	88	97.77	II
Others specify	-	-	-

2. Technological and economical impact on change in the yield of coconut farm income and expenditure

It is observed that nearly 97.77 per cent of respondents expressed that the yield of coconut had increased by the adoption of TNAU coconut tonic. This might be due to reduction of flower and button shedding and increased number of spathes and nuts per tree per year. 46.66 per cent of the respondents expressed that additional expenditure had increased by the adoption of TNAU coconut tonic.

At the same time 53.33 per cent of the farmers expressed their view that the additional expenditure was increased only during the first year of adoption but the expenditure has not changed (Fig 4). This might be due to the stable price of coconut tonic for the past four years. All the respondents (98.88% to 100%) accepted and told that additional gross and net income gradually increased over a period of years. It was observed that cent per cent of the selected respondents disseminated this new supreme technology of TNAU coconut tonic

to their fellow farmers, relatives, and also expressed their experiences and success of this technology among the group of farmers during different training programmes. None of the respondents experienced the decreasing change of any technological and economical factors.

3. Impact of coconut tonic application on quality aspects

To analyze the impact of coconut tonic on quality parameters of coconut, nuts were collected from

various locations and analyzed as given in Table 6. It is observed that the number of leaves, spathes and female flowers increased considerably in coconut tonic applied trees when compared to recommended practices only.

The percentage of button shedding decreased from 50 to 30 %. The single nut weight, pericarp thickness and oil content increased from 600 g to 980 g, 2.7 mm to 3.8 mm and 57.0 % to 58.9 % respectively in the coconut tonic applied trees when compared to recommended practices followed trees only. Foremost constraints expressed by 88 per cent of the coconut respondents was that the TNAU coconut tonic is not available in other places except KVK Salem district. Fifty per cent of the respondents felt that lack of experienced labourers is the major constraint which was followed by, selection of root which is difficult (22.22%) and absorption time of tonic is long (6.66%), loss of tonic due to packet damage during transport (5.55%) and only 2.22 per

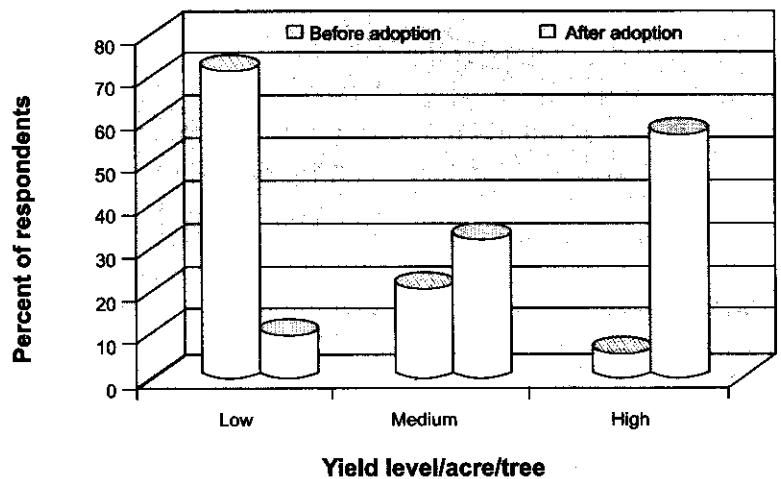


Fig. 4. Impact of coconut tonic on yield level

Table 7. Impact of TNAU coconut Tonic on Quality characters of Coconut

Characters (per tree / year)	Recommended Practices	Recommended practices+ root feeding of coconut tonic
No. of leaves	28	41
No. of spathes	8	12
No. of female flowers	112	163
Percentage of button Shedding	40	30
Single nut wt (g)	600	980
Thickness of pericarp (mm)	2.7	3.8
Oil content (%)	57.0	58.9

cent of the respondents felt that tonic cost is high (Table 7).

Root feeding of TNAU coconut tonic technique give results only after three months of application and moreover ,the respondents give cent per cent positive results when they adopted this technology on continuous basis.

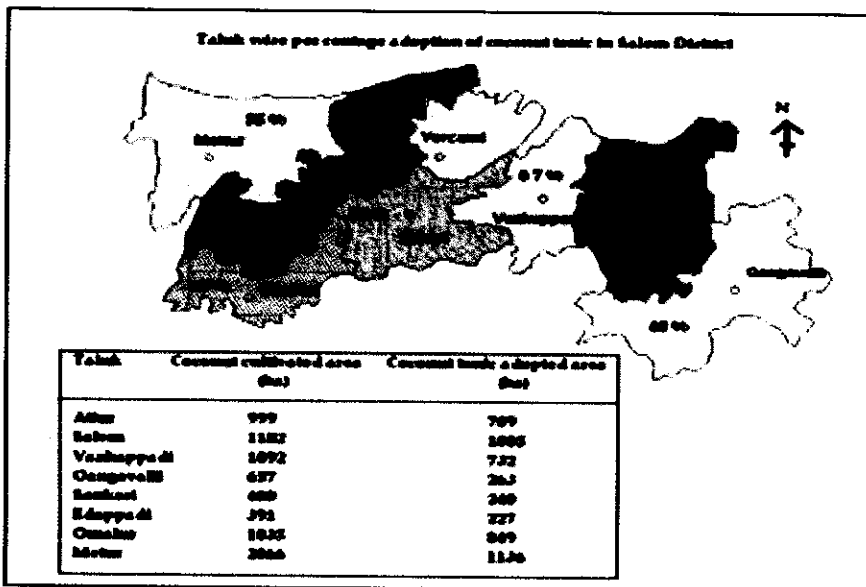
VI. Suggestions to overcome constraints

- While preparing action plan for state department, root feeding of TNAU coconut tonic technology shall be included as one of the objectives for increasing productivity of coconut in forthcoming years. For this, KVK can

produce tonic and supply to each block in Salem district. This in turn will reach the unreachable area as well as grass root level farmers.

- In future, other KVKs, Research stations and all line departments shall take part in popularization of TNAU coconut tonic for wide scale adoption and diffusion.
- KVK Salem can make arrangements to contact well experienced labourers available in root feeding of coconut trees in future.

The given map shows the overall adoption rate of coconut tonic in each Taluks of Salem district. Maximum adoption rate was observed in Salem (85 %) and Omalur (82 %) Taluks.



Feedback of respondents

Case 1

Mr. K. Jeganathan , a leading farmer of Salem district admits that KVK, Salem essentially is the force behind his endeavours in agriculture. He is the convener of KVK and member of Salem coconut commodity group. He is having 200 coconut trees in his field. There used to be high flower and button shedding. During 2003, the first demonstration on root feeding of coconut tonic was conducted in his field. Since the last 4 years, he is following this technology for coconut tree and applies tonic 3 times at four months interval.

He says that the flower and button shedding have reduced, pericarp has become very thick and got good price due to increased size of nuts, healthy and shining appearance. Now he is harvesting 130-135 nuts/year per tree on average. Further by giving him opportunity to serve as disseminator for popularization of this technology, he could take the message of coconut tonic to many farmers. He has confidence that the KVK will continue to be a source of support for the farming community.

Case 2

As an opinion leader of Veerapandi block, Mr.Arulraj recalled the services rendered by KVK, Salem in taking latest technology of root feeding of coconut tonic to the farmers of Veerapandi block. More than 850 ha of Veerapandi is being occupied by coconut with an average production of 75 nuts per tree and is the largest coconut producer in Salem district.

Coconut growers of this area came to understand about coconut tonic and approached the KVK individually and some farmers through the Department of Agriculture with some fundamental doubts on using and getting the TNAU coconut tonic. Perhaps it was all together a new thing to the farmers. To have better results a common consensus emerged from the farmers for obtaining training on the use of TNAU coconut tonic. Subsequently training was imparted to the farmers in the village itself and demonstration were made in 49 different places of 10 villages in Veerapandi block. Because of these new practices, the trees thrived well, button shedding was reduced upto 80 per cent and ultimately yield was increased. Considerably after 10 months of root feeding of TNAU coconut tonic it was realized that the cost is very cheaper. This motivated other farmers for replicating these practices on their fields in the forth coming years. As on 30th June 2004

itself KVK, Salem sold more than 22000 packets of coconut tonic to the farmers of Veerapandi block. 756 farmers were benefited and now also the farmers are following this technology on continued basis. Mr.Arulraj said that root feeding of TNAU coconut tonic ,a new technology implemented through KVK, Salem has come as a ray of hope for coconut growers of Veerapandi block and the interventions of KVK has changed the coconut cultivation especially on manuring thus ensuring increased yield in coconut. Right from the soil application of fertilizer to harvesting, KVK guided them properly to reap good dividends.

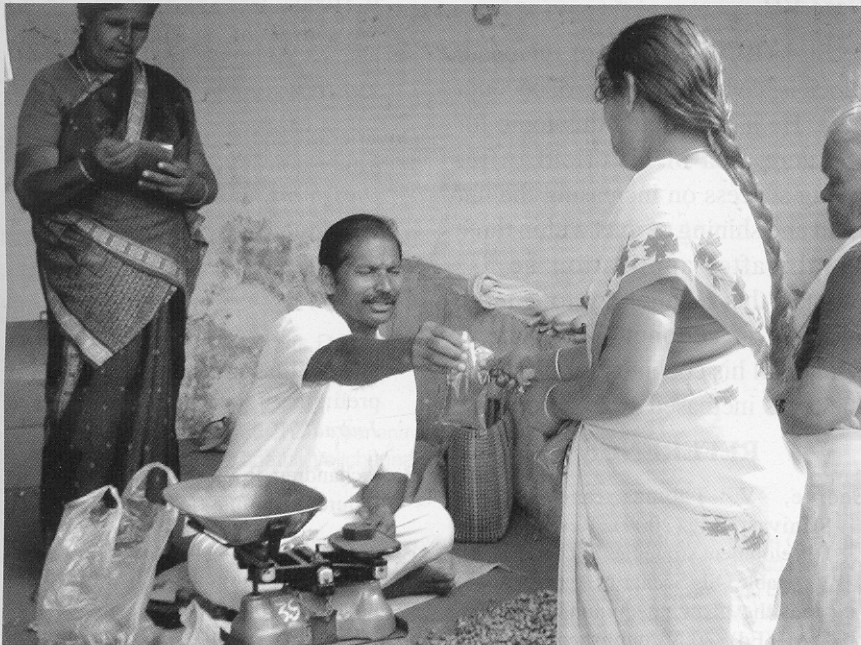
Case III

Shri. P.S. Dharmalingam, a farmer from Vattakkadu, Nalikkalpatti, Salem District came to know about coconut tonic during a training at KVK. He is having 100 trees of coconut in his field. After attending training and

demonstration, purchased tonic and fed to coconut trees. Initially he faced much difficulty in the selection of roots. But after 2-3 times it was easier. Since the last 3 years he is following this technology on continuous basis. He is getting good results in increasing the number of nuts, trees are looking healthy, the button shedding is less and the yield has increased considerably.

Case IV

Shri. K. G. Krishnamoorthi from Moongapadi, Gugai, Salem is having three hectors of coconut field. When he came to know about the coconut tonic, he visited the KVK and met Dr. M.K.Kalarani. He was explained about the coconut tonic and was guided for the easy adoption of coconut tonic. Since the last two years he is following this technology on continuous basis. He is getting good results in increasing the number of nuts and the button shedding has reduced considerably.



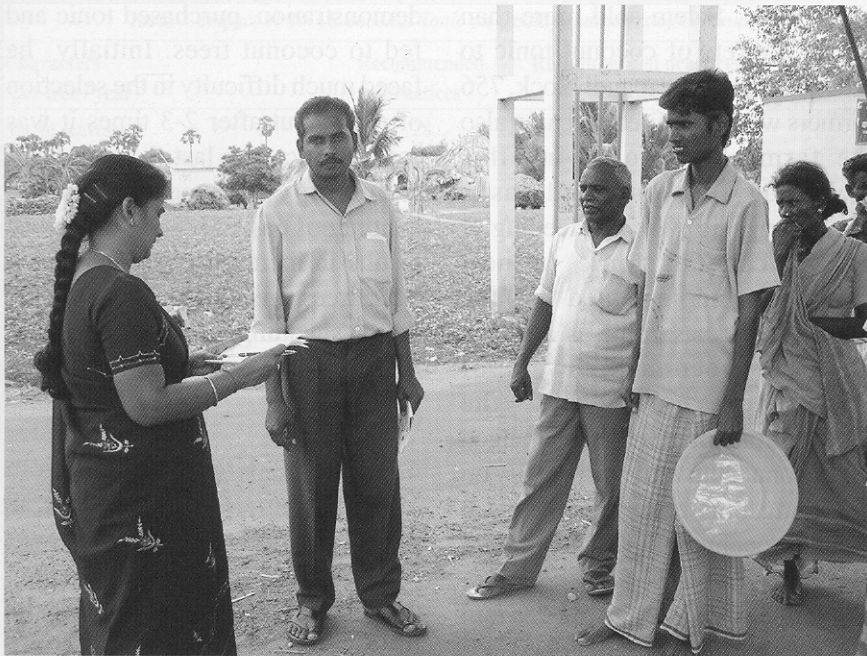
Shri. P.S. Dharmalingam



K. G. Krishnamoorthi with Dr. M. K. Kalarani

Case V

Shri. R. Balasubramaniam is having 35 coconut trees in his field. There was heavy button shedding and one coconut tree was having spathe but not producing nuts. When he contacted KVK, Salem, he came to know about coconut tonic. Krishi Vigyan Kendra scientists visited his



Dr. M. K. Kalarani giving training to the farmers

field and demonstrated the technology. Surprisingly now that particular non yielding tree is yielding about 100 nuts/year.

Case VI

Shri. K. G. Krishnamoorthi Deputy Director of Agriculture (ic) Farmers Training Centre, Salem says that KVK, Salem has helped the coconut growers of Salem to achieve the objectives of increasing the yield of coconut .KVK conducted many trainings, demonstration and also brought many successful farmers organization to Salem, which motivated the farmers to organize



A view of the training programme

themselves to bring revolution in the mindset of the coconut growers. The farmers organization ‘coconut commodity group’ is today a living example of the services of the KVK in Salem district.

Case VII

Shri. R. Venkatesan of Edappadi Block is having 2 hectares of coconut field. He has adopted this tonic for one acre area of his field. After seeing success on increasing the nut yield and shining of nuts within three months after application he has adopted this technology to 2 more hectares of coconut .Today he is selling all his coconuts for high cost due to its increased size and quality

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