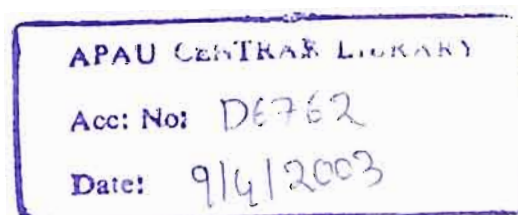


PROJECT REPORT
ON
A STUDY ON MARKET DEVELOPMENT OF
GROMOR 14-35-14

By
U. VASANTHA RAO

PROJECT REPORT SUBMITTED TO THE
ACHARYA N.G.RANGA AGRICULTURAL UNIVERSITY
IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF
MASTER OF AGRI-BUSINESS MANAGEMENT
IN THE FACULTY OF AGRICULTURE



SCHOOL OF AGRI-BUSINESS MANAGEMENT
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October 2, 2002

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. U. Vasantha Rao**, a final year M.A.B.M. student of School of Agri. Business Management, Acharya N.G. Ranga Agricultural University, Hyderabad, has done a project assignment in our Organisation from July 15, 2002 to September 30, 2002.

He had successfully completed his project assignment on "A Study on Market Development of Gromor 14:35:14 in Andhra Pradesh" in our Farm Inputs Division, Secunderabad.

Thanking you,

Yours faithfully,

For E.I.D. Parry (India) Limited,

Rupa Krishnan
Dy. Manager – HR

CERTIFICATE

This is to certify that the project entitled "**A STUDY ON MARKET DEVELOPMENT OF GROMOR 14-35-14**" submitted in partial fulfillment of the requirements of the degree of **Master of Agri-Business Management** to the School of Agri-Business Management of the Acharya N.G. Ranga Agricultural University is a record of the bonafide project work carried out by **Mr. U.VASANTHA RAO** under our guidance and supervision.

No part of the project report has been submitted for any other degree or diploma. The project report is approved by the guides.


Internal Guide


External Guide
(Industry guide)

ACKNOWLEDGEMENTS

It is by the Lavish love, grace and blessings of Almighty that I have been able to bring into this humble piece of work for which I am extremely indebted.

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U.Vasantha Rao
(**U.VASANTHA RAO**)

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DECLARATION

I, **U.VASANTHA RAO** hereby declare that the project report entitled "**A STUDY ON MARKET DEVELOPMENT OF GROMOR 14-35-14**" submitted to the school of Agri-Business Management of the Acharya N.G. Ranga Agricultural University in partial fulfillment of the requirements for the degree of **Master of Agri-Business Management** in the result of original work done by me.

Date

U. Vasantha Rao
Signature of the student

LIST OF ABBREVIATIONS

A.P.	:	Andhra Pradesh
CFL	:	Coromandel Fertilizer Limited
DAP	:	Diammonium phosphate
DAT	:	Days after transplanting
DAS	:	Days after sowing
K	:	Potassium
MOP	:	Muriate of potash
MRP	:	Maximum Retail Price
mt	:	Million tonnes
N	:	Nitrogen
P	:	Phosphorus
SSP	:	Single superphosphate
t	:	metric ton
%	:	Percentage
@	:	At the rate of
i.e.	:	that is
viz.	:	like

EXECUTIVE SUMMARY

Presently NPK balance is precariously poised particularly in respect to K. Even after making allowance for possible K additions through natural sources, a deficit of 8 mt of K per annum may persist. This situation demands on evolving strategies and policies to boost K supplies. Among CFL products Gromor 14-35-14 is having 'K' in 14%. Even though it is an ideal and suitable complex fertilizer for all crops for basal application, now it is only popular in chillies, paddy and groundnut. Its main competitor is DAP, whereas it is used for all crops even though it does not contain K. so, the CFL company wants to extend the product to other crop segments. Therefore, in order to know the possibility of introducing Gromor 14-35-14 on new crop segments, this study was undertaken with following objectives:

- To identify the positioning of Gromor 14-35-14 as per the perception and practices of farmers of chillies, paddy and groundnut.
- To compare relative positioning of Gromor 14-35-14 with other NPK complexes, including DAP, on these crops.
- To study and evaluate the fertilizer complexes used on other crop segments ie., cotton, sugarcane, banana, vegetables and orchard crops like mango and grapes.
- To explore the possibility of introducing Gromor 14-35-14 on new crop segments with the help of focused and concentrated promotional activities.

The study was conducted in isolated pockets of Vizianagaram, East Godavari, Krishna, Anantapur, Cuddapah districts of Andhra Pradesh. From each district 15 villages are surveyed and in each village 10 farmers are selected randomly and primary data was collected with a well designed pretested schedule. A total of 750 farmers (i.e., 150 each district) constitute the sample for the study. The primary and secondary data was also collected from Agricultural Research Stations from concerned districts to obtain information about technical suitability of Gromor 14-35-14 on the concerned crops.

GIST OF FINDINGS

Vizianagaram District

- The commonly used complex fertilizers on Mango was DAP (25%) and 20-20 (15%).
- The commonly used complex fertilizers on Paddy was 28-28 (53.3%) 20-20 (36.6%) and DAP (20.5%)
- The commonly used complex fertilizers on Groundnut was 20-20 (53.3%), 14-35-14 (20%) and DAP (16.6%).
- The basis for applying fertilizer dosages was past experience (94%) and dealer's advice (62%).
- The criteria for selecting a particular brand of complex fertilizer are past experience (old brands) (78%) and dealers advice (new brands) (64%).

- Awareness about Gromor brand and Gromor 14-35-14 was 56% and 42% respectively.
- The reasons for using other brands are credit facility (56%) and less unit cost per bag (42%).
- The most effective and convenient mass media was TV (92%) and news paper (26%).
- The most effective promotional programmes at village level was Burrakathas (54%) and audio visual vans (50%).
- The opinion on price of Gromor 14-35-14 was high (56%) and satisfactory (44%).
- The mode of purchasing fertilizers was credit (64%) and cash (36%).
- The repayment period for credit purchase was within a week (8%), one month (24%) and after harvest (68%).
- The interest rates charged by dealers was 24-30%.

East Godavari district:

- The commonly used complex fertilizers on Banana was 20-20 (95%), 14-35-14 (80%) 17-17-17 (80%), 19-19-19 (80%) and DAP (75%)
- The commonly used complex fertilizers on Yam was 14-35-14 (46.6%) 20-20 (30%), 17-17-17 (30%), and DAP (23.3%)

- The commonly used complex fertilizers on Turmeric was 14-35-14 (33.3%), 20-20 (30%), 17-17-17 (26.6%), and DAP (20%).
- The commonly used complex fertilizers on Coconut was 17-17-17 (26.6%), 19-19-19 (20%), 20-20 (10%).
- The commonly used complex fertilizers on *Kharif* Paddy was 17-17-17 (37%), 19-19-19 (31.4%), 20-20 (28.5%).
- The commonly used complex fertilizers on *Rabi* Paddy was DAP (51.4%), 14 35-14 (51.4%) and 20-20 (25/7%).
- The basis for applying fertilizer dosages was past experience (92%) and dealers advice (36%).
- The criteria for selecting a particular fertilizer brand was past experience (86%) and crop requirement (68%).
- The awareness about Gromor brand was 64% and Gromor 14-35-14 was 53%.
- The reasons for using other brands are suitability of the soil and crop (68%) and timely availability (42%).
- The most effective and convenient mass media are TV (96%) and newspaper (46%).

- The most effective promotional programmes at village level are Demo's (52%) and posters hand bills and other print media (46%) and Kisanmelas (38%).
- The opinion on price of Gromor 14-35-14 was satisfactory (52%) and high (48%).
- The mode of purchasing fertilizers was cash (56%) and credit (44%).
- The repayment period was after harvest (44%), one month (36%) and one week (20%)
- The interest rate charged by dealers was 18-24%.

Krishna District

- The commonly used complex fertilizers on Mango was 14-35-14 (25%), 20-10 (20%) and 17-17-17 (15%) DAP (15%).
- The commonly used complex fertilizers on Kharif Paddy was 14-35-14 (45%), 17-17-17 (26%) and 19-19-19 (25%).
- The commonly used complex fertilizers on *Rabi* Paddy was DAP(64%), 14-35-14 (54%) and 17-17-17 (25%).
- The commonly used complex fertilizers on Cotton was DAP(70%), 20-20 (65%) and 17-17-17 (40%)

- The commonly used complex fertilizers on Chilly was 14-35-14 (83.3%) DAP(80%), 17-17-17 (80%) and 20-20 (80%)
- The basis for applying fertilizer dosages were past experience (94%) and dealer advice (52%).
- The criteria for selecting a particular brand was past experience (old brands), Dealers advice and other farmers suggestions (new brands).
- The awareness about Gromor brand was 68% and that of Gromor 14-35-14 was 59%.
- The reasons for using other brands are suitability of the soil and crop (62%) and credit facility (48%).
- The most effective and convenient mass media was T.V. (96%) and news paper (34%).
- The most effective promotional programmes at village level are posters, hand bills and print media (54%) and audio-visual vans (48%).
- The opinion on price of Gromor 14-35-14 was expressed as high (52%) and satisfactory (48%).
- The mode of purchasing of fertilizers was credit (54%) and cash (46%).
- The repayment plans periods was after the harvest (58%) one month (30%) and one week (12%).

- The interest rates charged by dealers was 24-36%.

Anantapur District

- The commonly used complex fertilizers on Groundnut was Gromor 14-35-14 (54.1%), 17-17-17 (34.1%) and DAP (21.1%).
- The commonly used complex fertilizers on Citrus was 17-17-17 (62.5%) 19-19-19 (40%) and 10-26-26 (30%).
- The commonly used complex fertilizers on Papaya was 10-26-26 (46.6%) 17-17-17 (33.3%)
- The commonly used complex fertilizers on Paddy was DAP (72%) 17-17-17 (70%) and 14-35-14 (42%)
- The commonly used complex fertilizers on Bengalgram was Gromor 14-35-14 (67.5%) and DAP (50%).
- The commonly used complex fertilizers on Sunflower are Gromor 14-35-14 (65%) and DAP (45%).
- The basis for applying fertilizer dosages was past experience (100%) and following other progressive farmers (58%).
- The criteria for selecting a particular brand of fertilizer was past experience (92%), other farmers suggestions (60%) and dealers advice (58%).

- The awareness about Gromor brand was 78% and Gromor 14-35-14 was 72%.
- The reasons for using other brands are suitability of soil and crop (56%), credit facility (54%) and timely availability (52%).
- The most effective and convenient mass media was TV (94%) and news paper (30%).
- The most effective promotional programmes at village level were posters (66%), audio-visual vans (56%) and farmers meetings (42%).
- The opinion on price of Gromor 14-35-14 was expressed as satisfactory (76%) and high (24%).
- The mode of purchasing fertilizers was credit (62%) and cash (38%).
- The repayment plans was after the harvest (76%), one month (18%) and one week (6%).
- The interest rate charged by dealers was 24-30%

Cuddapah District

- The commonly used complex fertilizers on Paddy were DAP (55%), 20-20 (42.5%), 28-28 (42.5%) and 16-20 (20%).
- The commonly used complex fertilizers on Turmeric were 14-35-14(73.3%), 19-19-19 (36.6%), 17-17-17 (36.6%) and DAP (26.6%).

- The commonly used complex fertilizers on Bengalgram were Gromor 14-35-14 (65%), DAP (33.3%) and 16-20 (21.6%).
- The commonly used complex fertilizers on Groundnut were Gromor 14-35-14 (74.6%), DAP (20%) and 16-20 (13.3%).
- The commonly used complex fertilizers on Sunflower were Gromor 14-35-14 (75%), 17-17-17 (35%) and 16-20 (12.5%).
- The commonly used complex fertilizers on Citrus were 17-17-17 (66.6%) 19-19-19 (55.6%) and 16-20 (10%).
- The basis for applying fertilizer dosages was past experience (100%) and following progressive farmers (56%).
- The criteria for selecting a particular brand was past experience (94%), crop requirement (72%) (old brands) and other farmers suggestions (56%) (new brands).
- The awareness about Gromor brand was 76% and Gromor 14-35-14 was 70%.
- The reasons for used other brands are suitability of soil and crop (72%), brand image (48%) and timely availability (38%).
- The most effective and convenient mass media was TV (98%) and news paper (33%).

- The most effective promotional programmes at village level are posters (52%), audio-visual vans (48%) and farmer meetings (42%).
- The opinion on price of Gromor 14-35-14 was expressed satisfactory (72%) and high (28%).
- The mode of purchasing fertilizer was cash (64%) and credit (36%).
- The repayment period was after the harvest (62%) one month (30%) and one week (8%).
- Interest rate charged by the dealers was 18-24%.

SUMMARY

Paddy: The complex fertilizers were mainly used for quick establishment of seedlings. Better tillering and higher yields. The usage of Gromor 14-35-14 was low in Vizianagaram, Anantapur, Cuddapah districts and also in Kharif Paddy in East Godavari. The usage was good in Krishna district and also in East Godavari during Rabi season.

Groundnut: Complex fertilizers were mainly used for increasing growth, flowering and yield. The usage of Gromor 14-35-14 was good in Anantapur and Cuddapah Districts and low in Vizianagaram.

Chilly: The complex fertilizers were mainly used for increasing branching, flowering, yield and improving colour of fruits. The usage of Gromor 14-35-14 was good in Chilies.

Cotton: The complex fertilizers were mainly used to increase branching, flowering and yield. The usage of Gromor 14-35-14 was low in Cotton (Krishna District).

Bengalgram: The complex fertilizers were mainly used to increase growth, flowering and yield. The usage of Gromor 14-35-14 was good in Bengalgram crop.

Sunflower: The complex fertilizers were mainly used to increase growth, size of head and filled seeds. The usage of Gromor 14-35-14 was good in Sunflower.

Turmeric: The complex fertilizers were mainly used to increase growth, weight of rhizome and quality of rhizome. The usage of Gromor 14-35-14 was good in Turmeric crop.

Yam: The complex fertilizers were mainly used to increase growth and size of rhizome. The usage of Gromor 14-35-14 was good in Yam.

Mango: The complex fertilizers were mainly used to increase flowering and number of fruits per plant. The usage of Gromor 14-35-14 was less in Mango.

Coconut: The complex fertilizers were mainly used to increase flowering and yield. The usage of Gromor 14-35-14 was nil in Coconut.

Banana: The complex fertilizers were mainly used to increase size of stem and growth. The usage of Gromor 14-35-14 was good in Banana, but it was used only once out of 5-6 applications.

Citrus: The complex fertilizers were mainly used to increase flowering and yield. The usage of Gromor 14-35-14 was nil.

Papaya: The complex fertilizers were mainly used to increase yield and quality of fruits.. The usage of Gromor 14-35-14 was nil.

- The fertilizer doses was decided based on the past experience (94%), sometimes by following other progressive farmers (43.2%) and dealer's advice (42.4%).
- The criteria for selecting a particular brand of complex fertilizer was past experience (88.8%) ie., old brand, and dealers advice (48.4%) ie., new brands.
- Awareness about Gromor brand was 68.4% and that of Gromor-14-35-14 was 59.2%.
- The reasons for using other brands were suitability to the soil and crop (55.2%), timely availability (44.4%) and credit facility (38.4%).
- The most effective and convenient mass media was T.V. (95.2%) followed by news paper (33.8%).
- The most effective promotional programmes at village level were posters, hand bills and other print media(52.8%) and A.V.vans (48.8%).
- About 58.4% of the respondents were satisfied with the pricing of the Gromor 14-35-14 and about 41.6% felt it to be on the higher side.

- The mode of purchasing fertilizer was credit (51.2%) and cash (48.8%)
- The repayment period for credit purchase was after harvest (61.6%), one month (27.6%) and one week (10.8%).
- The interest rate charged by the dealers on credit purchase was around 25%.

In conclusion the Gromor 14-35-14 position was strong in some crops like Groundnut, Bengalgram, Sunflower, Chilly, Banana, Yam and Turmeric. Its position was weak in the other crops like Mango, Citrus, Papaya, Coconut and Paddy(except Krishna District). So there is a need to strengthen its position in weak crop segments by concentrated promotional activities.

INTRODUCTION

CHAPTER – I

INTRODUCTION

Importance of fertilizers use in Agriculture

In a densely populated country like India with long history of civilization, man has been exploiting the reserves of nutrients in soil from time immemorial. In 1951-52 the foodgrain production was merely 52 mt with the fertilizer consumption of only 70,000 t, where as the foodgrain production has increased to an all time high of 211.5 mt during 2001-02 with fertilizer consumption of about 17.5 mt to feed more than a billion. For the present level of production the estimated NPK removal is about 28 mt resulting in a net negative balance of about 10.5 mt. Organic manures and biofertilizers contribute about 4.5 mt which means that about 6 mt negative balance has been replenished by soil. This is a serious soil health hazard. The Government of India has announced the target of doubling of food production within 10 years. It implies that for doubling the productivity, the nutrient removal could be more than double of the present level to about 56 mt, since nutrition requirement, for incremental production would be higher. The gap between nutrient supply through all sources and removal would further escalate to more than 12 mt from the present level (2001-02) of about 6 mt, provided the contribution of organic and biofertilizer sources is also doubled. In order to attain this balance it is essential and must to use chemical fertilizers for higher crop production. Imbalanced use should be avoided in order to set better results, much more can and must be done to promote P and K use to achieve the goal of sustainable high yield agriculture in India.

Indian Fertilizer Industry

India is the third largest producer and consumer of fertilizers in the world. The total turnover of Indian fertilizer industry during 2000-01 was about 35,000 crores. The Indian fertilizer industry has been consistently meeting a substantial portion of the ever increasing demand of fertilizers. It started as a small industry with a capacity of 89,000 t of nitrogen and 28,000 t of P_2O_5 which has now grown to a capacity of 11.08 mt of nitrogen and 3.93 mt of P_2O_5 in 2000-01. At the same time the consumption increased from 0.065 mt (1951-52) to 17.5 mt (2001-02). India, however does not have any production capacity for potash and hence the requirement is met by imports.

Fertilizer policy in India

In order to provide fertilizers to farmers at affordable prices, the fertilizer policy in India was based on state subsidy, where till 1992, production of N+P+K fertilizers was covered under Retention Price Scheme. The movement and distribution was also controlled by the Government under ECA allocation. However, the MRP fixed by the Government did not keep pace with the increasing cost of production, resulting in increasing subsidy burden on the Government.

In August, 1992 the Government of India decontrolled the Phosphate and Potassic fertilizers, which was followed by decanalization of imports. Initially, all controls on price and movement were removed. The immediate fall out of decontrol was the sharp increase in selling price of Phosphatic and Potassic fertilizers leading to unaffordability by marginal farmers and substantial drop in its consumption. Appreciating the need to promote use of

P+K fertilizers and to improve the NPK ratio, the Government have to intervene and grant ad-hoc concession on indigenous, imported P+K fertilizers. The Government also introduced MRP of P+K fertilizers but the movement and distribution was left outside Government control. In order to avoid shortage of decontrolled P+K fertilizer in remote/hilly areas, the Government also started buffer stocking scheme for DAP and MOP in 1998-99, through Indian Potash Limited.

Presently, important of DAP and MOP are allowed under OGL whereas urea imports are only through designated STEs.

Though the indigenous urea production has rapidly grown to the level of self sufficiency, the cost of production and subsidy burden of the Government has also been ballooning every year. The total fertilizer subsidy on fertilizer was 4800 crores in 1991-92, which has increased to 9481 crores in 1999-2000 ie., approx 100% increase. The fertilizer industry has also shown improved efficiency in capacity utilization and consumption norms but the average cost of production of indigenous urea invariably has been higher than the farm-gate price of imported urea.

The indigenous urea capacity can be broadly classified in following categories.

- i) Natural gas based
- ii) Naphtha based
- iii) Others including fuel oil, LSHS, mixed feed and coal.

The gas based plants have the lowest cost of production but are still higher than the present cost of imported urea.

Recent Developments in Fertilizer Policy

The Government of India has clearly expressed its intentions to bring out a new urea policy, which aims to remove all distribution control on urea and withdraw subsidy by 2006.

In 1997, a High Powered Fertilizer Pricing Policy Review Committee (HPC) under the chairmanship of Professor C.H. Hanumantha Rao, was set up, which submitted its report on 3.4.1998. The Committee recommended to replace existing unit wise RPS by LRMC based uniform normative referral price. However no decision was taken on this report.

For reassessment of urea capacity of existing plant, the Government had set up an Expert Committee in April, 1999. The Committee pointed out the under statement of capacity of various urea plants and recommended five different methods to reassess the capacity. As per the recommendations of Expert Committee, Government of India constituted another Committee under the Chairmanship of Dr. Y.K.Alagh on 19.5.2000. the Committee has submitted its report in March, 2001. In the meantime, vide notification dated 23.5.2000 downward revision in retention price of 11 urea manufacturing units on a provisional basis was made, as a result of interim re-assessment of the capacity.

In September, 2000 the Expenditure Reforms Commission (ERC) submitted its report proposing a four phase programme for eventual decontrol of urea over a period of six years as below:

1st stage (2001-02) – adoption of uniform concession for each of five groups i.e., pre-1992 gas based plants, post 1992 gas based plants, naphtha based plants, fuel oil/LSHS based plants and mixed feed plants,. Concession rate to be determined taking weighted average RP of plants in each group as on 1-4-2000.

2nd stage (2002-2005) further reduction in concession on naphtha fuel oil/LSHS and mixed feed plants based on reduction of energy consumption and lowering of capital related charges (CRC).

3rd stage (2005-2006) – concession on naphtha and mixed feed plants on basis of assumed switch over to LNG.

4th stage (we.f. 1.4.2007) - reduction in number of groups from five to two viz., naphtha based plants having entitled for FDCR of Rs. 1900/- per mt. For all other plants, concession to be NIL. Selling price of urea to be increased @ 7% per annum from 2001 to Rs. 6900/- pmt as on 1.4.2006, which would also likely to import parity price of urea.

The ERC recommendations are still under consideration of the Government.

Present position of Industry

At present, fertilizer industry is divided into three sectors

Public sector:

In April 1978, two large enterprises of public sector namely Fertilizer Corporation of India (FCI) and National Fertilizer Limited were divided into four

enterprises. These four enterprises are Fertilizer Corporation of India, National Fertilizer Limited, Hindustan Fertilizer Corporation, Limited and National Chemicals and Fertilizers Limited. In addition to these enterprises, there are some other factories in the public sector which are given under.

- Fertilizer Corporation of India. Under its control there are five factories in the country Sindri (first), Sindri (Second), Gorakhpur, Takhar and Ramagundam.
- National Fertilizer Limited: There are four factories under its control which are situated at Nangal, Nangal (Extension), Bhatinda and Panipat.
- Hindustan Fertilizer Ltd: There are five factories under its control which are Durgapur, Barauni, Namrup, Namrup (extension) and Haldia.
- National Chemicals and Fertilizers Limited: There are three factories under its control which are Trombay, Trombay (fourth) and Trombay (fifth).
- Madras Fertilizers Ltd: This was established under joint sector in 1966 under it one factory at Chennai is working.
- Fertilizers and Chemicals Travancore Ltd: There are 3 factories under its control, which are one at Udyogamandal and two at Cochin.
- The public sector accounts for 32% and 16.5% of the total installed capacity of manufacturing N&P fertilizers respectively.

Co-operative sector

Indian Farmers Fertilizer Co-operative Ltd (IFFCO) was established on November 1967 and Krishak Bharat Co-operative Ltd (KRIBHCO) incorporated

in April 1980 are multi State Co-operative Societies under the control of the Department of fertilizers. IFCO has 6 operating units. KRIBHCO has one operating unit both for urea and phosphorus. The Co-operative sector accounts for 22% and 11.2% of the total installed capacity of manufacturing N&P fertilizers respectively.

Private sector

At present there are many factories working in private sector which are situated at Kanpur, Kota, Goa, Visakhapatnam, Tulikoran, Baroda, Mangalore, Ennore, Varanasi and Kakinada. The major players in private sector are Coromandal Fertilizers Ltd, Indogulf Fertilizers, Nagarjuna Fertilizers and chemicals Ltd, Zuari Fertilizers Ltd. Deepak Fertilizers, EID Parry India Ltd, GNFC, GSFC, Godavari Fertilizers, SPIC, Udaipur phosphates and Fertilizer Ltd, Dharamsi Morarji Chemical Co, Raashi Fertilizers, Rama Phosphate, Bharat Chemicals, Bharat Fertilizers, etc. The Private sector account, 45% and 73.3% of the total installed capacity of manufacturing N&P fertilizers respectively.

Marketing of Fertilizers

Fertilizers are produced only at selected locations and imported fertilizers arrive at seaports. The marketing system has to carryout the functions of storage, transportation and selling to the farmers spread throughout the country. Overtime the marketing system of fertilizers has undergone rapid change both in terms of its capacity and mode of operation. Its evolution has been mainly guided by the public policy. In fact, initially the demand for fertilizers had to be created. But the objective of demand creation

was not to sell more fertilizer and earn profit, but was to increase agricultural production up to the end of first five year plan (1951-56) the sale of chemical fertilizers was the sole responsibility of co-operative societies and state agricultural departments.

During the second five year plan (1956-61), the sale of fertilizers became almost monopoly of co-operative societies. This step aimed at popularizing the co-operative movement and achieving a higher efficiency of distribution system. Later, the government allowed the fertilizer production units, which had been licensed before December 31, 1967 to sell 70% of their production through their own agencies for a period of 7 years from the date of commencement of production. The remaining 30% of the production was required to be sold through public or cooperative agencies. At the end of March 1970, the number of sale points of fertilizers were 71652 out of which 53% were in private sector and 47% were in the public or co-operative sector. Now at the end of 2001, there were about 3 lakh sale points of fertilizers in the country, out of which about 80% were in the private sector and remaining 20% were operated by either co-operative societies or other public sector institutions like state agro-industries corporations.

Problems in marketing

- The number of sale points are still inadequate
- Quite often the supplies of the fertilizers at many sale points are not sufficient to meet the demand in the area.
- At many points, the fertilizers are not stocked at the time when the farmers want to purchase.

- Fertilizers are prone to adulteration in several cases.
- Grades of fertilizers which the farmers wish to buy are not available at the nearest sale point.
- Some times, the quantity of fertilizer in bags is less than the specified one.
- When supply is less than the demand for fertilizers in an area, during a specified season, the dealers charge a price higher than normal.
- Some times, the farmers are forced to buy another kind of fertilizer along with the kind desired by them.
- Farmers in many areas do not have cash to pay for fertilizers.
- In many areas the salesman do not possess the requisite knowledge on how to use fertilizer and pesticide which farmer wish to seek from them.

Coromandel Fertilizers Ltd.

Coromandel Fertilizers Limited incorporated in 1964, was the result of the synergistic efforts of EID Parry India Limited, now belonging to the Rs 4200 crore (US\$ 435 million) Murugappa group, one of the leading business houses in India and two major US corporations – Cherry Chemical Company and International Minerals and Chemical Corporation (IMC). This brought to India world class technology, for the production of high analysis fertilizers. In 1995 Chervon Chemical Company disinvested their stake in favour of EID parry and IMC in end 1998. After effecting buy-back of 20% of CFL's total shares in which the promoters did not participate, the Group's stake has gone upto 78.59%. The Indian Financial Institutions hold about 7.59% equity, the remaining 14.07% being held by the public.

Ever since production commenced in 1967, Coromandel has been an active partner of the Indian farmer in the field, helping him in his efforts to produce more from small land holdings. It has played a crucial role in assisting India achieve self-sufficiency in food grain production.

Complex phosphatic fertilizers are manufactured at the company's integrated plant at Visakhapatnam in Andhra Pradesh using Rock phosphate imported from Africa, the Pacific and China. Sulphur is imported from Japan and the middle East.

In 1995, production capacity was 4 lakh MTPA by retro-fitting the existing two trains of complex fertilizers plant. With the commissioning of the complex C train in the year 2000, production capacity has increased to 6 Lakh MTPA.

Corporate Vision

To be one of the leaders in Fertilizer Industry with an all India presence through.

- High quality products and brand image.
- Modern, cost effective and energy-efficient manufacturing facility
- Sustained growth in profitability
- High level of satisfaction to all stake holders.

Guiding principles

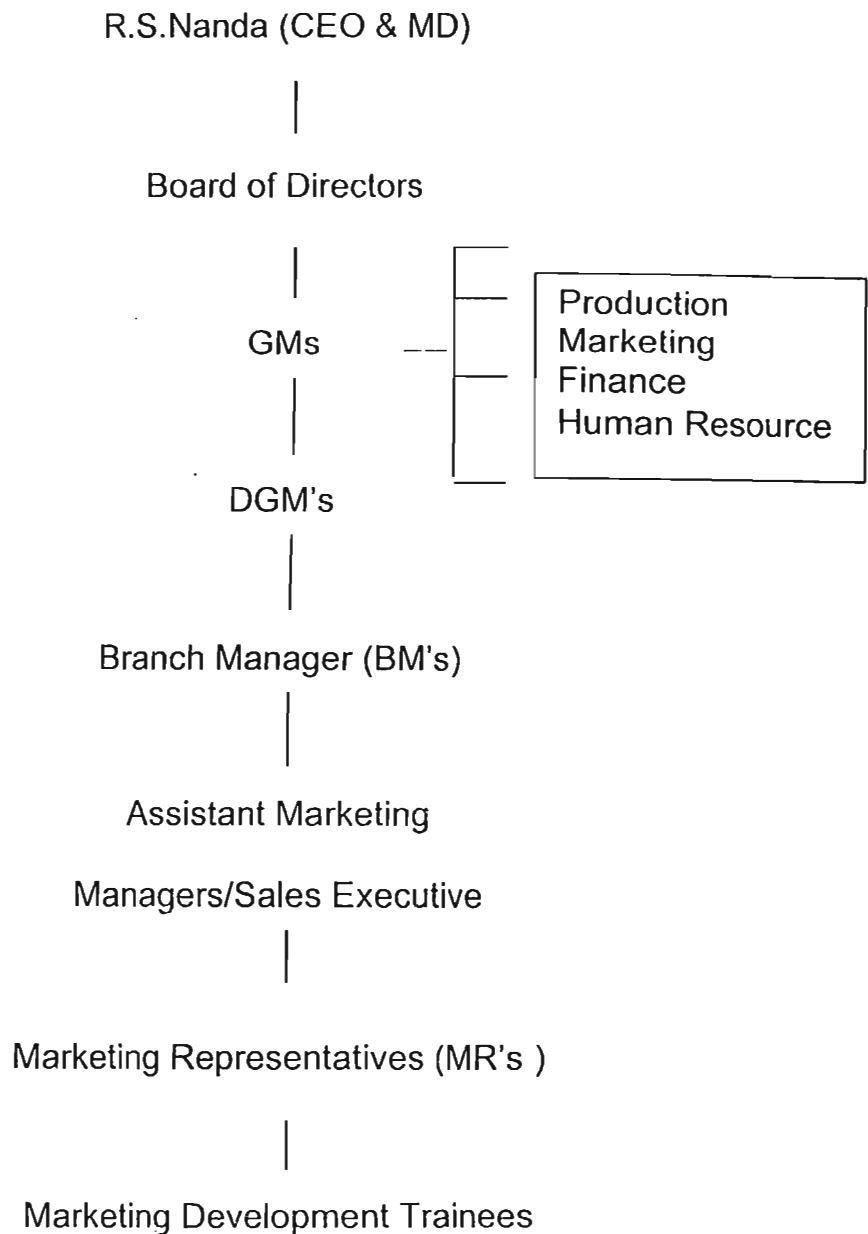
- Achieve cost effective operations through profitable funds management and efficient financial control.
- Create cost and quality consciousness at all levels.

- Increase levels of employee motivation, commitment and sense of belonging.
- Adhere to and even improve upon statutory norms on pollution control, environmental protection and ensure total safety to employees and neighbourhood.
- Use Information Technology as strategic tool for management.
- Propagate and adhere to group values and beliefs.

Milestones of CFL during 1998-2000

- Highest production volume – 1.21 lakh MT of phosphoric acid-a key intermediate in the manufacture of complex fertilizers.
- Highest turnover – Rs. 484.47 crores
- Highest net profit – Rs. 46.87 crores
- Highest ESP. Rs. 19.27
- The prestigious British safety council's Five star rating awarded for health and safety management system at the plant.
- FAI award for best overall performance of an operating phosphoric acid plant for the third consecutive year.

Organisation structure



CFL Products:

CFL is mainly phosphatic fertilizer company. It is having 3 complex fertilizers which are Gromor, 28-28, Gromor 20-20-0-15 and Gromor 14-35-14.

Gromor 28-28 (Urea Ammonium Phosphate)

- Complex with N&P in 1:1 ratio
- Unique granulation by coating prilled urea with ammonium phosphate layer.

- Such granule configuration ensures efficient utilization of nutrients.
- Highly suitable for paddy, wheat
- The product has less density

Gromor 20-20-0-15 (Ammonium phosphate sulphate)

- Ammonium phosphate sulphate with N&P in 1:1 ratio.
- Its special feature is 15% sulphur which is not available in most of the other fertilizers.
- The response to the sulphur has been very encouraging in many crops, particularly oil seeds in sulphur deficit soil.
- It is granular in nature and can be easily applied by broadcasting, placement or drilling.
- Hygroscopic nature is much less and it is suitable to a variety of soils and crops.

Gromor 14-35-14 (NPK complex)

- Complex fertilizer containing all major nutrients viz., N, P and K.
- The only complex having highest total nutrient content among the NPK complex fertilizers (total nutrients are 63%).
- Nitrogen and phosphate are available in 1:2 ratio like DAP. But 14-35-14 has 14% of potash additionally.
- It is the highest phosphate (35%) containing complex compared to any other NPK complexes.
- Entire 'N' is available in ammonical form. Entire P and K are available in water soluble form and therefore, easily available to crops.

- The NPK ratio 1:2.5:1 is a scientific combination for basal application to all crops and all nutrients are chemically combined and interaction is synergic.
- It does not contain any filler and it has 100% nutrient containing material having secondary and micro nutrients such as sulphur, calcium, magnesium and iron.
- Gromor 14-35-14 is a suitable complex for all soils since it is neutral in nature and does not leave any acidity or alkalinity soil.
- It is an ideal and suitable complex for all crops for basal application 14-35-14 is an ideal complex particularly for cotton, groundnut, chillies, soybean, potato and other commercial crops which require high phosphate initially. However for chlorine sensitive crops like tobacco and grapes application of 14-35-14 is not advisable.

Problem Statement

Presently NPK balance is precariously poised particularly in respect to K. Even after making allowance for possible K additions through natural sources, a deficit of 8 mt of K per annum may persist. This situation demands on evolving strategies and policies to boost K supplies. If adequate application of this essential nutrient through fertilizers remains neglected as in past, future sustainability is likely to be constrained mostly by this nutrient.

Among CFL products Gromor 14-35-14 is having 'K' in 14%. Even though it is an ideal and suitable complex fertilizer for all crops for basal application, now it is only popular in chillies, paddy and groundnut. Its main competitor is DAP, whereas it is used for all crops even though it does not contain K. So, the CFL company wants to extend the product to other crop

segments. Therefore, in order to know the possibility of introducing Gromor 14-35-14 on new crop segments, this study was undertaken with following objectives:

OBJECTIVES

The specific objectives of the study are:

- To identify the positioning of Gromor 14-35-14 as per the perception and practices of farmers of chillies, paddy and groundnut.
- To compare relative positioning of Gromor 14-35-14 with other NPK complexes, including DAP, on these crops.
- To study and evaluate the fertilizer complexes used on other crop segments i.e., cotton, sugarcane, banana, vegetables and orchard crops like mango and grapes.
- To explore the possibility of introducing Gromor 14-35-14 on new crop segments with the help of focused and concentrated promotional activities.

SCOPE OF THE STUDY

This survey identifies the perception and practices of farmers about Gromor 14-35-14 and compare with other NPK complexes including DAP in crops like Paddy, Chillies, Groundnut, Mango, Coconut, Banana, Turmeric, Bengalgram and Cotton. This study also helps in possibility of introducing Gromor 14-35-14 in new crop segments in isolated pockets of A.P.

Limitations of the study:

Research studies conducted by individuals are confronted with various bottlenecks and the present study was not an exception to such limitations. The other limitations are:

- This survey had the limitation of time.
- Almost all the information obtained from the respondents was based on their recall memory.
- Sweeping generalization cannot be made based on this study, as the study was limited to isolated pockets of Vizianagaram, East Godavari, Krishna, Anantapur and Cuddpah districts.
- The statistical tools used were elementary in nature.

Plan of the Project Report

The project report is presented in 4 chapters. The first chapter analyses in brief, the importance of fertilizers in agriculture, Indian fertilizer Industry, CFL company profile besides indicating specific objectives. The second chapter presents the research methodology adopted in this study. The third chapter presents the findings and analysis of the study. The conclusions, summary and suggestions emerged from the study form an integral part of the fourth chapter.

RESEARCH METHODOLOGY

CHAPTER II

RESEARCH METHODOLOGY

The Research Methodology followed for conducting any study plays an important role in obtaining accurate results. This chapter deals with the selection of the study districts, selections of villages, selection of respondents, collection of data and evaluation techniques.

2.1 SELECTION OF STUDY DISTRICTS

The study was conducted in five districts (ie., Vizianagaram, East Godavari , Krishna, Anantapur and Cuddapah) of Andhra Pradesh. All the five districts were purposively selected for following reasons.

- As the aim of study was to identify and compare the positioning of Gromor 14-35-14 and other complex fertilizers as per the perception and practices of farmers of Chillies, Paddy and Groundnut, these selected districts have been growing above crops in large areas.
- Another objectives of the study was to study and evaluate the fertilizer complexes used on other crop segments ie., Cotton, Sugarcane, Banana, Turmeric and orchard crops like Mango and Citrus. These selected districts are also growing above mentioned crops.

Even within these districts (Vizianagaram, East Godavari, Krishna, Anantapur and Cuddapah) isolated markets were selected for survey because these are the potential markets for using complex fertilizers, this can be arrived by seeing the past sales.

2.2 SELECTION OF VILLAGES

List of villages cultivating concerned crops in the selected market, along with acreages was obtained from Mandal Revenue Officer, Agriculture Officer. These villages were arranged in the descending order of the area under concerned crop. The first 3 to 4 villages from each market were selected for the study.

2.3 SELECTION OF RESPONDENTS

The list of farmers who had taken up the concerned crop during the year 2002-03 and who were using complex fertilizers were collected from the fertilizer dealers. From each of the selected village, 10 farmers were selected at random. Thus from each district 15 villages (ie., 150 farmers) and a total of 750 farmers (ie., 5 districts) constitute the sample for the study.

2.4 COLLECTION OF DATA

Data collection includes data from both primary (ie., survey) and secondary sources

Primary source: In this study, for collecting the primary data a well designed, pre-tested schedule is prepared and farmers have been interviewed to obtain information about their preferences, benefits and views regarding complex fertilizer grades being used on their crops.

Secondary source: In this study for collecting primary and secondary data, scientists in various research stations have been contacted to obtain

information about technical suitability of Gromor 14-35-14 on the concerned crops. The secondary data relating to area under each crop was collected from Joint Director of Agriculture of respective districts.

2.5 EVALUATION TECHNIQUE

The statistical tools used in this study were averages and percentages.

FINDINGS & ANALYSIS

CHAPTER III

FINDINGS AND ANALYSIS

Investigations were carried out in the five districts of Andhra Pradesh (ie., Vizianagaram, East Godavari, Krishna, Anantapuram and Cuddapah), to find out market development of Gromor 14-33-14. The major findings were analysed with a view to draw valid conclusions and are presented in this chapter.

For better understanding, the findings are presented in the form of tables and are analysed. With this analysis the conclusions, which are in accordance with the objectives stated were drawn district wise.

3.1 VIZIANAGARAM DISTRICT

The major markets covered in this district are Alamanda, Kovvada, Pusapatirega, Gajapatinagaram and Nellimarla. The major crops and villages surveyed are presented in table 3.1.

Table 3.1: Major markets, crops and villages covered in Vizianagaram district.

Market	Crop	Village	Mandal
Alamanda	Mango	Alamanda	Jami
		Sirigipalem	Jami
		Bheemali	L.Kota
		K.Sunkarapalem Erravanipalem	Kothavalasa Kothavalasa
Kowada	Mango	Penta	Padmanabham
		Kovvada	Padmanabham

Contd..			
Market	Crop	Village	Mandal
Pasapatirega	Paddy	Gumpam	Pusapatirega
		Govindapuram	Pusapatirega
		Kovada	Pusapatirega
Gajapatinagaram	Paddy	Ginnam	Gajapatinagaram
		Mentada	Mentada
		Bondapalli	Bondapalli
Nellimarla	Groundnut	Manyapuripeta	Gurla
		Bellanipeta	Gurla
		Vallapuram	Gurla

3.1.1 Mango Crop

3.1.1.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.2 and fig. 3.1.

From the table it is clear that, for less than 10 years age Mango tree, 1 kg each of Urea, SSP and MOP or 1.5-2.0 kg of any complex fertilizers was applied. For above 10 years age tree, 1 kg Urea, 2 kg SSP and 2 kg MOP or 3-4 kg of any complex fertilizer was applied during rainy season (i.e., July-Aug), only once in a year.

Among complex fertilizers DAP usage was the highest (25%) followed by Gromor 20-20 (15%) and 17-17-17 (11.6%). The usage of Gromor 14-35-14 was only 10% because of low awareness of the product.

Table 3.2 Fertilizer usage pattern in Mango

Season	Time of applica- tion	Fertilizer applied kg/pt					Method of application	Brand
		Urea	SSP	MOP	Complex	Quantity		
<10 years	July-Aug	1	1	1	Any complex	1.5-2	Applied in basins and covered with soil	U-NFCL
>10 years	July-Aug	1	2	2	Any complex	3-4	Applied in basins and covered with soil	S-Pragati M-IPL

Commonly used fertilizers in Mango

Fertilizer grade	Brand name	No. of farmers using	Percentage
DAP	GFC	15	25
20-20	Gromor	9	15
17-17-17	Vijay	7	11.6
14-35-14	Gromor	6	10
28-28	Gromor	3	5
Straight	-	8	13.4
No fertilizer	-	12	20

(Note: Percentages are total to the sample size 60)

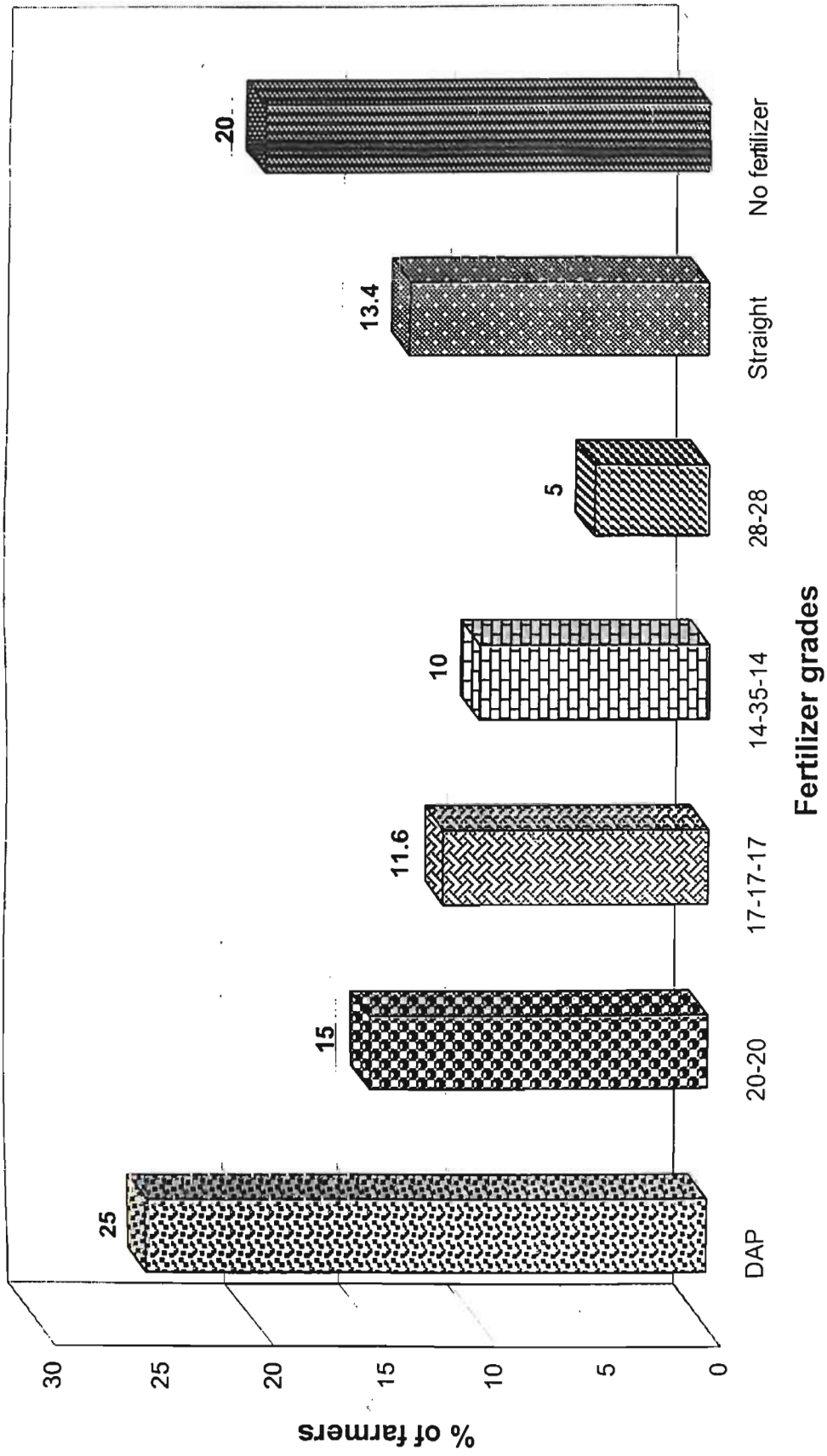


Fig.3.1: Commonly used fertilizers in Mango crop

Perception about various fertilizer grades:

DAP

- Increases flowering and yield
- Timely availability
- Credit facility

20-20

- Low price complex fertilizer (ie per bag price)
- Increases flowering and yield.
- Presence of sulphur increases disease resistance.

17-17-17

- Increase flowering and yield
- Improves the color of fruits
- Contains NPK in 1:1:1
- Medium price/bag

14-35-14

- Increases flowering and yield
- Improves colour of fruit
- High cost/per
- Timely not available
- Contains all three major nutrients ie., N, P and K

About 20% of the farmers were not using any fertilizers and they were applying tank silt or FYM @ 25 kg/tree.

3.1.2 Paddy crop

3.1.2.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in table .3.3 and fig 3.2.

From the table it can be inferred that, as basal 50 kg urea, 50 kg SSP and 25 kg MOP or complex fertilizers like 28-28 or DAP @ 50 kg per acre were applied. At 20-25 DAT ie, tillering stage 25-50 kg Urea or complex fertilizer like 20-20 or 14-35-14 were applied @ 50 kg per acre. At panicle initiation stage 25 kg Urea and 10-15 kg of MOP are applied in Paddy.

Among complex fertilizers Gromor 28-28 usage was the highest (53.3%) followed by Gromor 20-20 (36.6%) and DAP (20%). The usage of 14-35-14 was only 5% because of low awareness of the product.

Perception about different fertilizer grades

28-28

- Quick establishment of seedlings
- Contains urea, so greening is fast
- Increases the tillering
- No caking

DAP

- Quick establishment of seedlings
- Better root growth
- Quick decomposition of previous crop residues
- Better tillering
- Timely availability

Table 3.3 Fertilizer usage pattern in Paddy

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Kharif	Basal	50	50	25	Any complex	50	U-NFCL S-Pragati M-IPL, Paras
	20-25 DAT	25-50	-	-	Any complex	50	
	45-50 DAT (P.I.stage)	25	-	10-15	-	-	

Commonly used fertilizers in paddy

Fertilizer grade	Brand name	No. of farmers using	Percentage
28-28	Gromor	32	53.3
20-20	Gromor/GFC	22	36.6
DAP	GFC/PPL	12	20
14-35-14	Gromor	3	5
Straight	-	14	23.3

(Note: Percentages are total to the sample size 60)

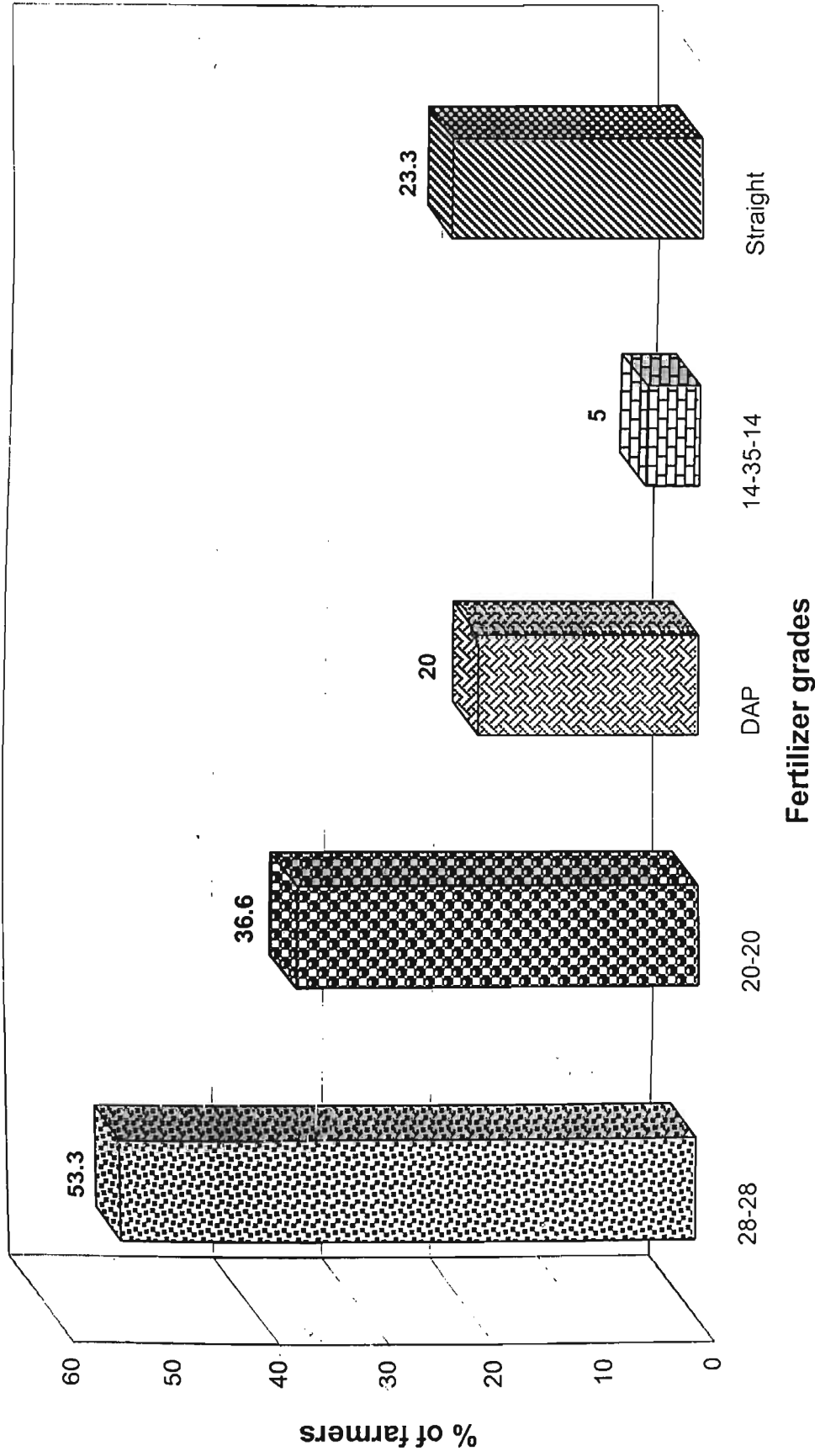


Fig.3.2: Commonly used fertilizers in Paddy crop

20-20

- Increases tillering
- Easily taken by plant
- Less hygroscopic nature
- Easily applied by broadcasting
- Low priced complex fertilizer

14-35-14

- Contains N, P and K
- Improves the tillering
- Improves filled grains/panicle
- Increases the yield
- No caking

About 23.3% of farmers were using straight fertilizers like Urea, SSP and MOP because of low price per bag of straight fertilizers and also as they were available easily in the market.

3.1.3 Groundnut crop**3.1.3.1 Fertilizer usage pattern:**

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.4 and fig.3.3.

As it is evident from the table, as basal 25 kg Urea, 50 kg SSP and 25 kg MOP or any complex fertilizer @ 50 kg per acre was applied in groundnut. Some farmers applied 25 kg urea per acre at 30 days after sowing i.e., flowering stage.

Table 3.4 Fertilizer usage pattern in Groundnut

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Kharif	Basal	25	50	25	Any complex	50	U-NFCL S-Pragati M-IPL, Paras
	30 DAS	25	-	-	-	-	U-NFCL

Commonly used fertilizers in Groundnut

Fertilizer grade	Brand name	No. of farmers using	Percentage
20-20	Gromor	16	53.3
14-35-14	Gromor	6	20
28-28	Gromor	4	13.3
DAP	GFC,PPL	5	16.6
Straight	-	9	30

(Note: Percentages are total to the sample size 30)

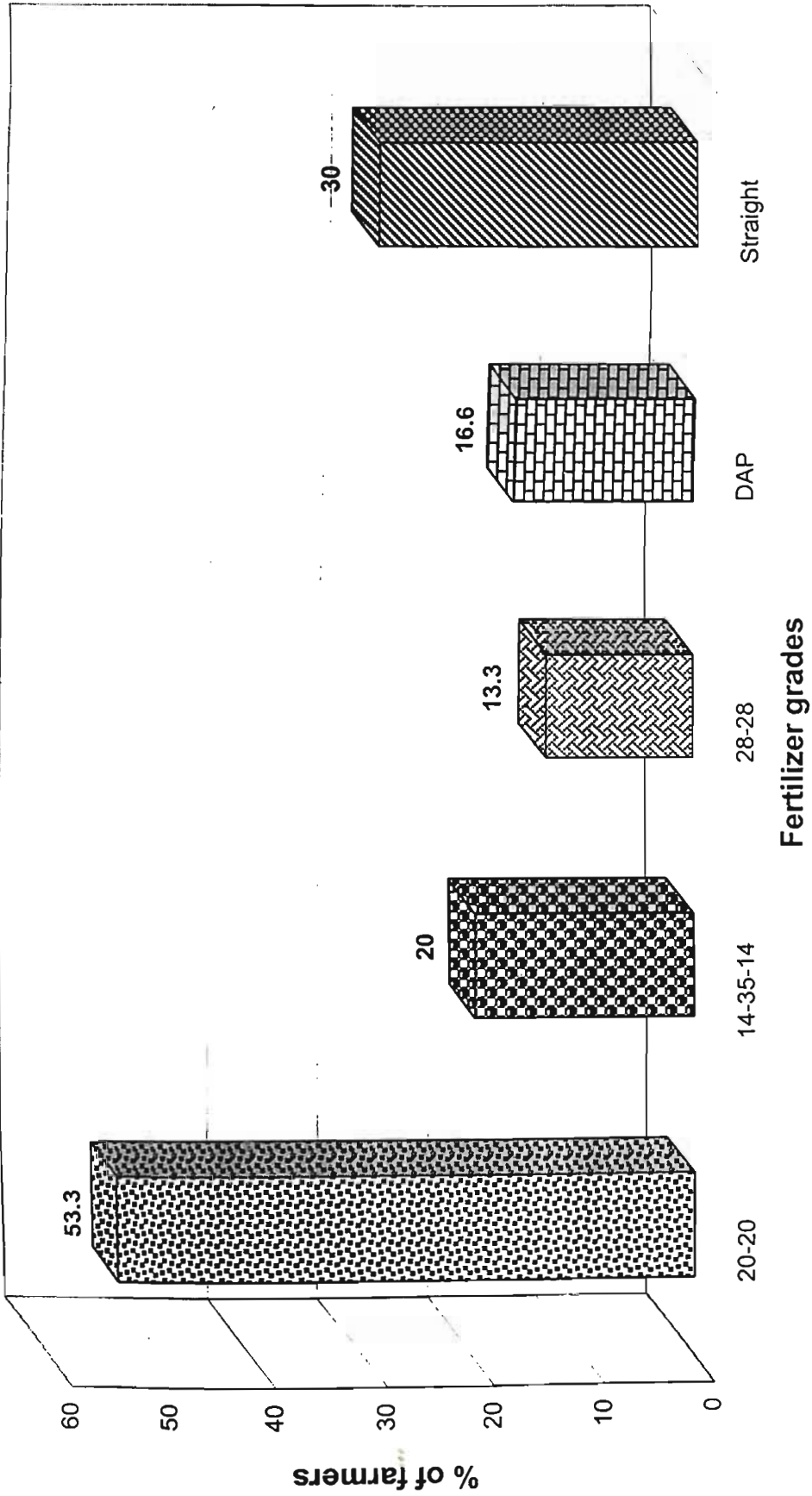


Fig.3.3: Commonly used fertilizers in Groundnut crop

Among the complex fertilizers Gromor 20-20 usage was the highest (53.3%) followed by Gromor 14-35-14 (20%), and DAP (16.6%). The usage of Gromor 28-29 was the lowest (13.3%).

Perception about various fertilizer grades

20-20

- Contains sulphur which is required for increasing oil content
- Increases the flowering
- Less hygroscopic
- Easy application
- Low priced complex fertilizer (ie., price per bag)

14-35-14

- Improves the flowering and branching
- Higher yields
- No, caking

DAP

- Increases the flowering
- High price per bag
- Timely available

28-28

- Increases the growth
- Improves the flowering
- High price per bag
- Timely not available

About 30% of the farmers were using straight fertilizers ie., Urea, SSP and MOP because of less price per bag and also as they were available easily in the market.

3.1.4. Basis for applying fertilizer dosages

The basis for applying fertilizer dosages are presented in Table 3.5 and Fig 3.4.

Table 3.5: Basis for applying fertilizer dosages

Basis	No. of farmers	Percentage
As per the recommendation of scientists or AO's	18	12
Based on soil testing	-	-
Past experience	141	94
Following other progressive farmers	66	44
Dealer's advice	93	62

(Note: Percentages are total to the sample size 150)

From the table it can be inferred that, about 94% of farmers were applying fertilizer dosages based on their past experience, which was followed by dealer's advice (62%), following other progressive farmers (44%) and recommendations of A.O. (12%). Nobody were applying fertilizer dosages based on soil testing.

3.1.5 Criteria for selection of a particular brand of fertilizer

The criteria for selection of a particular brand of fertilizer is presented in table 3.6 and fig.3.5.

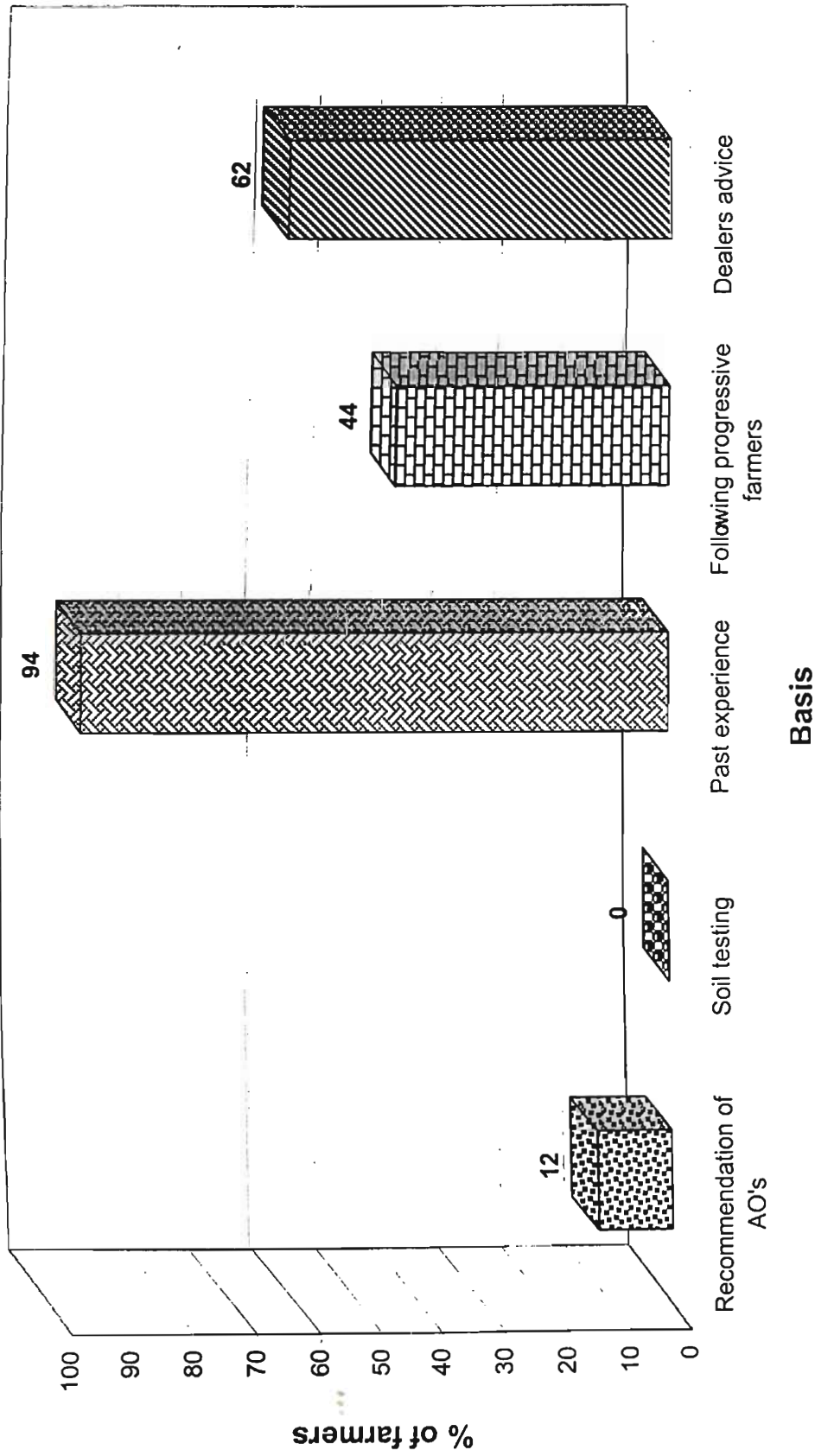


Fig.3.4: Basis for applying fertilizer dosages

Table 3.6: Basis for selecting a particular brand of fertilizer

Criteria	No. of farmers	Percentage
Dealer's advice	96	64
Other farmer's suggestions	63	42
Crop requirement	15	10
Lower price/bag	84	56
Brand image	39	26
Past experience	117	78
Timely availability	54	36

(Note: Percentages are total to the sample size 150)

From the above table it is noticed that about 78% of farmers were selecting brand based on their past experience, which was followed by dealers advice (64%), lower price/bag (56%) other farmers suggestions (42%) and timely availability (36%). Only 26% of farmers selecting brand based on brand image and 10% by crop requirement.

3.1.6 Awareness about Gromor brand

Awareness about various brands are presented in table 3.7 and fig. 3.6.

Table 3.7 Awareness about various brands of complex fertilizers

Brand	No. of farmers aware	Percentage
Gromor	84	56
Godavari	93	62
Vijay	72	48
PPL	60	40

(Note: Percentages are total to the sample size 150)

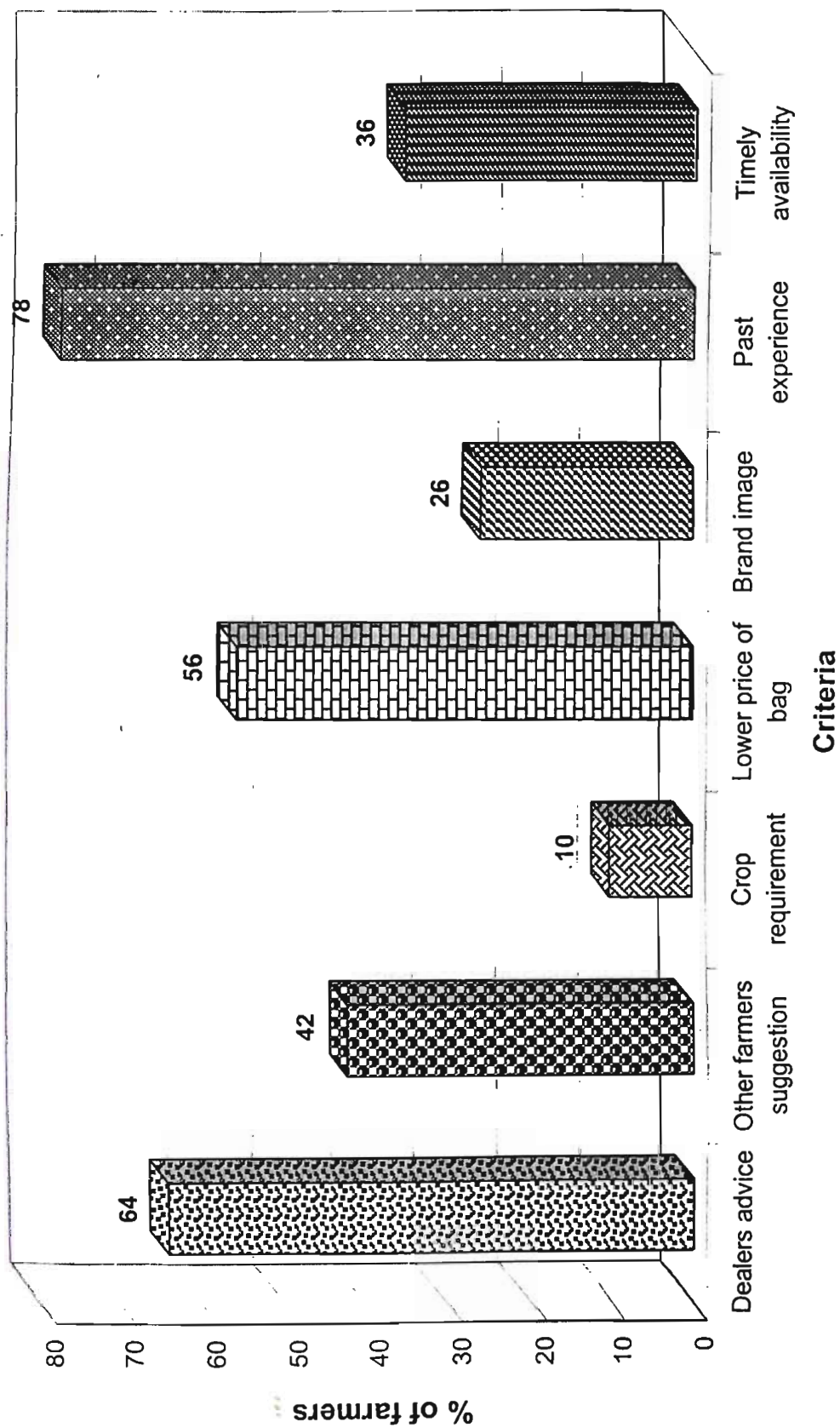


Fig.3.5: Criteria for selecting a particular brand of fertilizer

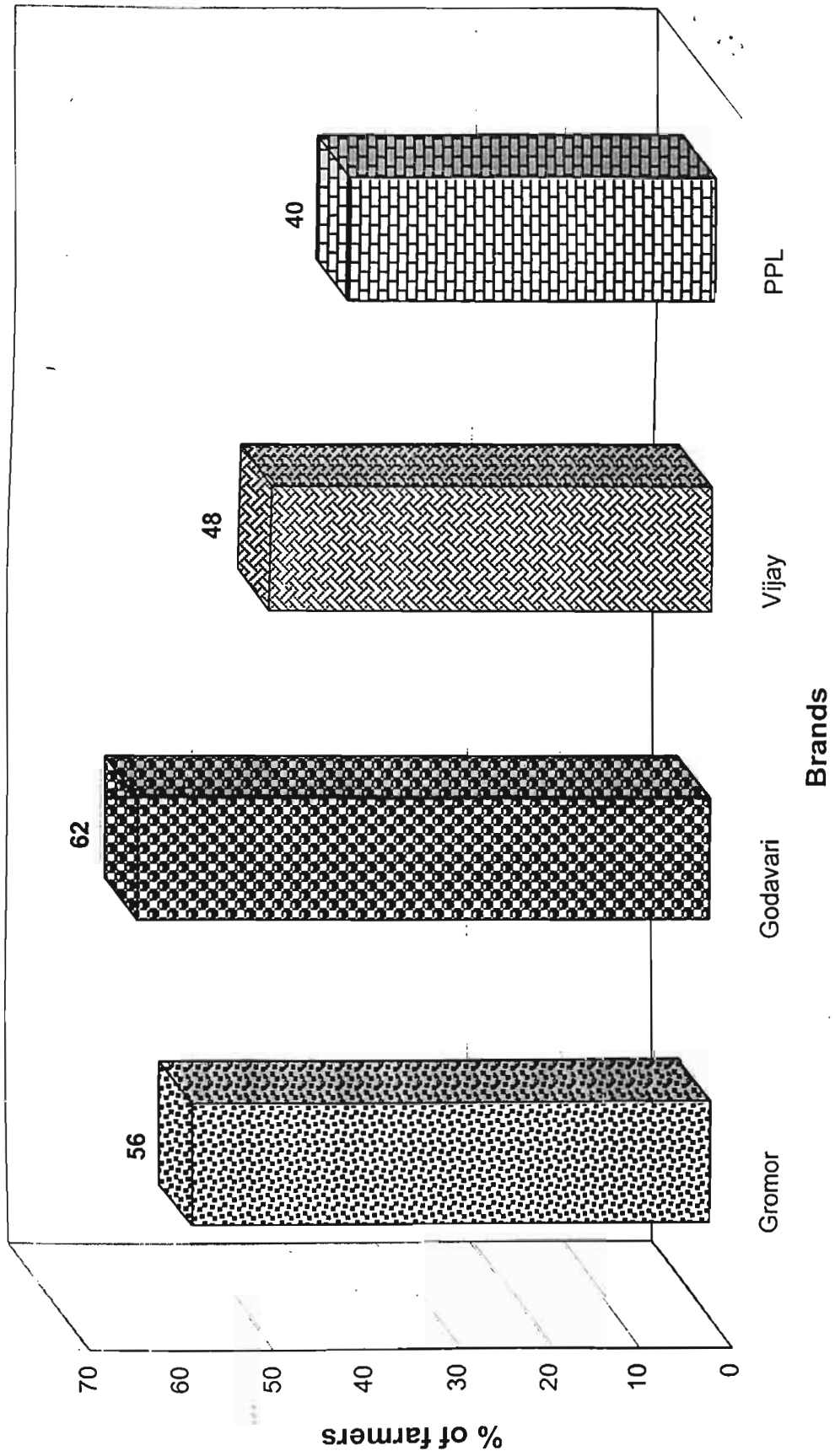


Fig.3.6: Awareness about different brands

It is clear from above table, that about 56% of the farmers were aware about Gromor brand and only 42% of farmers were aware about Gromor 14-35-14. Nearly 62% of the farmers were aware about Godavari brand and 48% of the farmers were aware of Vijay brand. Further, only 40% of the farmers were aware of PPL brand.

3.1.7. Reasons for using other brands of fertilizers

The reasons for using other brands of fertilizers were presented in table 3.8 and fig. 3.7.

Table 3.8 Reason for using other grades

Reason	No.of farmers	Percentage
Less price per bag	63	42
Credit facility	84	56
Brand image	42	28
Only grade available with the dealer	54	36
Timely availability	60	40
Other reason	27	18

(Note: Percentages are total to the sample size 150)

From the table it is inferred that about 56% of the farmers were using other grades due to credit facility being offered which was followed by less unit cost of the bag (42%), timely availability (40%), only grade being available with the dealer (36%) and brand image (28%).

3.1.8: Effective and convenient mass media

The details about the most effective and convenient mass media is presented in table 3.9 and fig. 3.8.

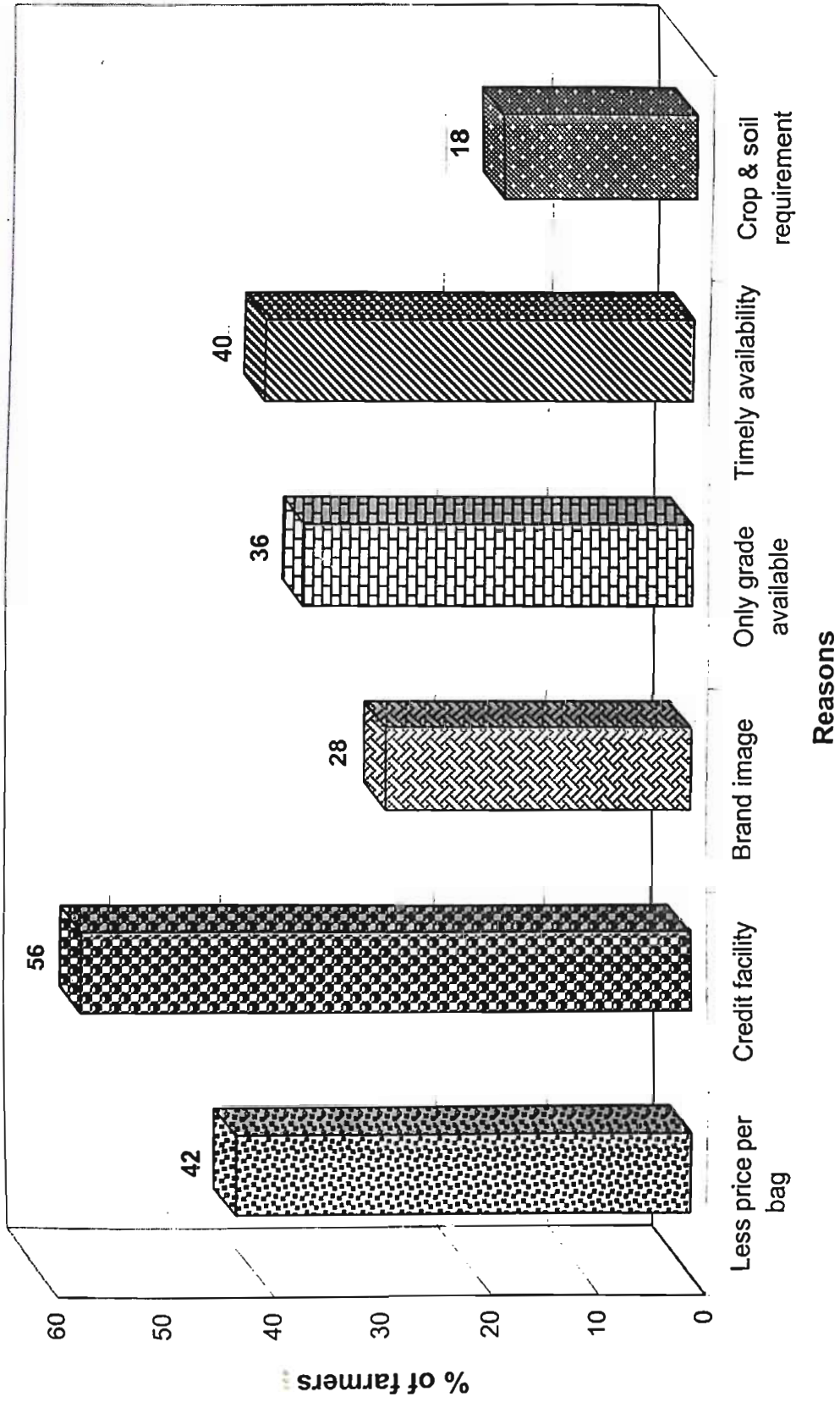


Fig.3.7: Reasons for using other I

Table 3.9 Most effective and convenient mass media

Mass Media	No. of farmers	Percentage
Television	138	92
Radio	12	8
News paper	39	26

(Note: Percentages are total to the sample size 150)

As could be seen from the table, about 92% of the farmers were watch TV channels like ETV, Gemini and DD1 and 26% of the farmers read news papers like Eenadu, Vaartha and Andhra Bhoomi. Only 8% of the farmers listen radio programmes like morning news and songs.

3.1.9 Effective promotional programmes

The most effective promotional programmes at village level are presented in table 3.10 and fig. 3.9

Table 3.10 Most effective promotional programmes at village level

Promotion programme	No. of farmers	Percentage
Farmer's meetings	54	36
Demos	30	20
Burrakathas	81	54
Audio-visual vans	75	50
Posters and hand bills and print media	69	46
Kisan melas and exhibitions	24	16

(Note: Percentages are total to the sample size 150)

From the table, it is evident that, about 54% of the farmers were interested in Burrakathas which was followed by Audio-visual vans (50%),

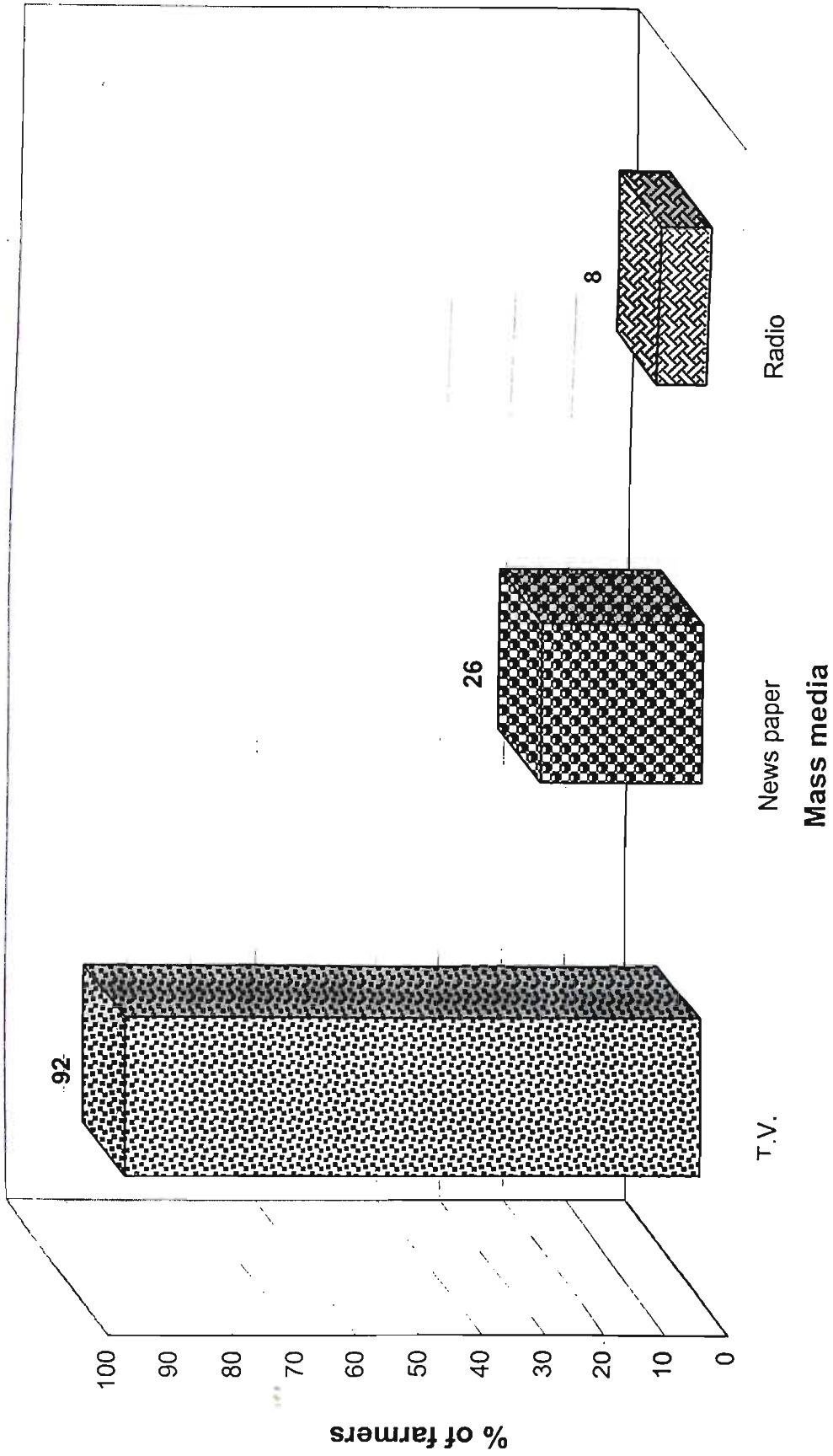


Fig.3.8: Most effective and convenient mass media

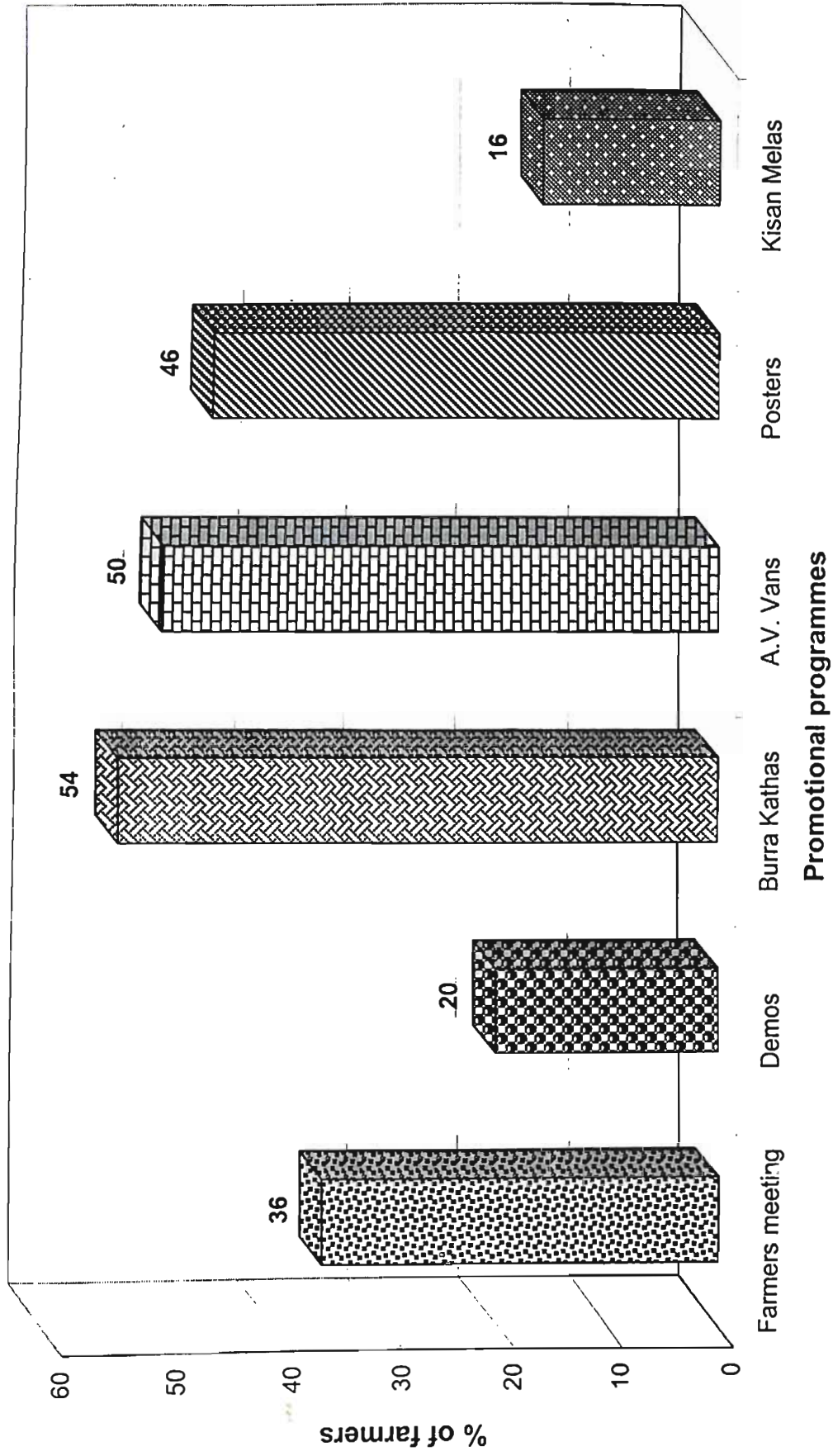


Fig.3.9: Most effective promotional programmes

posters (46%), farmers meeting (36%) and demos (26%). Only about 16% of the farmers were interested in Kisan melas and exhibitions.

3.1.10 Opinion on price of Gromor 14-35-14

Opinion on price of Gromor-14-35-14 is presented in table 3.11 and fig.

3.10.

Table 3.11 Opinion on price of Gromor 14-35-14

Opinion	No. of farmers	Percentage
High	84	56
Satisfactory	66	44

(Note: Percentages are total to the sample size 150)

From the table it is unearthed that about 56% of the farmers opined that the price of Gromor 14-35-14 was high and 44% felt that it was satisfactory.

3.1.11 Mode of purchase of fertilizers

The mode of purchasing fertilizers are presented in table 3.12 and fig.3.11.

Table 3.12 Mode of purchase of fertilizers

Mode of payment	No. of farmers	Percentage
Cash	54	36
Credit	96	64

(Note: Percentages are total to the sample size 150)

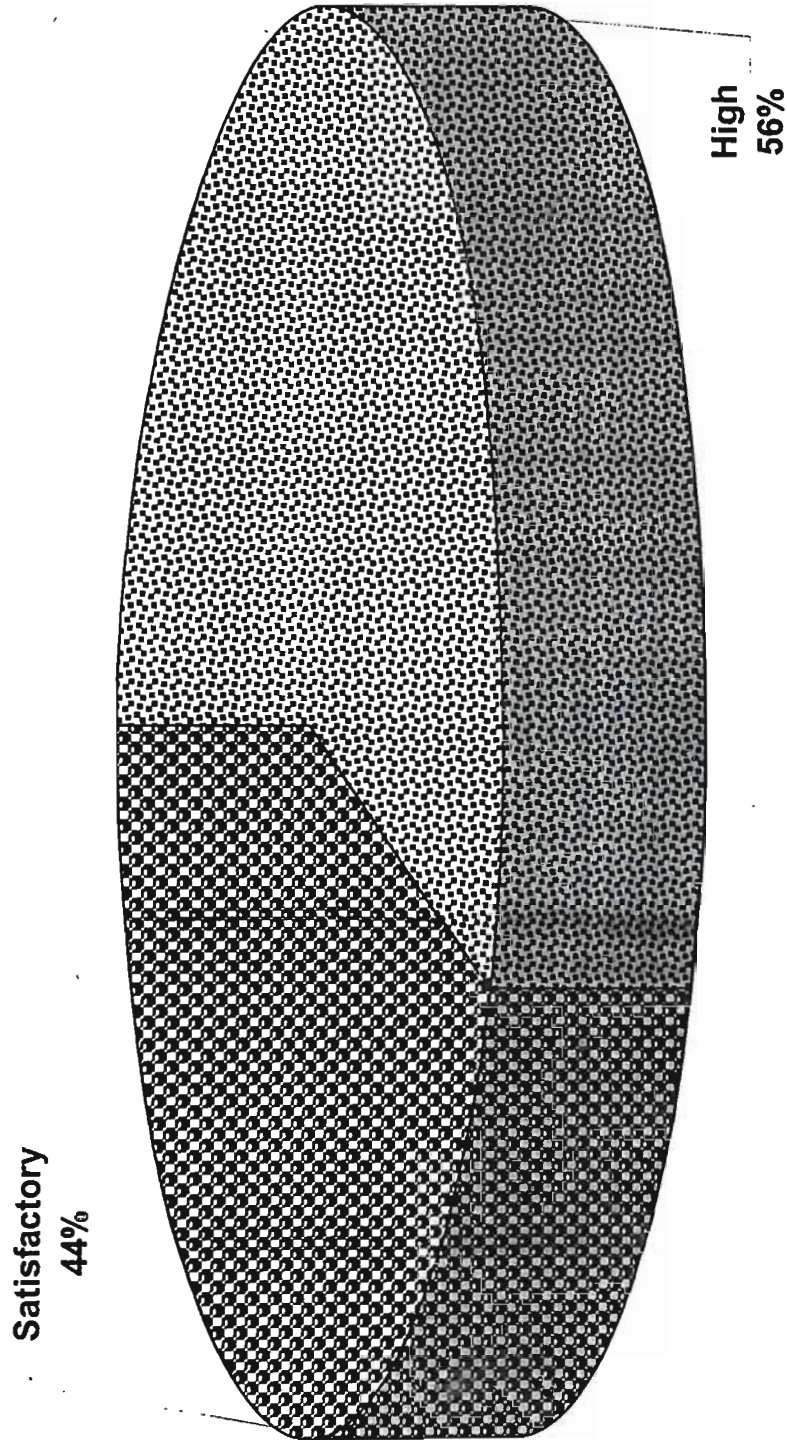


Fig. 3.10: Opinion on price of Gromor 14-35-14

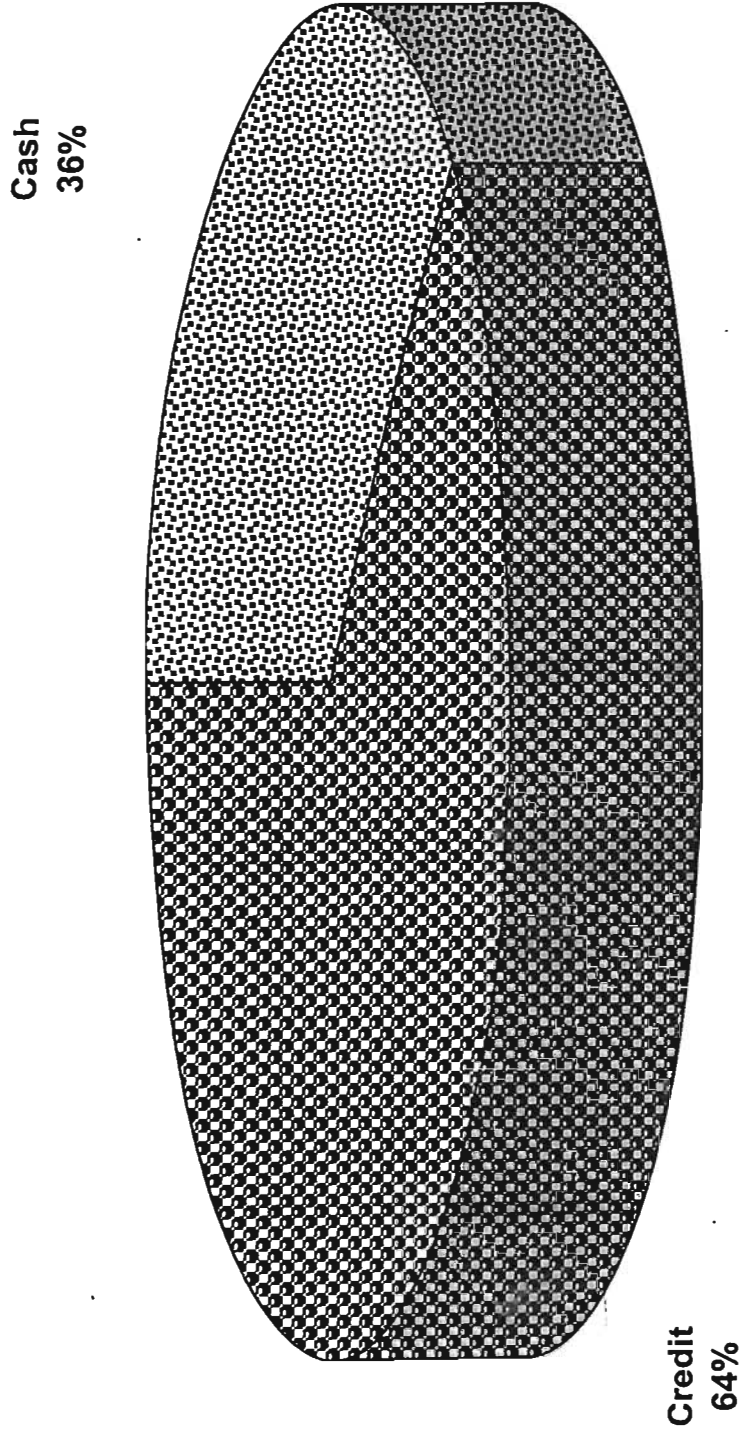


Fig. 3.11: Mode of purchase of fertilizers

From the above table it is evident that, about 64% of the farmers were purchasing fertilizers on credit basis and remaining 36% on cash basis.

3.1.12 Repayment period

The repayment periods for credit purchase is presented in table 3.13 and fig.3.12.

Table 3.13 Repayment period

Repayment period	No. of farmers	Percentage
One week	12	8
One month	36	24
After harvest	102	68

(Note: Percentages are total to the sample size 150)

From the above table it is noticed that about 68% of the farmers repay the credit after the harvest of crop and 24% of the farmers repay the credit within one month after purchasing fertilizers. Only 8% of the farmers make the repayment within one week.

3.1.13 Interest rates

No interest was charged by dealers if repayment was made within a week or one month. If the repayment is extended further an interest rate of 24-30% is charged. The dealers also charge Rs. 10-15 /- extra per bag on credit purchase.

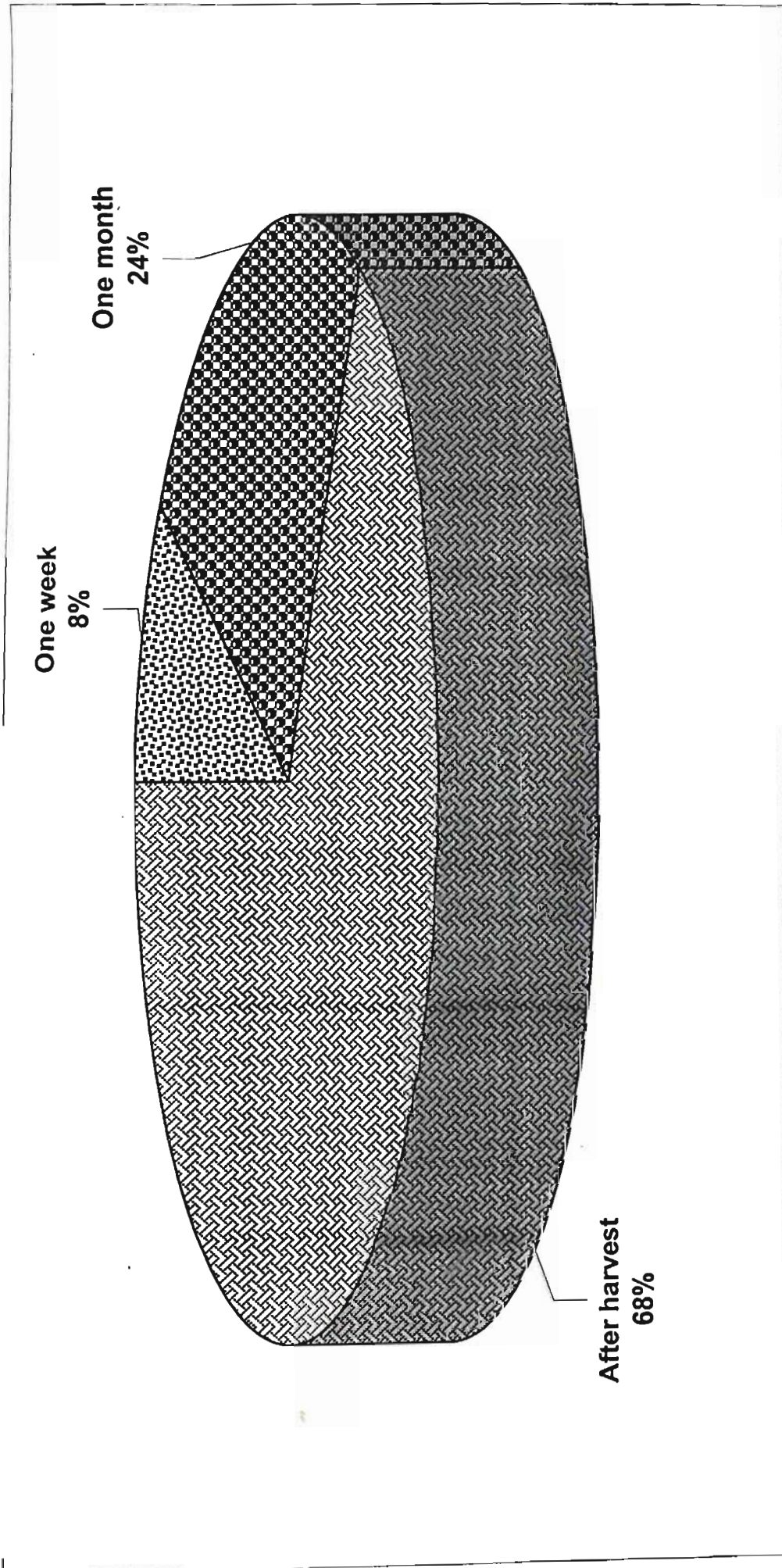


Fig. 3.12: Repayment period for credit purchase

3.2 EAST GODAVARI DISTRICT

The major markets covered in this district are Ravulapalem, Amalapuram and Mandapeta. The major crops and villages surveyed are presented in table 3.14.

Table 3.14 Major markets, crops and villages covered in East Godavari district.

Market	Crop	Village	Mandal
Ravulapalem	Banana	Kammarajulanka	Ravulapalem
	Yam	Mandapalli	Kothapeta
	Turmeric	Vaddiparru	Athrayapuram
		Ryali	Atharayapuram
		Devarapalli	Ravulapalem
		Vedireswaram	Ravulapalem
Mandapeta	Paddy	Yedidha	Mandapeta
		Maredubaka	Mandapeta
		Madhukar	Alamuru
		Gummileru	Alamuru
Amalapuram	Coconut	Pulletikurru	Ambajipeta
	Paddy	Mukkamala	Ambajipeta
		Nandanuru	Inapalli
		Ambajipeta	Ambajipeta
		Bandarulanka	Amalapuram

3.2.1 Banana crop:

3.2.1.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.15 and fig. 3.13.

Table 3.15 Fertilizer usage pattern in Banana

Season	Time of application	Fertilizer applied kg/acre						Method of application	Brand
		Urea	SSP	MOP	Complex	Quantity	Quantity		
April-Aug	30 DAP	50	-	-	Any complex	100	100	Applied inholes and covered with soil	U-NFCL
	60 DAP	50	-	-	Any complex	100	100	"	
	90 DAP	50	-	-	Any complex	100	100	"	
	120 DAP	100	-	-	Any complex	150	150	"	
	150 DAP	100	-	-	Any complex	150	150	"	
	180 DAP	100	-	-	Any complex	150	150	"	
	After emergence of bunch	A/S 100	-	50	-	-	-	"	Raja/FACT Pushkala IPL/paras

Commonly used fertilizers in Banana

Fertilizer grade	Brand name	No. of farmers using	Percentage
20-20	Fact/Gromor/GFC	38	95
14-35-14	Gromor	32	80
17-17-17	Vijay	32	80
19-19-19	Jaikisan	32	80
DAP	GFC/PPL/SPIC	30	75
28-28	Gromor	26	65
A/S	FACT/Puskala/Raja	40	100

(Note: Percentages are total to the sample size 40)

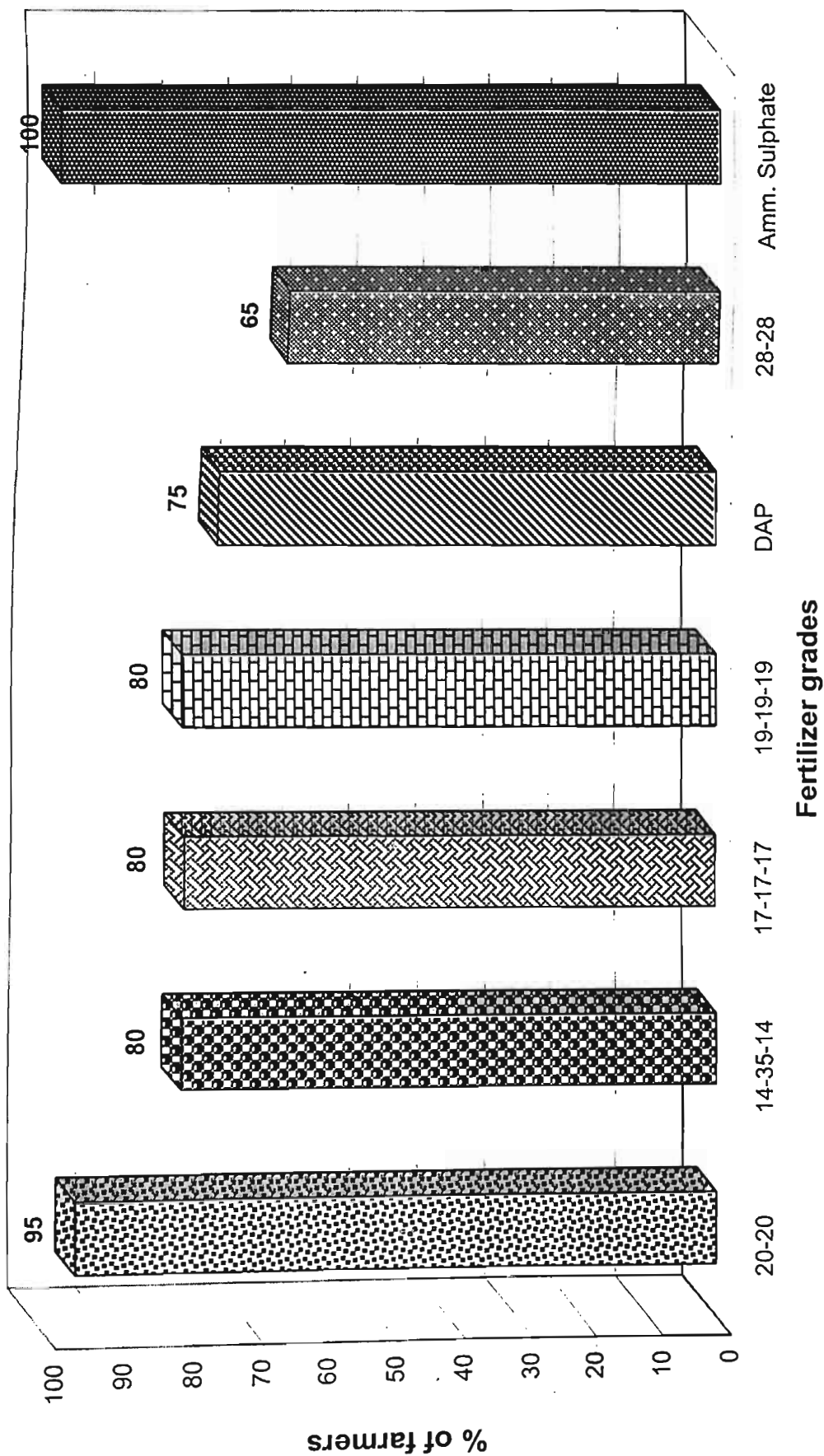


Fig.3.13: Commonly used fertilizers in Banana crop

From the table it reveals that at every monthly interval farmers were applying 100 kg of complex fertilizers and 50 kg Urea upto 90 DAP after that they were applying 150 kg of complex fertilizer and 100 kg Urea upto 180 DAP. After emergence of bunch farmers applied ammonium sulphate @ 100 kg and 50 kg MOP per acre.

Among complex fertilizers the usage of 20-20 was the highest (95%), followed by 14-35-14 (80%), 17-17-17 (80%), 19-19-19 (80%), DAP (75%) and 28-28 (65%). Every time farmers keep changing the grade because they think that the same grade may not be effective if applied successively. The usage of 20-20 was more because at times farmers were applying FACT brand alternating with Gromor brand.

Perception about various fertilizer grades

20-20

- Improves the growth of plant
- Increases the size of stem
- Contains sulphur which improves the quality of the fruits
- Low priced complex fertilizer ie., price per bag
- Less hygroscopic

14-35-14

- Contain all 3 major nutrient ie., N P and K
- Increases the size of stem
- Improves the yield and bunch size
- Improves disease resistance
- No caking

17-17-17

- Contain all 3 major nutrients ie, N,P and K
- Increases the size of stem
- Increases the growth of plant
- Improves disease resistance

19-19-19

- Contain all 3 major nutrients ie, N, P and K
- Increases the size of stem
- Increases the growth
- Improves disease resistance

DAP

- Increases the size of stem
- Facilitates quick establishment
- Increases the shoot growth
- Timely availability

28-28

- Facilitates quick establishment
- Increases the root growth
- Increases the size of stem
- Does not require urea application

3.2.2 Yam crop**3.2.2.1 Fertilizer usage pattern**

The details of fertilizer usage pattern and commonly used fertilizer grades is presented in table 3.16 and fig. 3.14.

Table 3.16 Fertilizer usage pattern in Yam

Season	Time of applica- tion	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
May- June Or Nov.- Dec.	40 DAP	50	-	-	Any complex	100	NFCL/Vijay
	80 DAP	50	-	-	Any complex	100	NFCL/Vijay
	120 DAP	A/S 100	-	50			Raja/FACT IPL/paras

Commonly used fertilizers in Yam

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	14	46.6
20-20	Gromor/FACT	9	30
17-17-17	Vijay	9	30
DAP	GFC/SPIC/PPL	7	23.3
A/S	Raja/FACT	30	100

Note: Percentages are total to the sample size 30)

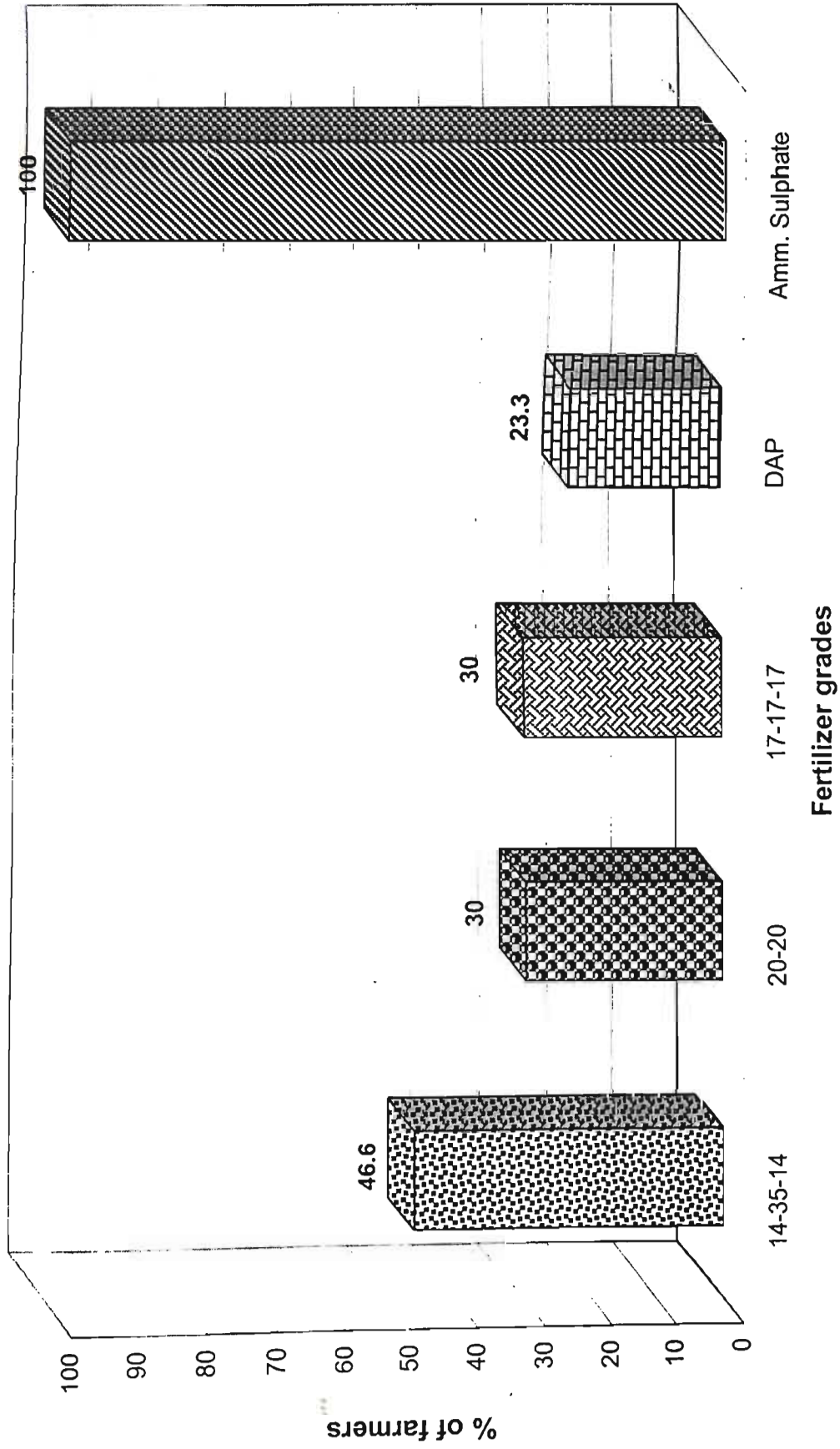


Fig.3.14: Commonly used fertilizers in Yam crop

From the table it is seen that the farmers were applying 100 kg of complex fertilizer and 50 kg urea per acre at 40 and 80 DAT. At 120 DAP farmers were applying ammonium sulphate @ 100 kg and 50 kg MOP per acre.

Among complex fertilizers the usage of 14-35-14 was the highest (46.6%) followed by 20-20 (30%), 17-17-17 (30%) and DAP (23.3%). The Ammonium sulphate usage was 100% because every farmer was using at 120 DAP.

Perception about different fertilizer grades

14-35-14

- Contains all 3 major nutrient ie, N, P and K
- Quick establishment
- Quick root growth
- Increases the weight of rhizome
- Improves disease resistance
- No caking

20-20

- Contains sulphur which improves quality of rhizome
- Improves the yield ie., size of rhizome
- Low price
- Less hygroscopic
- No caking

17-17-17

- Contains 3 major nutrients in equal ratio
- Improves the yield

- Increases the disease resistance
- Medium price ie., price per bag

DAP

- Quick establishment
- Increases the root growth
- Increases the size of the rhizome
- Timely availability

3.2.3 Turmeric crop

3.2.3.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.17 and fig. 3.15.

From the table it is evident that, the farmers were applying 50 kg Urea, 100 kg SSP and 50 kg MOP or complex fertilizer @ 100 kg and 25 kg Urea per acre at 40-50 DAP followed by application of ammonium sulphate @ 100 kg and MOP 50 kg or any complex @ 100 kg per acre at 80-90 DAP.

Among different fertilizer grades the 14-35-14 usage was the highest (66.6%) followed by 20-20 (30%), 17-17-17 (26.6%) and DAP (20%).

Perception about various fertilizer grades

14-35-14

- Contains 3 major nutrients ie., N, P & K
- Quick establishment
- Increases the weight of the rhizome
- Improves the quality at rhizome
- No caking

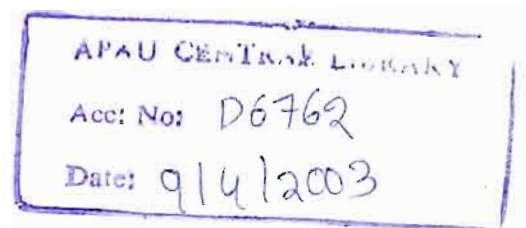


Table 3.17 Fertilizer usage pattern in Turmeric

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
May-June	40-50 DAP	50	100	50	Any complex	100	U-NFCL S-Pragati. A Sugars M-Paras
	80-90 DAP	A/S 100 to 150	-	50	Any complex	100	A/S - FACT/Raja/ Pushkala

Commonly used fertilizers in Turmeric

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	20	66.6
20-20	Gromor/FACT	9	30
17-17-17	Vijay	8	26.6
DAP	GFC/APL/SPIC	6	20
Ammonium sulphate	Raja/FACT/Pushkala	25	83.3

(Note: Percentages are total to the sample size 30)

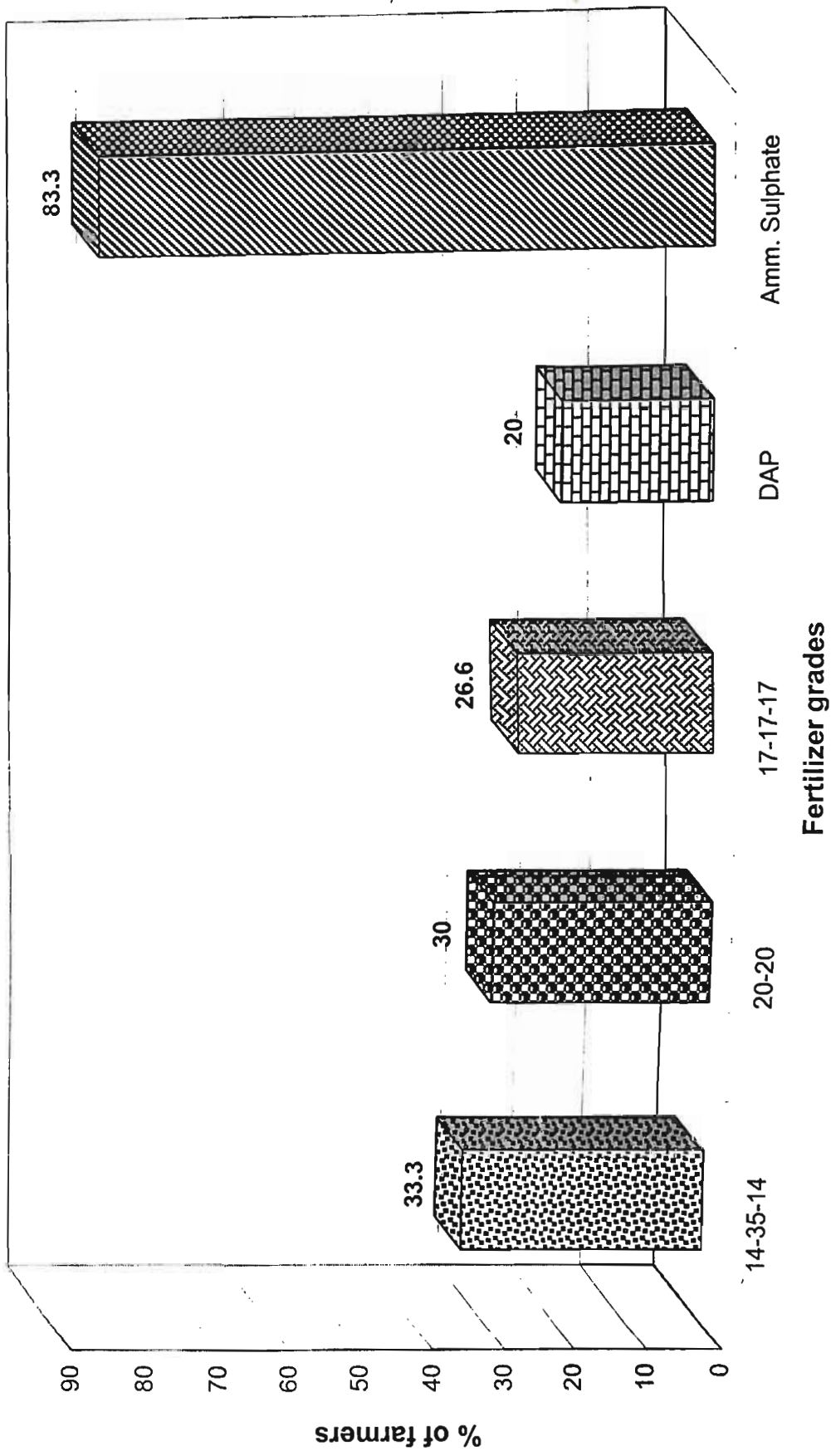


Fig.3.15: Commonly used fertilizers in Turmeric crop

20-20

- Improves the yield ie., size of rhizome
- Quick absorption by roots
- Less hygroscopic
- No caking
- Easy application

17-17-17

- Contains 3 major nutrients in equal ratio
- Increases the size of the rhizome
- Increases the growth

DAP

- Quick establishment
- Increases the root growth
- Increases the size of rhizome
- Timely availability

3.2.4 Coconut crop**3.2.4.1 Fertilizer usage pattern**

The fertilizer usage pattern and commonly used fertilizer grades are presented in the table 3.18 and fig. 3.16.

From the table, it is clear that, for less than 4 years age coconut trees, farmers were applying 1 kg each of Urea, SSP and MOP or 1.5 to 2 kg of complex fertilizer. For above 4 years trees, they were applying 1 kg Urea, 2 kg SSP and 2 kg MOP or 3 kgs of complex fertilizer during rainy season (ie., July to Aug) only once in a year.

Table 3.18 Fertilizer usage pattern in Coconut

Season	Time of application	Fertilizer applied kg/pt					Method of application	Brand
		Urea	SSP	MOP	Complex	Quantity		
<4 years	June-July	1	1	1	Any complex	1.5-2.0	Applied in pan and covered with soil	NFCL A-sugars Paras
>4 years	June-July	1	2-	2	Any complex	3	Applied in pan and covered with soil	NFCL A-sugars Paras

Commonly used fertilizers in Coconut

Fertilizer grade	Brand name	No. of farmers using	Percentage
17-17-17	Vijay	8	26.6
19-19-19	Jaikisan	6	20
20-20	Gromor/FACT	3	10
Straight	-	18	60
No fertilizer	-	3	10

(Note: Percentages are total to the sample size30)

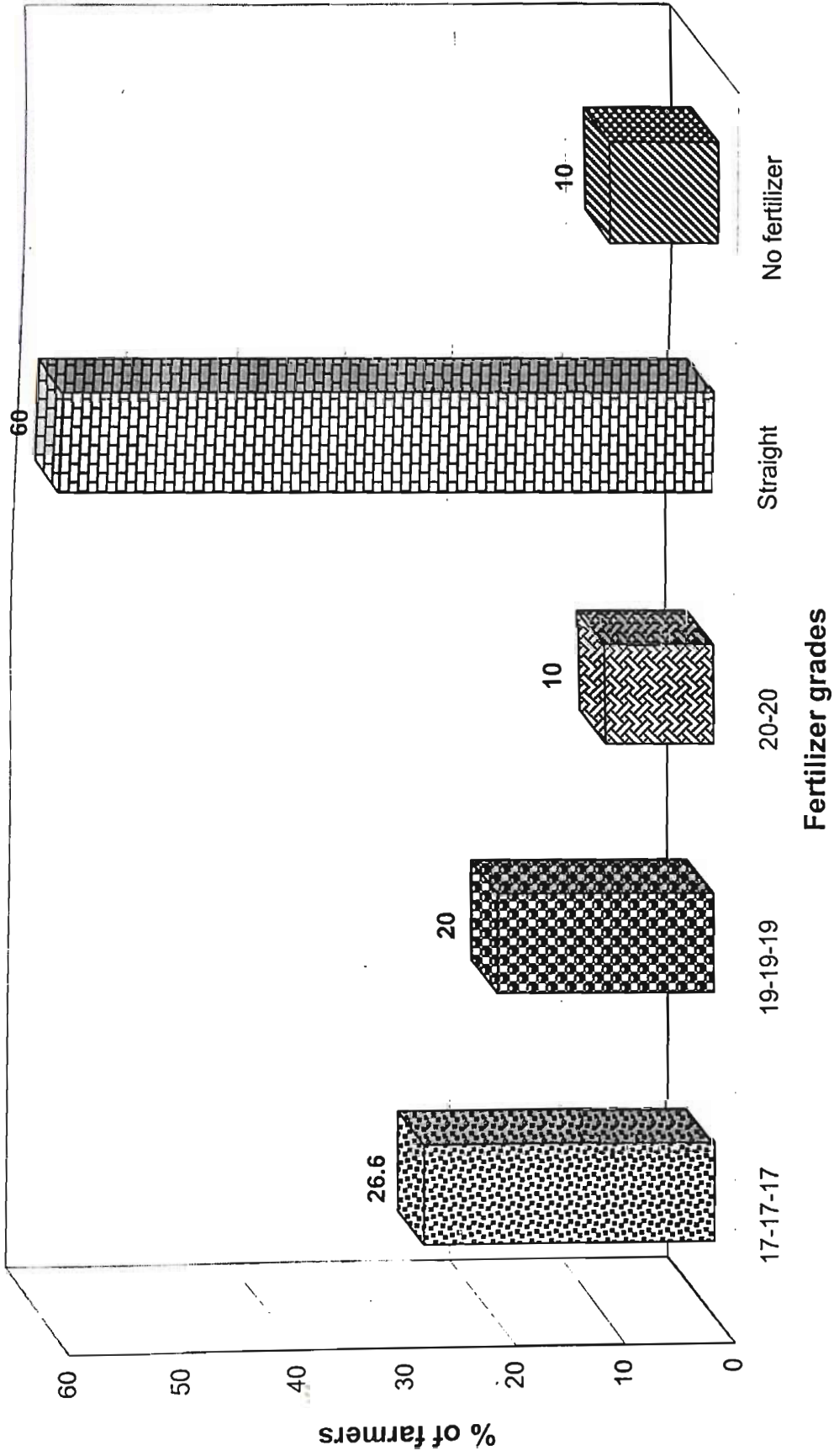


Fig.3.16: Commonly used fertilizers in Coconut crop

Among complex fertilizers 17-17-17 usage was the highest (26.6%) followed by 19-19-19 (20%) and 20-20 (10%).

About 60% of the farmers were using straight fertilizers because more quantity of these fertilizers enable them to spread it uniformly in the basins.

Perception about various fertilizer grades

17-17-17

- Contains all 3 major nutrients ie., N, P & K in equal ratio
- Increases the flowering
- Reduce flower dropping
- Medium price per bag

19-19-19

- Contains all 3 major nutrients ie., N, P&K in equal ratio
- Increases the flowering ie, yield
- Increases the disease resistance

20-20

- Increases the flowering
- Requires MOP application
- Less hygroscopic

3.2.5 Paddy crop

3.2.5.1. Fertilizer usage pattern in *Kharif* Paddy

The details of fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.19 and fig. 3.17.

Table 3.19 Fertilizer usage pattern in *kharif* Paddy

Season	Time of applica- tion	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
<i>Kharif</i>	10-15 DAT	25	50	20	Any complex	50	U-NFCL S-A.Sugars M-Paras
	At P.I stage	25	-	20	-	-	U-NFCL M-IPL

Commonly used fertilizers in *Kharif* Paddy

Fertilizer grade	Brand name	No. of farmers using	Percentage
17-17-17	Vijay	26	37.1
19-19-19	Jaikisan/Vijay	22	31.4
20-20	FACT/Gromor/GFC	20	28.5
28-28	Gromor	12	17.1
14-35-14	Gromor	8	11.4
DAP	GFC/PPL/SPIC	6	8.5
Straight	-	5	7.1

(Note: Percentages are total to the sample size 70)

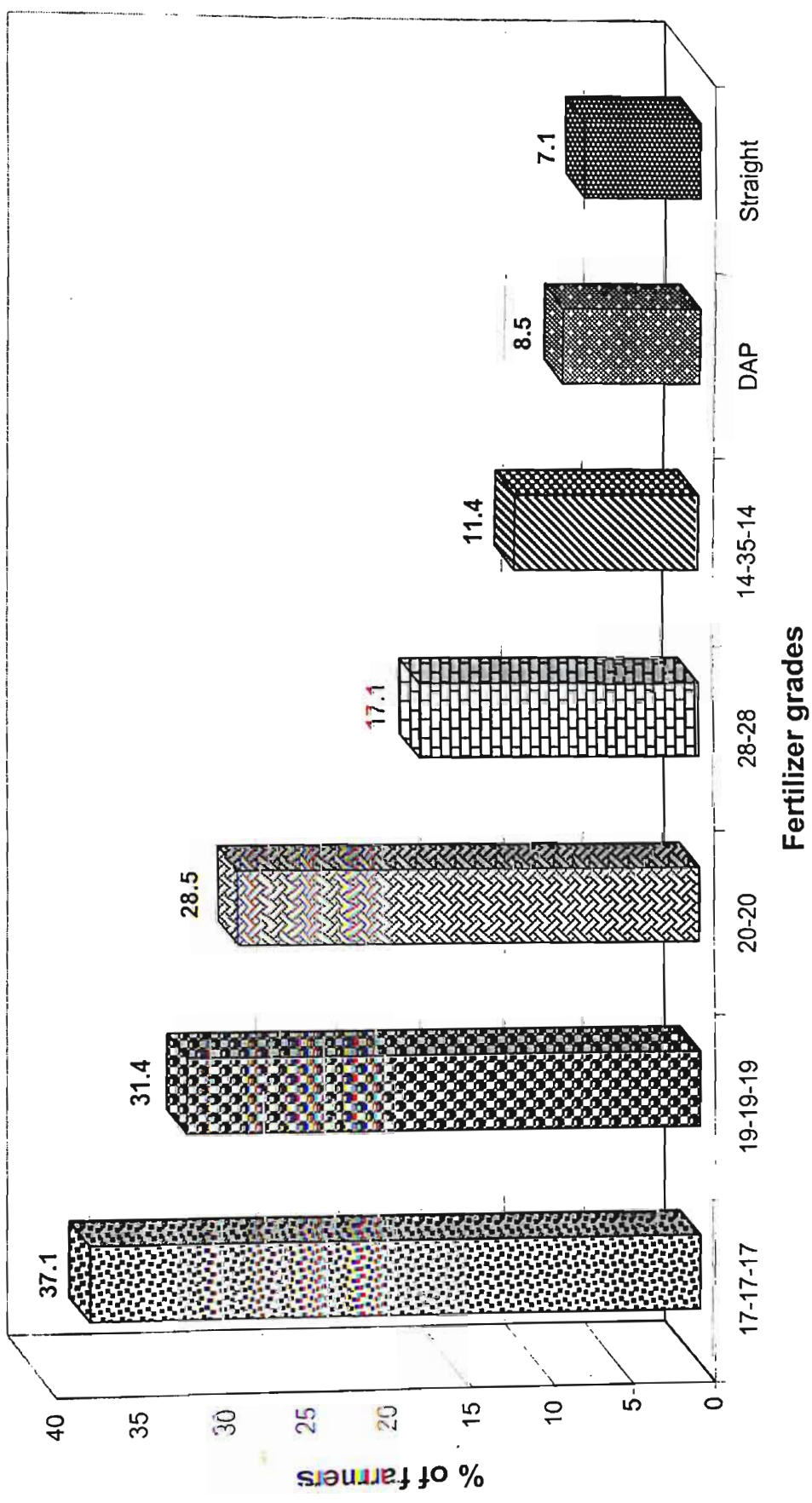


Fig.3.17: Commonly used fertilizers in Kharif Paddy crop

From the table it is clear that, the farmers are applying 25 kg Urea, 50 kg SSP and 20 kg MOP or 50 kg of complex fertilizer per acre at 10-15 DAT. During panicle initiation stage they were applying 25 kg Urea and 20 kg MOP per acre.

Among complex fertilizers usage of 17-17-17 was the highest (37.1%) which was followed by 19-19-19 (31.4%), 20-20 (28.5%), 28-28 (17.1%), 14-35-14 (11.4%) and DAP (8.5%).

3.2.5.2 Fertilizer usage pattern in *Rabi Paddy*

The details of fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.20 and fig. 3.18.

From the table, it is evident that, as basal farmers were applying 50 kg Urea, 100 kg SSP and 25 kg MOP or any complex fertilizer (ie., DAP or 14-35-14) @ 100 kg per acre. At tillering stage (20-25 DAT) farmers were applying 50-100 kg Urea or 100 kg of complex fertilizer. At panicle initiation stage they were applying 25 kg Urea and 20 kg MOP per acre.

Among complex fertilizers the usage of DAP was the highest (51.4%), followed by 14-35-14 (45.7%), 20-20 (25.7%) 28-28 (20%) and 17-17-17 (10%).

Perception about different fertilizer grades

DAP

- Quick establishment of seedlings
- Quick decomposition of previous crop stalks
- Increases the root growth
- Better tillering

Table 3.20 Fertilizer usage pattern in Rabi paddy

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Rabi	Basal	50	100	25	DAP or 14-35-14	100	U-NFCL S-A sugars M-Paras
	20-25 DAT	50-100	-	-	Any complex	100	
	At PI stage	25	-	20	-	-	Broadcasting

Commonly used fertilizers in Rabi paddy

Fertilizer grade	Brand name	No. of farmers using	Percentage
DAP	GFC/PPL/SPIC	36	51.4
14-35-14	Gromor	32	45.7
20-20	FACT/Gromor/GFC	18	25.7
28-28	Gromor	14	20
17-17-17	Vijay	7	10
19-19-19	Jaikisan/Vijay	6	8.5
Straight	-	5	7.1

(Note: Percentages are total to the sample size 70)

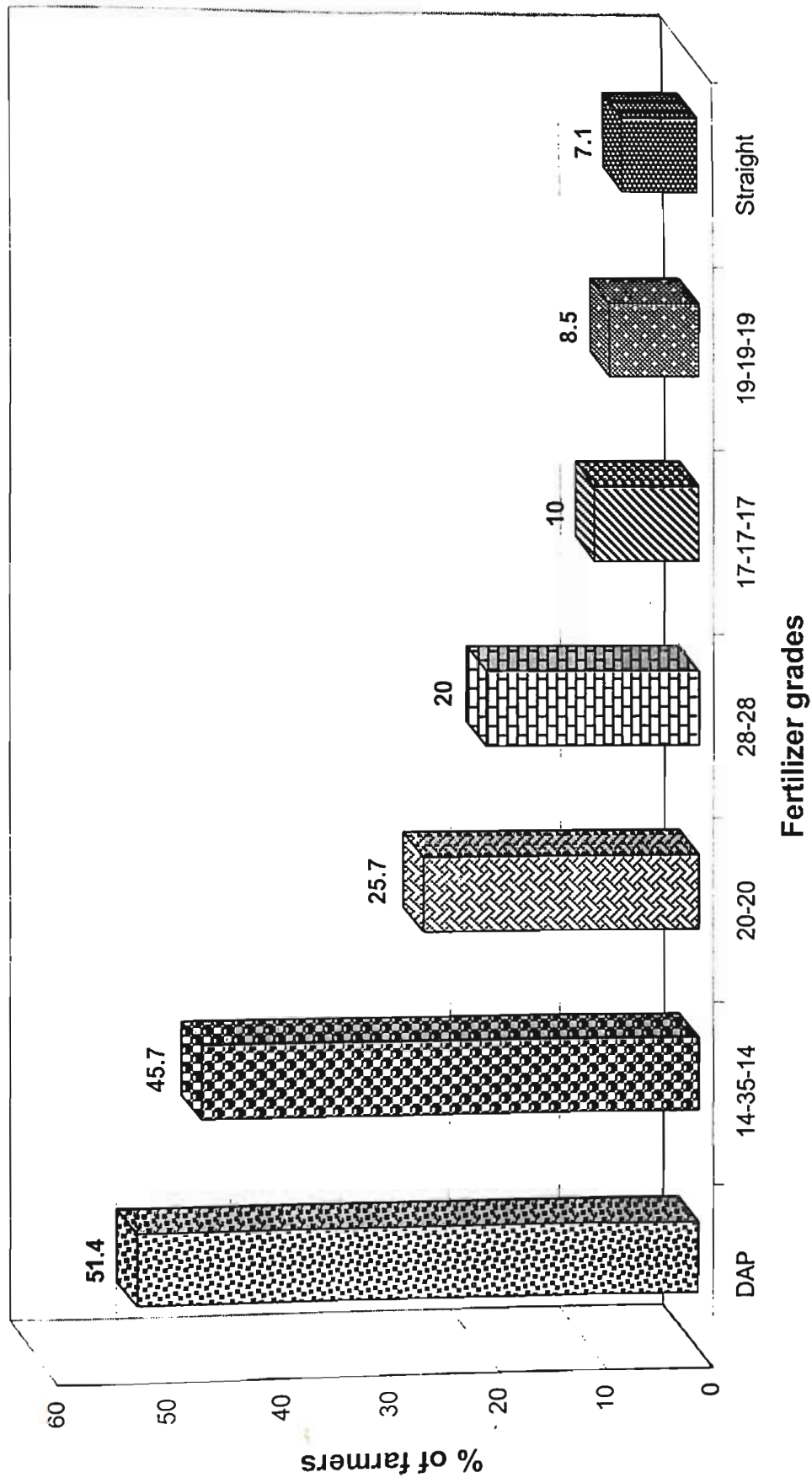


Fig.3.18: Commonly used fertilizers in Rabi Paddy crop

- Higher yields
- Timely availability

14-35-14

- Contains all 3 major nutrients ie., N, P&K
- Quick establishment of seedlings
- Increases the root growth
- Better tillering
- Higher yields
- Increases disease resistance
- No caking

17-17-17

- Containing all 3 major nutrient ie., N, P &K in equal proportions
- Reduces the vegetative growth
- Increases the flowering
- Higher yields
- Improves the disease resistance
- Caking is common

19-19-19

- Contains all 3 major nutrients ie, N, P & K
- Increases the tillering
- Higher yield
- Improves the disease resistance
- Improves quality of grain
- Caking

20-20

- Increases the tillering
- Less hygroscopic
- Easy application
- Less price per bag
- Increases the yield
- No caking

28-28

- Quick establishment of seedlings
- Quick greening because it contain urea.
- Better tillering
- Higher yields
- High price per bag

In *kharif*, farmers were applying less amount of fertilizers compared to *rabi* due to following reasons:

- In *kharif* they grow Swarna variety which is a low fertilizer responsive variety
- Rains are very common and they are of opinion that the fertilizer may be washed out from the field.
- Plant population is less so, it requires less amount of fertilizer
- The river water contain clay particles which serve as a good fertilizer.
- In *rabi*, if they apply higher amount of fertilizers it may have the residual effect in *kharif*.

3.2.6. Basis for applying fertilizer dosages

The basis for applying fertilizer dosages are presented in table 3.21 and fig. 3.19.

Table 3.21 Basis for applying fertilizer dosages

Criteria	No.of farmers	Percentage
As per recommendations of Scientists & AO's	30	20
Based on soil testing	15	10
Past experience	138	92
Following other progressive farmers	42	28
Dealer's advice	54	36

(Note: Percentages are total to the sample size 150)

From the table it is inferred that about 92% of the farmers were applying fertilizers dosages based on their past experience, which was followed by dealers advice (36%), following other progressive farmers (28%) and as per recommendations of Scientists and AO's (20%). Only 10% of farmers will applying fertilizers based on soil testing.

3.2.7 Criteria for selection of a particular brand of fertilizer

The criteria for selecting a particular brand of fertilizer is presented in table 3.22 and fig. 3.20.

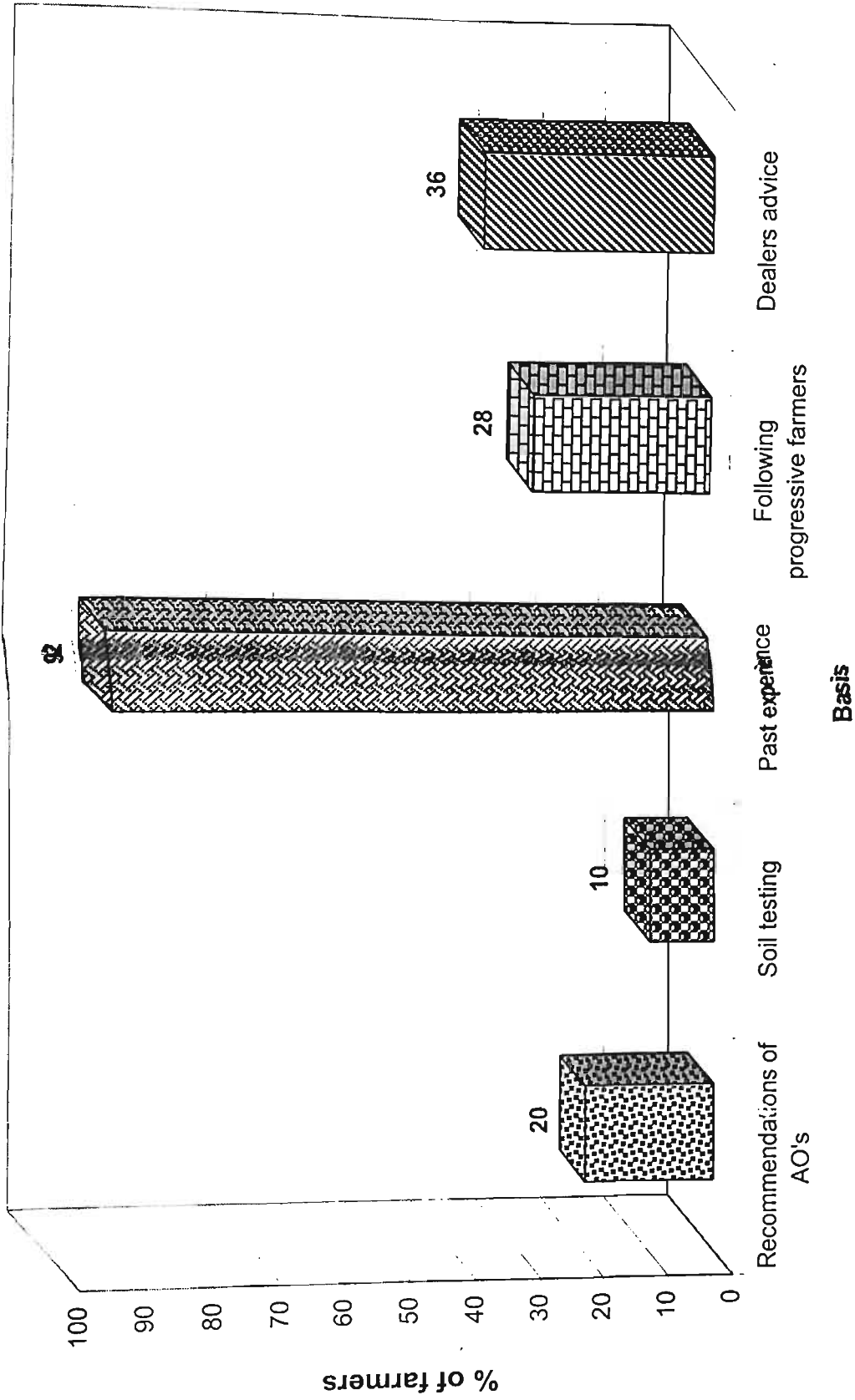


Fig.3.19: Basis for applying fertilizer dosages

Table 3.22 Basis for selecting a particular brand of fertilizer

Criteria	No. of farmers	Percentage
Dealer's advice	72	48
Other farmers suggestions	36	24
Crop requirement	102	68
Lower price / bag	51	34
Brand image	30	20
Past experience	129	86
Timely availability	63	42

(Note: Percentages are total to the sample size 150)

From the table it is evident that, about 86% of the farmers were selecting brand based on their past experience, which was followed by crop requirement (68%), dealer's advice (48%), timely availability (42%) and lower price/bag (34%). Only 20% of farmers go for brand image.

3.2.8 Awareness about Gromor brand

The awareness about different brands is presented in table 3.23 and fig.

3.21.

Table 3.23 Awareness about different brands of complex fertilizers.

Brand	No. of farmers	Percentage
Gromor	96	64
Godavari	114	76
Jaikisan	93	62
Vijay	96	64
SPIC	69	46
FACT	57	38
PPL	54	36

(Note: Percentages are total to the sample size 150)

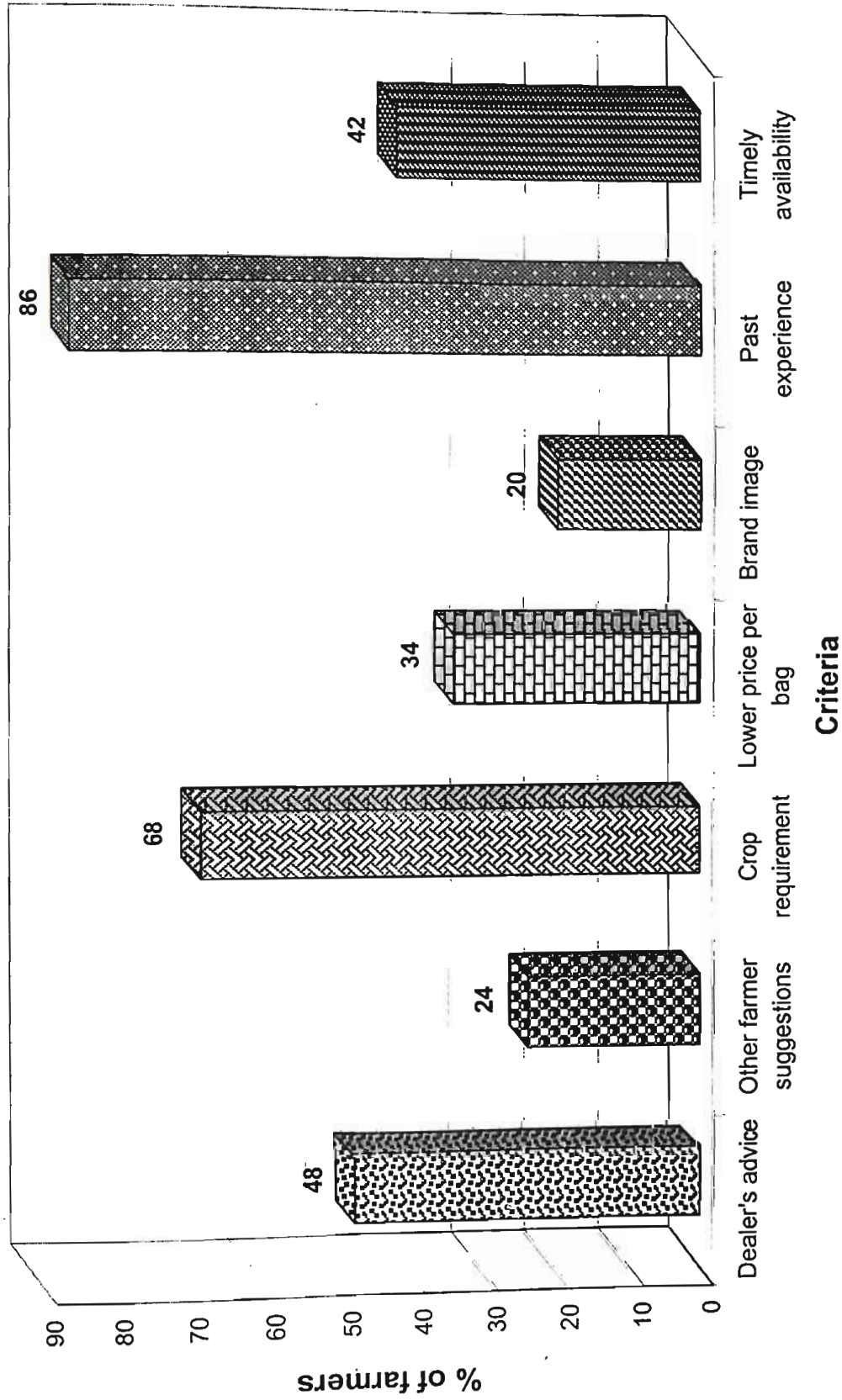


Fig.3.20: Criteria for selecting a particular brand of fertilizer

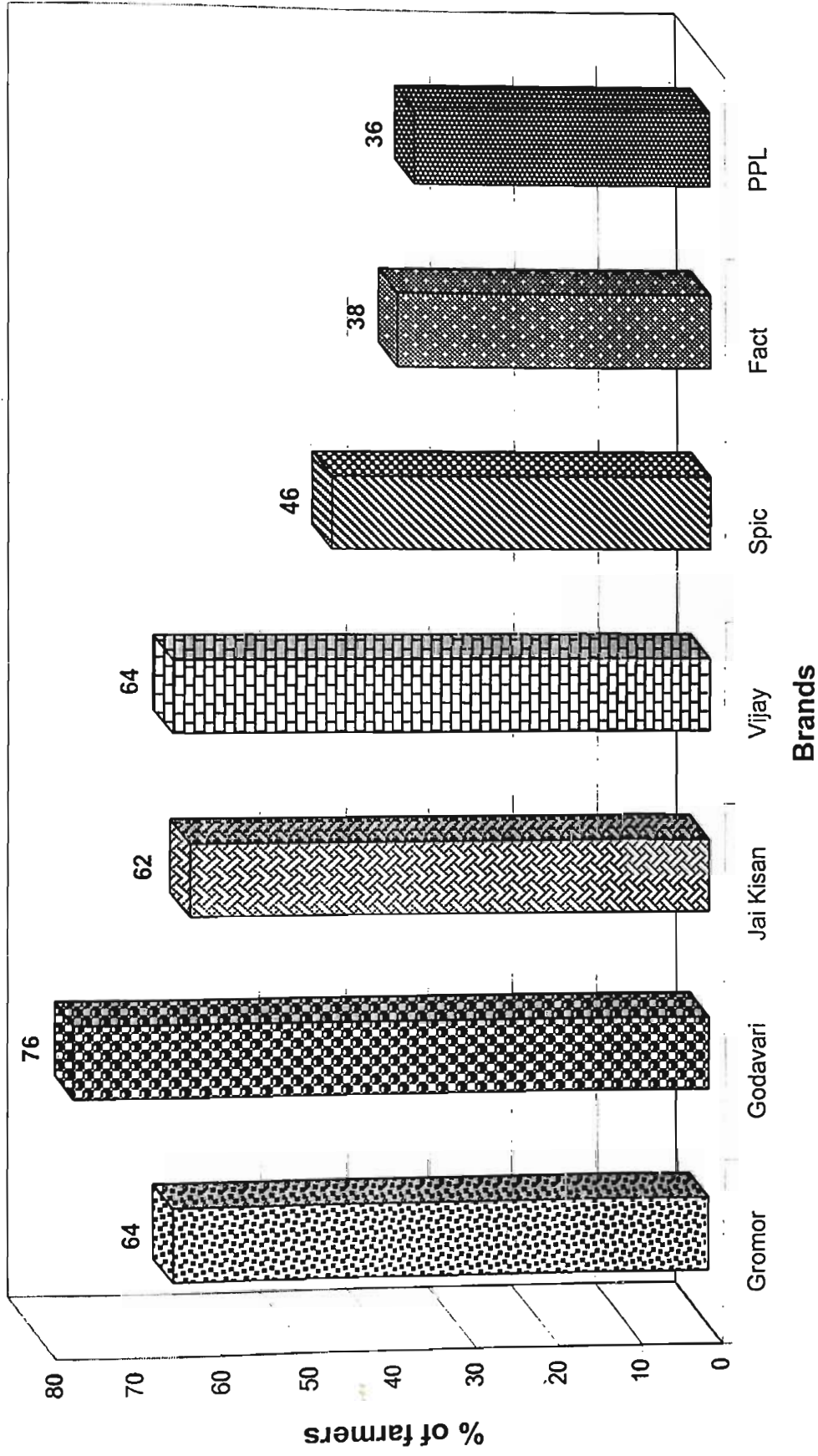


Fig.3.21: Awareness about different brands

From the table it is revealed that, 64% of the farmers were aware of Gromor brand and 53% of farmers were aware about Gromor 14-35-14.

About 76% of the farmers were aware of Godavari brand followed by Vijay (64%), Jai kisan (62%) SPIC (46%) and FACT (38%).

3.2.9 Reasons for using other brands of fertilizers

The reasons for using other brands of fertilizers are presented in table 3.24 and fig 3.22.

Table: 3.24 Reasons for using other brands.

Reason	No. of farmers	Percentage
Less price/bag	54	36
Credit facility	30	20
Brand image	39	26
Only grade available with the dealer	18	12
Timely availability	63	42
Other reasons (suitability of the soil and crop)	102	68

(Note: Percentages are total to the sample size 150)

From the table it is inferred that, about 68% of the farmers were using others brands as they were suitable to the soil and crop and they also think that same grade may not work every time. This was followed by timely availability (42%), less price per bag (36%) and brand image (26%).

3.2.10 Effective and convenient mass media

The most effective and convenient mass media are presented in table 3.25 and fig 3.23.

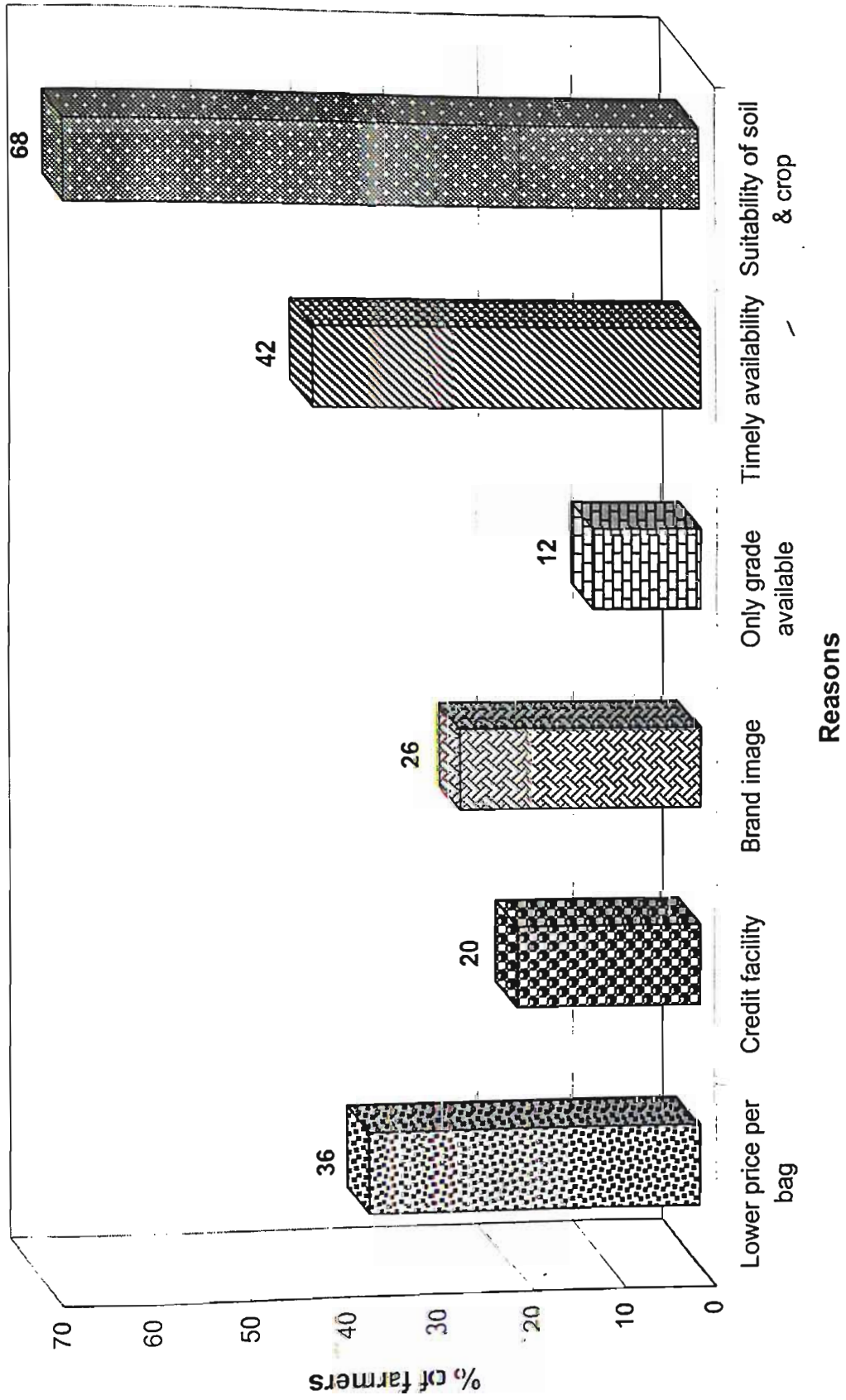


Fig.3.22: Reasons for using other brands

Table 3.25 Most effective and convenient mass media

Mass Media	No .of farmers	Percentage
T.V.	144	96
Radio	6	4
News paper	69	46

(Note: Percentages are total to the sample size150)

As could be seen from the table, about 96% of the farmers watch T.V.channels like ETV, Gemini, Teja and DD1. 46% of the farmers read news papers like Eenadu, Vaartha, Andhra Jyothi and Andhra Bhoomi. Only 4% of the farmers listen radio programmes like news and agricultural suggestions and weather report.

3.2.11 Effective promotional programmes

The most effective promotional programmes at village level are presented in table 3.26 and fig 3.24.

Table 3.26 Effective promotional programmes at village level.

Promotional Programme	No. of farmers	Percentage
Farmers meetings	48	32
Demos	78	52
Burrakathas	24	16
A.V.Vans	63	42
Posters	69	46
Kisan Melas	57	38

(Note: Percentages are total to the sample size150)

From the table it is noticed that, about 52% of the farmers were interested in Demonstrations which was followed by Posters, hand bills and

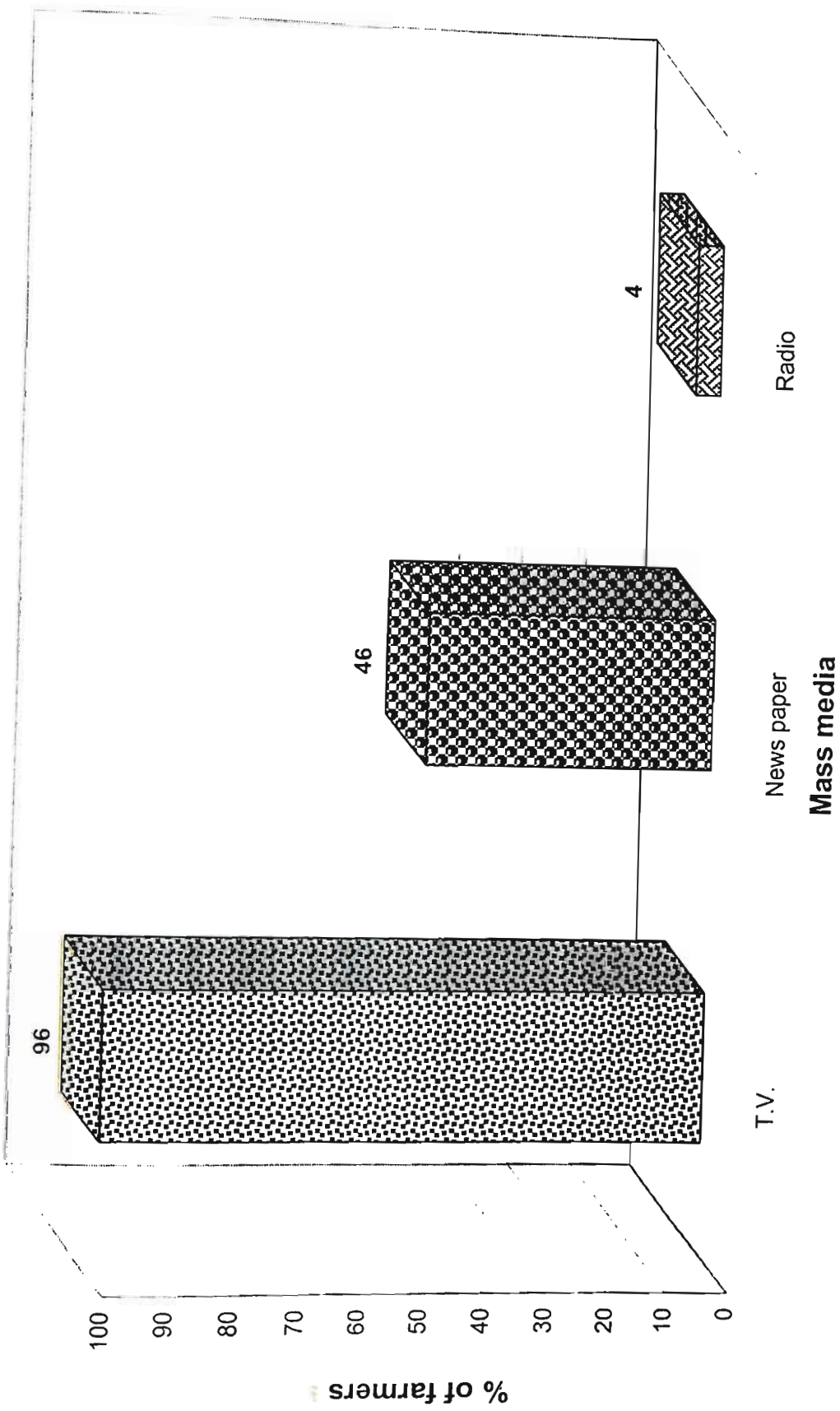


Fig.3.23: Most effective and convenient mass media

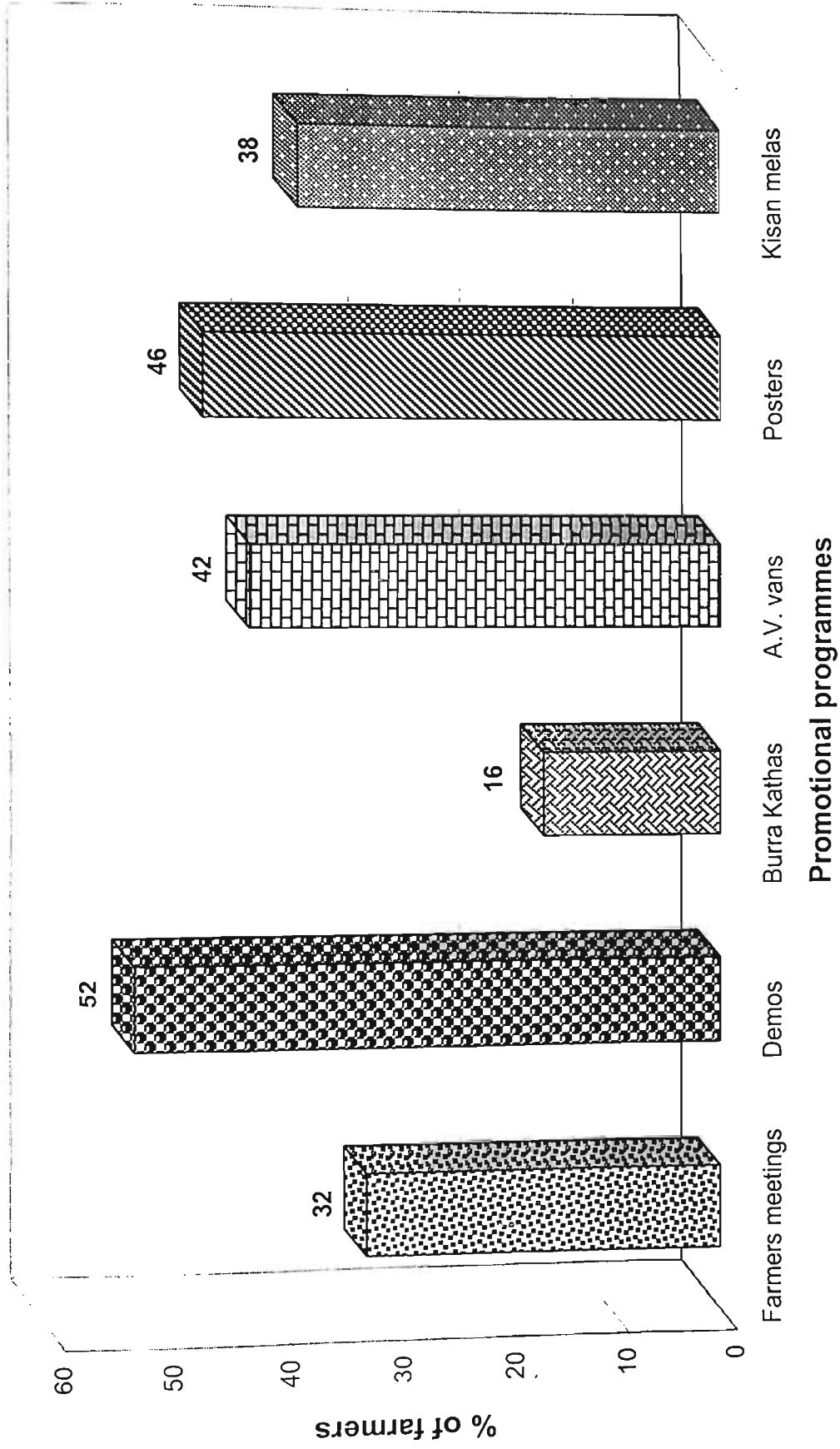


Fig.3.24: Most effective promotional programmes

print media (46%), Audio-visual vans (42%), Kisan melas (38%) and Farmers meetings (32%). Only 16% of the farmers were interested in burrakathas.

3.2.12 Opinion on price of Gromor 14-35-14

The results of the opinion on price of Gromor 14-35-14 is presented in table 3.27 and fig. 3.25.

Table 3.27 Opinion on price of Gromor 14-35-14

Price	No. of farmers	Percentage
High	72	48
Satisfactory	78	52

(Note: Percentages are total to the sample size 150)

About 52% of the farmers opined that the price of Gromor 14-35-14 was satisfactory and remaining 48% felt it to be high.

3.2.13 Mode of purchase of fertilizers

The mode of purchase of fertilizers was presented in table 3.28 and fig. 3.26.

Table 3.28 Mode of purchase of fertilizers

Mode of payment	No. of farmers	Percentage
Cash	90	60
Credit	60	40

(Note: Percentages are total to the sample size 150)

From the table it is clear that about 60% of the farmers purchase fertilizers on cash basis and remaining 40% on credit basis.

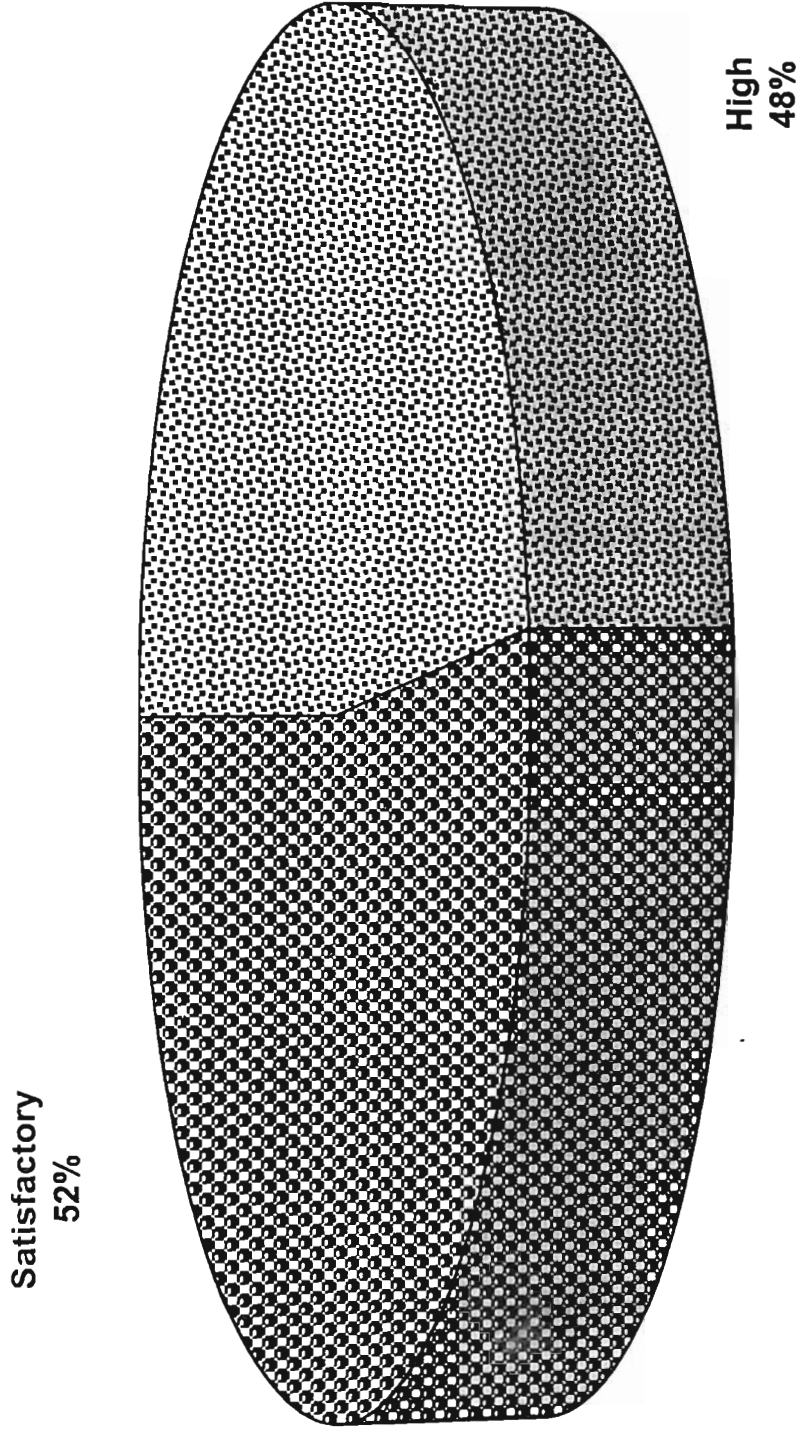


Fig. 3.25: Opinion on price of Gromor 14-35-14

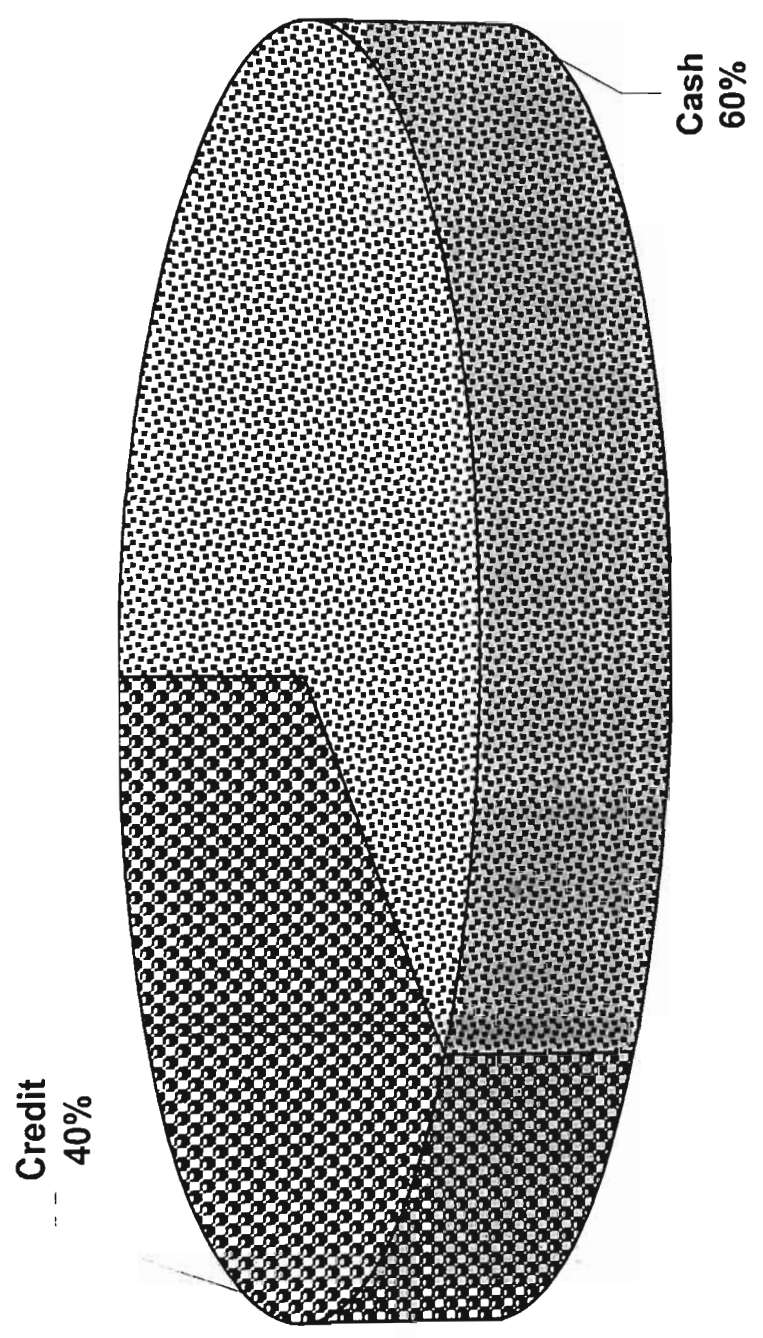


Fig. 3.26: Mode of purchase of fertilizers

3.2.14 Repayment period

The repayment period for credit purchase being followed is presented in table 3.29 and fig. 3.27.

Table 3.29 Repayment period

Repayment period	No. of farmers	Percentage
One week	30	20
One month	54	36
After harvest	66	44

(Note: Percentages are total to the sample size 150)

From the table it is clear that, about 44% of the farmers repay their credit after harvest of crop and 36% of the farmers repay the credit within one month after purchasing fertilizers. Only 20% of the farmers repay the amount within one week.

3.2.15 Interest rates

No interest was charged by dealers for repayment within a week or one month period and beyond that they charged an interest rate of 18-24%. The dealers also charge Rs. 5-10% extra per bag on credit purchase.

3.3 KRISHNA DISTRICT

The major markets covered in this district are Nuzvidu, Ramanakkapeta, Gudivada, Gudlavalleru, Pedana Jaggaiahpetta and Nandigama. The major crops and villages surveyed are presented in table 3.30.

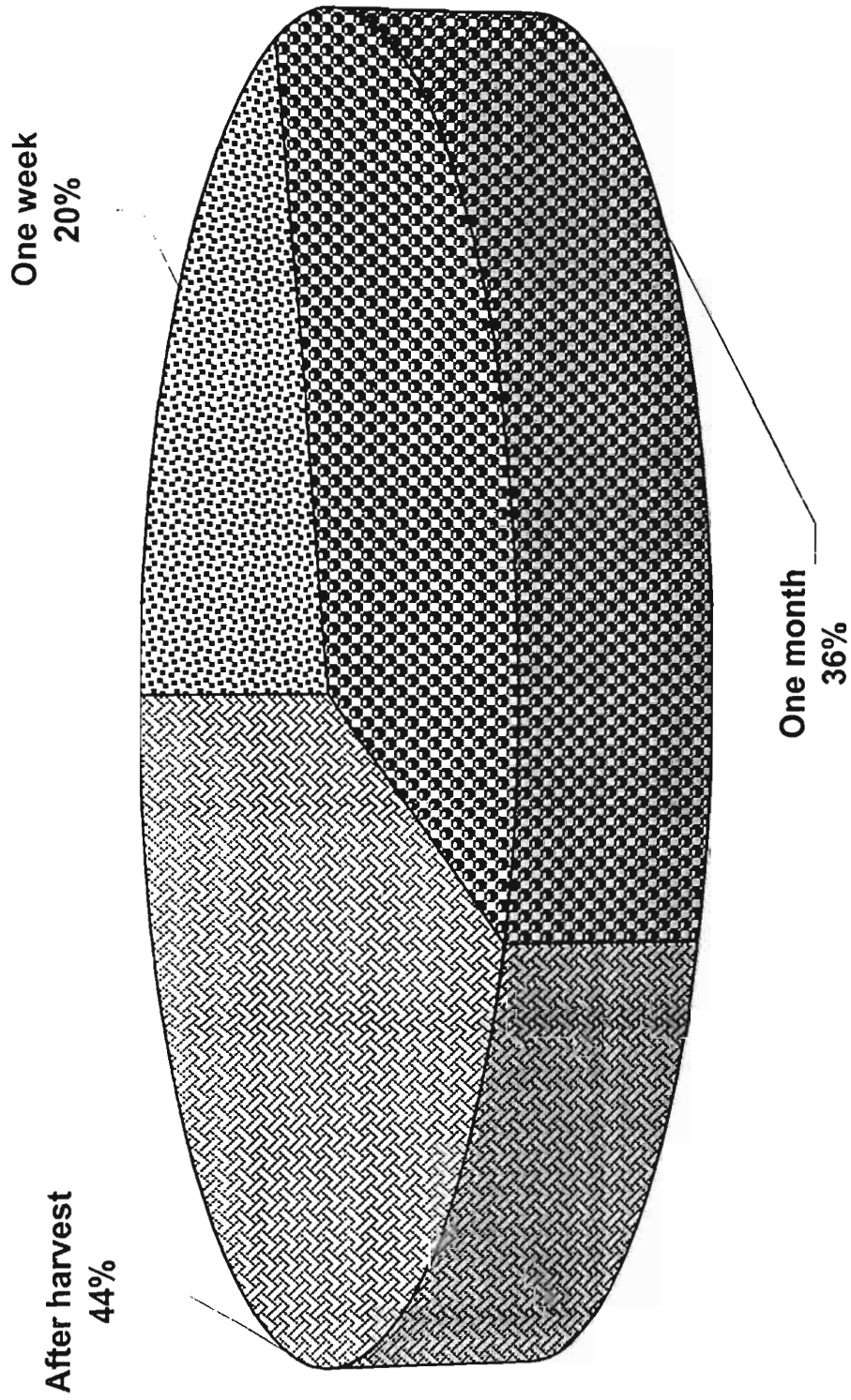


Fig. 3.27: Repayment period for credit purchase

Table 3.30 Major markets, crops and villages surveyed in Krishna district

Market	Crop	Village	Mandal
Nuzvidu	Mango	Nuzvidu	Nuzvidu
		Leelanagar	Nuzvidu
		Mittagudem	Nuzvidu
Ramanakkapet	Mango	Suryapalli	Musunuru
		Ramanakkaeta.	Musunuru
Gudivada	Paddy	Nandivada	Nandivada
		Vennanapudi	Nandivada
Gudlavalleru	Paddy	Kavutaram	Gudlavalleru
		Pashubhotlapalem	Gudlavalleru
Pedana	Paddy	Kanchedam	Bantumilli
		Mucherla	Pedana
Jaggaihpeta	Cotton	Bhimavaram	Vachavai
	Chillies	Gouravaram	Jaggaihpeta
Nandigama	Cotton	Turlapadu	Chandralapadu
	Chillies	Thota ravulapadu	Chandralapadu

3.3.1 Mango crop

3.3.1.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.31 and fig. 3.28.

From the table it is evident that for less than 10 years old trees 1 kg SSP and 2 kg MOP or 2 kg of any complex fertilizer was applied. For above 10 years old trees, 1 kg Urea, 2 kg SSP and 3 kg MOP or 4-5 kg of complex fertilizer was applied during rainy season (ie., July-Aug) only once in a year.

Table 3.31 Fertilizer usage pattern in Mango

Season	Time of applica- tion	Fertilizer applied kg/pt				Method of application	Brand
		Urea	SSP	MOP	Complex		
<10 years	July-Aug	-	FYM 5 kg/plant 1	2	Any complex	2	U-NFCL Vijay Ujjwala S- A Sugars, Parry M-IPL, Paras
>10 years	July-Aug	1	FYM 10 kg/plant 2	3	Any complex	4-5	

Commonly used fertilizers in Mango

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	10	25
20-20	FACT/Gromor	8	20
17-17-17	Vijay	6	15
DAP	GFC/SPIC/IFFCO	6	15
Straight	-	16	40

(Note: Percentages are total to the sample size 40)

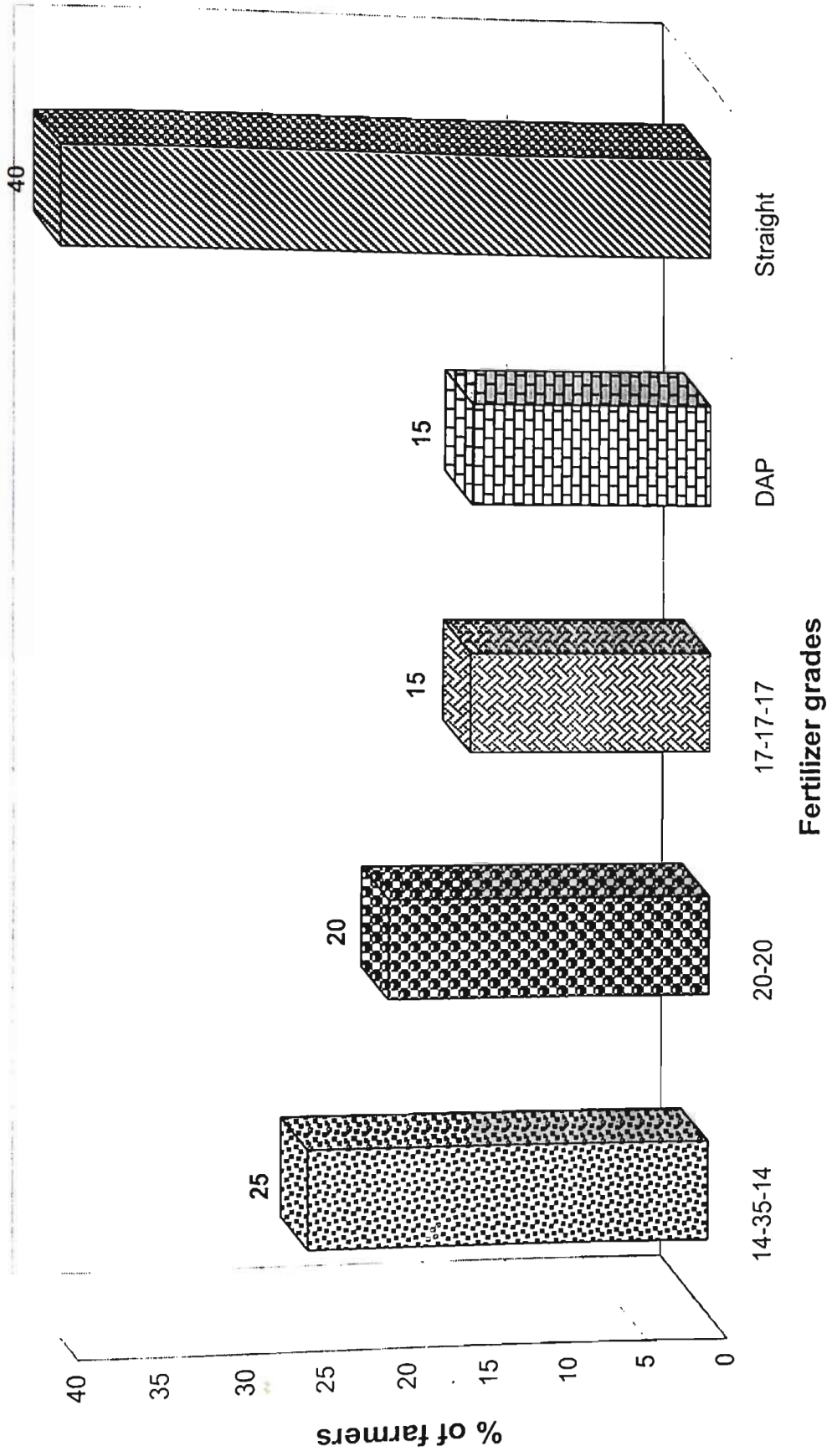


Fig.3.28: Commonly used fertilizers in Mango crop

Among complex fertilizers 14-35-14 usage was the highest (25%), followed by 20-20 (20%), 17-17-17 (15%) and DAP (15%).

Perception about various fertilizer grades

14-35-14

- Contains all 3 major nutrients ie. ,N, P and K
- Increases flowering and yield
- Improves the colour of fruit
- Increases the disease resistance
- No caking

20-20

- Increases the flowering and yield
- Contains sulphur
- Low priced complex fertilizer
- Less hygroscopic

17-17-17

- Contains all 3 major nutrients in equal proportions
- Increases flowering and yield
- Improves the colour of fruit
- Improves the disease resistance
- Caking is common

DAP

- Increases flowering and yield
- Timely availability
- If moisture is less it is not soluble
- Caking is common

About 40% of the farmers were using straight fertilizers like Urea, SSP and MOP because of low price per bag, timely availability and more quantity of fertilizer spread uniformly in pans. Farmers were also applying FYM @ 5-10 kg per plant every year during rainy season.

3.3.2 Paddy crop

3.3.2.1 Fertilizer usage pattern in *Kharif* Paddy

The fertilizer usage pattern and commonly used fertilizer grades are presented in Table 3.32 and fig. 3.29.

From the table, it is inferred that, the farmers were applying 25 kg Urea and complex fertilizer @ 50 kg per acre at 10 DAT after transplanting. At 25-30 DAT (ie., tillering stage) they were applying 25 kg urea and any complex fertilizer @ 50 kg per acre. At panicle initiation stage they were applying 25 kg urea and 10 kg MOP.

Among complex fertilizers the usage of Gromor 14-35-14 was the highest (45%) followed by 17-17-17 (26%), 19-19-19 (25%), 20-20 (20%), DAP (10%) and 28-28 (5%).

3.3.2.2 Fertilizer usage pattern in *Rabi* Paddy

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.33 and fig. 3.30.

From the table, it is revealed that as basal farmers were applying 50 kg Urea, 100 kg SSP and 25 kg MOP or 25 kg urea/25 kg MOP and complex fertilizer @ 100 kg per acre.

Table 3.32 Fertilizer usage pattern in Kharif paddy

Season	Time of application	Fertilizer applied kg/acre			Method of application	Brand		
		Urea	SSP	MOP			Complex	Quantity
Kharif	10-15 DAT	25	-	-	Any complex	50	Broadcasting	U-NFCL Ujwala M-IPL, Paras
	25-30 DAT	25	-	-	Any complex	50	Broadcasting	
	At P.I. stage	20	-	10	-	-	Broadcasting	

Commonly used fertilizers in Kharif paddy

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	45	45
17-17-17	Vijay	26	26
19-19-19	Vijay/Jaikisan	25	25
20-20	FACT/Gromor	20	20
DAP	GFC/SPIC/IFFCO	10	10
28-28	Gromor	5	5

(Note: Percentages are total to the sample size 100)

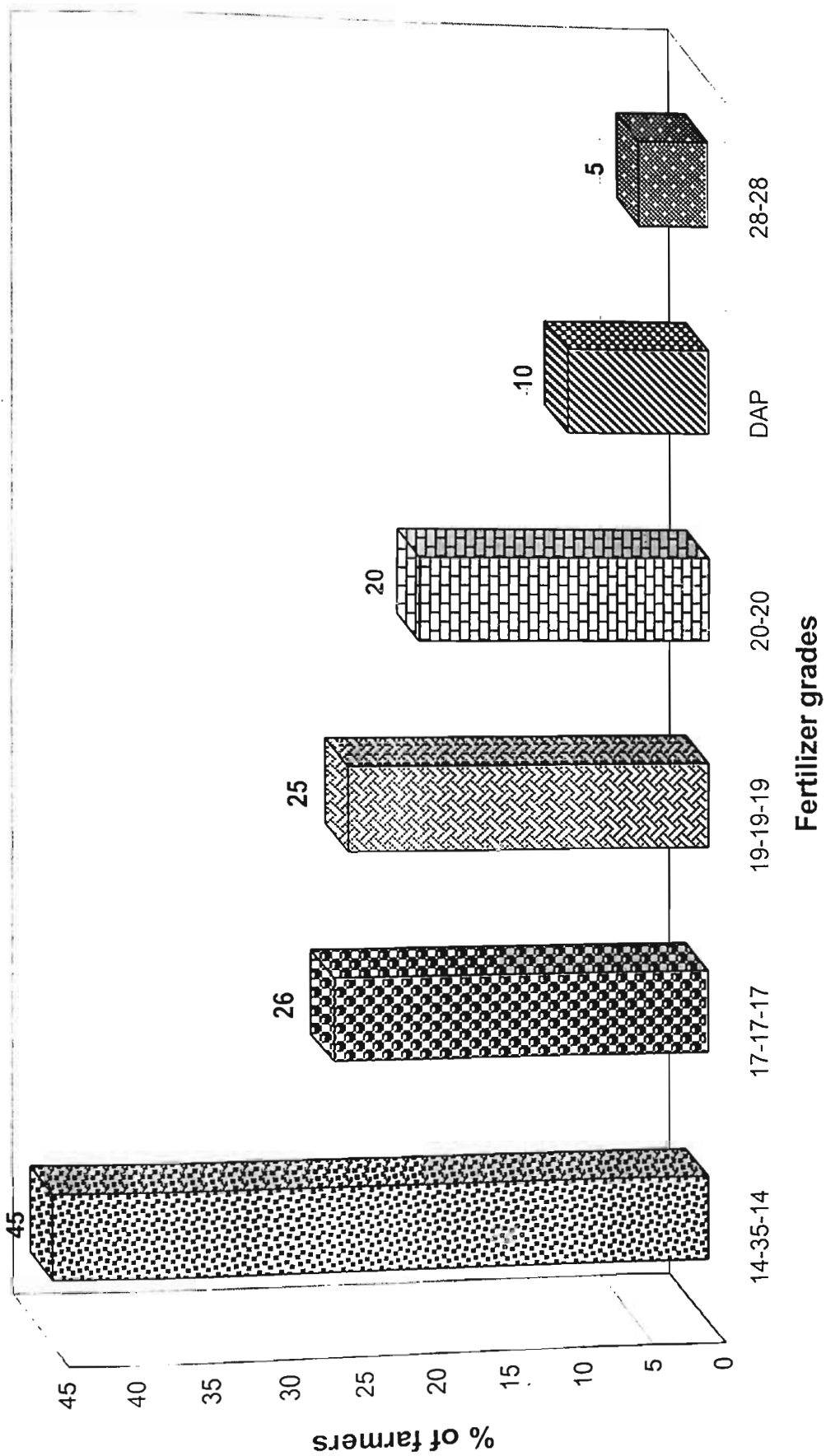


Fig.3.29: Commonly used fertilizers in Kharif Paddy crop

Table 3.33 Fertilizer usage pattern in Rabi paddy

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Rabi	Basal	25	100	25	Any complex	100	U-NFCL Ujwala M-IPL, Parry S-A.sugars.parry
	15-20 DAT	25	-	-	Any complex	50	Broadcasting
	35-40DAT	25	-	-	Any complex	50	Broadcasting
	At P.I. stage	25	-	10	-	-	Broadcasting

Commonly used fertilizers in Rabi paddy

Fertilizer grade	Brand name	No.of farmers using	Percentage
DAP	GFC/SPIC/IFFCO	32	64
14-35-14	Gromor	27	54
17-17-17	Vijay	25	50
19-19-19	Vijay/Jaikisan	20	40
20-20	FACT/Gromor	15	30
Straight	-	5	10

(Note: Percentages are total to the sample size 100)

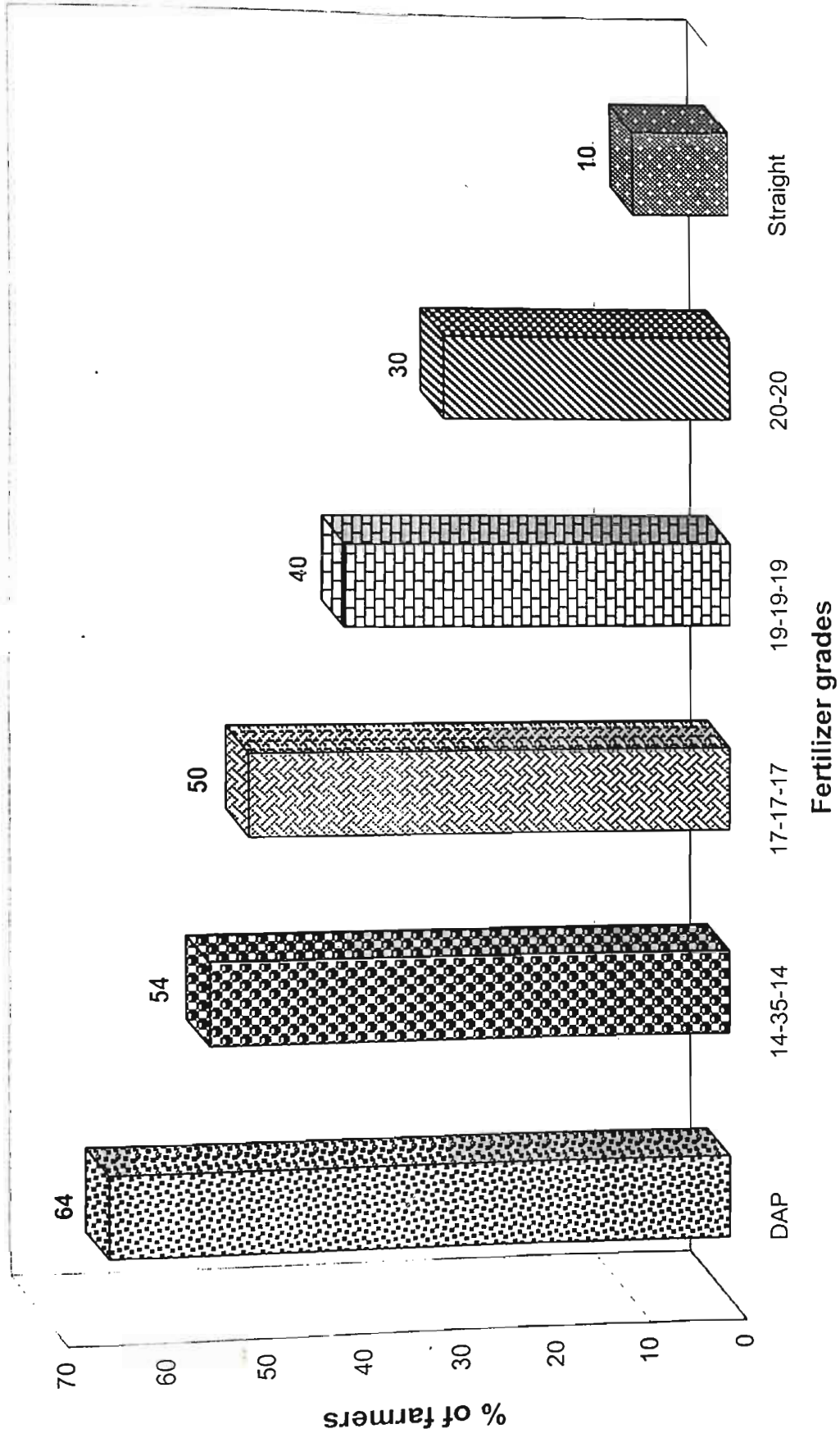


Fig.3.30: Commonly used fertilizers in Rabi Paddy crop

At 15-20 DAT they were applying 25 kg Urea and complex fertilizer @ 50 kg per acre. At 35-40 DAT they were applying 25 kg Urea and any complex fertilizer @ 50 kg per acre. At panicle initiation stage they were applying 25 kg Urea and 10 kg MOP per acre.

Among complex fertilizers usage of DAP was the highest (64%) followed by 14-35-14 (54%), 17-17-17 (50%), 19-19-19 (40%) and 20-20 (30%).

Perception about various fertilizer grades

DAP

- Quick establishment of seedlings
- Quick decomposition of previous crop residue
- Better root growth
- Better tillering
- Higher yields
- Timely availability

14-35-14

- Contains all 3 major nutrients ie, N,P & K
- Quick establishment of seedlings
- Better root growth
- Better tillering
- Balanced nutrition at early stages
- Higher yields
- Less no.of unfilled grains
- Non-caking

17-17-17

- Contains all 3 major nutrients ie., N,P&K
- Higher yields
- Less no.of unfilled grains
- Reduces vegetative growth
- Caking is common

19-19-19

- Contains all 3 major nutrients ie., N,P& K
- Better tillering
- Reduces vegetative growth
- Higher yields.
- Less no. of unfilled grains
- Improve disease resistance
- Caking is common

20-20

- Better tillering
- Easily taken by the plant
- Higher yields
- Less hygroscopic
- Less price per bag

28-28

- Quick greening
- Does not require urea application
- Better tillering

- Higher yields
- Non-caking

3.3.3 Cotton crop

3.3.3.1 Fertilizer usage pattern:

The details of fertilizer usage pattern and commonly used fertilizer grades in cotton crop are presented in table 3.34 and fig. 3.31..

From the table it is noticed that, farmers were applying 25 kg Urea and 50 kg of any complex fertilizer per acre at 30 and 60 DAS. At 90 DAS they were applying 50 kg urea and 25 kg MOP per acre.

Among complex fertilizers the usage of DAP was the highest (70%) followed by 20-20 (65%), 17-17-17 (40%) 14-35-14 (37.5%) and 16-20 (37.5%)

Perception about different fertilizer grades

DAP

- Better root growth
- Better branching
- More number of bolls
- Higher yields
- Timely availability
- Credit facility

20-20

- Better branching
- Increases the no. of bolls
- Higher yields

Table 3.34 Fertilizer usage pattern in Cotton

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
July-Aug (Kharif)	30 DAS	25	-	-	Any complex	50	U-NFCL Ujwala Vijay M - Paras
	60 DAS	25	-	-	Any complex	50	
	90 DAS	50	-	25	-	-	

Commonly used fertilizers in Cotton

Fertilizer grade	Brand name	No. of farmers using	Percentage
DAP	GFC/SPIC/IFFCO	28	70
20-20	Gromor/FACT	26	65
17-17-17	Vijay	16	40
14-35-14	Gromor	15	37.5
16-20	Paramfos	15	37.5
19-19-19	Vijay/Jaikisan	4	10
28-28	Gromor	2	5

(Note: Percentages are total to the sample size 40)

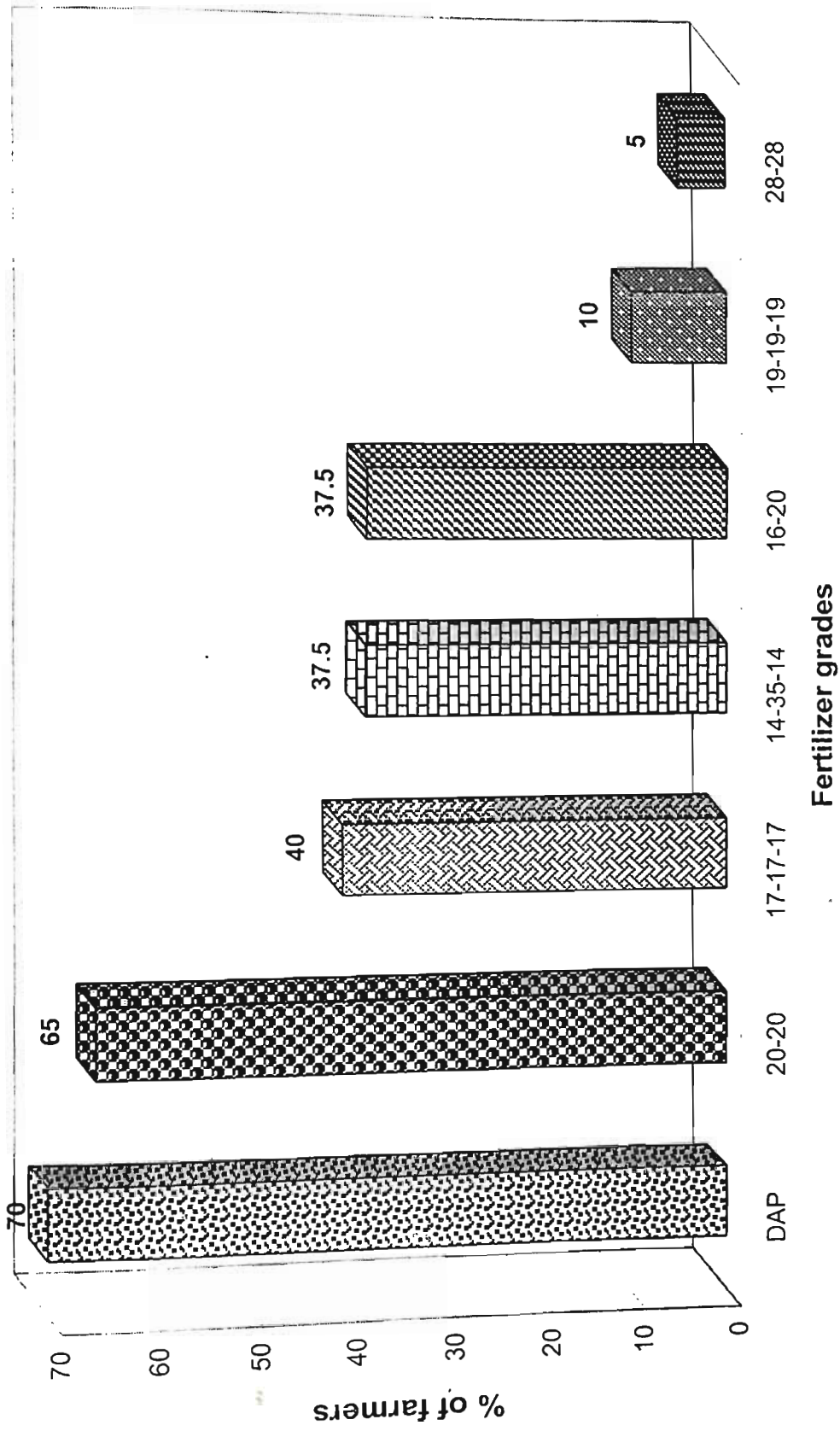


Fig.3.31: Commonly used fertilizers in Cotton crop

3.3.4 Chilly crop

3.3.4.1 Fertilizer usage pattern

The details of fertilizer usage pattern and commonly used fertilizers grades in chilly are presented in table 3.35 and fig. 3.3.2.

From the table it is revealed that, farmers were applying complex fertilizer @ 50 kg and Urea 25 kg per acre at monthly interval (ie., 30,60,90, 120 DAT) up to 120 DAT. After which some of the farmers were using CAN @ 50 kg and 25 kg MOP or any complex fertilizer @ 50 kg per acre at 150 and 180 DAT. Farmers keep changing the grade for every application as they think that same grade may not work effectively if applied continuously.

Among complex fertilizers the usage of 14-35-14 was the highest (83.3%) followed by DAP (80%), 17-17-17 (80%) 20-20 (80%), 16-20 (66.6%), 19-19-19 (40%) and 28-28 (30%).

Perception about different fertilizer grades

14-35-14

- Contains 3 major nutrients ie., N, P&K
- Increases the root growth
- Improves branching and flowering
- Higher yields
- Good colour of fruits
- Non-caking

DAP

- Quick establishment of seedling
- Better root growth
- Improves branching and flowering

usage pattern in Chilly

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
July-Aug (Kharif)	30 DAT	25	-	-	Any complex	Applied in furrows and covered with soil	U-NFCL Vijay Ujwala M:Paras
	60 DAT	25	-	-	Any complex		
	90 DAT	25	-	-	Any complex		
	120 DAT	25	-	-	Any complex		
	150 DAT	50 (CAN)	-	25 (or)	Any complex		
	180 DAT	50 (CAN)	-	25 (or)	Any complex		

Commonly used fertilizers in Chilly

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	25	83.3
DAP	GFC/SPIC/IFFCO	24	80
17-17-17	Vijay	24	80
20-20	Gromor/FACT	24	80
16-20	Paramfos	20	66.6
19-19-19	Jaikisan	12	40
28-28	Gromor	9	30
CAN	Sona	27	90

(Note: Percentages are total to the sample size 30)

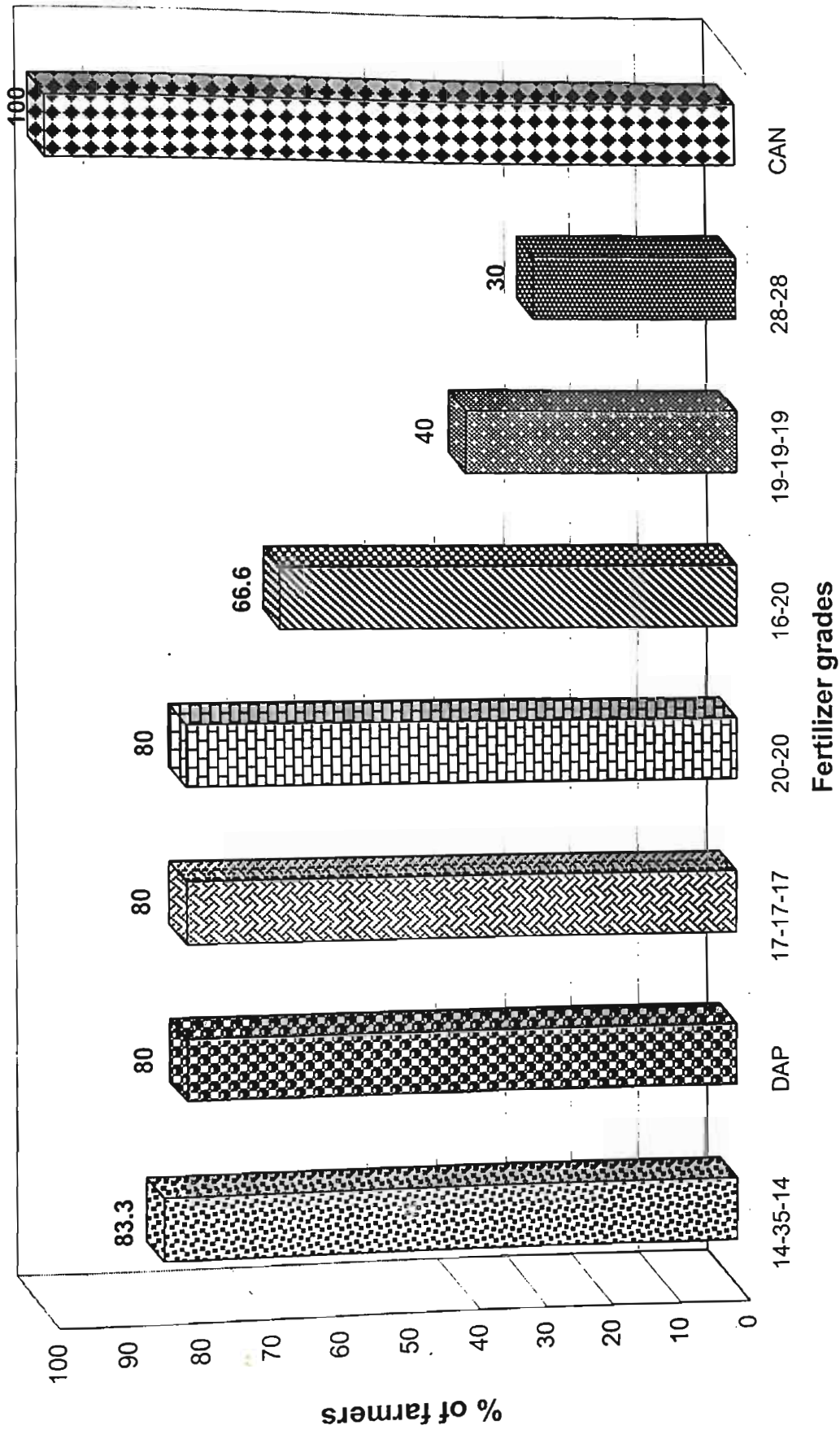


Fig.3.32: Commonly used fertilizers in Chilly crop

- Less hygroscopic
- Non-caking
- Less price per bag

17-17-17

- Contains 3 major nutrients ie., N, P&K
- Better branching
- Higher yields
- Caking is problem

14-35-14

- Contains 3 major nutrients ie., N, P&K
- Better branching
- Higher yields
- Non-caking
- High price per bag

16-20

- Better branching
- Higher yields
- Low price per bag

19-19-19

- Contains 3 major nutrients ie., N, P&K
- Better branching
- Higher yields
- Caking is common

- Higher yields
- Requires MOP applications
- Timely availability

17-17-17

- Contains 3 major nutrients ie., N, P&K in equal proportions
- Improves branching and flowering
- Higher yields
- Improves colour of the fruits
- Caking is common

20-20

- Improves branching and flowering
- Higher yields
- Less hygroscopic
- Easy application
- Low price
- Contains 15% sulphur , which gives resistance to mites

16-20

- Improves branching and flowering
- Higher yields
- Lower price

19-19-19

- Contains 3 major nutrients ie., N, P&K in equal proportions
- Improves branching and flowering
- Higher yields

- Good coloured fruits
- Increases resistance to pest and diseases
- Caking is common

28-28

- Quick establishment and greening of seedlings
- Better root growth
- Improves branching and flowering
- Higher yield
- Does not require urea application
- Non-caking

3.3.5 Basis for applying fertilizer dosages

The basis for applying fertilizer dosages are presented in table 3.36 and fig. 3.33.

Table: 3.36 Basis for applying fertilizer dosages

Basis	No.of farmers using	Percentage
Recommendations of AO's and Scientists	15	10
Soil testing	9	6
Past experienced	141	94
Following progressive farmers	45	30
Dealers advice	78	52

(Note: Percentages are total to the sample size 150)

From the table it is evident that about 94% of the farmers were applying fertilizer dosages based on their past experience which was followed by

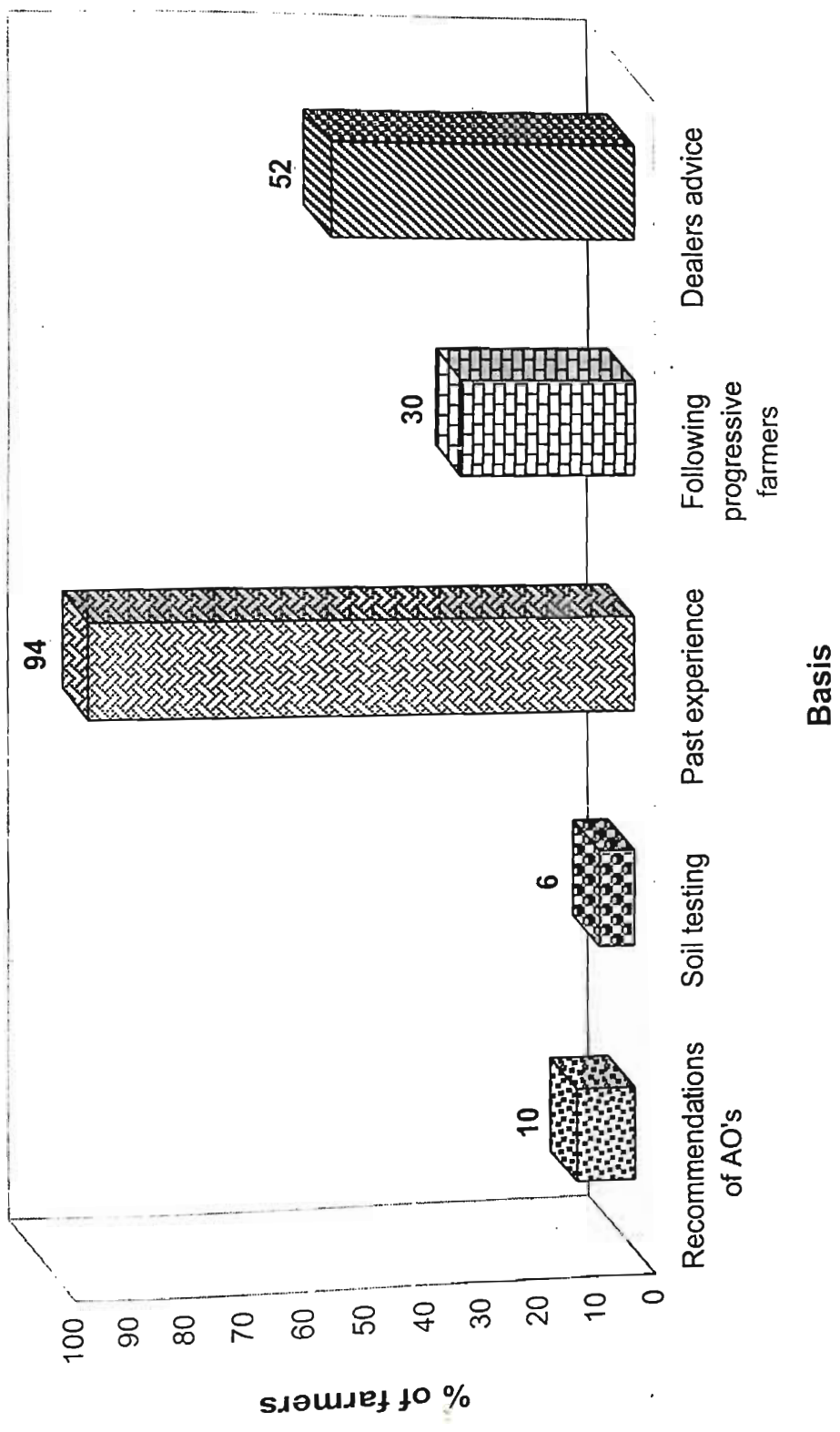


Fig.3.33: Basis for applying fertilizer dosages

dealer's advice (52%), following other progressive farmers (30%) and as per recommendations of scientists and AO's (10%). Only 6% of farmers will applying fertilizer dosages based on soil testing.

3.3.6 Criteria for selection of a particular brand of fertilizer

The criteria for selecting a particular brand of fertilizer is presented in Table 3.37 and fig. 3.34.

Table 3.37 Criteria for selecting a particular brand of fertilizer

Criteria	No.of farmers using	Percentage
Dealers advice	84	56
Other farmers suggestions	45	30
Crop requirement	81	54
Lower price/bag	69	46
Brand image	15	10
Past experience	141	94
Timely availability	30	20

(Note: Percentages are total to the sample size 150)

From the table it is noticed that about 94% of the farmers were selecting brand based on their past experience, which was followed by dealers advice (56%) crop requirement (54%), lower price/bag (46%), other farmers suggestions (30%) and timely availability (20%). Only 10% of the farmers go for brand image.

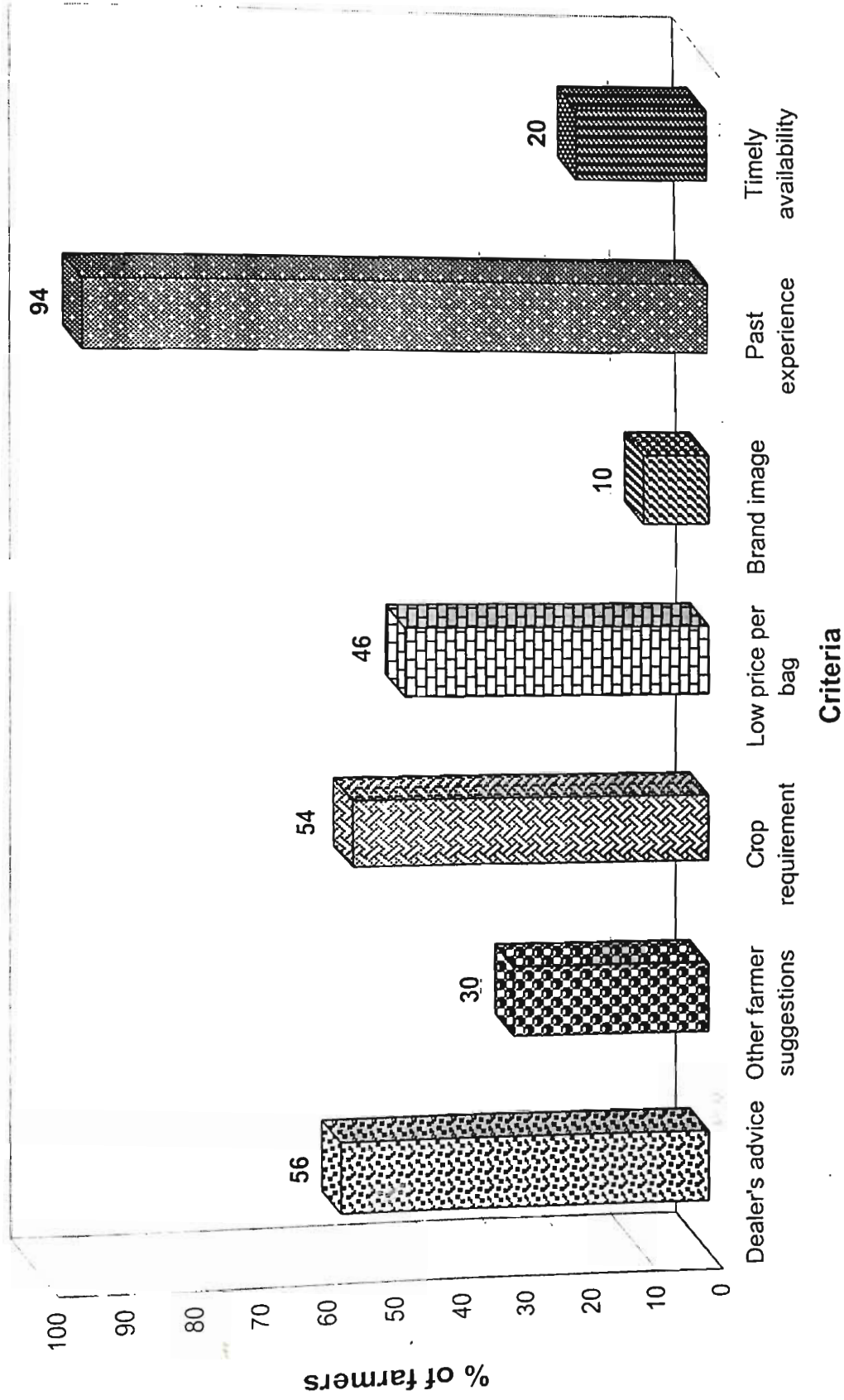


Fig.3.34: Criteria for selecting a particular brand of fertilizer

3.3.7 Awareness about Gromor brand

The awareness levels about different brands are presented in table 3.38 and fig. 3.35.

Table 3.38 Awareness about different brands of complex fertilizers

Brand	No. of farmers	Percentage
Gromor	102	68
Godavari	111	74
Jaikisan	99	66
Vijay	102	68
IFFCO	90	60
SPIC	90	60
FACT	54	36
Parry	24	16

(Note: Percentages are total to the sample size 150)

From the table it is evident that nearly 68% of the farmers were aware of Gromor brand and only 59% of farmers were aware about Gromor 14-35-14.

74% of the farmers were aware of Godavari brand followed by Vijay (68%), Jaikisan (66%) IFFCO (60%) and Spic (60%).

3.3.8 Reasons for using other brands of fertilizers

The reasons for using other brands of fertilizers are presented in table 3.39 and fig.3.36.

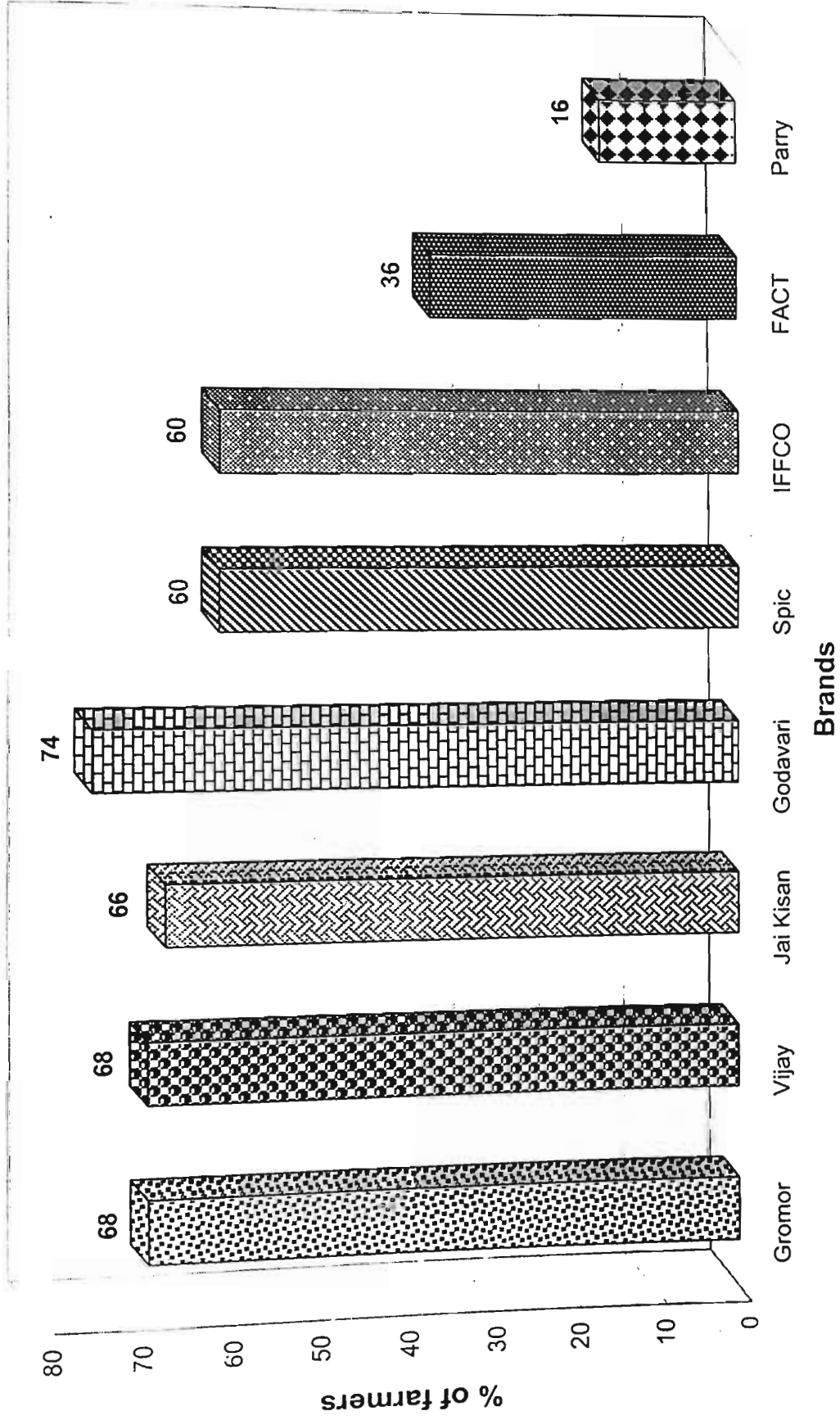


Fig.3.35: Awareness about different brands

Table 3.39 Reasons for using other brands

Reason	No. of farmers	Percentage
Less price/bag	54	36
Credit facility	72	48
Brand image	36	24
Only grade available with the dealer	15	10
Timely availability	60	40
Other reasons (suitability of the soil and crop)	93	62

(Note: Percentages are total to the sample size 150)

From the table it is unearthed that, about 62% of the farmers were using other brands due to suitability to the soil and crop, which was followed by credit facility (48%), timely availability (40%) and less unit cost / bag (36%). Only 24% of the farmers have gone for brand image.

3.3.9 Effective and convenient Mass media:

The most effective and convenient mass media has been evaluated and presented in table 3.40 and fig 3.37.

Table 3.40 Most effective and convenient mass media

Mass Media	No. of farmers	Percentage
T.V.	144	96
Radio	3	2
News paper	51	34

(Note: Percentages are total to the sample size 150)

As could be seen from the table, about 96% of the farmers watch T.V. channels like ETV, Gemini, Teja, Maa and DD1. About 34% of the farmers read news papers like Eenadu, Vaartha, Andhra Jyothi, Andhra Bhoomi. Only 2% of the farmers listen radio programmes like news and weather report.

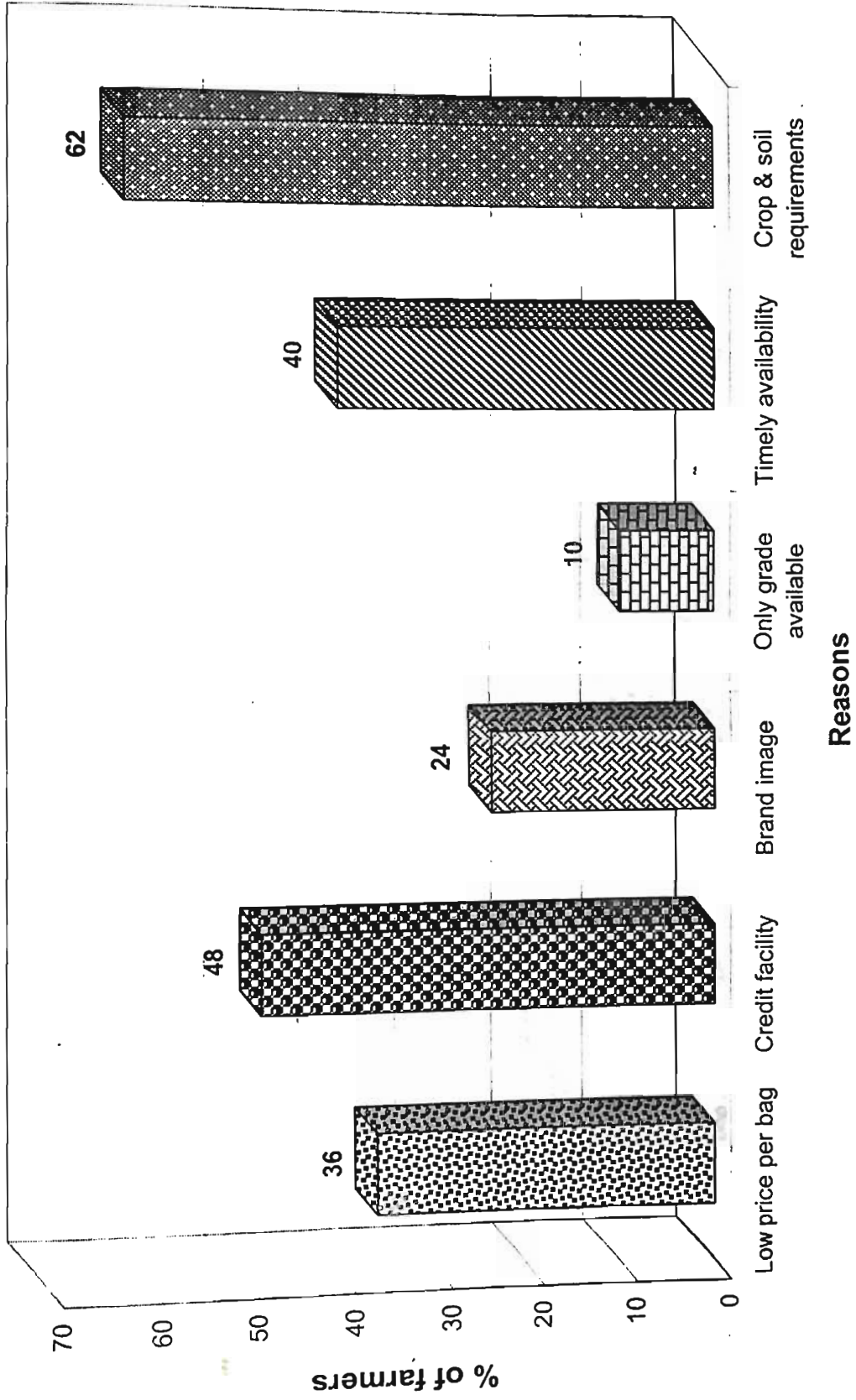


Fig.3.36: Reasons for using other brands

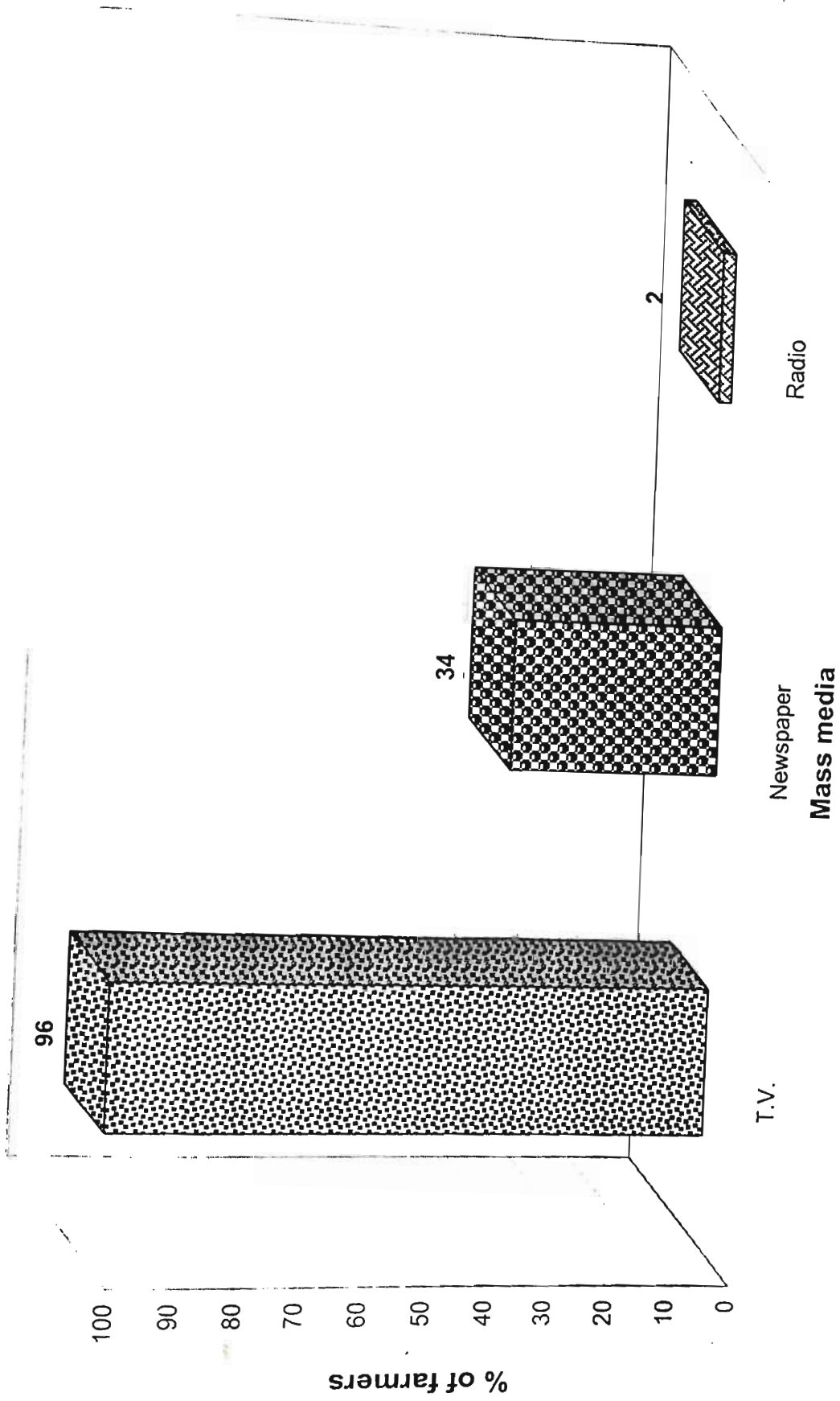


Fig.3.37: Most effective and convenient mass media

3.3.10 Effective promotional programmes

The most effective promotional programmes at village level have been studied and are presented in table 3.41 and fig. 3.38.

Table 3.41 Effective promotional programmes

Promotional programme	No. of farmers	Percentage
Farmers Meetings	57	38
Demo's	48	32
Burrakathas	39	26
A.V.Vans	72	48
Posters	81	54
Kisan Melas	36	24

(Note: Percentages are total to the sample size 150)

From the table, it is inferred that, about 54% of the farmers were interested in posters hand bills and other print media which was followed by Audio visual vans (48%), farmers meetings (38%) and Demo's (32%). Only 26% of farmers were interested in burrakathas and 24% were interested in Kisan melas.

3.3.11 Opinion on price of Gromor 14-35-14

The opinion on price of Gromor 14-35-14 is presented in the table 3.42 and fig. 3.49.

Table 3.42 Opinion on price of Gromor 14-35-14

Price	No. of farmers	Percentage
High	78	52
Satisfactory	72	48

(Note: Percentages are total to the sample size 150)

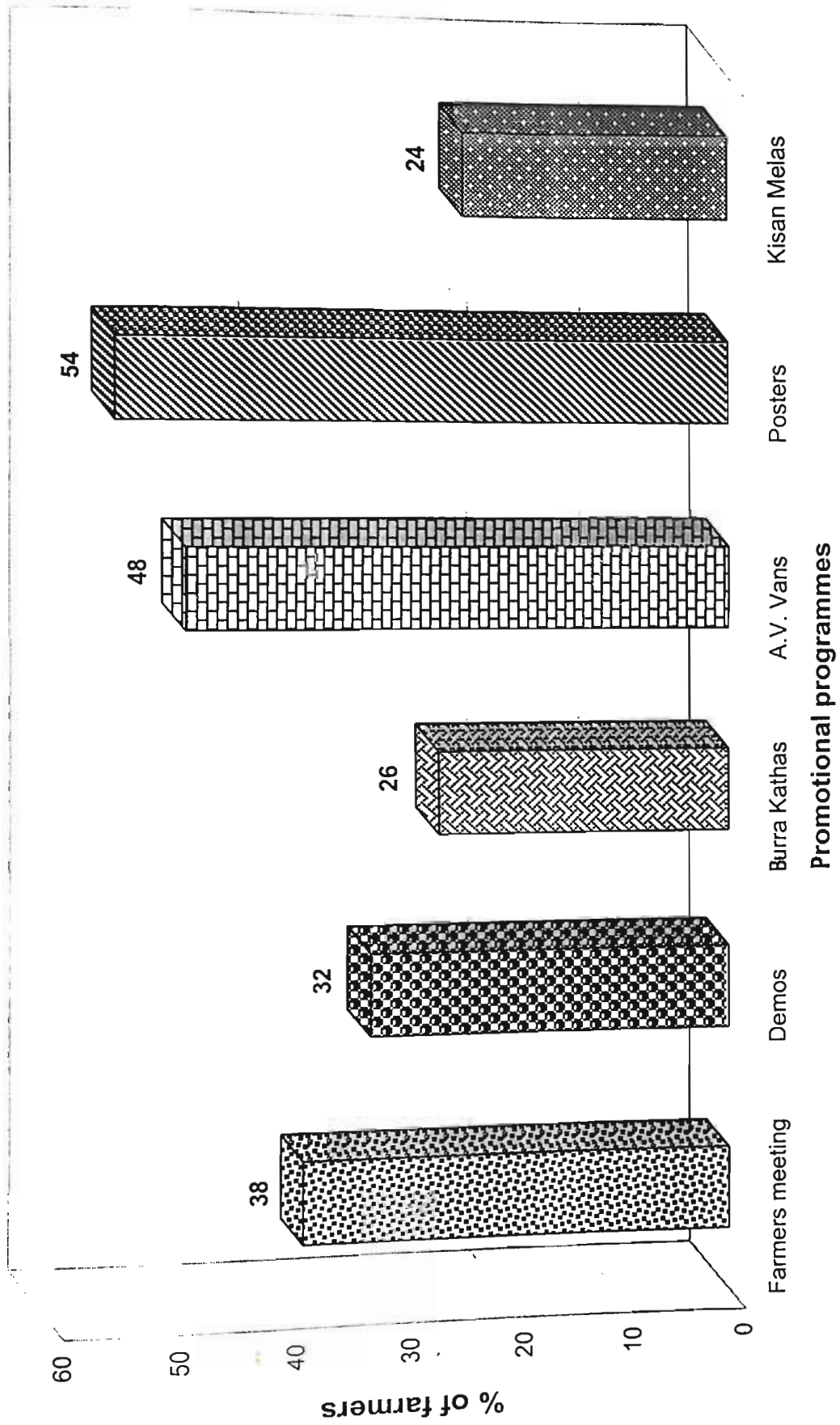
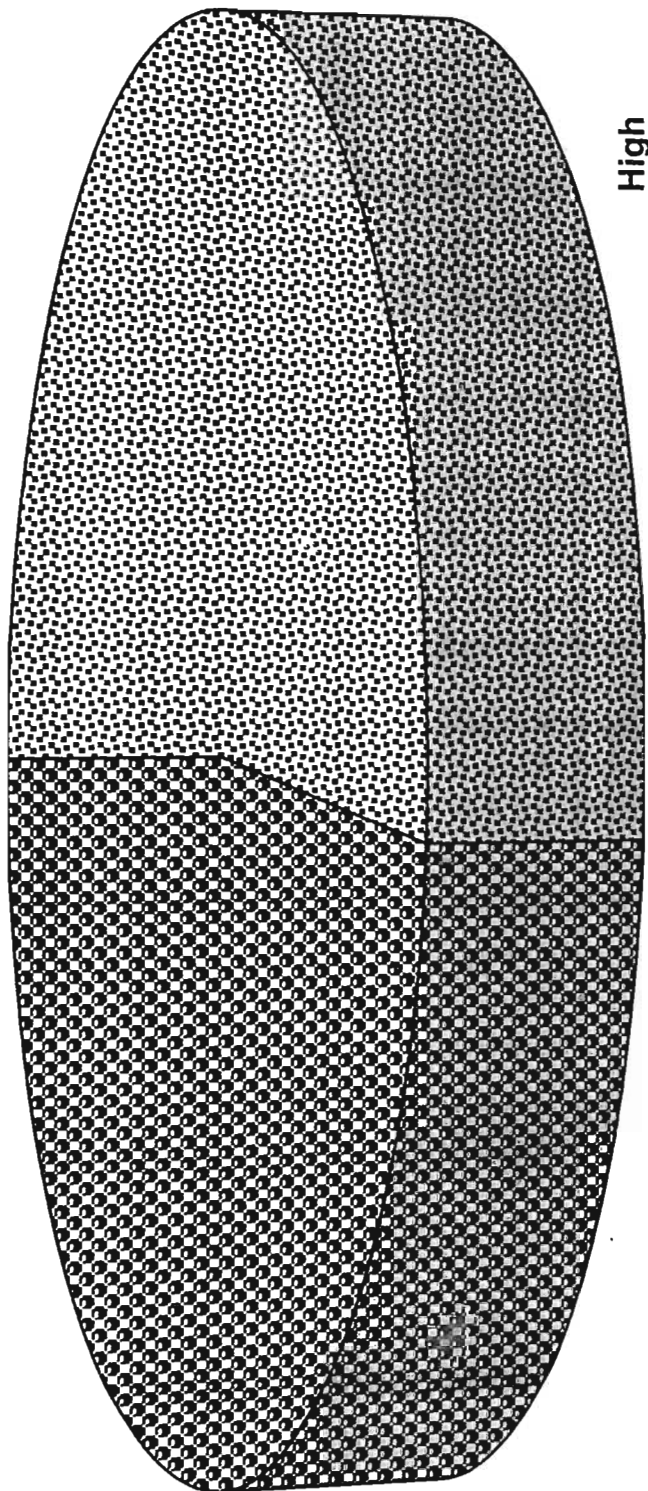


Fig.3.38: Most effective promotional programmes

Satisfactory
48%



High
52%

Fig. 3.39: Opinion on price of Gromor 14-35-14

From the table, it is noticed that about 52% of the farmers felt the price as high and remaining 48% felt it to be satisfactory.

3.3.12 Mode of purchase of fertilizers

The mode of purchase of fertilizers is analysed and presented in table 3.43 and fig. 3.40.

Table 3.28 Mode of purchase of fertilizers

Mode of purchase	No. of farmers	Percentage
Cash	69	46
Credit	81	54

(Note: Percentages are total to the sample size 150)

From the table it is evident that, about 46% of the farmers purchased fertilizers on cash basis and remaining 54% on credit basis.

3.3.13 Repayment period

The repayment period for credit purchase is presented in table 3.44 and fig. 3.41.

Table 3.44 Repayment period

Repayment	No. of farmers	Percentage
One week	18	12
One month	45	30
After harvest	87	58

(Note: Percentages are total to the sample size 260)



Fig. 3.40: Mode of purchase of fertilizers

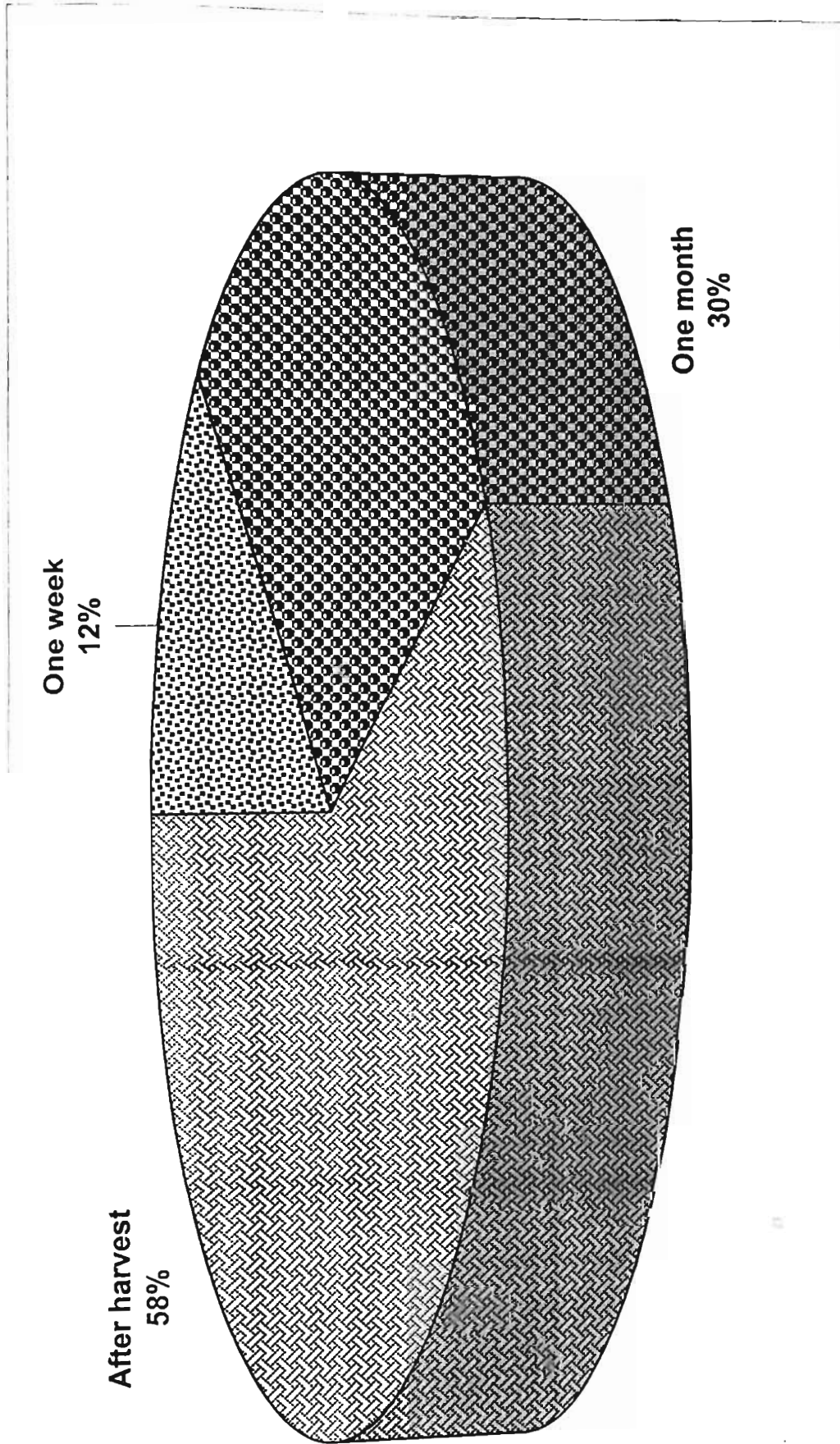


Fig. 3.41: Repayment period for credit purchase

From the table it is revealed that, about 58% of the farmers repay their credit after the harvest of the crop and 30% of the farmers repay the credit within one month. Only 12% of the farmers repay their credit within one week.

3.3.14 Interest rates

No interest was charged by dealers for a week or one month repayment period, after which they charged an interest rate of 24-36%. The dealers also charge Rs. 15-20/- extra per bag on credit purchase.

3.4 ANANTAPUR DISTRICT

The major markets covered in this district are Anantapur, Uravakonda, Gooty and Kanekal. The major crops and villages surveyed are presented in Table 3.45.

Table 3.45 Major markets, crops and villages surveyed in Anantapur District

Market	Crop	Village	Mandal
Anantapur	Groundnut	Narpala	Narpala
	Citrus	Papparu	Narpala
	Papaya	Garladinnae	Garladinnae
		Budaedu	Garladinnae
Gooti	Groundnut	Kothapeta	Gooti
	Sunflower	Thondapadu	Gooti
		Jakkalacheruvu	Gooti

Contd..			
Market	Crop	Village	Mandal
Kaneikal	Paddy	Udegolam	Kaneikal
		Brahmasamudram	Kaneikal
		Benikal	Kaneikal
		SRN camp	Kaneikal
Uravakonda	Bengalgram	Ragulapadu	Vajrakaruru
	Sunflower	Nimbagallu	Uravakonda
		N.Hanumapuram	Kaneikal
		Sollapuram	Kaneikal

3.4.1 Groundnut crop

3.4.1.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.46 and fig. 3.42.

From the table it is observed that, as basal, farmers were applied castor cake 150 kg, 25 kg Urea, 50 kg SSP and 25 kg MOP or any complex fertilizer @ 50-75 kg per acre. Some farmers applied gypsum @ 100-200 kg or Urea @ 25 kg per acre at 25-30 days after sowing.

Among complex fertilizers the usage of Gromor 14-35-14 was the highest (54.1%) which was followed by 17-17-17 (34.1%), DAP (21.1%), 20-20 (20%) and 16-20 (20%). The usage of 19-19-19 and 10-26-26 was 8.2% and 7% respectively.

Table 3.46 Fertilizer usage pattern in Groundnut

Season	Time of application	Fertilizer applied kg/ acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Kharif/Rabi	Basal	Castor cake 2 bags				Broadcasting	U-Spic, Vijay Ujwala NFCL S-Parry M-Parry IPL
	25-30 DAS	25	50	25	Any complex		
		Gypsum 100-200 25	-	-	-	Broadcasting	

Commonly used fertilizers in Groundnut

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	46	54.1
17-17-17	Vijay	29	34.1
DAP	GFC/SPIC/IFFCO	18	21.1
20-20	Gromor/SPIC/FACT	17	20
16-20	Paramfos	17	20
19-19-19	Vijay/Jaikisan	7	8.2
10-26-26	Jaikisan	6	7
Straight	-	3	3.5

(Note: Percentages are total to the sample size 85)

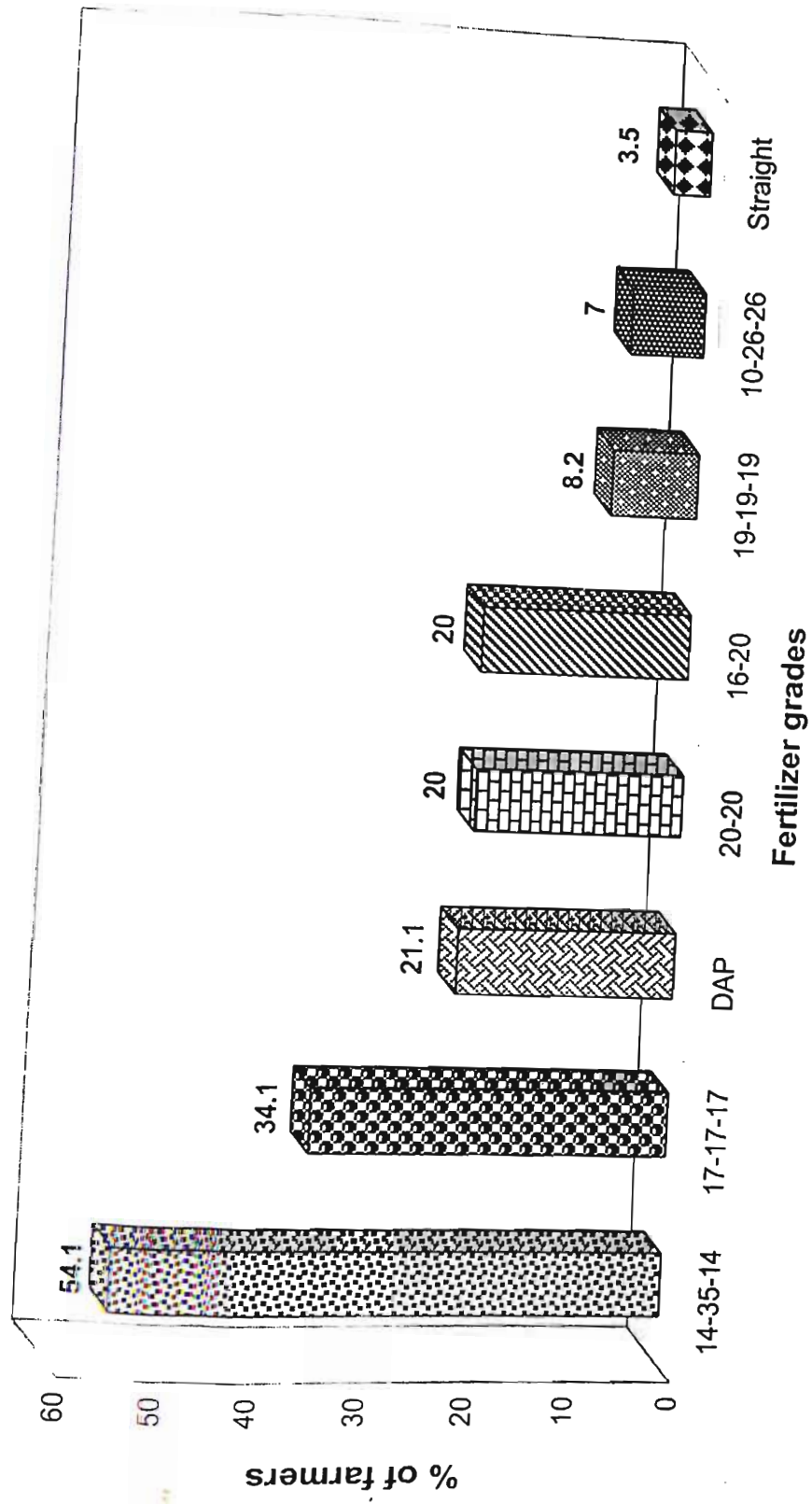


Fig.3.42: Commonly used fertilizers in Groundnut crop

Perception about various fertilizer brands

14-35-14

- Increases the root growth
- Increases flowering
- Improves the root nodules
- Timely harvesting
- Increases disease resistance
- Higher yields

17-17-17

- Contains all three major nutrients ie., N, P and K
- Increases flowering
- Increases the disease resistance
- Improves the yield
- Timely harvest

DAP

- Quick establishment
- Increases the root growth
- Improves the root nodules
- Increases flowering
- Higher yield
- High price

20-20

- Better growth
- Increases flowering
- Contains sulphur which is required for increasing oil content

- Less hygroscopic
- Higher yields
- Low price

16-20

- Contains sulphur which is required for increasing oil content
- Increases flowering
- Higher yields
- Low price per bag

19-19-19

- Contains 3 major nutrients, ie, N, P & K
- Improves flowering
- Higher yields
- Improves the disease resistance

10-26-26

- Higher 'K' containing complex fertilizer
- Increases flowering
- Contains 3 major nutrients ie., N,P&K
- Higher yields
- Improves the disease resistance
- Requires urea application

3.4.2 Citrus crop

3.4.2.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in Table 3.47 and fig. 3.43.

Table 3.47 Fertilizer usage pattern in Citrus

Season	Time of application	Fertilizer applied kg/pt				Quantity	Method of application	Brand
		Urea	SSP	MOP	Complex			
>4 years	May-June	FYM Castor cake +neem cake	25kg 4-8kg		Any complex	0.5-1.0	Applied in basin and covered with soil	
	Nov-Dec	Castor cake 2kg	-	-	Any complex	1.0	Applied in basin and covered with soil	

Commonly used fertilizers in Citrus

Fertilizer grade	Brand name	No. of farmers using	Percentage
17-17-17	Vijay	25	62.5
19-19-19	Jaikisan	16	40
10-26-26	Jaikisan	12	30
20-20	Gromor/FACT/Jaikisan	3	7.5
16-20	Paramfos	2	5
14-35-14	Gromor	2	5

(Note: Percentages are total to the sample size 40)

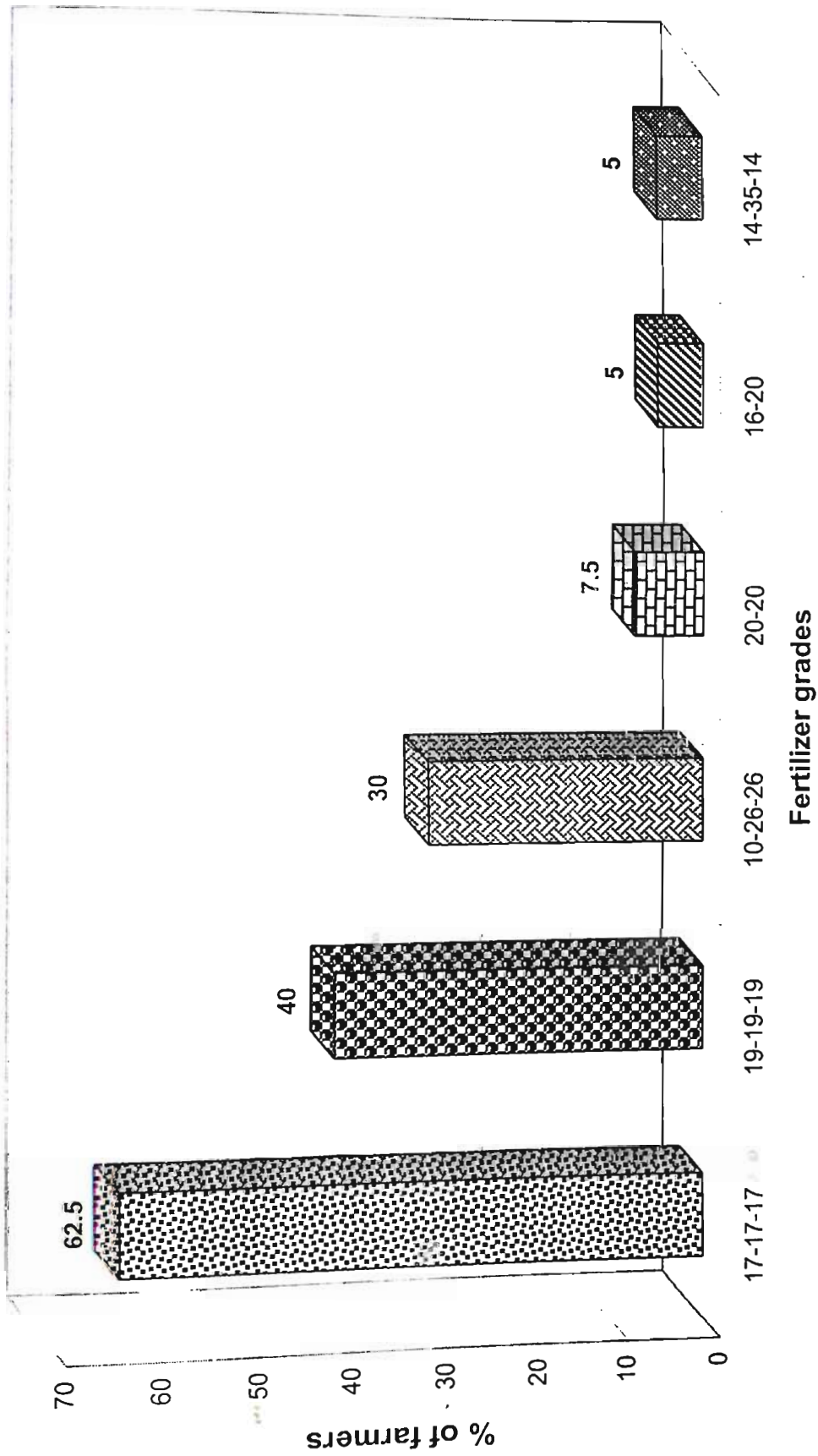


Fig.3.43: Commonly used fertilizers in Citrus crop

As could be seen from the table, the farmers are applying castor cake / neem cake @ 4-8 kg and any complex fertilizer @ 0.5-1 kg per plant during May-June. For second time they are applying castor cake/neem cake @ 2 kg and any complex fertilizer @ 1 kg per plant during Nov-Dec.

Among complex fertilizers usage of 17-17-17 is the highest (62.5%) followed by 19-19-19 (40%), 10-26-26 (30%) and 20-20 (7.5%). Only 5% of the farmers applied Gromor 14-35-14.

Perception about various fertilizer grades

17-17-17

- Contains all three major nutrients ie., N and K
- More flowering
- Good colour of fruiting
- Higher yields
- Medium cost per bag

19-19-19

- Contains 3 major nutrients, ie, N, P & K
- Increases flowering
- Higher yields
- Good colour of fruits
- Increases disease resistance

10-26-26

- Increases flowering
- Revives urea application
- Higher yields

- Good colour of fruits
- Increases disease resistance

20-20

- Increases flowering
- Higher yields
- Less price per bag
- Less hygroscopic
- Non-caking
- Requires MOP application

3.4.3 Papaya crop

3.4.3.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in Table 3.48 and fig. 3.44.

From the table it is noticed that, the farmers are applying 250 kg castor cake or neem cake, 10-15 kg urea, 50 kg SSP and 50 kg MOP or castor cake / neem cake 250 kg and any complex fertilizer 100 kg per acre for every 2 months interval ie., 6 times in a year.

Among complex fertilizers the usage of 10-26-26 is the highest (46.6%) followed by 17-17-17 (33.3%), 19-19-19 (30%) and 16-20 (30%).

Table 3.48 Fertilizer usage pattern in Papaya

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
July-Oct	Every 2 months interval	Castor cake /neem cake 250 10-15	50	50	Any complex	100	U-Vijay, spic Ujwala NFCL S-Parry M-Parry,IPL

Commonly used fertilizers in Papaya

Fertilizer grade	Brand name	No.of farmers using	Percentage
10-26-26	Jaikisan/IFCO	14	46.6
17-17-17	Vijay	10	33.3
19-19-19	Jaikisan/Vijay	9	30
16-20	Paramfos	9	30
Straight	-	30	100

(Note: Percentages are total to the sample size 30)

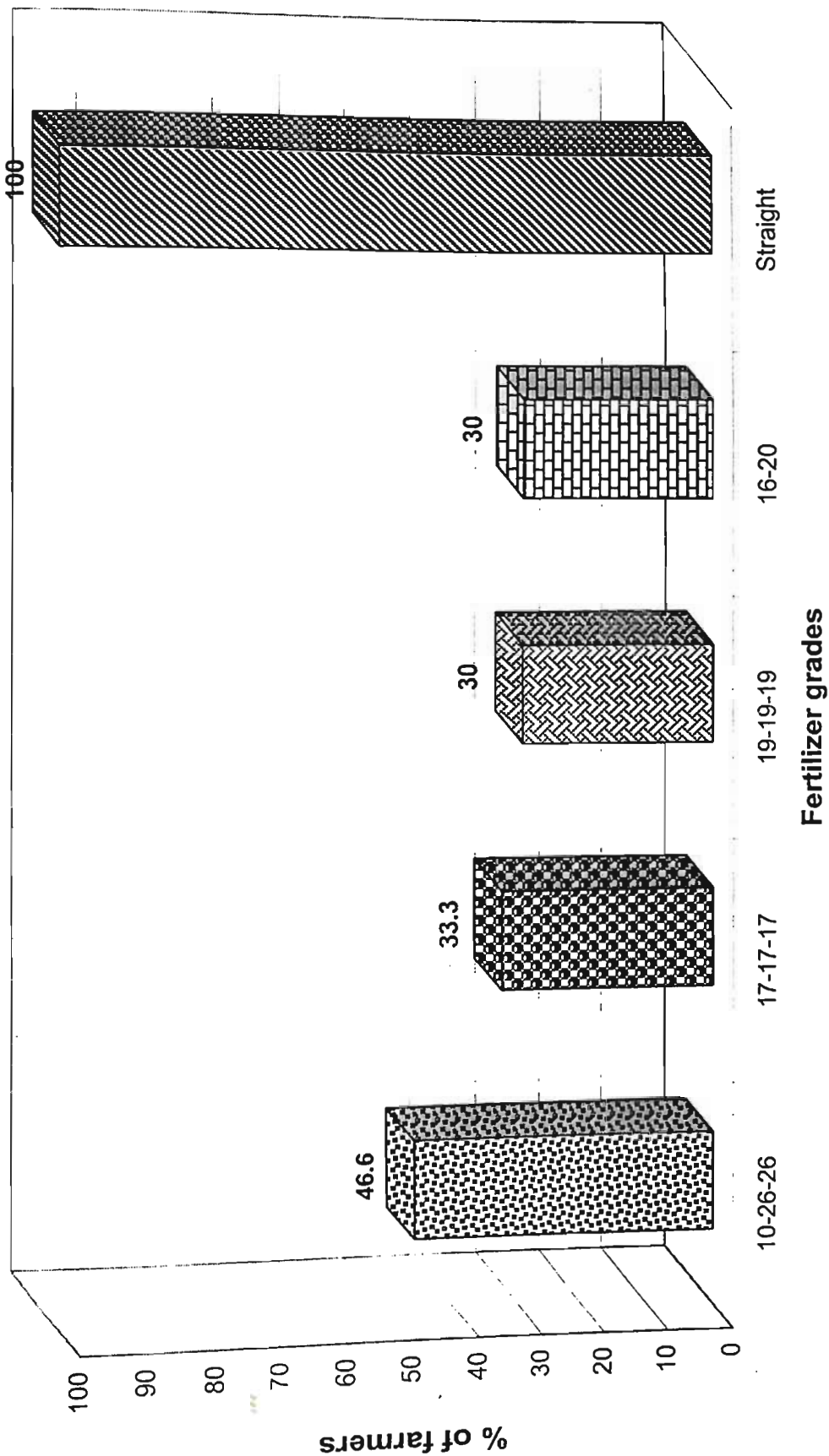


Fig.3.44: Commonly used fertilizers in Papaya crop

Perception about various fertilizer grades

10-26-26

- Contains 3 major nutrients ie., N,P & K
- Best suited their practice ie., farmers were applied less 'N' in order to decrease height of tree.
- Increases flowering
- Higher yields
- Increases disease resistance
- Timely harvesting

17-17-17

- Contains 3 major nutrients ie., N,P & K
- Higher yields
- Increases disease resistance
- Caking is common

19-19-19

- Contains 3 major nutrients ie., N,P & K in equal proportion
- Higher yields
- Increases disease resistance
- Caking is common

16-20

- Higher yields
- Requires MOP application
- Low price per bag

All the farmers were using straight fertilizer at least 2-3 times out of 6 applications and their perception about the straight fertilizers are

- Timely availability
- By applying less quantity of urea, they reduce the tree height within manageable limits.
- More quantity of fertilizers spread uniformly in the field
- Less prices per bag.

3.4.4 Paddy crop

3.4.4.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in Table 3.49 and fig. 3.45.

From the table it is clear that, as basal farmers are applying 50 kg urea 50 kg SSP and 25 kg MOP or 50 kg of any complex fertilizer per acre. At 7-10 and 25-30 DAT they were applying 25 kg urea and complex fertilizer @ 50 kg per acre. At panicle initiation stage they were applying 25 kg ammonium sulphate and 20 kg MOP per acre.

Among complex fertilizers usage of DAP is the highest (72%) followed by 17-17-17 (70%), 14-35-14 (42%) 20-20 (24%), 10-26-26 (24%) 28-28 (22%) and 19-19-19 (20%).

Perception about various fertilizer grades

DAP

- Quick establishment of seedlings
- Quick decomposition of previous crop residues
- Better tillering
- Higher yields

Table 3.49 Fertilizer usage pattern in Paddy

Season	Time of application	Fertilizer applied kg/acre				Quantity	Method of application	Brand
		Urea	SSP	MOP	Complex			
Kharif	Basal	50	50	25	Any complex	50	Broadcasting	S-Parry, SPIC
	7-10 DAT	25	-	-	Any complex	50	Broadcasting	U-SPIC, Ujjwala
	25-30 DAT	25	-	-	Any complex	50	Broadcasting	NFCL M-Parry, IPL
	At P.I stage	A/S 25-50	-	20	-	-	Broadcasting	FACT/Raja

Commonly used fertilizers in Paddy

Fertilizer grade	Brand name	No. of farmers using	Percentage
DAP	GFC/SPIC/IFFCO	36	72
17-17-17	Vijay	35	70
14-35-14	Gromor	21	42
20-20	Gromor/SPIC/FACT	12	24
10-26-26	Jaikisan/IFFCO	12	24
28-28	Gromor	11	22
19-19-19	Vijay/Jaikisan	10	20
16-20	Paramfos	8	16

(Note: Percentages are total to the sample size 50)

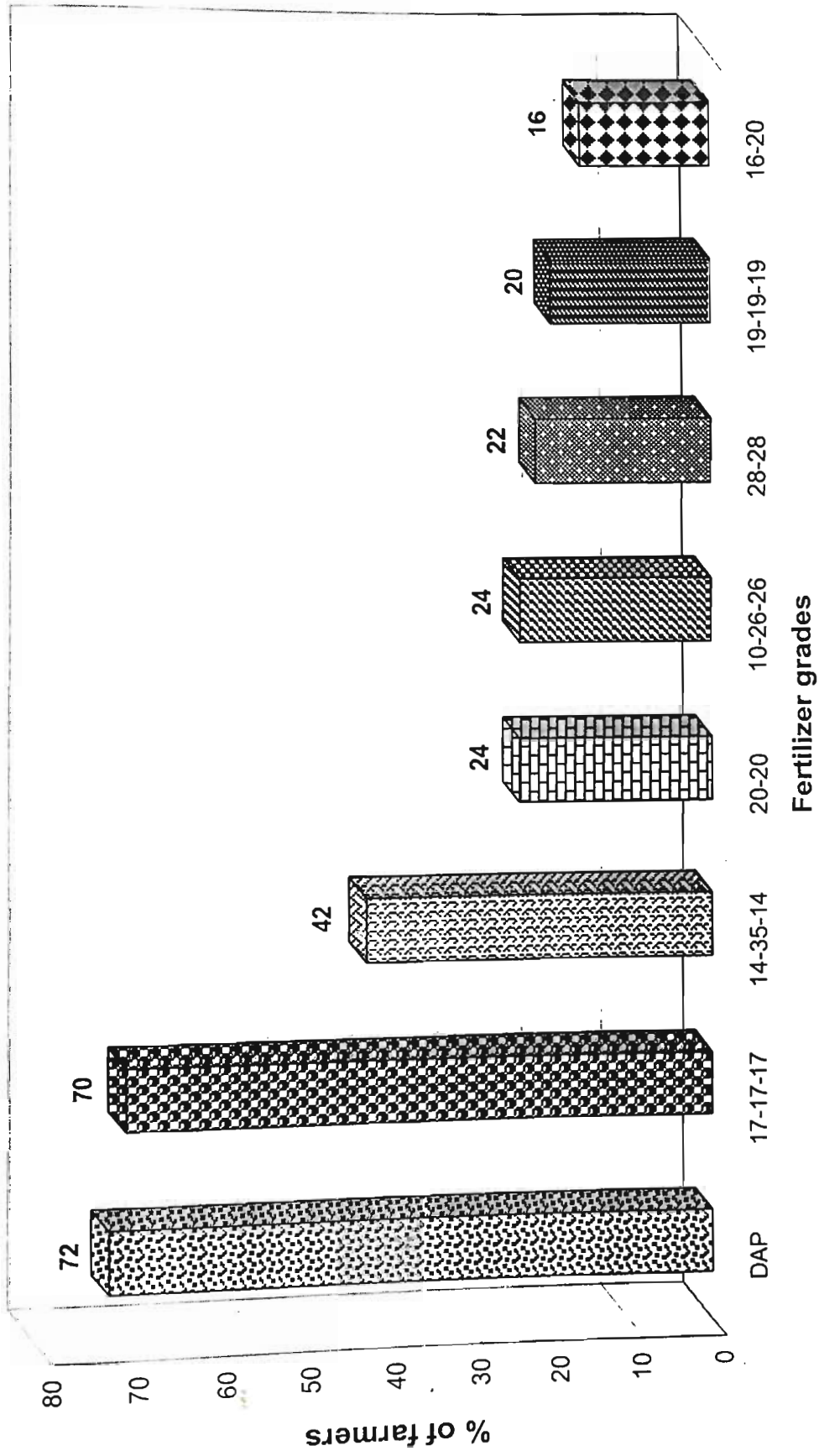


Fig.3.45: Commonly used fertilizers in Paddy crop

17-17-17

- Contains all 3 major nutrients ie., N,P&K
- Less no. of unfilled grains
- Improves disease resistance
- Higher yields
- Caking is common

14-35-14

- Contains all 3 major nutrients ie., N,P&K
- Quick establishment of seedlings
- Better tillering
- Increases weight of grains
- Higher yields
- Non-Caking

20-20

- Better tillering
- Higher yields
- Contains Sulphur so, it improves quality of grains
- Less hygroscopic

10-26-26

- Better tillering
- Higher yields
- Improves disease resistance
- Less no .of unfilled grains
- Requires urea application

28-28

- Quick greening
- Does not require urea application
- Higher yields
- Non-caking

16-20

- Low price
- Higher yields
- Contains Sulphur so, it improves quality of grains

3.4.5 Bengalgram crop

3.4.5.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades are presented in table 3.50 and fig. 3.46.

From the table it is evident that, the farmers are applying complex fertilizer @ 25-50 kg per acre as basal only.

Among complex fertilizers, 14-35-14 usage was the highest (67.5%) followed by DAP (50%) and 16-20 (10%).

Perception about various fertilizer grades

14-35-14

- Contains all 3 major nutrients ie., N,P&K
- Better growth and flowering
- Higher yields
- Increases disease resistance

Table 3.50 Fertilizer usage pattern in Bengalgram

Season	Time of application	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Rabi (Oct-Nov)	Basal				Any complex	25-50	Broadcasting

Commonly used fertilizer in Bengalgram

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	27	67.5
DAP	GFC/SPIC	20	50
16-20	Paramfos	4	10

(Note: Percentages are total to the sample size 40)

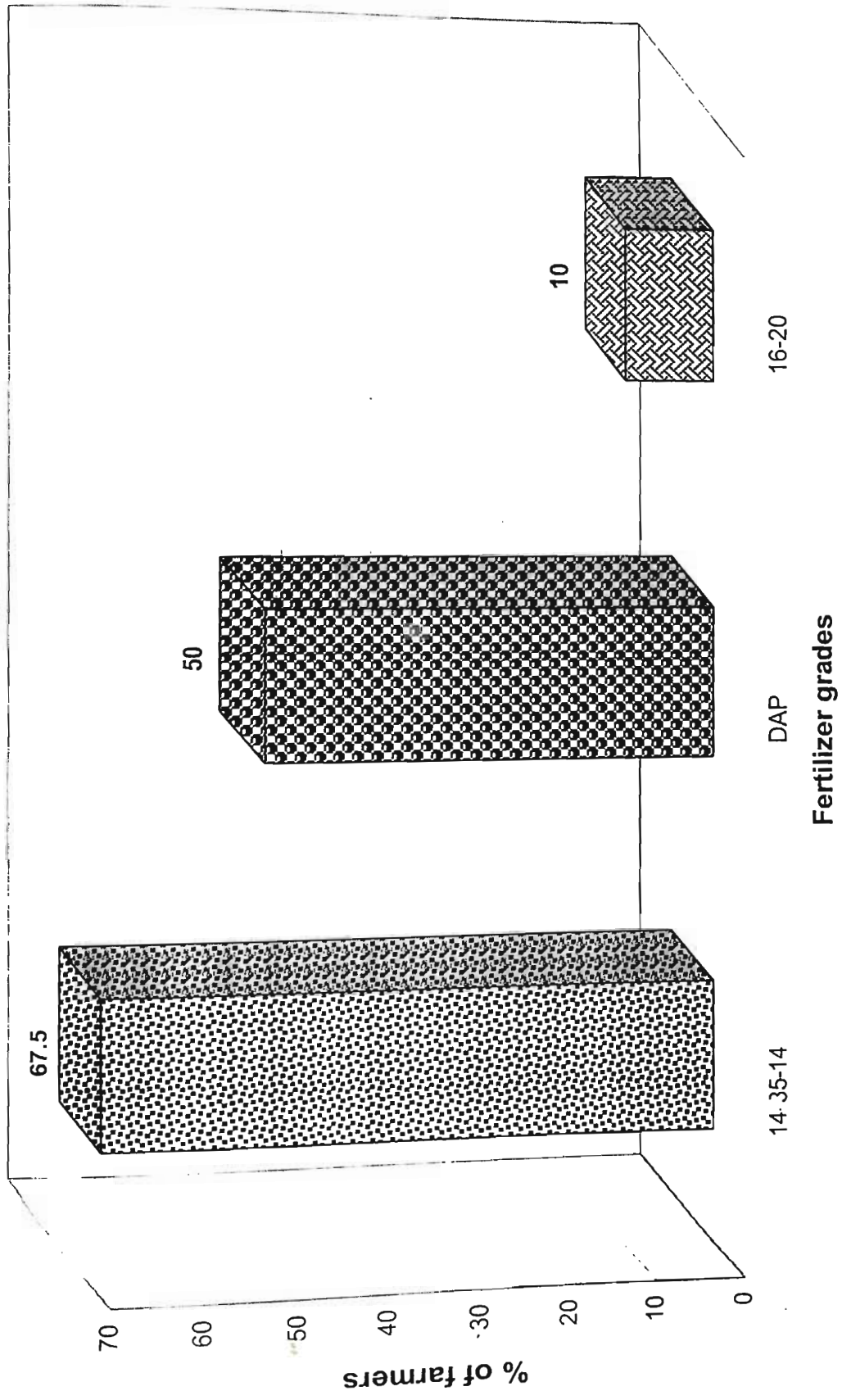


Fig.3.46: Commonly used fertilizers in Bengalgram crop

DAP

- Contains required nutrients ie., N&P
- Increases flowering
- Higher yields
- High price per bag

16-20

- Contains required nutrients, N&P
- Low price per bag
- Higher yields

3.4.6 Sunflower crop**3.4.6.1 Fertilizer usage pattern**

The fertilizer usage pattern and commonly used fertilizer grades are presented in Table 3.51 and fig. 3.47.

As could be seen from the table, the farmers are applying castor cake @ 50 kg and complex fertilizer (ie., 14-35-14/DAP/16-20) @ 50 kg per acre as basal, later they were applying 25 kg Urea per acre at 30 DAS.

Among complex fertilizers, 14-35-14 usage was the highest (65%) followed by DAP (45%) and 16-20 (15%).

Perception about various fertilizer grades**14-35-14**

- Contains all the 3 major nutrients ie., N,P&K
- Increases the size of head
- Less no. of unfilled grains

Table 3.51 Fertilizer usage pattern in Sunflower

Season	Time of applica- tion	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Kharif/ Rabi	Basal	Castor cake	50 kg		14-35-14 or DAP or 16-20	50	Broadcasting
	30 DAS	25	-	-	-	-	Broadcasting
							U- Spic NFCL Vijay

Commonly used fertilizer in Sunflower

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	13	65
DAP	GFC/SPIC/IFFCO	9	45
16-20	Paramfos	3	15

(Note: Percentages are total to the sample size 20)

Table 3.51 Fertilizer usage pattern in Sunflower

Season	Time of applica- tion	Fertilizer applied kg/acre				Method of application	Brand
		Urea	SSP	MOP	Complex		
Kharif/ Rabi	Basal	Castor cake	50 kg		14-35-14 or DAP or 16-20	50	Broadcasting
	30 DAS	25	-	-	-	-	Broadcasting

Commonly used fertilizer in Sunflower

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	13	65
DAP	GFC/SPIC/IFFCO	9	45
16-20	Paramfos	3	15

(Note: Percentages are total to the sample size 20)

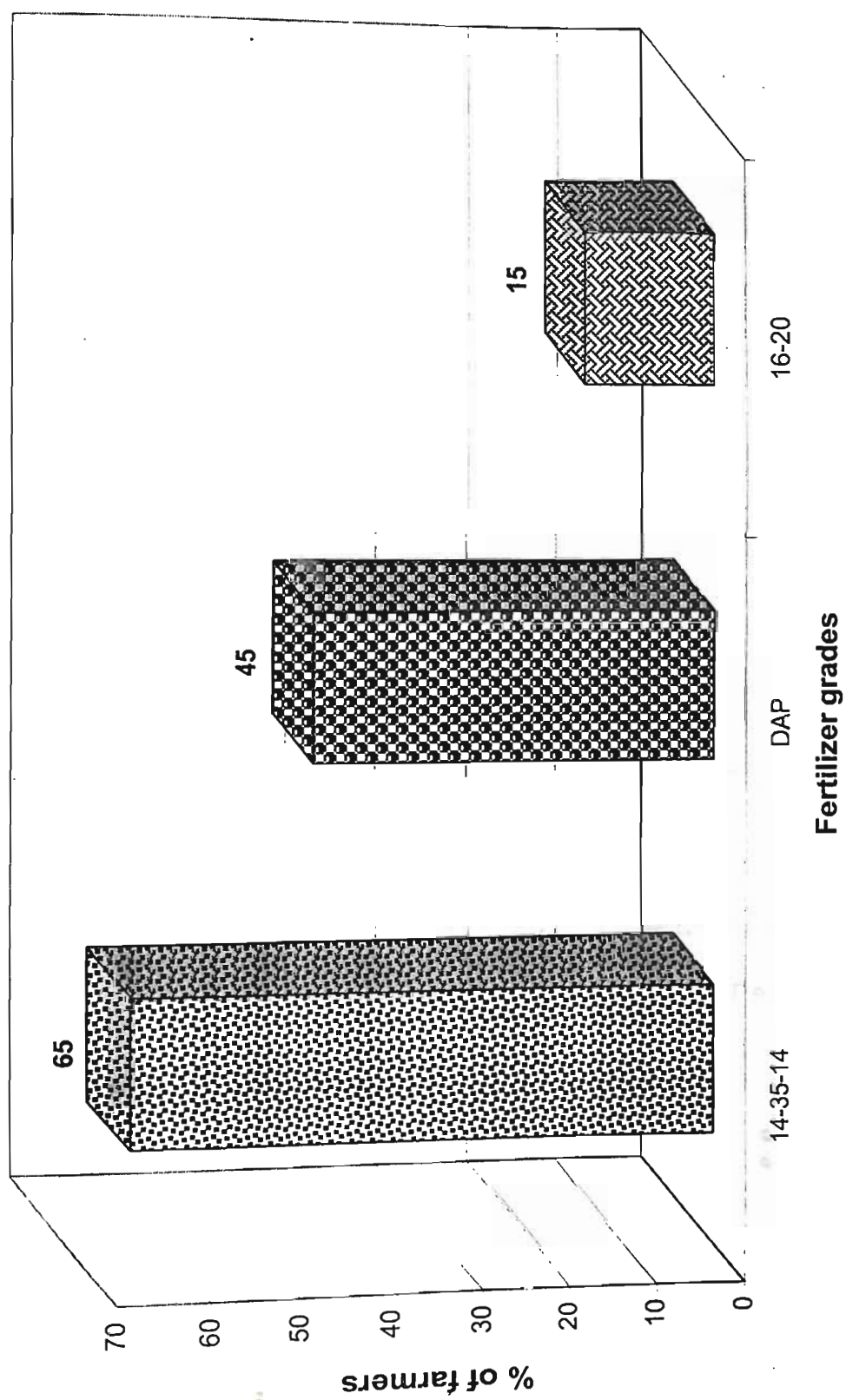


Fig.3.47: Commonly used fertilizers in Sunflower crop

- Higher yields
- Increases disease resistance

DAP

- Quick establishment
- Increases growth
- Increases size of head
- Higher yields

16-20

- Increases growth
- Contains Sulphur which increases the oil content
- Higher yields
- Low price per bag

3.4.7 Basis for applying fertilizer dosages

The basis for applying fertilizer dosages are presented in table 3.52 and fig. 3.48.

Table: 3.52 Basis for applying fertilizer dosages

Basis	No. of farmers	Percentage
As per recommendations of Scientists & AO's	33	22
Soil testing	12	8
Past experience	150	100
Following progressive farmers	87	58
Dealer advice	69	46

(Note: Percentages are total to the sample size 150)

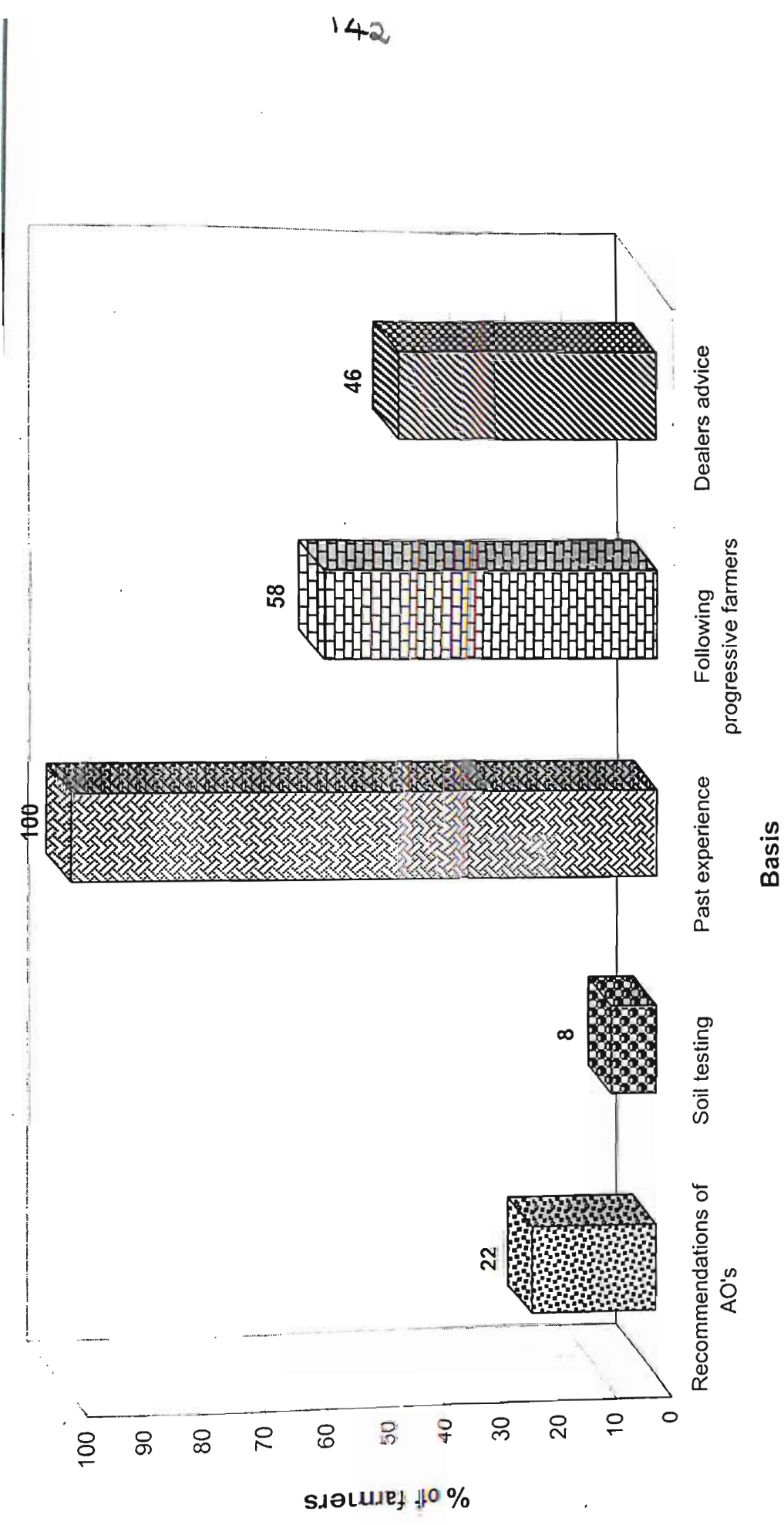


Fig.3.48: Basis for applying fertilizer dosages

From the table, it is observed that all most all the farmers were applying fertilizer dosages based on their past experience which was followed by following other progressive farmers (58%), Dealers advice (46%) and recommendations of scientists and AO's (22%). Only 8% of the sampled farmers applied fertilizer dosages based on soil testing.

3.4.7 Criteria for selection of a particular brand of fertilizer

The criteria for selecting a particular brand of fertilizer is presented in table 3.53. and fig. 3.49.

Table 3.53 Basis for selecting a particular brand of fertilizer

Criteria	No.of farmers	Percentage
Dealers advice	87	58
Other farmers suggestions	90	60
Crop requirement	45	30
Lower price/bag	57	38
Brand image	72	48
Past experience	138	92
Timely availability	69	46

(Note: Percentages are total to the sample size 150)

From the table it is inferred that about 92% of the farmers selected a brand based on their past experience, which was followed by other farmers suggestions (60%), dealers advice (58%), Brand image (48%) and timely availability (46%).

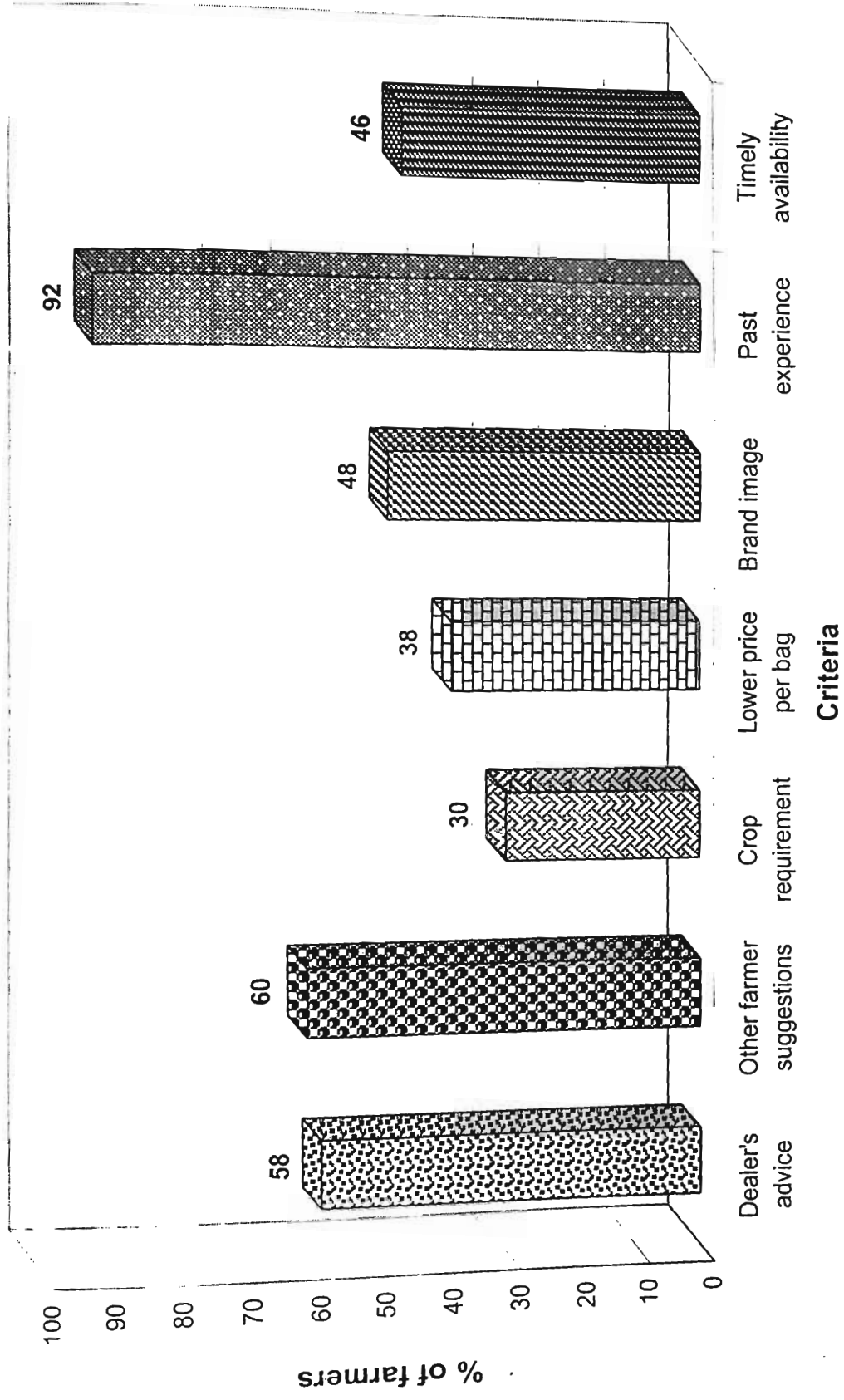


Fig.3.49: Criteria for selecting a particular brand of fertilizer

3.4.8 Awareness about Gromor brand

The awareness about different brands is presented in table 3.54 and fig.

3.50.

Table 3.54 Awareness about different brands of complex fertilizers

Fertilizers Brand	No. of farmers	%
Gromor	117	78
Vijay	111	74
Jaikisan	108	73
Godavari	96	64
SPIC	108	72
IFFCO	102	68
FACT	78	52
Parry	105	70

(Note: Percentages are total to the sample size 150)

From the table it is evident that nearly 78% of the farmers were aware of the Gromor brand and 72% of the farmers were aware of Gromor 14-35-14.

About 74% of the farmers were aware of Vijay brand which was followed by Jaikisan (72%), SPIC (72%), Parry (70%) Godavari (64%), IFFCO (68%) and FACT (52%).

3.4.7 Reasons for using other brands

The reasons for using other brands are presented in table 3.55 and fig.

3.51.

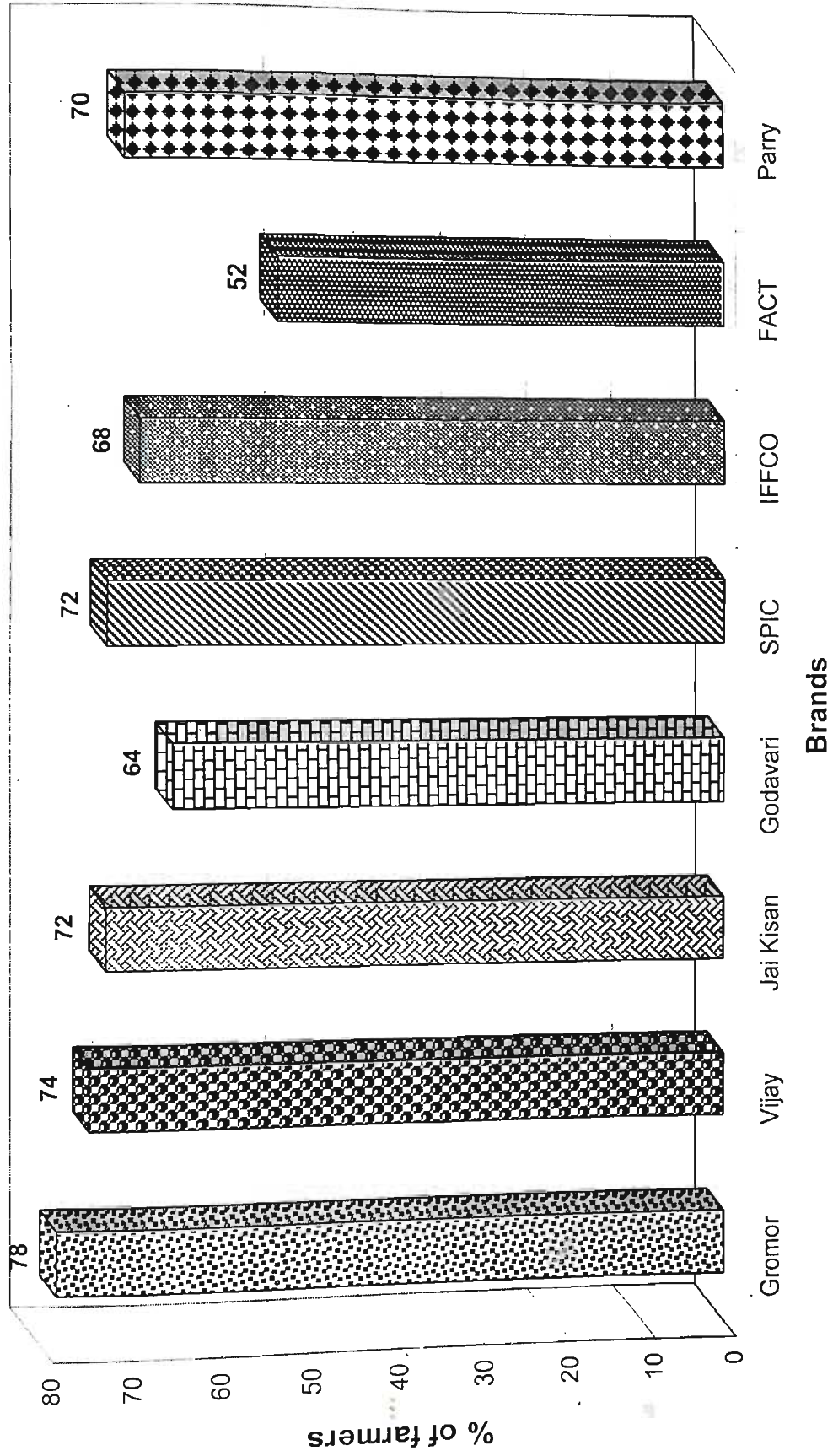


Fig.3.50: Awareness about different brands

Table 3.55 Reasons for using other brands

Reason	No. of farmers	Percentage
Less price / bag	42	28
Credit facility	81	54
Brand image	72	48
Only grade available with the dealer	39	26
Timely availability	78	52
Other reasons (suitability of the soil and crop)	84	56

(Note: Percentages are total to the sample size 150)

From the table it is unearthed that about 56% of the farmers were using other brands due to the suitability to the soil and crop followed by credit facility (54%), timely availability (52%) and brand image (48%).

3.4.7 Effective and convenient mass media

The most effective and convenient mass media was studied and presented in table 3.56 and fig. 3.52.

Table 3.56 Most effective and convenient mass media

Mass Media	No. of farmers	Percentage
T.V.	141	94
Radio	6	4
News paper	45	30

(Note: Percentages are total to the sample size 150)

From the table it is noticed that about 94% of the farmers watch TV channels like ETV, Gemini, Teja and DD1. Nearly 30% of the farmers read news papers like Vaartha and Eenadu. Only 4% of the farmers listen to radio programmes like news and weather report.

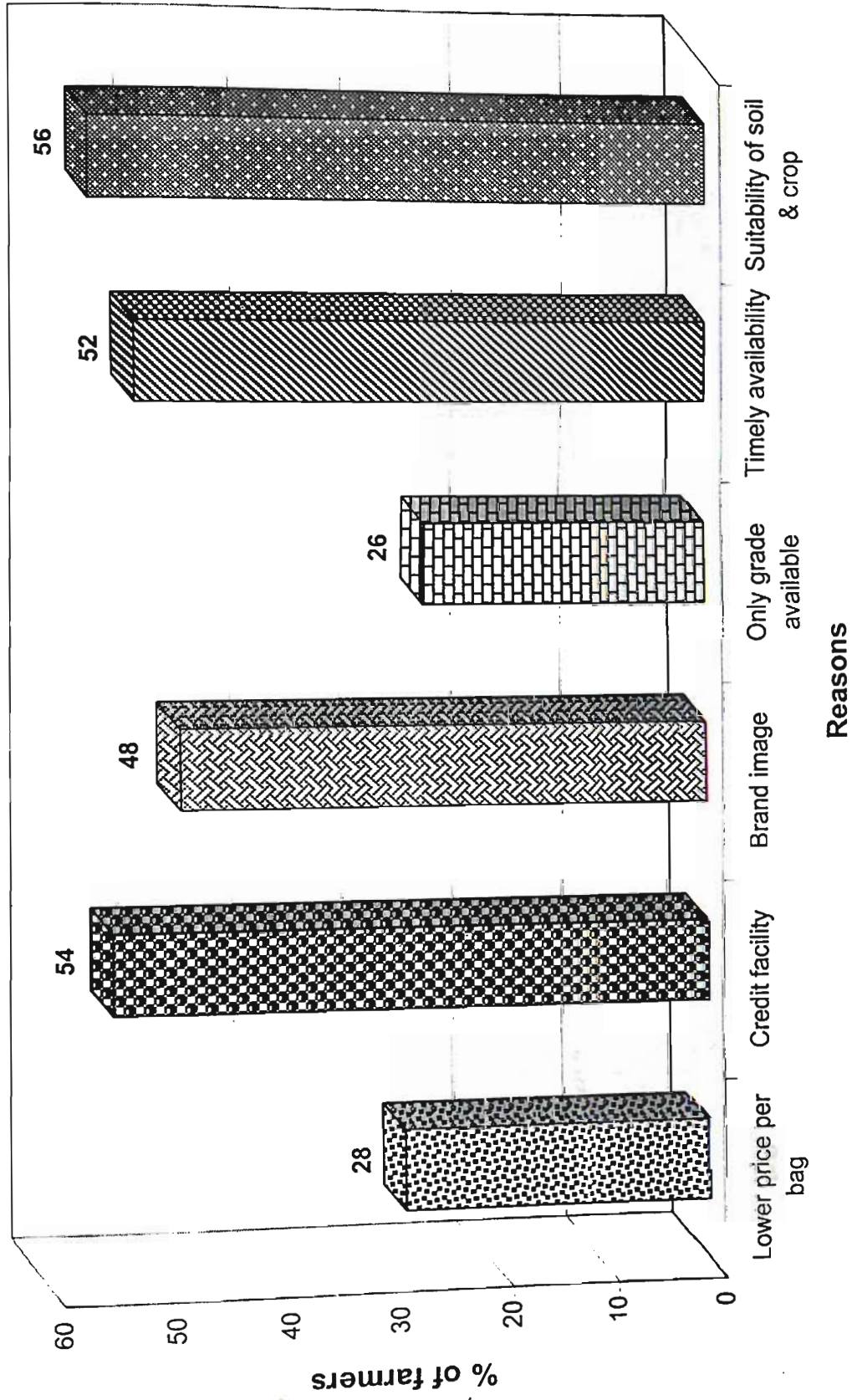


Fig.3.51: Reasons for using other brands

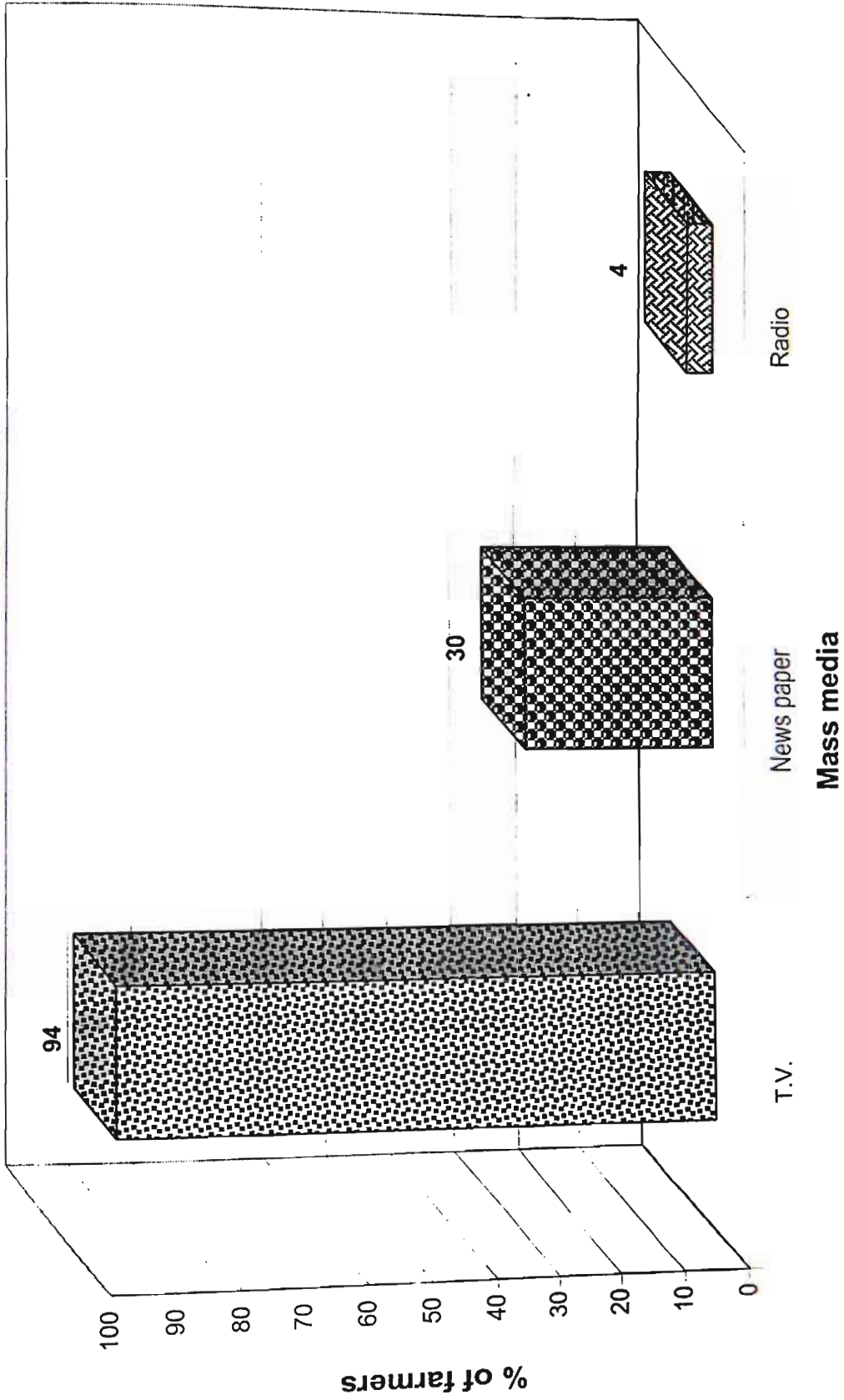


Fig.3.52: Most effective and convenient mass media

3.4.8 Effective promotional programmes

The most effective promotional programmes at village level are presented in table 3.57 and fig. 3.53.

Table 3.57 Effective promotional programmes

Promotional programmes	No. of farmers	Percentage
Farmers meetings	63	42
Demo's	42	28
Burrakathas	33	22
A.V. Vans	84	56
Posters	99	66
Kisan Melas	48	32

(Note: Percentages are total to the sample size 150)

From the table it is observed that about 66% of the farmers were interested in posters which was followed by audio visual vans (56%), farmers meetings (42%) and Kisan melas (32%). Only 28% of farmers were interested in demos and 22% were interested in Burrakathas.

3.4.9 Opinion on price of Gromor 14-35-14

The opinion on price of Gromor 14-35-14 is presented in table 3.58 and fig. 3.54.

Table: 3.58 Opinion on price of Gromor 14-35-14

Price	No. of farmers	Percentage
High	36	24
Satisfactory	114	76

(Note: Percentages are total to the sample size 150)

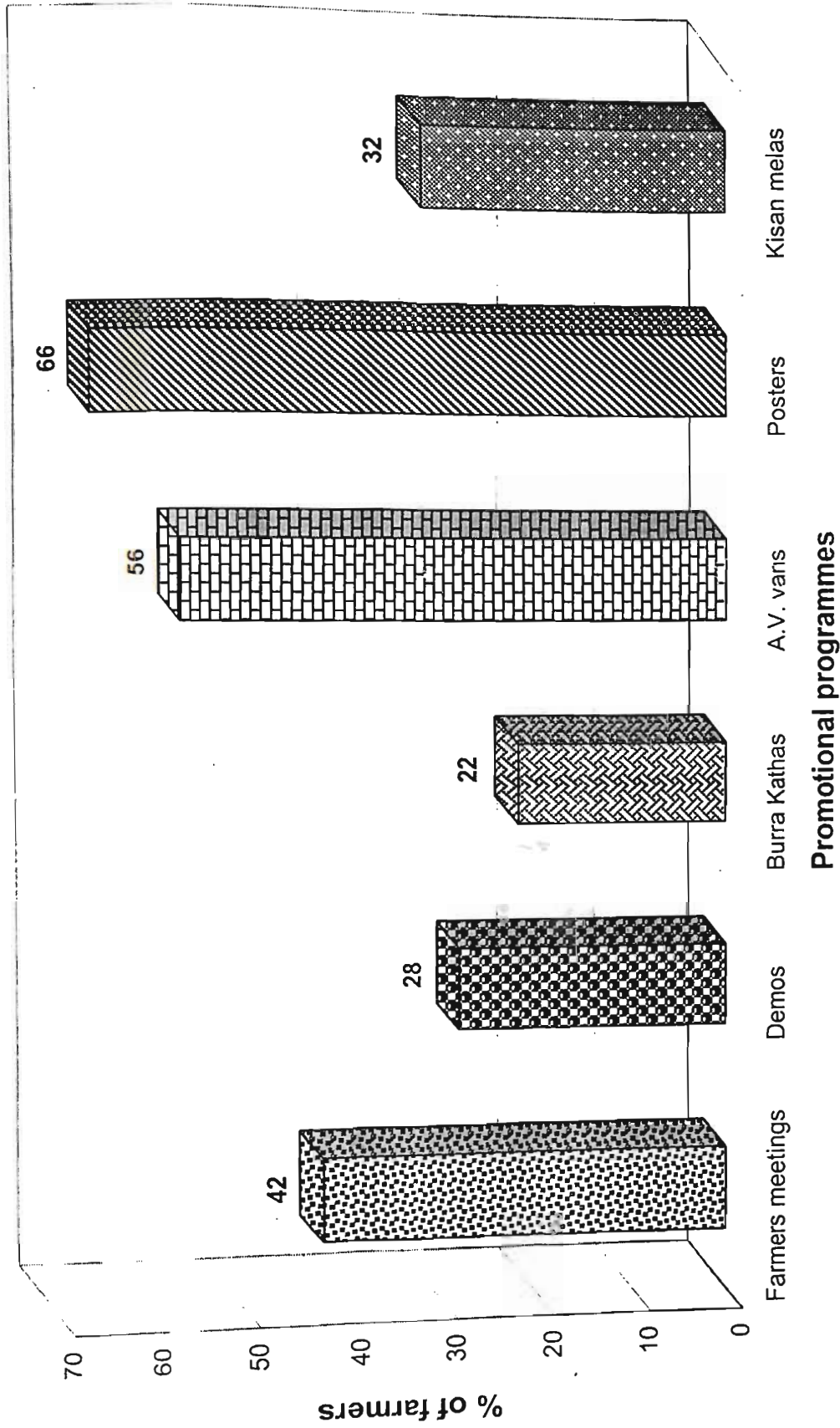


Fig.3.53: Most effective promotional programmes

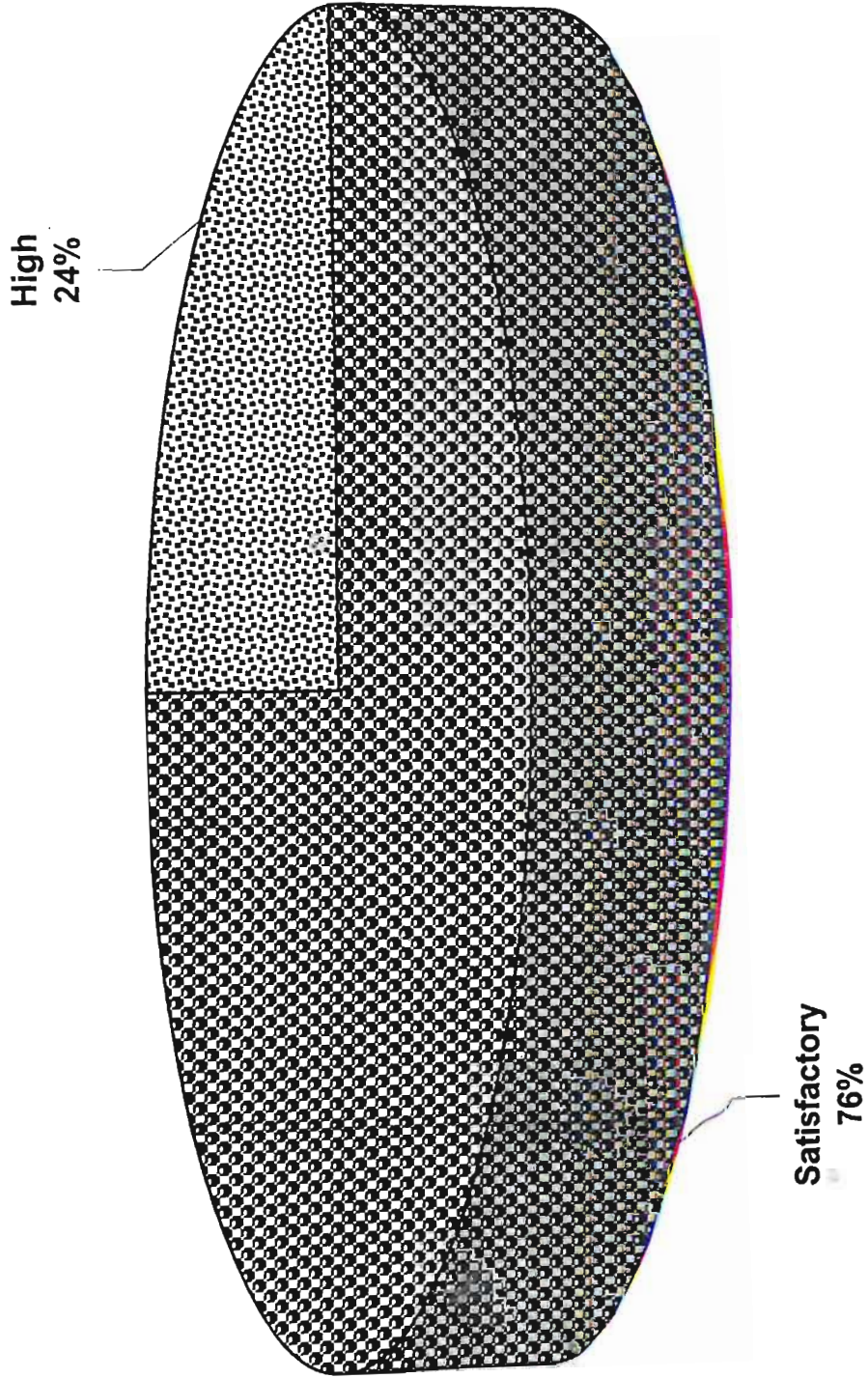


Fig. 3.54: Opinion on price of Gromor 14-35-14

From the table it is evident that about 76% of the farmers were satisfied with the price of Gromor 14-35-14 and remaining 24% opined to be high.

3.4.9 Mode of purchase of fertilizers

The mode of purchasing of fertilizers is presented in table 3.59 and fig. 3.55.

Table 3.59 Mode of purchase of fertilizers

Purchase	No. of farmers	Percentage
Cash	57	38
Credit	93	62

(Note: Percentages are total to the sample size 150)

From the table it is inferred that, about 62% of the farmers purchased fertilizers on credit basis and remaining 38% on cash basis.

3.4.9 Repayment period

The repayment period for credit purchase is presented in table 3.60 and fig. 3.56.

Table 3.60 Repayment period

Repayment period	No. of farmers	Percentage
One week	9	6
One month	27	18
After harvest	114	76

(Note: Percentages are total to the sample size 150)

From the table it is clear that, about 76% of the farmers repay their credit after harvest of the crop and 18% repay within one month. Only 6% of the farmers repay their credit within one week.

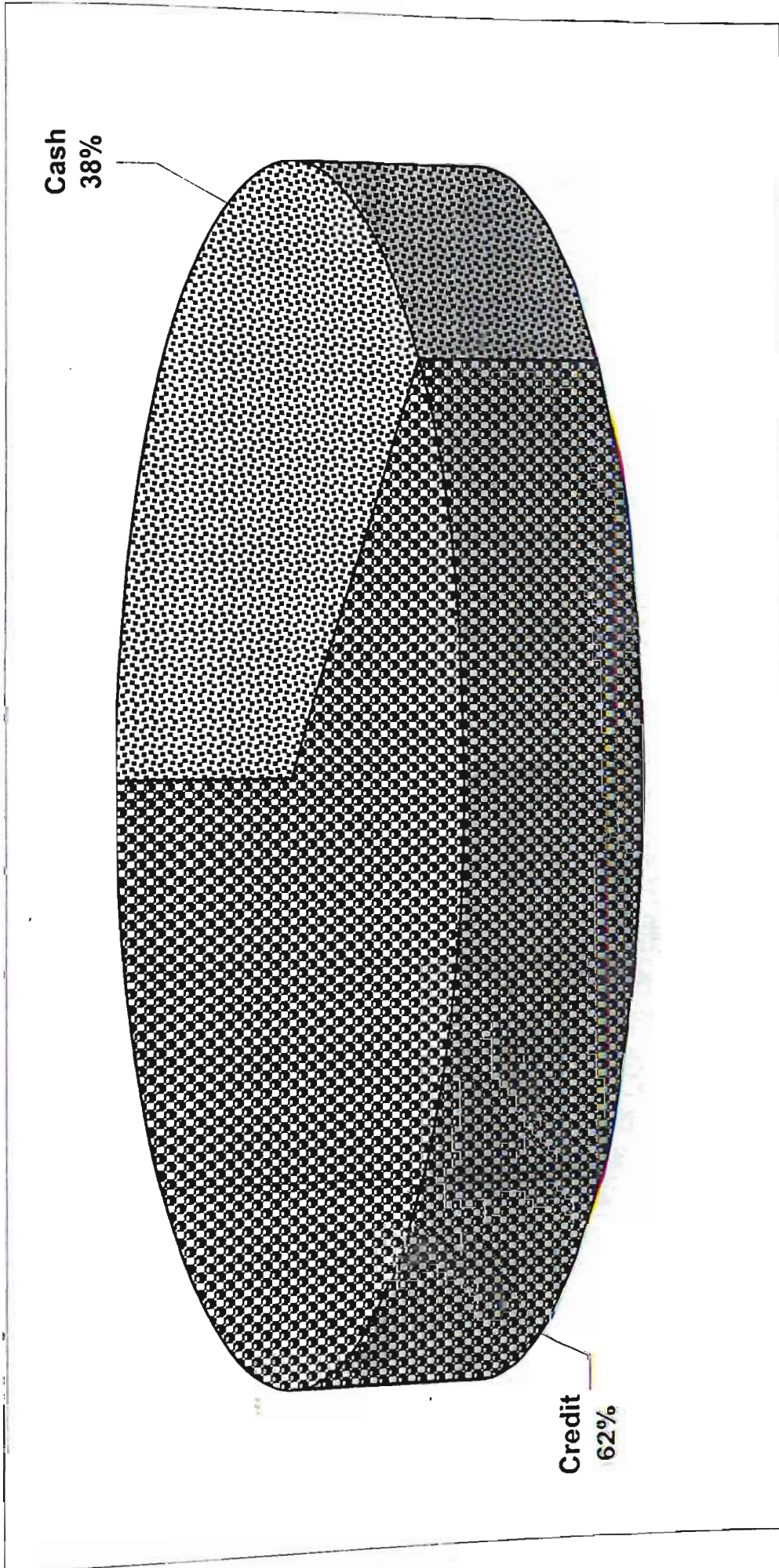


Fig. 3.55: Mode of purchase of fertilizers

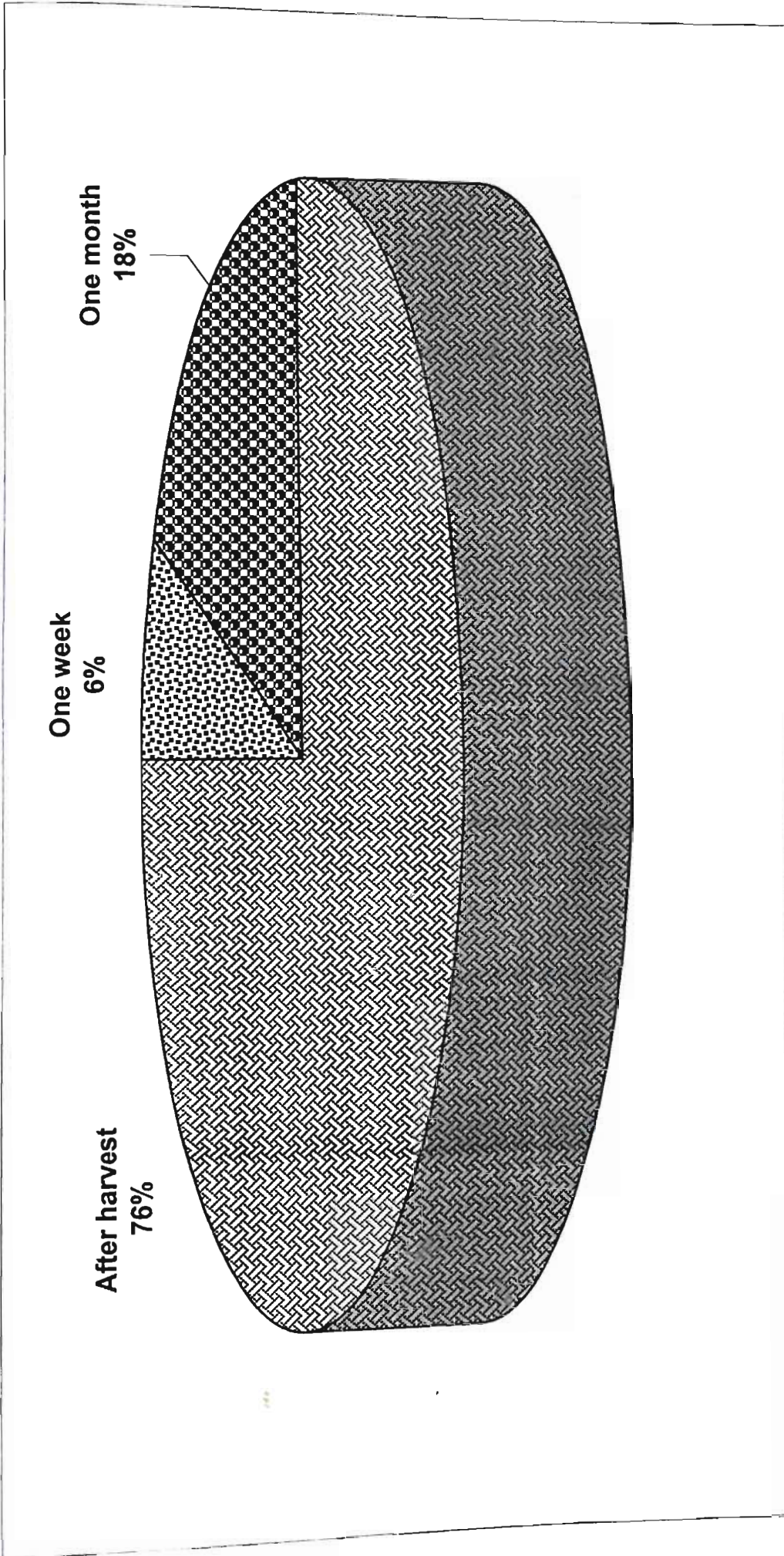


Fig. 3.56: Repayment period for credit purchase

3.4.14 Interest rate

No interest was charged by the dealer for repayment within a week or one month, after which they charge an interest rate of 24-30%. The dealers also charge Rs. 5-10% extra per bag on credit purchase.

3.5 CUDDAPAH DISTRICT

The major markets covered in this district are Proddatur, Jammalamadugu, Vempalli and Pulivendula. The major crops and villages surveyed are presented in the table 3.51

Table 3.61 Major markets, crops and villages covered in Cuddapah District.

Market	Crop	Village	Mandal
Proddatur	Paddy	Peddasettipalli	Proddatur
	Bengalgram	Sankarapuram	Proddatur
	Turmeric	Sreeramulapeta	Chapadu
	Sunflower	Laksh mipeta	Chapadu
Jammalamadugu	Groundnut		
	Bengalgram	Peddapasupula	Pedd amudiam
	Sunflower	J.Kottapally	Rajupalem
		Parlapadu	Rajupalem
Vempalli		Arkatavemula	
	Groundnut	Nandipalli	Vempalli
	Sunflower	Pamuluru	Vempalli
Pulivendula		Ayyavarupalli	Vempalli
	Groundnut	Chintala Juturu	Pulivendula
	Citrus	Peddajuturu	Vemula
		Balapanur	Simhadripuram
		Ankamma-gudur	Simhadripuram

3.5.1 Paddy crop

3.5.1.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades in paddy are presented in table 3.62 and fig. 3.57.

From the table it is observed that, as basal farmers were applying 100-150 kg castor cake, 25 kg Urea, 50 kg SSP and 25 kg MOP or complex fertilizer @ 50 kg and castor cake @ 100-150 kg per acre. At 15-20 DAT and 35-40 DAT they were applying 25 kg Urea and complex fertilizer @ 50 kg per acre. At panicle initiation they were applying 25 kg ammonium sulphate and 25 kg MOP per acre.

Among complex fertilizers, usage of DAP is the highest (55%) followed by 20-20 (42.5%), 28-28 (42.5%) and paramfos (20%). Only 17.5% of the farmers were using 14-35-14 and 30% of farmers using straight fertilizers .

Perception about different fertilizer grades

DAP

- Quick decomposition of previous crop residues
- Quick establishment of seedlings
- Better tillering
- Higher yields
- Timely availability

20-20

- Better tillering
- Higher yields

Table 3.62 Fertilizer usage pattern in Paddy

Season	Time of application	Fertilizer applied kg/acre					Quantity	Method of application	Brand
		Urea	SSP	MOP	Complex	Complex			
Kharif	Basal	25 Castor cake 100- 150	50	25	Any complex	50	Broadcasting	U-NFCL Spic S-Parry M-IPL Parry	
	15-20 DAT	25	-	-	Any complex	50			
	35-40 DAT	25	-	-	Any complex	50			
	P.I stage	A/S 25	-	25	-	-	-	FACT	

Commonly used fertilizers in Paddy

Fertilizer grade	Brand name	No. of farmers using	Percentage
DAP	GFC/SPIC	22	55
20-20	Gromor/FACT	17	42.5
28-28	Gromor	17	42.5
16-20	Paramfos	8	20
14-35-14	Gromor	7	17.5
17-17-17	Vijay	2	5
Straight	-	12	30

(Note: Percentages are total to the sample size 40)

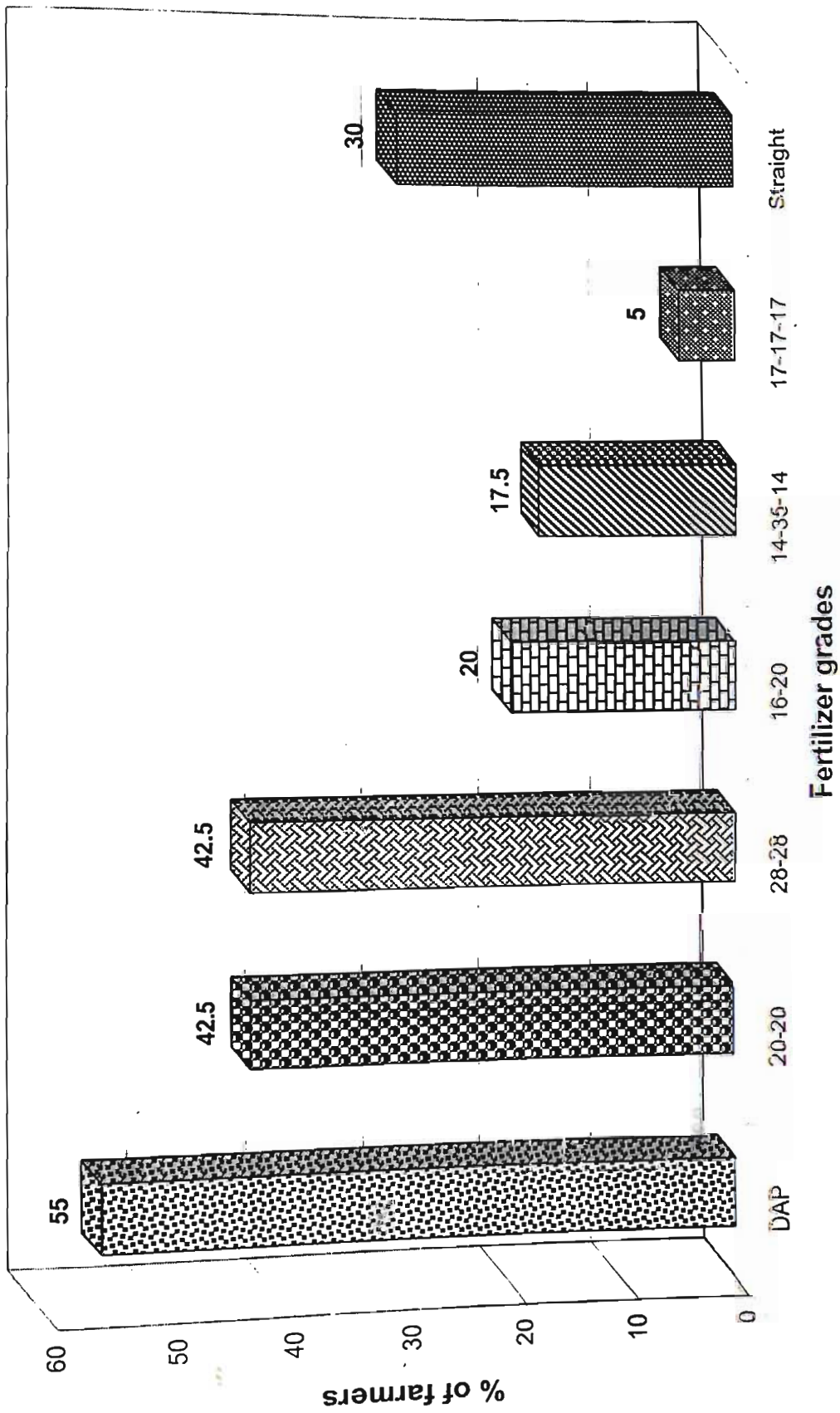


Fig.3.57: Commonly used fertilizers in Paddy crop

- Low price per bag
- Less hygroscopic
- Easy application
- No caking
- Contains sulphur which improves grain quality

28-28

- Quick greening
- Better tillering
- Does not require urea application
- Higher yields
- High price per bag

16-20

- Increases tillering
- Contains Sulphur it improves grain quality
- Low price per bag

14-35-14

- Quick establishment of seedlings
- Better tillering
- Higher yields
- Less unfilled grains

3.5.1 Turmeric crop**3.5.1.1 Fertilizer usage pattern**

The fertilizer usage pattern and commonly used fertilizer grades in turmeric crop are presented in table 3.63 and fig. 3.58.

Table 3.63 Fertilizer usage pattern in Turmeric

Season	Time of application	Fertilizer applied kg/acre					Method of application	Brand
		Urea	SSP	MOP	Complex	Quantity		
June-July	Basal	FYM 4 trucks				100	Applied in furrows and covered with soil	
	40 DAP	-	-	-	Any complex			
	80 DAP	Castor cake 300 kg	-	-	Any complex	100	Applied in furrows and covered with soil	
	120 DAP	CAN 100 kg	-	-				Sona

Commonly used fertilizers in Turmeric

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	22	73.3
19-19-19	Vijay/Jaikisan	11	36.6
17-17-17	Vijay	11	36.6
DAP	GFC/SPIC	8	26.6
20-20	Gromor /FACT/SPIC	6	20
CAN	Sona	30	100

(Note: Percentages are total to the sample size 30)

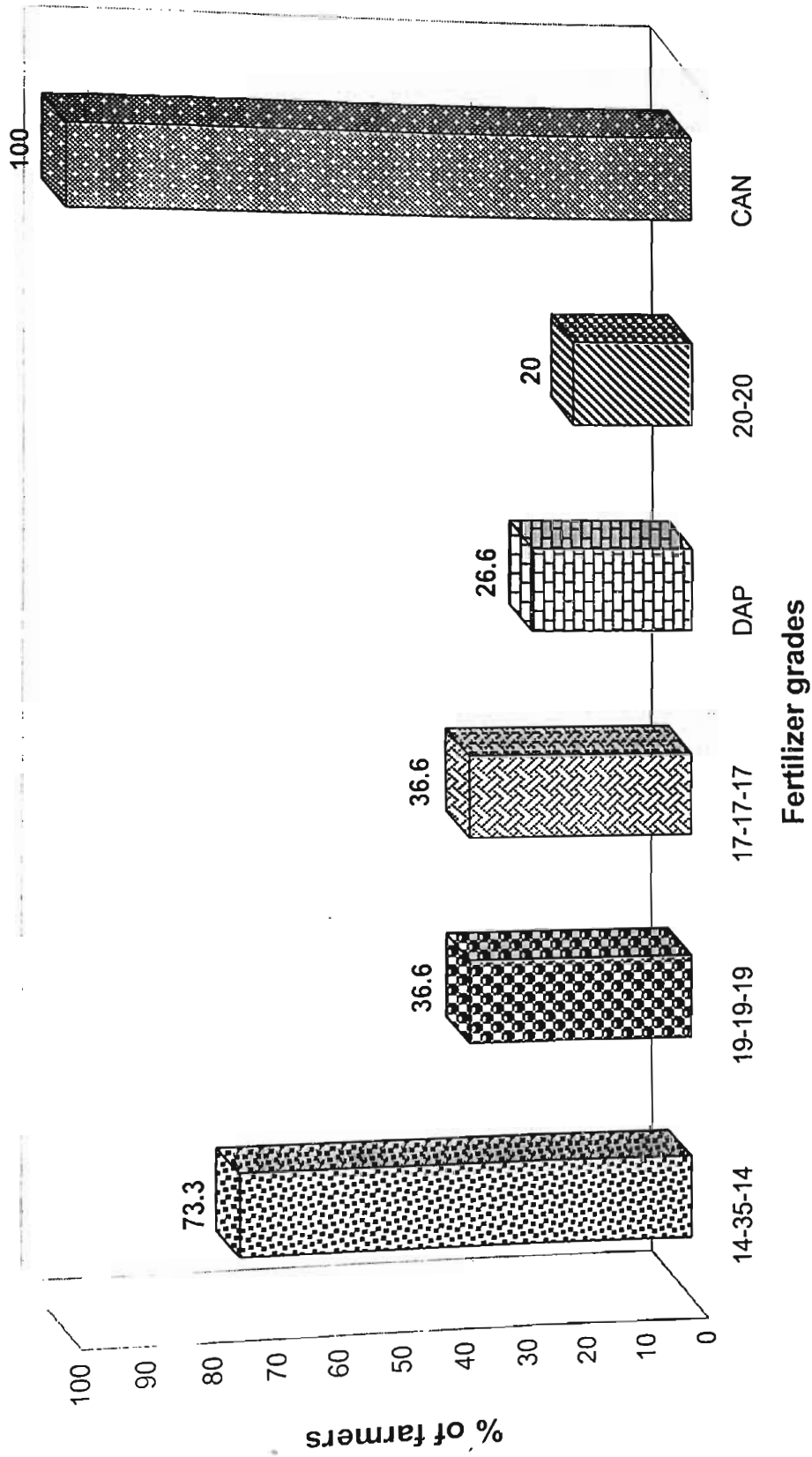


Fig.3.58: Commonly used fertilizers in Turmeric crop

From the table it is evident that, the farmers were applying FYM @ 4 trucks per acre as basal. At 40 DAP they were applying complex fertilizer @ 100 kg per acre and at 80 DAP they were applying castor cake @ 300 kg and complex fertilizer @ 100 kg per acre. At 120 DAP they were applying 100 kg CAN per acre.

Among complex fertilizers the usage of 14-35-14 was the highest (73.3%) followed by 19-19-19 (36.6%), 17-17-17 (36.6%), DAP (26.6%) and 20-20 (20%). CAN usage was 100% because they perceive that it gives good colour to the rhizomes.

Perception about various fertilizer grades

14-35-14

- Quick establishment
- Increases the weight of rhizome
- Improves disease resistance
- Higher yields and quality

17-17-17/19-19-19

- Contains 3 major nutrients in equal ratios
- Increases the growth
- Increases the size of rhizome
- Higher yields and quality
- Caking is common

DAP

- Quick establishment
- Increases size of rhizome

- Higher yields
- High price per bag
- Requires MOP application

20-20

- Contains Sulphur which improves the quality of rhizomes
- Requires MOP application
- Low price

3.5.3 Bengalgram crop

3.5.4 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades in Bengalgram crop is presented in table 3.64 and fig.3.59.

From the table it is noticed that the farmers were applying 50 kg castor cake, 12.5 kg Urea and 50-00 kg of complex fertilizer per acre as basal only.

Among complex fertilizers 14-35-14 usage was the highest (65%) followed by DAP (33.3%), 16-20 (21.6%) and 20-20 (5%).

Perception about different fertilizer grades

14-35-14

- Contains 3 major nutrients, ie, N, P&K
- Better growth and branching
- Higher yields
- Good colour of pods

DAP

- Contains required nutrients ie. N&P
- Increases branching

Table 3.64 Fertilizer usage pattern in Bengalgram

Season	Time of application	Fertilizer applied kg/acre				Quantity	Method of application	Brand
		Urea	SSP	MOP	Complex			
Rabi (Oct-Nov)	Basal	Castor cake 50 kg	-	-	Any complex	50-100	Broadcasting	U-NFCL Spic
		12.5						

Commonly used fertilizers in Bengalgram

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	39	65
DAP	GFC/SPIC	20	33.3
16-20	Paramfos	13	21.6
20-20	Gromor/FACT	3	5

(Note: Percentages are total to the sample size 30)

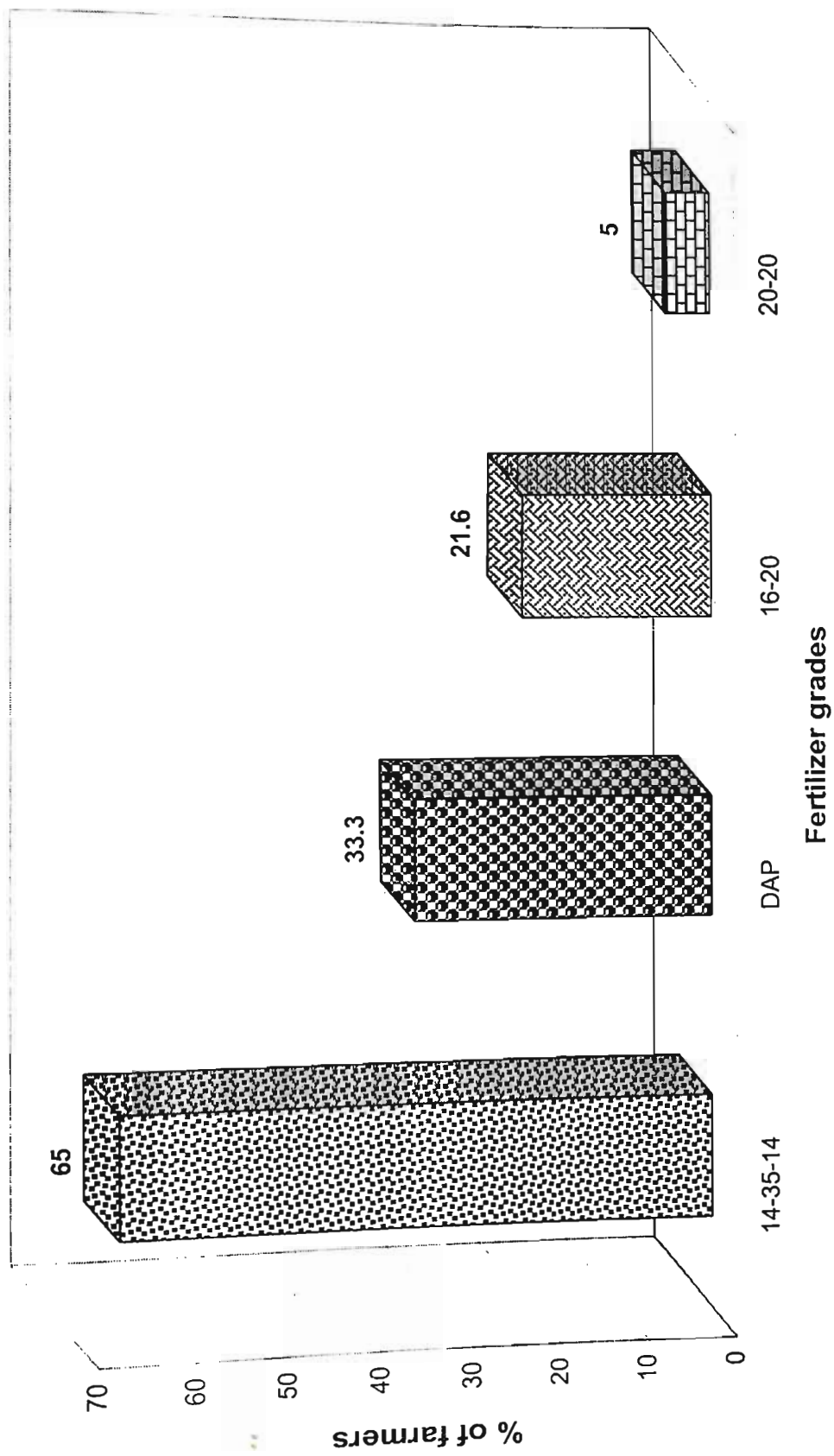


Fig.3.59: Commonly used fertilizers in Bengalgram crop

- Higher yields
- High price per bag

16-20/20-20

- Contains required nutrients i.e. N&P
- Low price per bag
- Higher yields

3.5.4 Groundnut crop

3.5.4.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades in groundnut crop is presented in table 3.65 and fig. 3.60.

From the table it is observed that as basal farmers were applying 50-100 kg castor cake, 12.5 kg urea and complex @ 50-100 kg/acre. Some farmers were applying gypsum @ 100-200 kg per acre at 25-30 DAS.

Among complex fertilizers the usage of Gromor 14-35-14 was the highest (74.6%) followed by DAP (20%) and 16-20 (13.3%).

Perception about various fertilizer grades

14-35-14

- Increases the root growth
- Increases root nodules
- Improves flowering
- Timely harvesting
- Higher yields

Table 3.65 Fertilizer usage pattern in Groundnut

Season	Time of application	Fertilizer applied kg/acre				Quantity	Method of application	Brand
		Urea	SSP	MOP	Complex			
Kharif	Basal	12.5	-	-	Any complex	50-100	Broadcasting	U-NFCL SPIC
		Castor cake 50-100	-	-	-			
	30 DAS	Gypsum: 100-200 kg					Broadcasting	-

Commonly used fertilizers in Groundnut

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	56	74.6
DAP	GFC:SPIC	15	20
16-20	Paramfos	10	13.3

(Note: Percentages are total to the sample size 75)

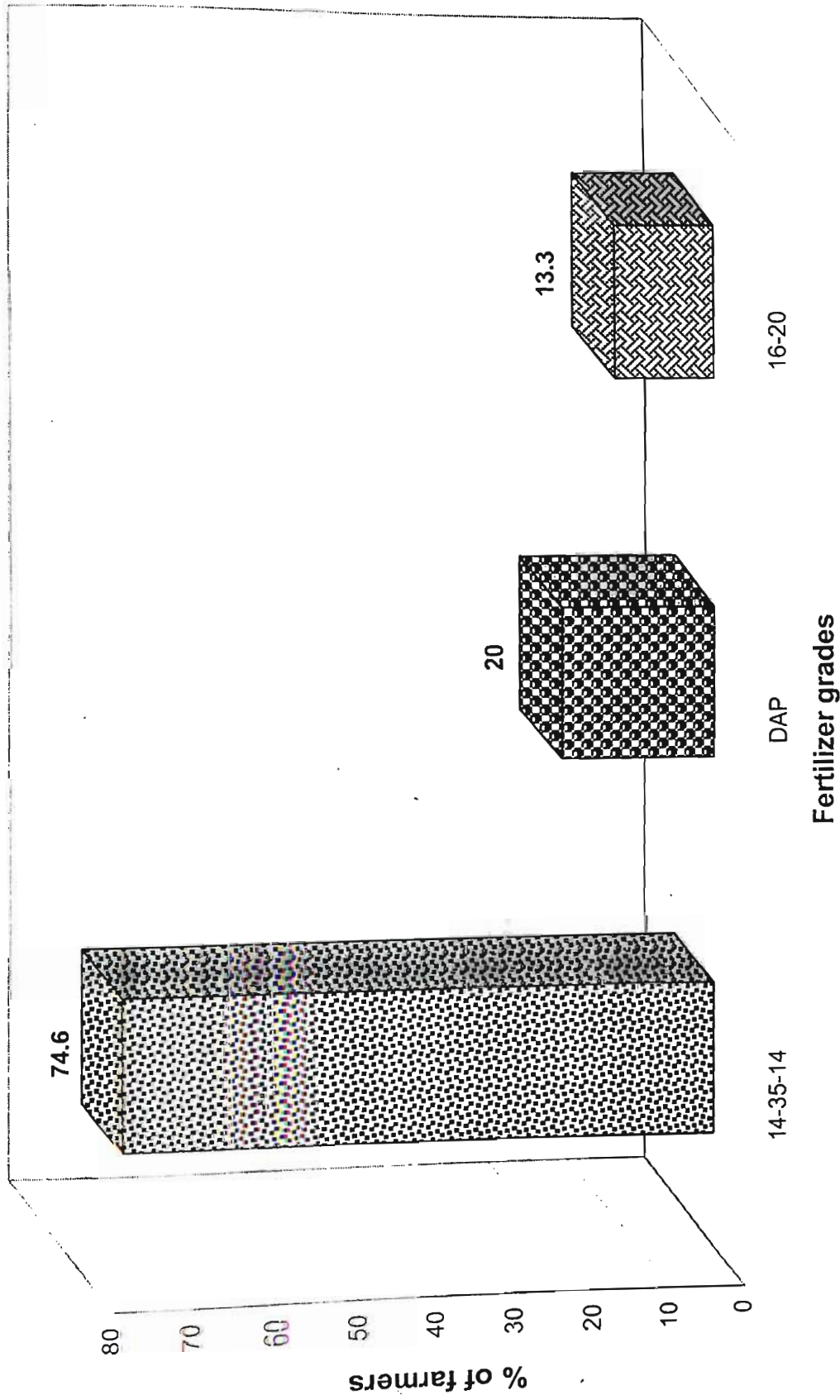


Fig.3.60: Commonly used fertilizers in Groundnut crop

DAP

- Quick establishment
- Improves root growth and root nodules
- Requires MOP application
- Higher yields
- High price per bag
- Not soluble if moisture is less

16-20

- Contains Sulphur which improves the oil content
- Higher yields
- Low price

3.5.5 Sunflower crop**3.5.5.1 Fertilizer usage pattern**

The fertilizer usage pattern and commonly used fertilizers in sunflower crop is presented in table 3.66 and fig.3.61.

As could be seen from the table, the farmers were applying castor cake @ 50-100 kg and complex fertilizer @ 50-75 kg per acre as basal, later they were applying 25 kg Urea per acre at 30 DAS.

Among complex fertilizers, Gromor 14-35-14 usage was the highest (75%) followed by 17-17-17 (35%), 16-20 (12.5%) and 19-19-19 (10%), DAP (10%).

14-35-14

- Contains 3 major nutrients i.e., N,P&K
- Balanced nutrition in initial stages
- Increases the size of the head

Table 3.66 Fertilizer usage pattern in Sunflower

Season	Time of application	Fertilizer applied kg/acre				Quantity	Method of application	Brand
		Urea	SSP	MOP	Complex			
Kharif or Rabi	Basal	Castor cake 50-100	-	-	Any complex	50-75	Broadcasting	U-NFCL Spic
	30 DAS	25	-	-	-	-	Broadcasting	

Commonly used fertilizers in Sunflower

Fertilizer grade	Brand name	No. of farmers using	Percentage
14-35-14	Gromor	30	75
17-17-17	Vijay	14	35
16-20	Paramfos	5	12.5
19-19-19	Vijay/Jaikisan	4	10
DAP	GFC/SPIC	4	10

(Note: Percentages are total to the sample size 40)

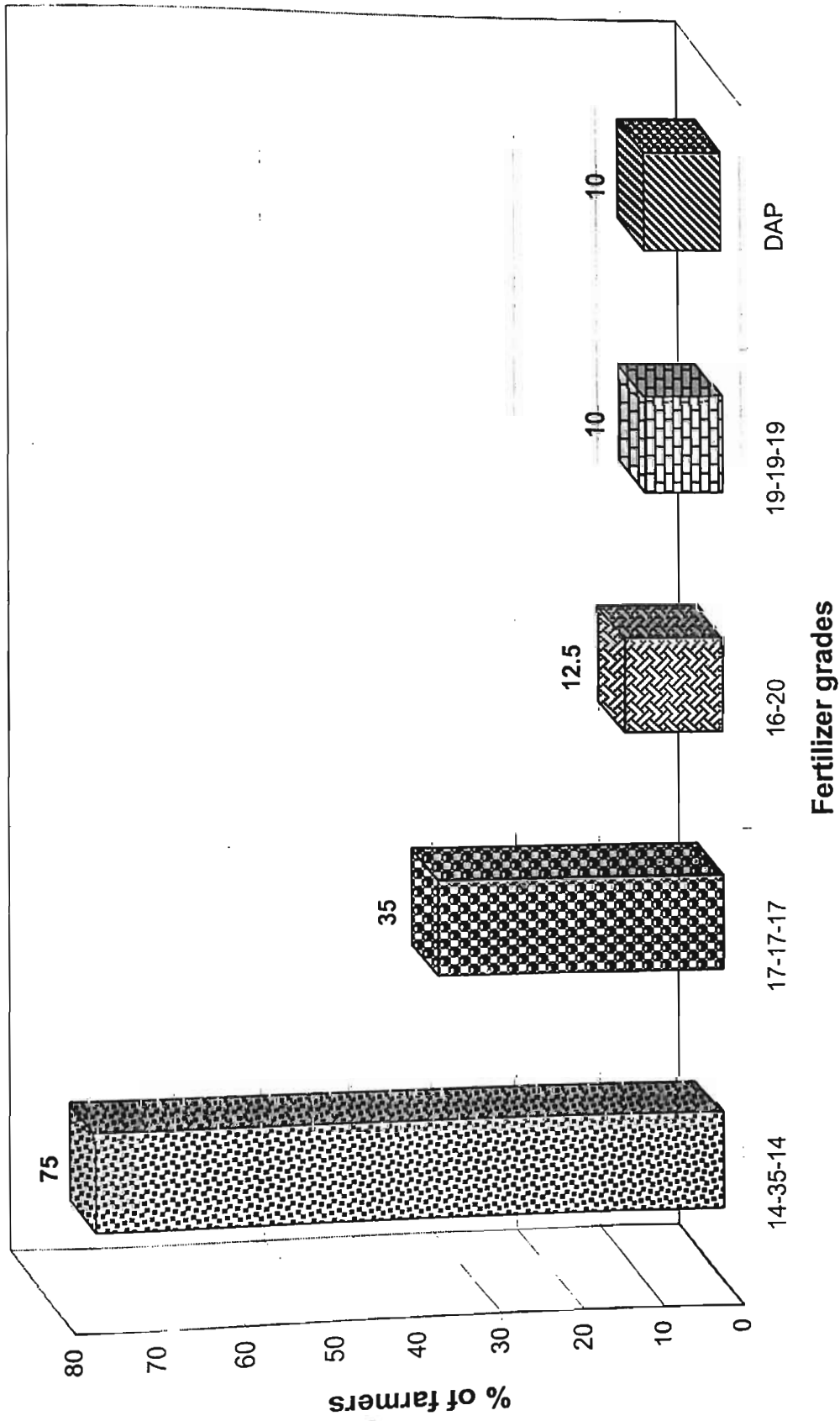


Fig.3.61: Commonly used fertilizers in Sunflower crop

- Less no. of unfilled grains
- Higher yields
- Soluble with little moisture

DAP

- Quick establishment and growth
- Increases the size of the head
- Requires MOP application
- Not soluble when moisture is less

17-17-17/19-19-19

- Contains 3 major nutrients in equal proportion
- Increases size of the head
- Less unfilled grains
- Caking is common

16-20

- Contains Sulphur which improves the oil content
- Low price per bag
- Requires MOP application

3.5.3 Citrus crop

3.5.4.1 Fertilizer usage pattern

The fertilizer usage pattern and commonly used fertilizer grades in citrus are presented in table 3.67 and fig. 3.62.

From the table it is evident that, the farmers were applying castor cake @ 3-4 kg, FYM @ 25 kg and complex fertilizer @ 0.5-1 kg per plant during

Table 3.67 Fertilizer usage pattern in Citrus

Season	Time of application	Fertilizer applied kg/pt				Quantity	Method of application	Brand
		Urea	SSP	MOP	Complex			
>4 years	May-June	FYM or tank silt 25 Castor cake 3-4		Any complex		0.5-1.0	Applied in basin and covered with soil	
	Nov-Dec	Castor cake - 2		Any complex		1.0-1.5	Applied in basin and covered with soil	

Commonly used fertilizers in Citrus

Fertilizer grade	Brand name	No. of farmers using	Percentage
17-17-17	Vijay	20	66.6
19-19-19	Jaikisan/Vijay	17	56.6
16-20	Paramfos	3	10

(Note: Percentages are total to the sample size 30)

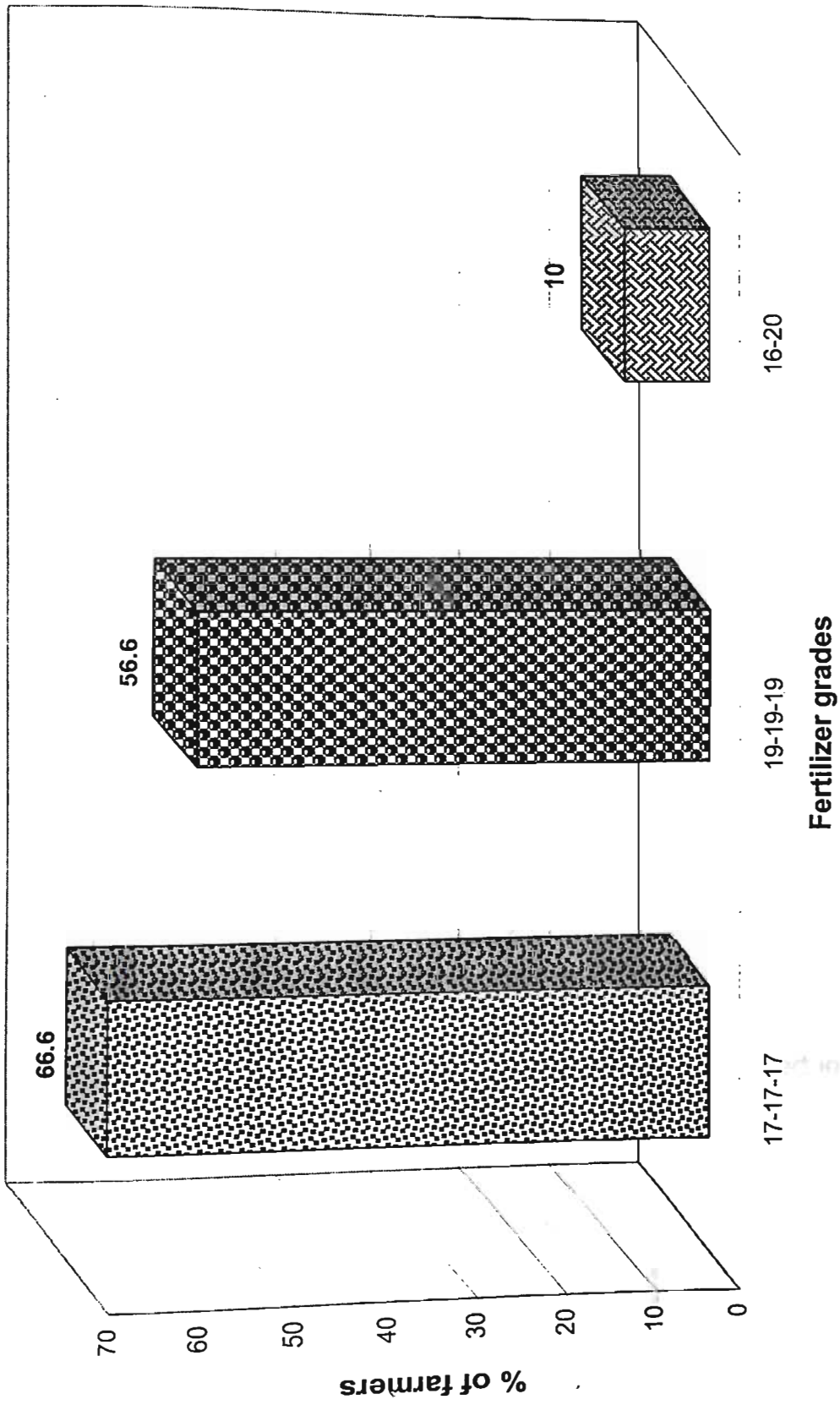


Fig.3.62: Commonly used fertilizers in Citrus crop

May-June. During second time they were applying castor cake @ 2 kg and any complex @ 1-1.5 kg per plant at Nov-Dec.

Among complex fertilizers, usage of 17-17-17 was the highest (66.6%) followed by 19-19-19 (56.6%) and 16-20 (10%).

Perception of different complex fertilizers

17-17-17/19-19-19

- Contains 3 major nutrients in equal ratio
- Increases flowering
- Higher yields
- Good colour fruits
- Increases disease resistance
- Caking is common

16-20

- Low price per bag
- Increases flowering
- Higher yield

3.5.7 Basis for applying fertilizer dosages

The basis for applying fertilizer dosages are presented in table 3.68. and

fig.3.63

Table: 3.68 Basis for applying fertilizer dosages

Basis	No. of farmers	Percentage
Recommendations of Scientists and AO's	60	40
Soil testing	15	10
Past experience	150	100
Following progressive farmers	84	56
Dealers advice	24	16

(Note: Percentages are total to the sample size 150)

From the table it is inferred that all the farmers applying fertilizer dosages based on their past experience which was followed by following other progressive farmers (56%), as per recommendations of AO's and Scientists (40%). Only 16% of the farmers were applying fertilizer dosages based on dealer's advice and 10% based on soil testing.

3.5.4 Criteria for selection of a particular brand of fertilizer

The criteria for selecting a particular brand of fertilizer is presented in table 3.69 and fig. 3.64.

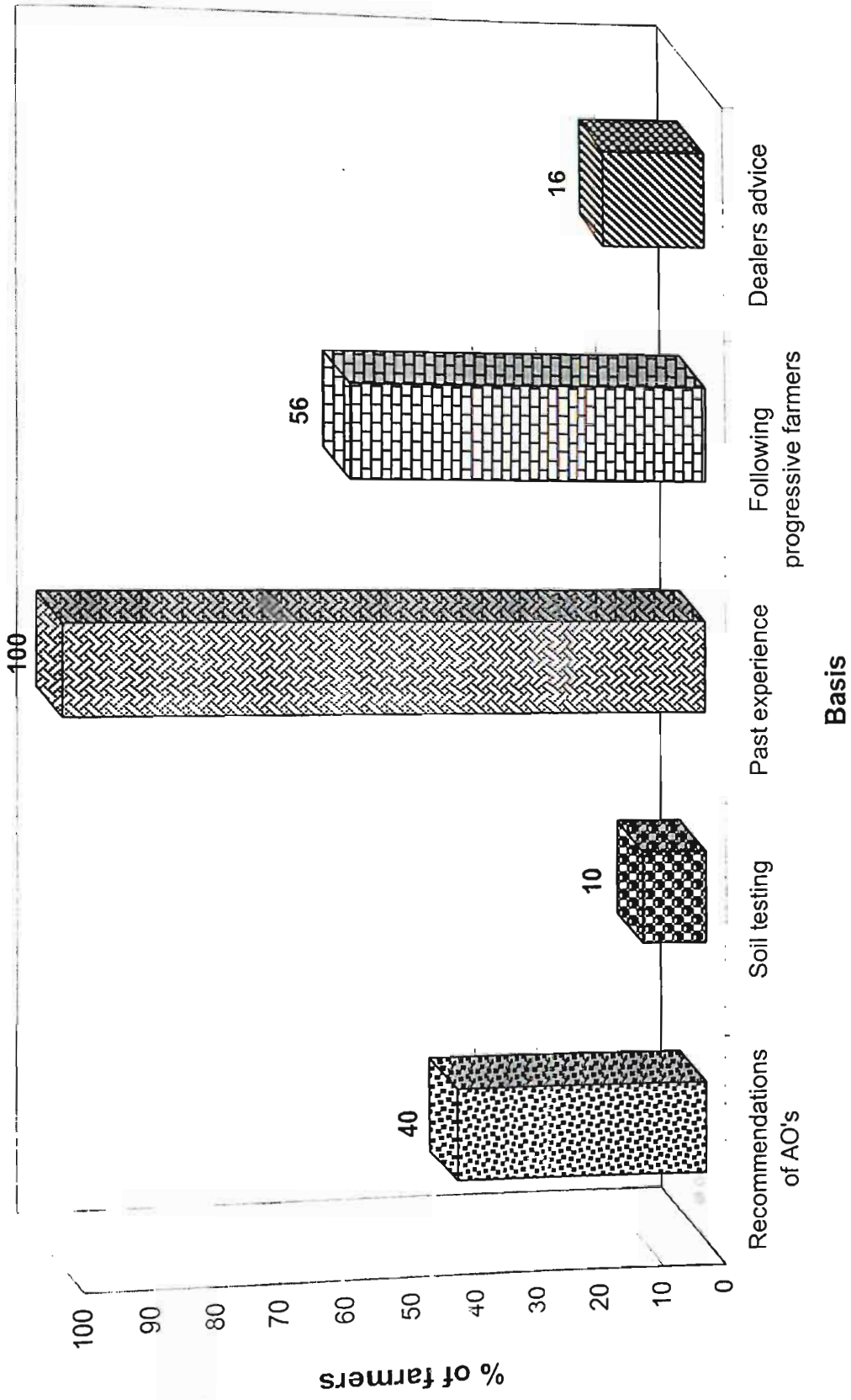


Fig.3.63: Basis for applying fertilizer dosages

Table 3.53 Criteria for selecting a particular brand of fertilizer

Criteria	No. of farmers	Percentage
Dealers advice	24	16
Other farmers suggestions	84	56
Crop requirement	108	72
Lower price/bag	42	28
Brand image	78	52
Past experience	141	94
Timely availability	72	48

(Note: Percentages are total to the sample size 150)

From the table it is revealed that about 94% of the farmers were selecting brand based on their past experience, which was followed by crop requirement (72%), other farmers suggestions (56%) and brand image (52%).

3.5.5 Awareness about Gromor brand

The awareness about different brands are presented in table 3.70 and fig.

3.65.

Table 3.70 Awareness about different brands of complex fertilizers

Fertilizers brand	No. of farmers	Percentage
Gromor	114	76
SPIC	108	72
Vijay	99	66
Jaikisan	99	66
Godavari	93	62
Parry	93	62
FACT	98	52

(Note: Percentages are total to the sample size 150)

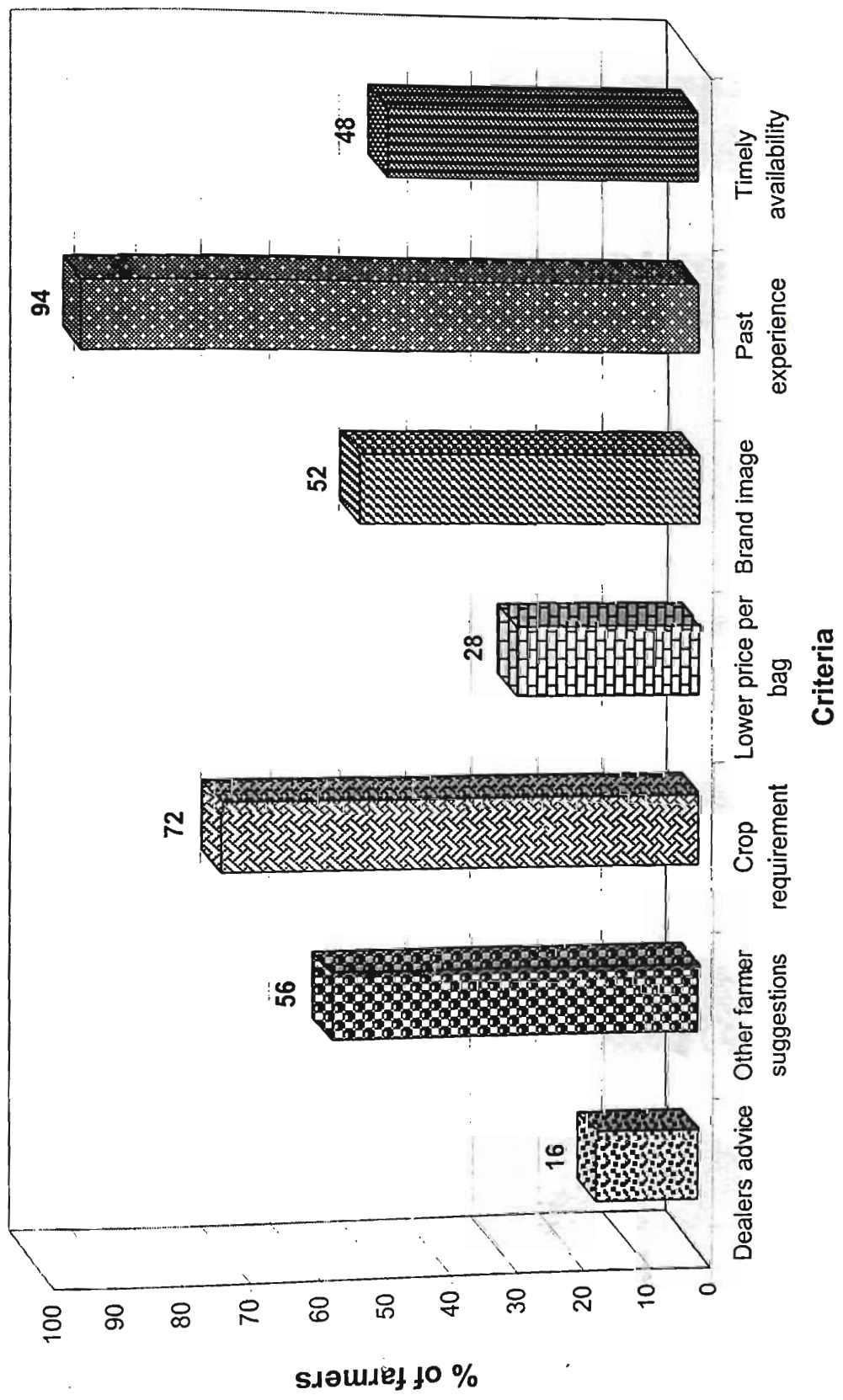


Fig.3.64: Criteria for selecting a particular brand of fertilizer

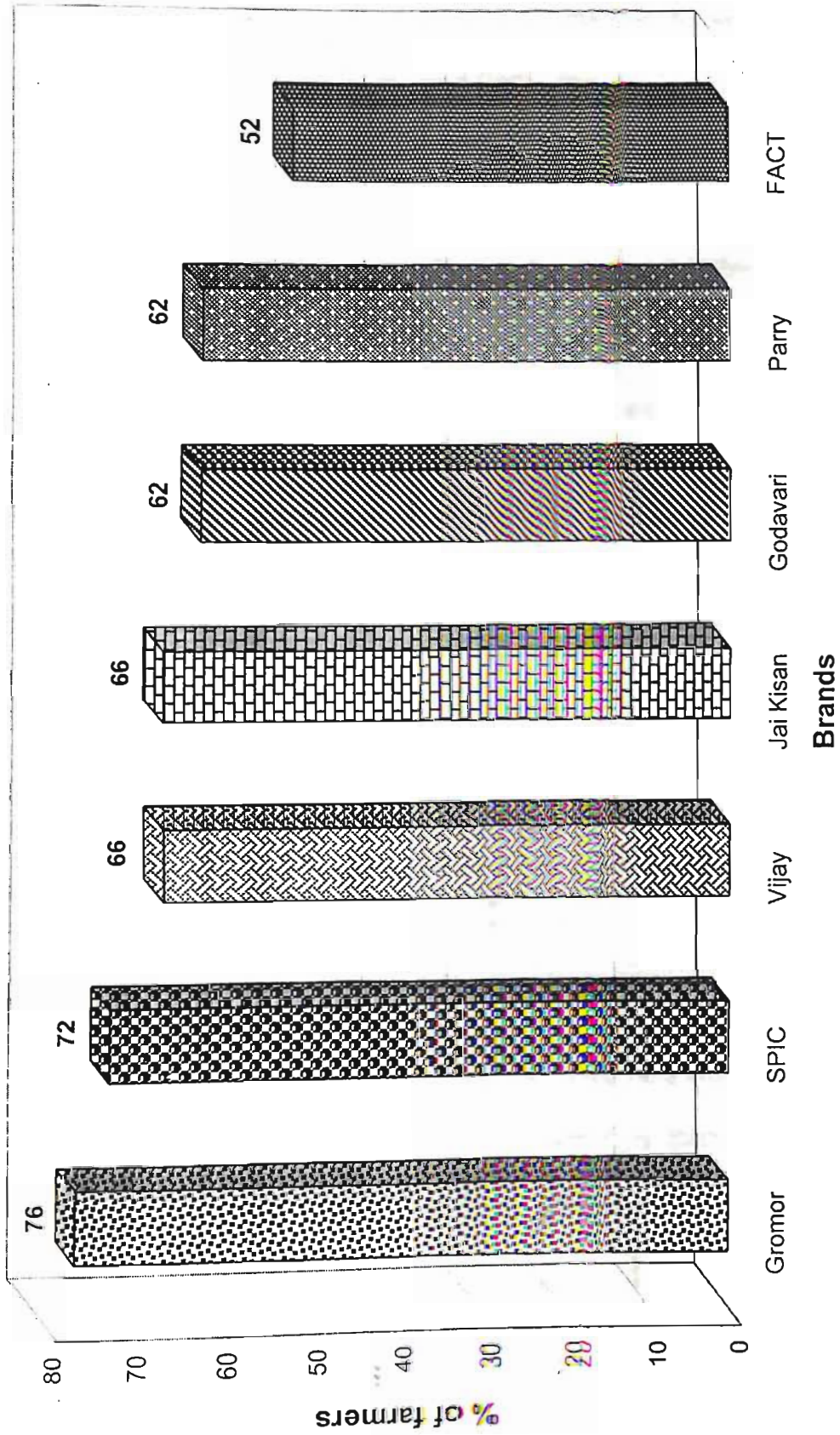


Fig.3.65: Awareness about different brands

From the table it is evident that about 76% of the farmers were aware of Gromor brand and about 70% of the farmers were aware of Gromor 14-35-14. Nearly 72% of the farmers were aware of spic brand followed by Jaikisan (66%) Vijay (66%), Parry (62%), Godavari (62%) and FACT (52%).

3.5.6 Reasons for using other brands

The reasons for using other brands are presented in table 3.71 and fig.3.66.

Table 3.71 Reasons for using other brands

Reason	No. of farmers	Percentage
Less price/bag	42	28
Credit facility	24	16
Brand image	72	48
Only grade available with the dealer	51	34
Timely availability	57	38
Other reasons (suitability of the soil and crop)	108	72

(Note: Percentages are total to the sample size 150)

From the table it is noticed that, about 72% of farmers were using other brands due to its suitability to the soil and crop which is followed by brand image (48%) timely availability (38%) and only grade available with dealer (34%).

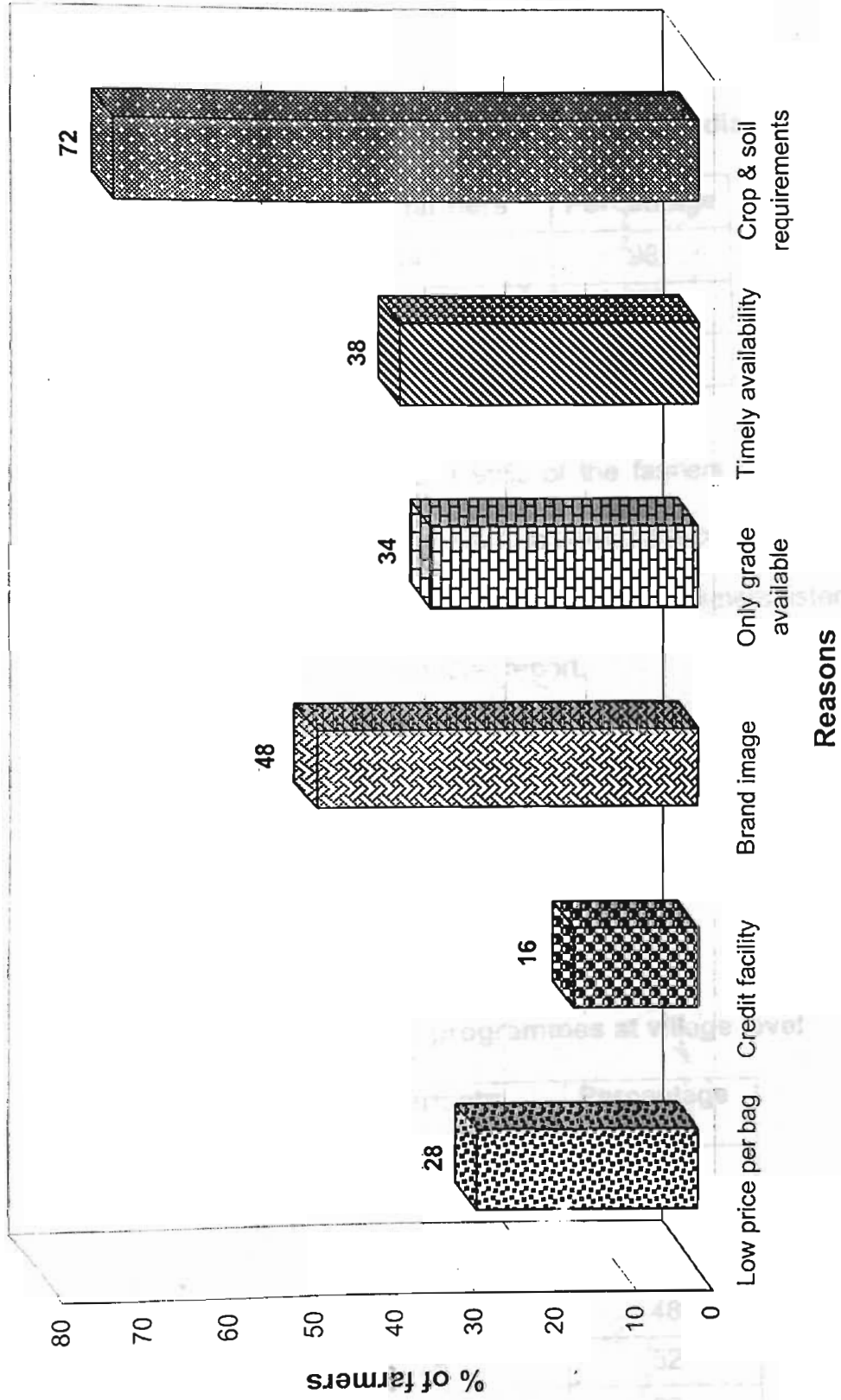


Fig.3.66: Reasons for using other brands

3.5.7 Effective and convenient mass media

The most effective and convenient mass media are presented in table 3.72 and fig. 3.67.

Table: 3.72 Most effective and convenient mass media

Mass Media	No.of farmers	Percentage
T.V.	147	98
Radio	6	4
News paper	51	33

(Note: Percentages are total to the sample size 150)

From the table it is inferred that about 98% of the farmers watch T.V. channels like Gemini, ETV, Teja, Maa and DD1. Nearly 33% of the farmers read news papers like; Vaartha and Eenadu. Only 4% of the farmers listen to radio programmes like news, songs and weather report.

3.5.8 Effective promotional programmes

The most effective promotional programmes at village level are presented in table 3.73 and fig. 3.68.

Table 3.73 Effective promotional programmes at village level

Promotional programmes	No. of farmers	Percentage
Farmers meetings	63	42
Demo's	54	36
Burrakathas	51	34
A.V.Vans	72	48
Posters	78	52
Kisan Melas	30	20

(Note: Percentages are total to the sample size 150)

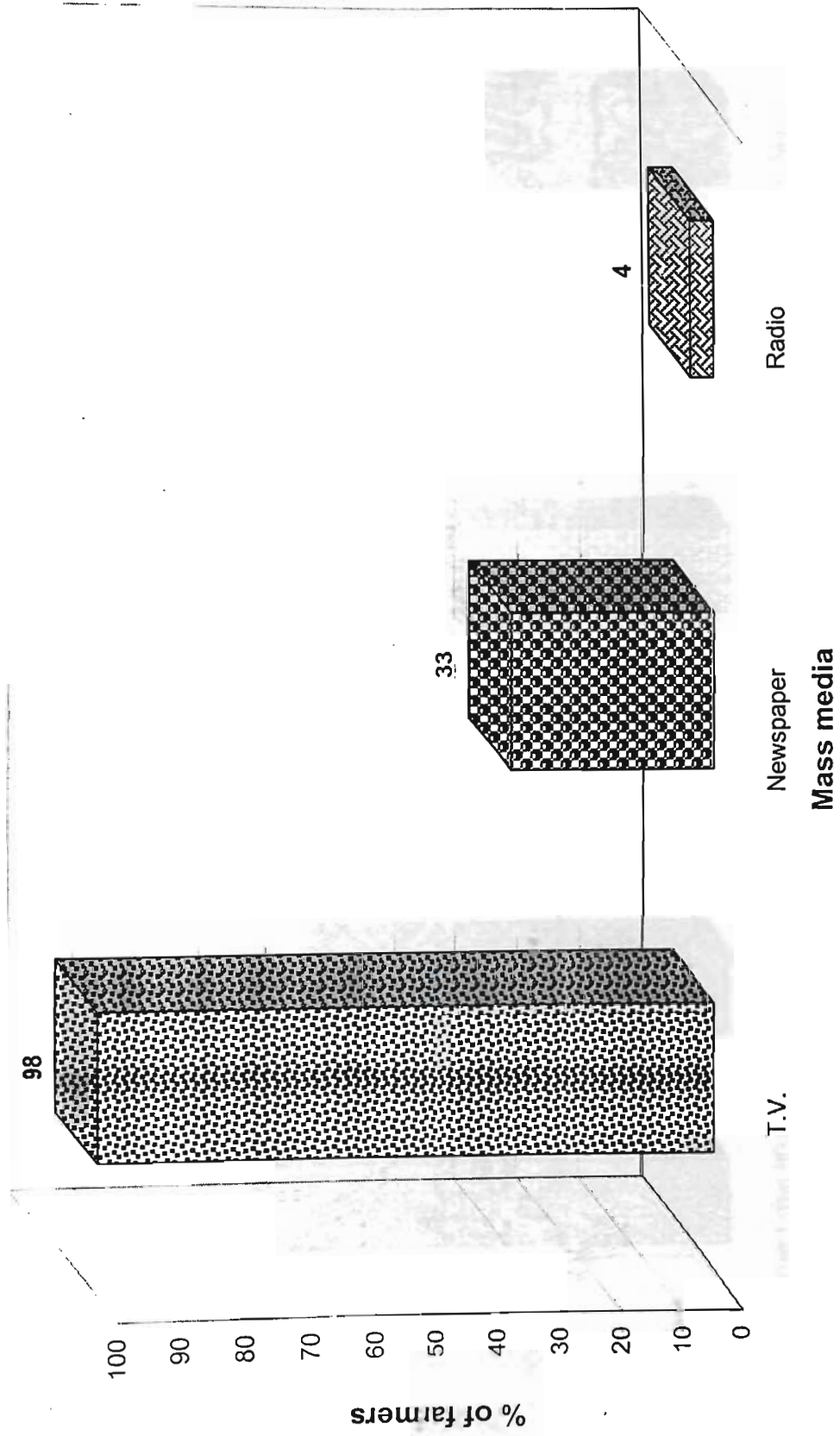


Fig.3.67: Most effective and convenient mass media

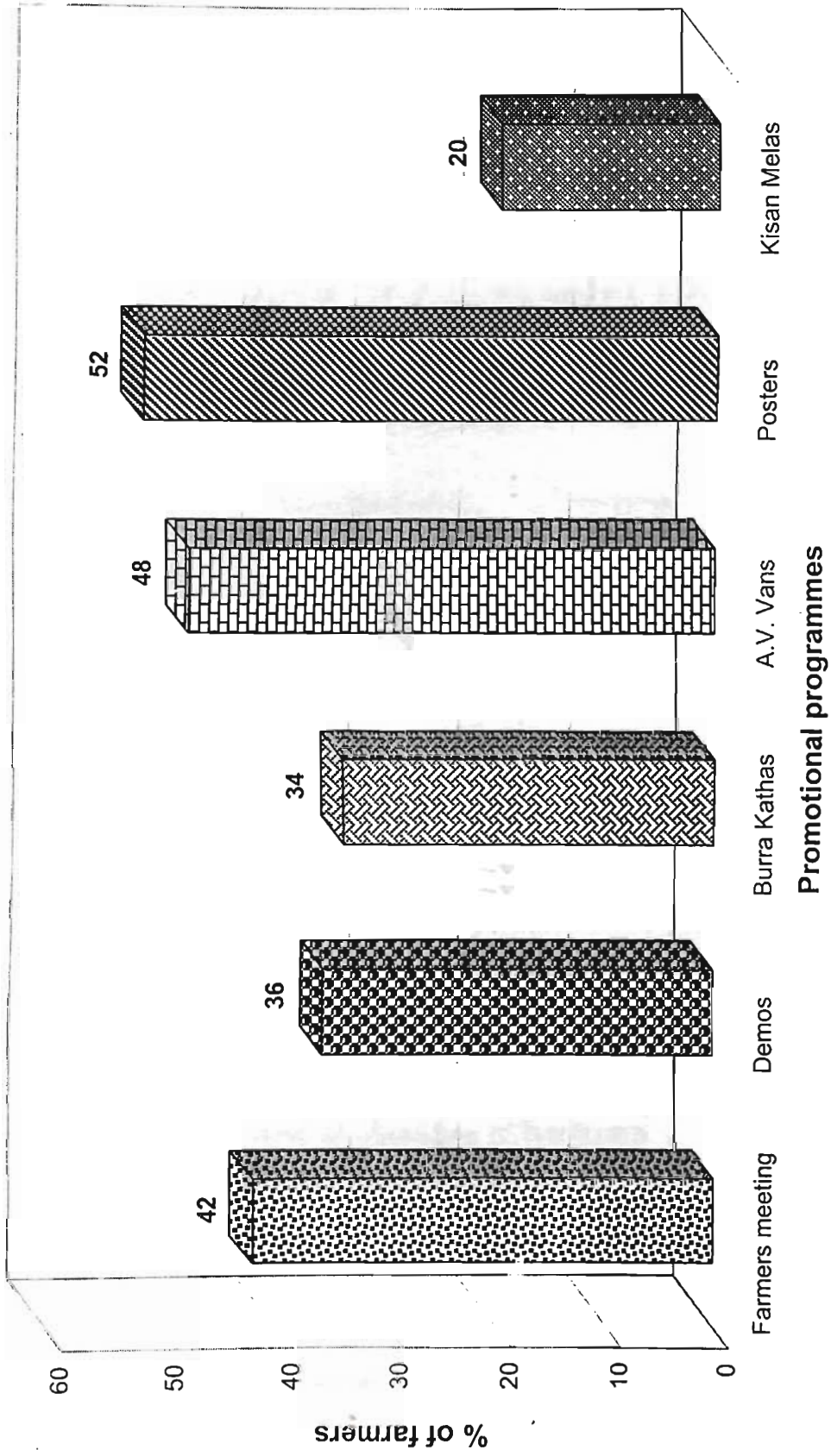


Fig.3.68: Most effective promotional programmes

From the table it is observed that, about 52% of farmers were interested in posters and print media which was followed by audio-visual vans (48%); farmers meetings (42%), demos (36%). Burrakathas (34%) and Kisan melas (20%)

3.5.9 Opinion on price of Gromor 14-35-14

The opinion on price at Gromor 14-35-14 is presented in table 3.74 and fig.3.69.

Table 3.74 Opinion on price of Gromor 14-35-14

Price	No. of farmers	Percentage
High	42	28
Satisfactory	108	72

(Note: Percentages are total to the sample size 150)

From the table it is noticed that 72% of the farmers were satisfied with the price of Gromor 14-35-14 and remaining 28% opined that it is high.

3.5.10 Mode of purchase of fertilizer

The mode of purchasing of fertilizers was presented in table 3.75 and fig. 3.70.

Table 3.75 Mode of purchase of fertilizers

Purchase	No. of farmers	Percentage
Cash	96	64
Credit	54	36

(Note: Percentages are total to the sample size 150)

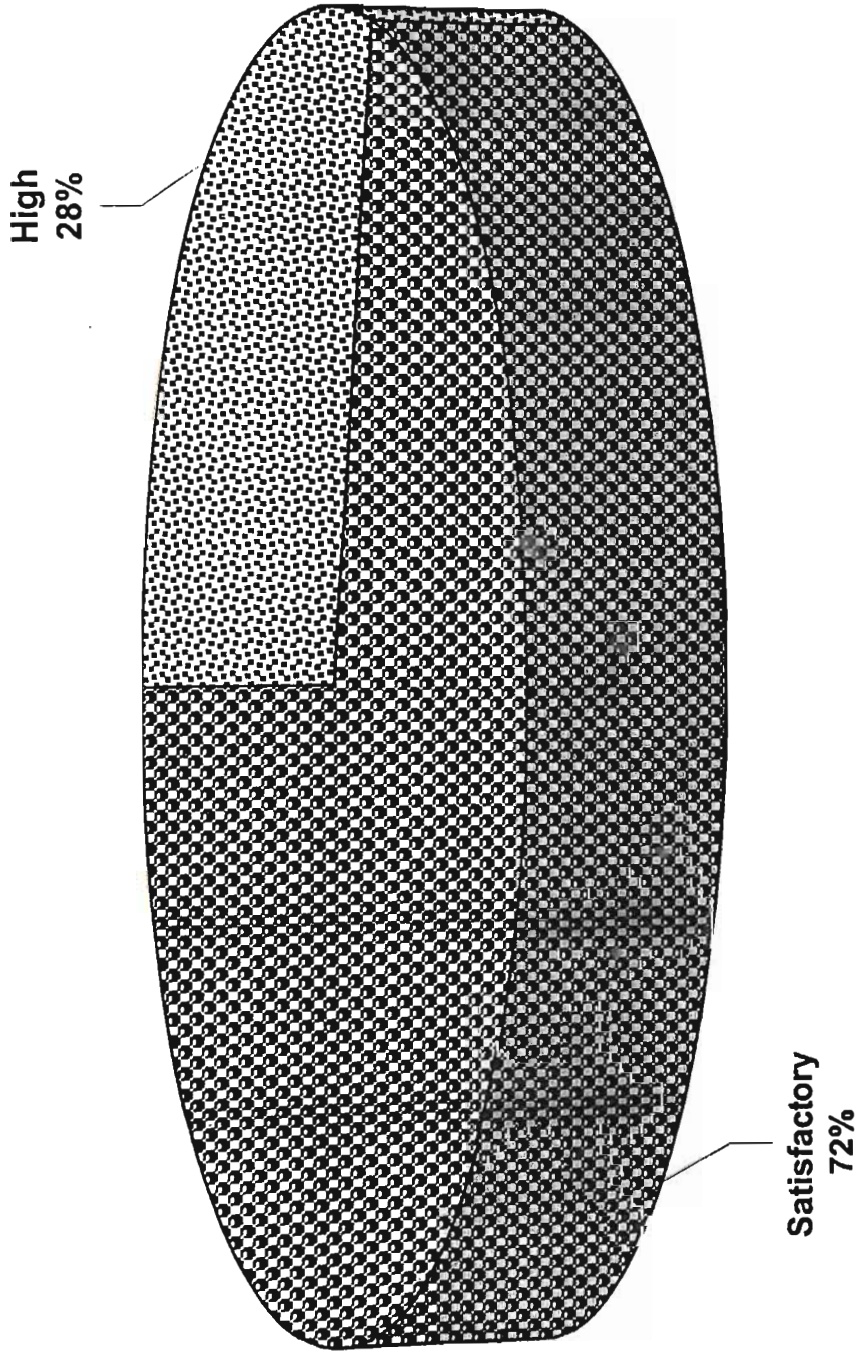


Fig. 3.69: Opinion on price of Gromor 14-35-14

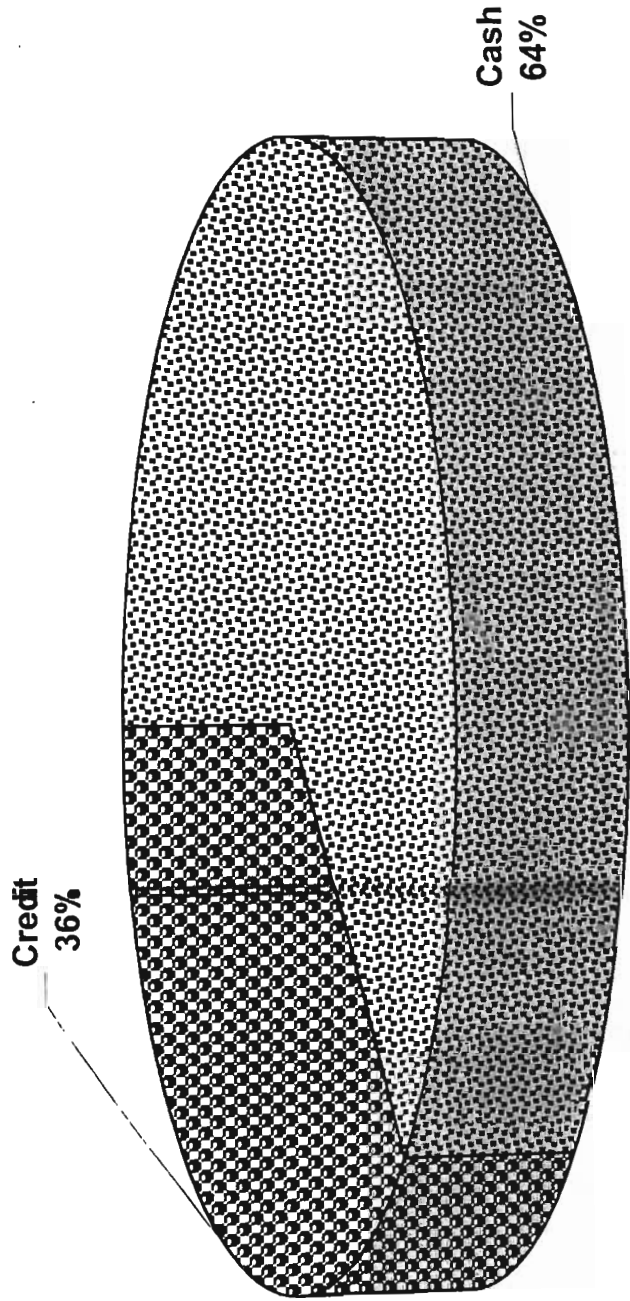


Fig. 3.70: Mode of purchase of fertilizers

From the table it is revealed that about 64% of the farmers were purchasing fertilizers on cash basis and remaining 36% on credit basis.

3.5.11 Repayment period:

The repayment period for credit purchase is presented in table 3.76 and fig.3.71

Table 3.76 Repayment period

Repayment period	No. of farmers	Percentage
One week	12	8
One month	45	30
After harvest	93	62

(Note: Percentages are total to the sample size 150)

From the table it is clear that about 62% of the farmers repay their credit after harvest of crop and 30% repay within one month. Only 8% of farmers repay their credit within one week.

3.5.12 Interest rate

No interest was charged by dealers if repayment is made within one week or one month. Beyond which they were charged an interest of 18-24%. The dealers also charge Rs. 5-10% extra per bag on credit purchase.

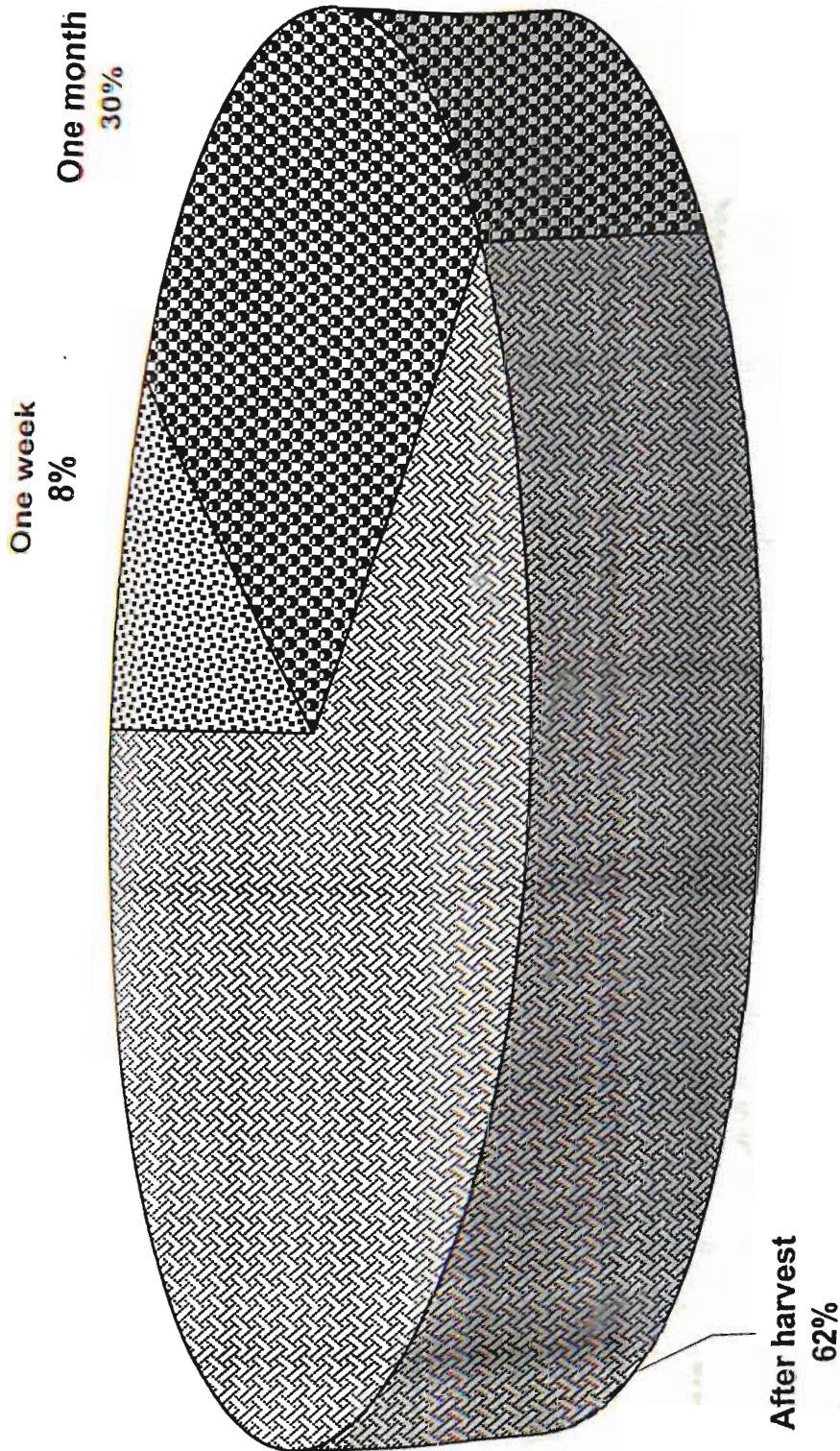


Fig. 3.71: Repayment period for credit purchase

GENERAL OBSERVATIONS / FINDINGS:

3.6.1 Vizianagaram District

- Most of the farmers were not able to differentiate straight and complex fertilizers
- Some farmers opined that continuous use of chemical fertilizers results in the deterioration of soil health. Therefore, they are applying FYM + tank silt (Mango)
- Most of the small farmers expressed that the dealers did not give them credit and they advance only to large farmers.
- Some dealers have cheated the farmers by supplying them with Gromor 20-20, instead of Gromor 28-28 (paddy market).
- In some areas like Bhemali and Erravanipalem the dealer do not sell Gromor 14-35-14 even though the farmers were interested in it. Subsequently they were applying other grades because of non-availability (Mango market).
- The farmers were growing either Mesta or Gingelly during summer season i.e., May-July. For these crops farmers were not applying any fertilizers (Paddy and Groundnut markets).
- Farmers show very little loyalty towards fertilizer brands, they always prefer low priced fertilizers.

3.6.2 East Godavari District

- Majority of the farmers are brand switchers. They never use same grade successively because they think that the same grade may not be effective if used continuously (Ravulapalem and Mandapeta markets).
- Some farmers opined that the use of 14-35-14 and DAP result in Zn deficiency because of antagonistic effect of Zn and Phosphorus. These two grades contain high amount of phosphorus (Paddy crop).
- The Turmeric area is declining because of low returns the farmers are shifting to other crops like Paddy, Banana and Yam.
- Yam crop is cultivated as intercrop in Banana or as a sole crop.
- In Kharif Paddy, farmers were applying less dosages of fertilizers than in Rabi Paddy.
- After 1997 cyclone, the farmers were not taking much care about Coconut gardens.
- Some of the Paddy area is converted into fish ponds.
- Majority of the farmers were applying Gromor 28-28 in Paddy nurseries.

5.6.3 Krishna District

- Some farmers feel that their soils are highly fertile so, they are applying only SSP + MOP (Mango areas like Suryapalli, Mittagudem).

- Mango farmers were changing grades every year because they feel that some grade will not work every year (Leelanagar and Ramanakkapeta).
- Some farmers expressed that the application of 14-35-14 for mango results in drying of branches and leaves when dry conditions prevail.
- In some areas the sub-dealer do not keep Gromor 14-35-14 even though the farmers were interested in it. Subsequently, they were applying the grades whatever were available at that time (paddy areas like Nandivada and Venannapudi).
- The Cotton area is declining due to low returns, the farmers are shifting to Subabul, Chilly and Maize crops.
- Farmers show little loyalty towards fertilizer brands, they always prefer low price / bag fertilizers.
- Majority of the farmers were applying Gromor 28-28 in paddy nurseries.

5.6.4 Anantapur district

- Majority of the farmers were brand loyal. They never use other brands even though they are not available (Bengalgram, Sunflower and Groundnut farmers).
- In some villages, farmers were purchasing fertilizers directly from dealers.
- Groundnut area was declining because of low returns.
- The area under papaya, sweet orange and crossandrum was increasing.

- Majority of the farmers was using castor cake, neem cake to any crop because they felt that it controls some soil borne insects and nematodes and it also improves soil fertility.
- In papaya, majority of farmers were applying SSP + MOP or 10-26-26 fertilizers because they perceive that 'N' will increase the height of plant (ie., beyond manageable height) and also results in less number of fruits.
- Some of the farmers expressed that the quantity of fertilizer in bags was less than the specified one.

5.6.5 Cuddapah District

- Most of the farmers were using castor cake and neem cake to supply half dosage of 'N' in organic form and remaining in chemical form. They perceive that the organic cakes supplies micronutrients and prevent soil borne diseases and insects.
- Majority of farmers were brand loyal.
- Most of the farmers were purchasing fertilizers on cash and pesticides on credit basis.
- Groundnut area is declining due to low returns and the farmers are shifting to Bengalgram, sunflower, papaya etc.,
- Majority of farmers do not apply DAP to *Rabi* crops because they perceive that it is not soluble due to low moisture in the soil.

STRENGTHS OF GROMOR 14-35-14

- Contains all 3 major nutrients.
- All 3 major nutrients are chemically combined so, efficient utilization of applied nutrients.
- Balanced nutrition in early stage of crop
- No filler material
- Suitable complex fertilizer to all crops.
- Contains highest phosphate among NPK complex fertilizers (ie., 35%)
- Contains highest total nutrients among NPK complex fertilizers.
- Less unit cost of phosphate among all NPK complex fertilizers.
- Strong brand name (ie., Gromor)

Weaknesses of Gromor 14-35-14

- Lack of awareness of the product.
- Non-attractive packing (dull appearance of bag)
- Non-availability of the product
- Lack of knowing the core benefits of the product
- Wrong perception of high price per bag
- Greening of plant is late (i.e, lack of visible effect)

Note: In all districts farmers watch T.V. channels like ETV, Gemini, Teja, Maa and DD1. The programmes being watched on ETV are news, movies, Annadata and serials like Vadina Vedhi etc. The programmes being watched on Gemini TV are movies and serials starting from 7 PM to 10 PM. The programmes being watched on Teja TV are movies and songs. The programmes being watched on DD1 are only news.

**CONCLUSIONS, SUMMARY
& SUGGESTIONS**

CHAPTER –IV

CONCLUSIONS, SUMMARY AND SUGGESTIONS

The present investigation entitled "A study on Market Development of Gromor 14-35-14" was undertaken mainly to identify and compare relative positioning of Gromor 14-35-14 as perceived by the chilly, paddy and groundnut farmers with other complex fertilizers including DAP and to study and evaluate the fertilizer complexes used on other crop segments i.e., cotton, sugarcane, banana, vegetables and orchard crops like; mango, citrus, etc., the study was also intended to explore the possibility of introducing Gromor 14-35-14 on new crop segment with the help of concentrated promotional activities. The data was collected from 5 districts (ie., Vizianagaram, East Godavari, Krishna, Anantapur and Cuddapah) of Andhra Pradesh through interview method with the help of pre-tested schedule from a sample 750 farmers (150 from each District). The collected data was analyzed to arrive at valid conclusions.

CONCLUSIONS

The following conclusions could be drawn from the present investigations.

Vizianagaram District

- The commonly used complex fertilizers on Mango was DAP (25%) and 20-20 (15%).
- The commonly used complex fertilizers on Paddy was 28-28 (53.3%) 20-20 (36.6%) and DAP (20.5%)

- The commonly used complex fertilizers on Groundnut was 20-20 (53.3%), 14-35-14 (20%) and DAP (16.6%).
- The basis for applying fertilizer dosages was past experience (94%) and dealer's advice (62%).
- The criteria for selecting a particular brand of complex fertilizer are past experience (old brands) (78%) and dealers advice (new brands) (64%).
- Awareness about Gromor brand and Gromor 14-35-14 was 56% and 42% respectively.
- The reasons for using other brands are credit facility (56%) and less unit cost per bag (42%).
- The most effective and convenient mass media was TV (92%) and news paper (26%).
- The most effective promotional programmes at village level was Burrakathas (54%) and audio visual vans (50%).
- The opinion on price of Gromor 14-35-14 was high (56%) and satisfactory (44%).
- The mode of purchasing fertilizers was credit (64%) and cash (36%).
- The repayment period for credit purchase was within a week (8%), one month (24%) and after harvest (68%).
- The interest rates charged by dealers was 24-30%.

East Godavari district:

- The commonly used complex fertilizers on Banana was 20-20 (95%), 14-35-14 (80%) 17-17-17 (80%), 19-19-19 (80%) and DAP (75%)
- The commonly used complex fertilizers on Yam was 14-35-14 (46.6%) 20-20 (30%), 17-17-17 (30%), and DAP (23.3%)
- The commonly used complex fertilizers on Turmeric was 14-35-14 (33.3%) 20-20 (30%), 17-17-17 (26.6%), and DAP (20%).
- The commonly used complex fertilizers on Coconut was 17-17-17 (26.6%), 19-19-19 (20%) 20-20 (10%).
- The commonly used complex fertilizers on Kharif Paddy was 17-17-17 (37%), 19-19-19 (31.4%) 20-20 (28.5%).
- The commonly used complex fertilizers on Rabi Paddy was DAP (51.4%), 14-35-14 (51.4%) and 20-20 (25/7%).
- The basis for applying fertilizer dosages was past experience (92%) and dealers advice (36%).
- The criteria for selecting a particular fertilizer brand was past experience (86%) and crop requirement (68%).
- The awareness about Gromor brand was 64% and Gromor 14-35-14 was 53%.
- The reasons for using other brands are suitability of the soil and crop (68%) and timely availability (42%).

- The most effective and convenient mass media are TV (96%) and newspaper (46%).
- The most effective promotional programmes at village level are Demo's (52%) and posters hand bills and other print media (46%) and Kisanmelas (38%).
- The opinion on price of Gromor 14-35-14 was satisfactory (52%) and high (48%).
- The mode of purchasing fertilizers was cash (56%) and credit (44%).
- The repayment period was after harvest (44%), one month (36%) and one week (20%)
- The interest rate charged by dealers was 18-24%.

Krishna District

- The commonly used complex fertilizers on Mango was 14-35-14 (25%), 20-10 (20%) and 17-17-17 (15%) DAP (15%).
- The commonly used complex fertilizers on Kharif Paddy was 14-35-14 (45%), 17-17-17 (26%) and 19-19-19 (25%).
- The commonly used complex fertilizers on Rabi Paddy was DAP(64%), 14-35-14 (54%) and 17-17-17 (25%).
- The commonly used complex fertilizers on Cotton was DAP(70%), 20-20 (65%) and 17-17-17 (40%)

- The commonly used complex fertilizers on Chilly was 14-35-14 (83.3%) DAP(80%), 17-17-17 (80%) and 20-20 (80%)
- The basis for applying fertilizer dosages were past experience (94%) and dealer advice (52%).
- The criteria for selecting a particular brand was past experience (old brands), Dealers advice and other farmers suggestions (new brands).
- The awareness about Gromor brand was 68% and that of Gromor 14-35-14 was 59%.
- The reasons for using other brands are suitability of the soil and crop (62%) and credit facility (48%).
- The most effective and convenient mass media was T.V. (96%) and news paper (34%).
- The most effective promotional programmes at village level are posters, hand bills and print media (54%) and audio-visual vans (48%).
- The opinion on price of Gromor 14-35-14 was expressed as high (52%) and satisfactory (48%).
- The mode of purchasing of fertilizers was credit (54%) and cash (46%).
- The repayment plans periods was after the harvest (58%) one month (30%) and one week (12%).
- The interest rates charged by dealers was 24-36%.

Anantapur District

- The commonly used complex fertilizers on Groundnut was Gromor 14-35-14 (54.1%), 17-17-17 (34.1%) and DAP (21.1%).
- The commonly used complex fertilizers on Citrus was 17-17-17 (62.5%) 19-19-19 (40%) and 10-26-26 (30%).
- The commonly used complex fertilizers on Papaya was 10-26-26 (46.6%) 17-17-17 (33.3%)
- The commonly used complex fertilizers on Paddy was DAP (72%) 17-17-17 (70%) and 14-35-14 (42%)
- The commonly used complex fertilizers on Bengalgram was Gromor 14-35-14 (67.5%) and DAP (50%).
- The commonly used complex fertilizers on Sunflower are Gromor 14-35-14 (65%) and DAP (45%).
- The basis for applying fertilizer dosages was past experience (100%) and following other progressive farmers (58%).
- The criteria for selecting a particular brand of fertilizer was past experience (92%), other farmers suggestions (60%) and dealers advice (58%).
- The awareness about Gromor brand was 78% and Gromor 14-35-14 was 72%.

- The reasons for using other brands are suitability of soil and crop (56%), credit facility (54%) and timely availability (52%).
- The most effective and convenient mass media was TV (94%) and news paper (30%).
- The most effective promotional programmes at village level were posters (66%), audio-visual vans (56%) and farmers meetings (42%).
- The opinion on price of Gromor 14-35-14 was expressed as satisfactory (76%) and high (24%).
- The mode of purchasing fertilizers was credit (62%) and cash (38%).
- The repayment plans was after the harvest (76%), one month (18%) and one week (6%).
- The interest rate charged by dealers was 24-30%

Cuddapah District

- The commonly used complex fertilizers on Paddy were DAP (55%), 20-20 (42.5%), 28-28 (42.5%) and 16-20 (20%).
- The commonly used complex fertilizers on Turmeric were 14-35-14 (73.3%), 19-19-19 (36.6%), 17-17-17 (36.6%) and DAP (26.6%).
- The commonly used complex fertilizers on Bengalgram were Gromor 14-35-14 (65%), DAP (33.3%) and 16-20 (21.6%).

- The commonly used complex fertilizers on Groundnut were Gromor 14-35-14 (74.6%), DAP (20%) and 16-20 (13.3%).
- The commonly used complex fertilizers on Sunflower were Gromor 14-35-14 (75%), 17-17-17 (35%) and 16-20 (12.5%).
- The commonly used complex fertilizers on Citrus were 17-17-17 (66.6%) 19-19-19 (55.6%) and 16-20 (10%).
- The basis for applying fertilizer dosages was past experience (100%) and following progressive farmers (56%).
- The criteria for selecting a particular brand was past experience (94%), crop requirement (72%) (old brands) and other farmers suggestions (56%) (new brands).
- The awareness about Gromor brand was 76% and Gromor 14-35-14 was 70%.
- The reasons for used other brands are suitability of soil and crop (72%), brand image (48%) and timely availability (38%).
- The most effective and convenient mass media was TV (98%) and news paper (33%).
- The most effective promotional programmes at village level are posters (52%), audio-visual vans (48%) and farmer meetings (42%).
- The opinion on price of Gromor 14-35-14 was expressed satisfactory (72%) and high (28%).

- The mode of purchasing fertilizer was cash (64%) and credit (36%).
- The repayment period was after the harvest (62%) one month (30%) and one week (8%).
- Interest rate charged by the dealers was 18-24%.

SUMMARY

Paddy: The complex fertilizers were mainly used for quick establishment of seedlings. Better tillering and higher yields. The usage of Gromor 14-35-14 was low in Vizianagaram, Anantapur, Cuddapah districts and also in Kharif Paddy in East Godavari. The usage was good in Krishna district and also in East Godavari during Rabi season.

Groundnut: Complex fertilizers were mainly used for increasing growth, flowering and yield. The usage of Gromor 14-35-14 was good in Anantapur and Cuddapah Districts and low in Vizianagaram.

Chilly: The complex fertilizers were mainly used for increasing branching, flowering, yield and improving colour of fruits. The usage of Gromor 14-35-14 was good in Chilies.

Cotton: The complex fertilizers were mainly used to increase branching, flowering and yield. The usage of Gromor 14-35-14 was low in Cotton (Krishna District).

Bengalgram: The complex fertilizers were mainly used to increase growth, flowering and yield. The usage of Gromor 14-35-14 was good in Bengalgram crop.

Sunflower: The complex fertilizers were mainly used to increase growth, size of head and filled seeds. The usage of Gromor 14-35-14 was good in Sunflower.

Turmeric: The complex fertilizers were mainly used to increase growth, weight of rhizome and quality of rhizome. The usage of Gromor 14-35-14 was good in Turmeric crop.

Yam: The complex fertilizers were mainly used to increase growth and size of rhizome. The usage of Gromor 14-35-14 was good in Yam.

Mango: The complex fertilizers were mainly used to increase flowering and number of fruits per plant. The usage of Gromor 14-35-14 was less in Mango.

Coconut: The complex fertilizers were mainly used to increase flowering and yield. The usage of Gromor 14-35-14 was nil in Coconut.

Banana: The complex fertilizers were mainly used to increase size of stem and growth. The usage of Gromor 14-35-14 was good in Banana, but it was used only once out of 5-6 applications.

Citrus: The complex fertilizers were mainly used to increase flowering and yield. The usage of Gromor 14-35-14 was nil.

Papaya: The complex fertilizers were mainly used to increase yield and quality of fruits.. The usage of Gromor 14-35-14 was nil.

- The fertilizer doses was decided based on the past experience (94%), sometimes by following other progressive farmers (43.2%) and dealer's advice (42.4%).
- The criteria for selecting a particular brand of complex fertilizer was past experience (88.8%) i.e., old brand, and dealers advice (48.4%) i.e., new brands.

- Awareness about Gromor brand was 68.4% and that of Gromor-14-35-14 was 59.2%.
- The reasons for using other brands were suitability to the soil and crop (55.2%), timely availability (44.4%) and credit facility (38.4%).
- The most effective and convenient mass media was T.V. (95.2%) followed by news paper (33.8%).
- The most effective promotional programmes at village level were posters, hand bills and other print media(52.8%) and A.V.vans (48.8%).
- About 58.4% of the respondents were satisfied with the pricing of the Gromor 14-35-14 and about 41.6% felt it to be on the higher side.
- The mode of purchasing fertilizer was credit (51.2%) and cash (48.8%)
- The repayment period for credit purchase was after harvest (61.6%), one month (27.6%) and one week (10.8%).
- The interest rate charged by the dealers on credit purchase was around 25%.

In conclusion the Gromor 14-35-14 position was strong in some crops like Groundnut, Bengalgram, Sunflower, Chilly, Banana, Yam and Turmeric. Its position was weak in the other crops like Mango, Citrus, Papaya, Coconut and Paddy(except Krishna District). So there is a need to strengthen its position in weak crop segments by concentrated promotional activities.

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SUGGESTIONS

Gromor is one of the leading and oldest brands in the fertilizer industry. Gromor has earned a very good name and reputation in A.P. market. However, brands like Godavari, Vijay and Jaikisan are making a headway into the market. Hence, there is every need for the Gromor brand to retain and improve its position by evolving new strategies to face the challenges of the competitors. Therefore, a few suggestions are being made based on the survey and the information being collected which can be of help to the company in the drawing its future plan of action.

As regarding suggestions:

- The emphasis in future programmes should be focused on balanced application of macro, micro and secondary nutrients, fertilizer use efficiency, Soil testing, IPNS, Natural Resource Management and Environment friendly practices for sustainable agriculture. The programmes will have linkages with the sale of fertilizers particularly in areas with low fertilizer consumption.
- The promotional programme has to be worked out on the crop based approach, after identifying the gaps in nutrient consumption and productivity of crops in a given area. An approach based on potential yield and consumption vis-à-vis present productivity and consumption will provide focused attention while bridging the productivity gaps.

- The trend would be towards low analysis complex fertilizers. This would become a real challenge and it becomes necessary to popularize fertilizers based on per unit cost rather than per bag cost consideration.
- As the fertilizer prices would become prohibitive, there will be greater awareness about mode of application, method of application and use of optimum doses, resulting in economic and efficient use of crop nutrients by the farmers.
- Advertising plays a very important role. CFL lags behind in effective advertisement. Advertising is the first recall at the time of purchase. Hence, proper advertising and promotional campaign should be taken up with the objective of increasing brand image and brand familiarity.
- The farmers would regularly meet dealers for purchasing seeds, fertilizers and pesticides. The dealers advice affects the purchase decision of the farmers. Hence proper incentives and credit facilities should be given to the retailers. Effective promotion strategy should be adopted to persuade the retailers to stock the product futures in their shops.
- The farmers have apprehension that same grade may not work effectively if applied successively. This should be corrected and eliminated by effective promotional campaigns and demonstrations.
- The ability to increase the market share is also critically dependent on how accomplished a fertilizer manufacturer is in optimally stocking the distribution network. So the company must pay more attention on timely availability of products in all markets.

- The fertilizer promotion programmes should be carried out and fertilizer use efficiency should be stressed in all communications to the farmers. Fertiliser use efficiency and balanced use of fertilizers are inter-dependent and considered to be the two sides of the same coin.
- During promotional programmes, stress more upon identification of different products of CFL by farmers through different colours.

Ex: Gromor 14-35-14 bag having black border.

- Gromor 28-28 bag having green border.
- Gromor 20-20 bag having red border

MANAGEMENT
MEMORANDUM

ANNEXURE

No.	Date	Particulars

ACHARYA N.G RANGA AGRICULTURAL UNIVERSITY

SCHOOL OF AGRI-BUSINESS MANAGEMENT

MARKET RESEARCH ON 14-35-14(GROMOR)

FARMERS' QUESTIONNAIRE

VILLAGE

MANDAL

DISTRICT

DEMOGRAPHY

Name of the farmer:

Age :

Education :

Area under Cultivation

Own: Irrigated: Source of irrigation:

Leased: Rainfed:

Crops grown : _____

SURVEY RELATED INFORMATION

1. What type of fertilizers do you apply?

Straight/Complex/Both

2. What are the complex fertilizers do you know?

Grade				
Brand				

3. What are the different fertilizers applied to your crops?

Season (Kharif/ Rabi)	Crop	Time of application	Fertilizer Applied (Kg/acre)					Method of application		Brand
			Urea	SSP	MOP	DAP	NPK Complex Grade Quantity			

4. On what basis, do you apply fertilizer dosages?

- a) As per the recommendation of scientists or A.O's b) Based on soil testing c) Past experience
 b) Following other progressive farmer or neighbouring farmers e) By intuition f) Dealers' advice

5. Have you heard of "GROMOR" brand? Yes/No

6. If yes, what are the different grades under Gromor Brand?

- a) 28-28-0 b) 14-35-14 c) 20-20-0

7. Have you applied any of the above three grades? Yes/No

8. If yes, what are they?

Grade	Crop	Stage	Purpose or Benefit
14-35-14			
28-28-0			
20-20-0			

9. What are the other brands do you know?

- a) Vijay b) Godavari c) Jai kisan d) Factomphos e) Spic-DAP f) Suphala e) Oswal-DAP

10. What are the Grades of above brands you have used earlier or present?

Grade	Crop	Stage	Purpose or Benefit

11. Is there any other reason for using the above grade?

- a) Less unit cost of the bag b) Gifts, Lucky dips c) Credit facility d) Brand image
 d) Only grade available with the regular dealer e) Timely availability f) Any other _____

12. From how many years have you been using these grades?

- a) 14-35-14 () b) 20-20-0 () c) 17-17-17 () d) DAP ()
 e) 19-19-19 () f) 15-15-15 () g) 14-28-14 () h) 28-28-0 ()

13. Are you looking for any change in the grade/brand/fertilizer pattern? Yes/No

If yes, what are the reasons?

14. Which complex fertilizer do you feel the best among all?

Crop	Grade	Brand

15. Which of the following mass media do you feel most effective and convenient?

- a) Television Yes/No (Programme; _____)
 b) Radio Yes/No (Programme; _____)
 c) News paper Yes/No (Name ; _____)

16. Which of the following advertising methods is most effective and convenient for you at village or market level?

- a) Farmer meetings b) Crop seminars c) Demos d) Burra Kathas
 e) Audiovisual vans f) Handbills, posters, and other print media g) Kisan melas, exhibitions

17. How do you select a particular brand of fertilizer?

- a) Dealers' advice
 b) other farmers' suggestion
 c) Crop requirement
 d) Lower price/bag
 e) Brand image
 f) Past experience
 g) Timely availability
 h) any other _____

18. About Gromor 14-35-14

Are you aware of Gromor 14-35-14	Yes/No
Do you prefer it?	Yes/No
If yes, why?	a) It contains highest "P" (35%) among all other complexes b) Less unit cost of "P" c) Ideal ratio of NPK d) N:P ratio is same as DAP but, also contains 14% "k" extra e) Balanced nutrient mixture in early stages of crop (basal Application) f) No filler material (100% Nutrient containing material) g) Highest in total nutrient content (63%) h) Higher yields Any other _____
If not, why?	Lack of visible effect/High price Any other _____
Will you apply it to the following crops?	a) Mango b) Banana c) Grapes d) Coconut e) Sugarcane f) Citrus g) Red gram h) Vegetables i) Sunflower j) Soya bean k) Oil Palm l) any other
Availability of 14-35-14 in y'r area	Yes/No/ _____ in the nearest town/own village

19. What's your opinion on price of Gromor brand?

High/Medium/Low/Satisfactory

20. Do you buy fertilizers on cash or credit? Cash/Credit/both

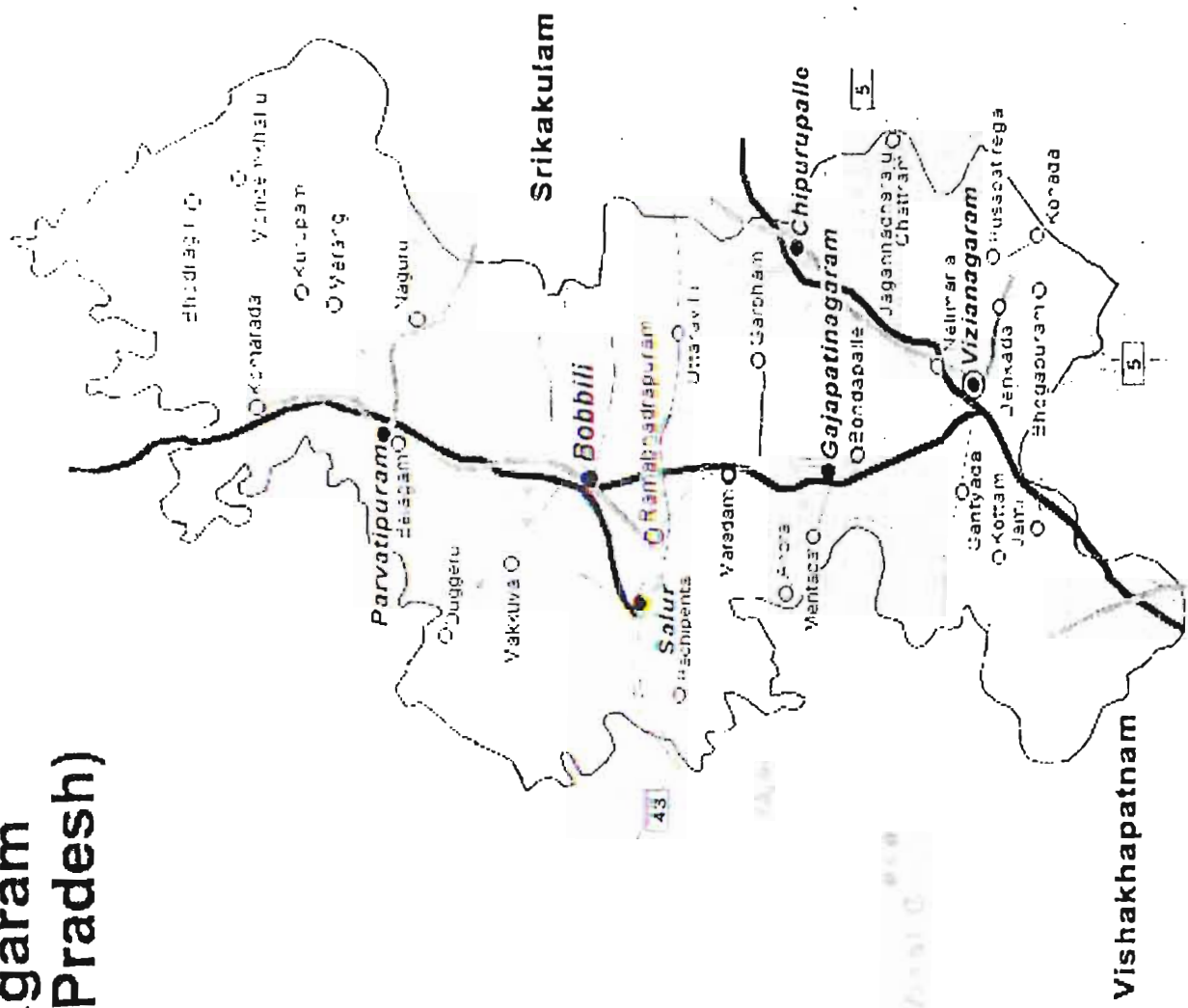
If it is a credit, what is the repayment period? A week/month/after harvest

21. What are the interest rates charged by the dealer? _____

22. Are the Gromor complex fertilizers available sufficiently in your area? Yes/No

23. Suggestions by the farmer

Vizianagaram (Andhra Pradesh)



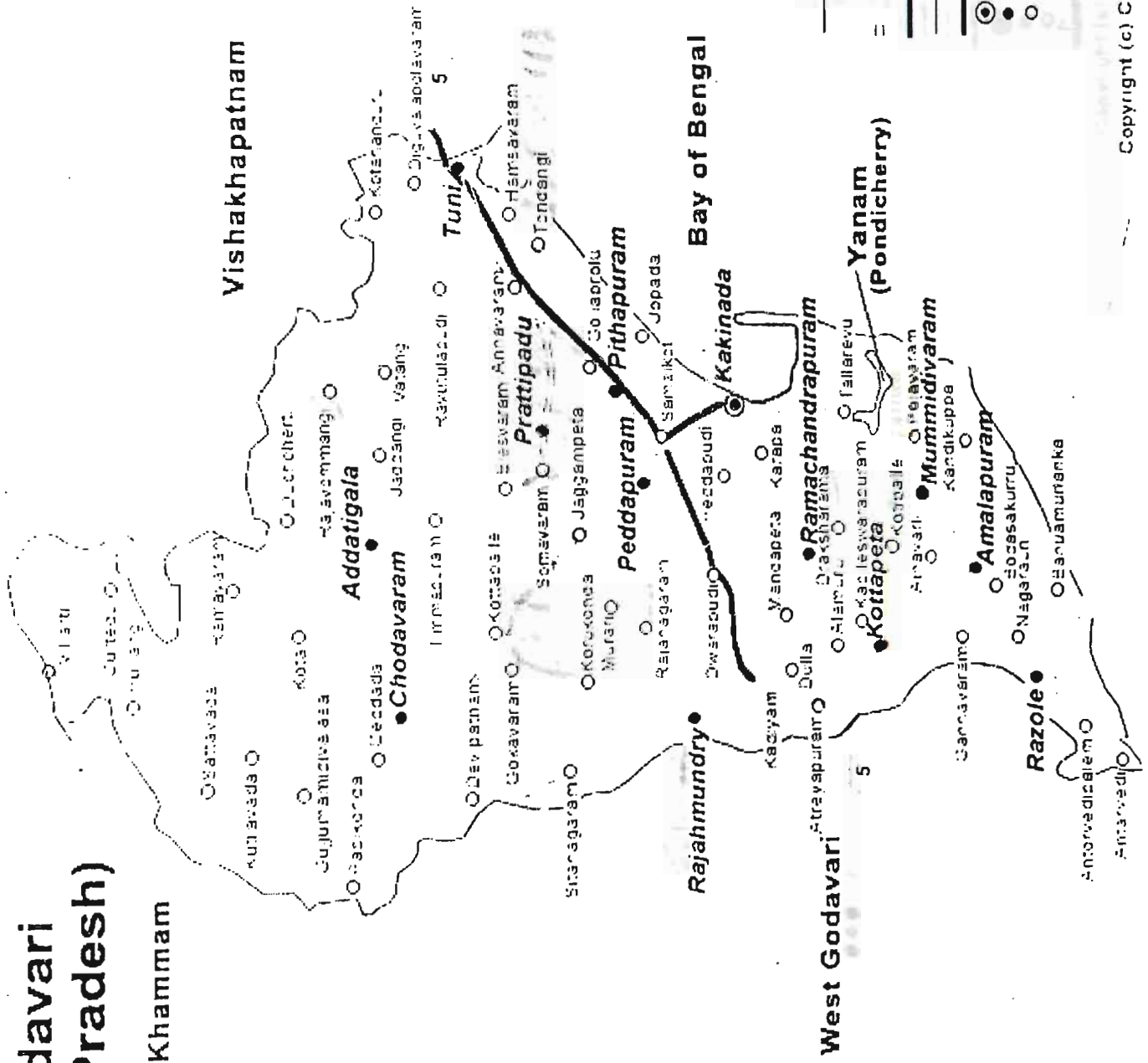
- Map not to Scale**
- District Boundary
 - ~ River
 - == National Highway
 - Major Road
 - Road
 - Railway Track
 - District Headquarter
 - Taluk Headquarter
 - Town

East Godavari (Andhra Pradesh)

Khammam



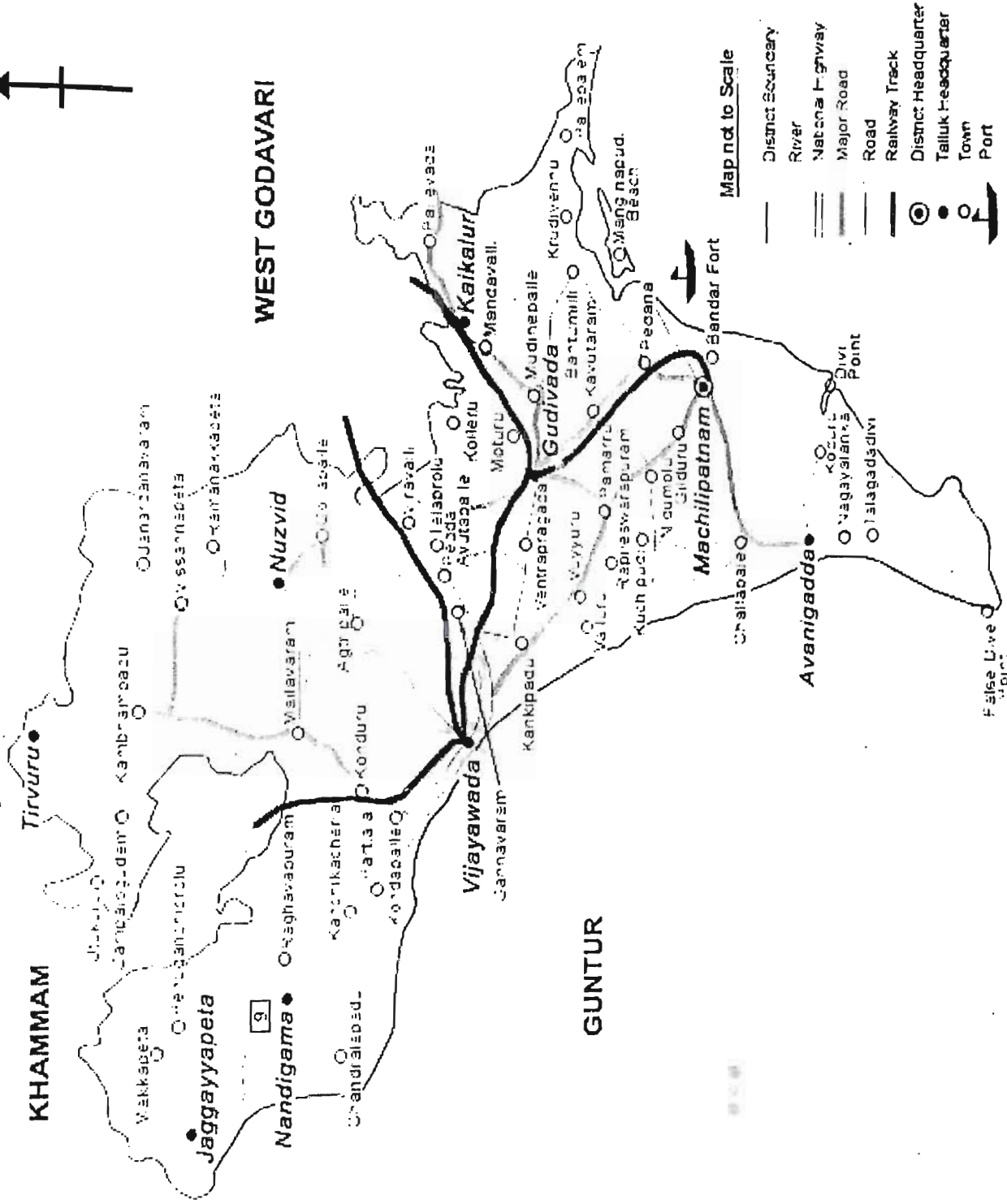
Vishakhapatnam



Map not to Scale

- District Boundary
- River
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- Road
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- District Headquarter
- Taluk Headquarter
- Town

Krishna (Andhra Pradesh)



- Map not to Scale**
- District Boundary
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Primary and Secondary data obtained from Research Institutes on Technical suitability of Gromor 14-35-14 in different crops

Name of the Institute	Contacted Scientist	Crop	Time of application	Recommended Fertilizer dosage (kg/acre)			Suitability of Gromor 14-35-14
				N	P ₂ O ₅	K ₂ O	
1) Agricultural Research Station, Vizianagaram Vizianagaram (Dt)	P.Krishnam Raju, Scientist (Pathology)	Groundnut	Basal (At sowing)	8	16	16	Gromor 14-35-14 was suitable to Groundnut at basal because all 3 nutrients, applied at the same time. For groundnut 1 bag 14-35-14 + 15 kg MOP per acre was recommended.
		Bajra	Basal	12	12	8	Gromor 14-35-14 was suitable for Bajra at basal. It is applied @ 35 kg + 4 kg urea /acre
			20-30 DAS	12			
		Ragi	Basal (at planting)	12	12	8	14-35-14 apply same as for Bajra
2) Agricultural Research Station, Ambajipeta East Godavari (Dt)	Dr.D.V.Raghava Rao, Princial Scientist & Head (Horticulture)	Coconut	June to July	35	70	87.5	Gromor 14-35-14 was suitable to coconut crop. It is applied @ 200 kg + 15 kg urea + 100 kg MOP per acre in each application.
			25-30 DAP	12			
3) Agricultural Research Station, Kovvuru, West Godavari (Dt)	D.Madhava Rao, Senior Scientist (Horticulture)	Banana	Oct-Nov At planting (for any variety)	35	70	87.5	Complex fertilizers are not recommended to Banana because 'P' is applied as basal and N&K are applied at 30 DAP. 'P' is taken in initial stages only. Calculation of quantity for per plant is also problem.
		Karpura Chekkarakeli Kovvuru bonta	N&K are applied @ 200 g/pt each at 45, 90, 135 and 180 DAP	-	50 g/pt	-	

Contd..

Name of the Institute	Contacted Scientist	Crop	Time of application	Recommended Fertilizer dosage (kg/acre)			Suitability of Gromor 14-35-14
				N	P ₂ O ₅	K ₂ O	
3) Agricultural Research Station, Kowuru, West Godavari (Dt)			N&K are applied @ 200 g/plant each at 40, 80, 120 and 160 DAP				
		Tella Chekkarakeli	N&K are applied @ 250 g/pt each at 35, 70, 105, 140 & 175 DAP				
	Yam	Basal (Last ploughing)	-	24	-		
		-	N&K are applied in 3 splits @ 100 kg/acre each at 40, 80 and 120 DAP.				Complex fertilizers are not recommended to Yam because 'P' is applied as basal and N&K are applied at 40 DAP. So it is better to apply straight fertilizers
4) Agricultural Research Station, Nuzvid, Krishna (Dt)	Senior Scientist (Horticulture)	Mango	Basal (last ploughing)	-	30	24	Complex fertilizers are not recommended to turmeric because P and K are applied as basal and N is applied at 40 DAP.
			July-Aug 1 year	100 g/pt	100 g/pt	100 g/pt	
			2 year	200 g/pt	200 g/pt	200 g/pt	

Contd..

Name of the Institute	Contacted Scientist	Crop	Time of application	Recommended Fertilizer dosage (kg/acre)			Suitability of Gromor 14-35-14
				N	P ₂ O ₅	K ₂ O	
4) Agricultural Research Station, Nuzvid, Krishna (Dt)			10 years and above	1000 g/pt	1000 g/pt	1000 g/pt	Gromor 14-35-14 was suitable to Mango because all the 3 nutrients, ie., NPK applied at the same time. It is applied @ 115 kg + 50 kg urea + 40 kg MOP/acre
5) Agricultural Research Station, Anantapur, Anantapur (Dt)	Balaguravaiah Senior Scientist (Soil Science)	Groundnut	Basal (at the time of sowing)	8	16	16	There is already 'P' build up in groundnut soils of Anantapur due to continuous use of DAP. There is no recommendation of P wherever the soil are high in P. Hence 14-35-14 does not suit to this situation..
		Redgram	Basal	8	20		For Redgram there is no recommendation of K so, the 14-35-14 is not recommended
6) Agricultural Research Station, Anantarajupet, Cuddapah (Dt)	Dr.K.Purushotham Principal Scientist (Horticulture)	Mango	Sept-Oct 10 years and above trees	1 kg/pt	1 kg/pt	1 kg/pt	Gromor 14-35-14 was suitable to Mango because all the 3 nutrients applied at the same time. It is applied @ 115 kg + 50 kg urea + 40 kg MOP per acre.
		Banana	Basal (at planting)	-	50 g/pt	-	Complex fertilizers are not recommended to banana because 'P' is applied at basal and N&K are applied at 45 DAP.
				N&K are applied in 4 splits @ 300 g/pt each at 45,90,135 & 180 DAP.			

Contd..

Name of the Institute	Contacted Scientist	Crop	Time of application	Recommended Fertilizer dosage (kg/acre)			Suitability of Gromor 14-35-14
				N	P ₂ O ₅	K ₂ O	
6) Agricultural Research Station, Anantarajupet, Cuddapah (Dt)		Papaya	Every 2 months interval	250 g/pt	250 g/pt	500 g/pt	Gromor 14-35-14 was suitable to papaya because all 3 major nutrients is applied at the same time. It is applied @ 700 kg 14-35-14+330 kg Urea+670 kg MOP per acre.
		Citrus (sweet orange)	June-July	750 g/pt	175 g/pt	200 g/pt	1/2 of recommended NPK is applied through organic manure (ie., FYM, castor cake & neem cake.
			Dec.Jan	750 g/pt	175 g/pt	200 g/pt	Gromor 14-35-14 is suitable to citrus it is applied @ 28 kg + 83 kg urea + 11.5 kg MOP per acre in each application.

Cost of cultivation of field crops (Rs/ha)

District	Crop	Nursery preparation	Main field preparation	Transplanting or sowing	Weeding or Inter-cultivation	Harvesting and threshing	Seed cost	Fertilizer cost	Plant Protection Cost	Irrigation cost	Total Cost (Rs)		
											Others	Per ha	
Vizianagaram	Paddy	400	2900	1250	1200	3300	900	2750	800	500	1000	15000	6000
	Groundnut	-	1250	750	1500	1600	2000	1300	650	-	1000	10050	4020
East Godavari	Paddy	400	2500	1500	1500	3500	900	1800	1000	500	1000	14600	5840
	Khari	400	3000	1750	1200	4000	1000	3000	800	1000	1500	17650	7060
	Turmeric	-	3000	2000	5000	12000	12000	4500	2000	500	2000	43000	17200
	Paddy	450	3000	1500	1400	3500	1000	2500	1000	500	1000	15850	6340
Krishna	Khari	450	3000	1750	1200	4000	1200	3000	800	1000	1500	17900	7160
	Rabi	450	3000	1750	1200	4000	1200	3000	800	1000	1500	17900	7160
	Cotton	-	1500	900	1800	2500	1000	2000	3000	0	1000	13700	5480
	Rainfed	-	1500	900	2300	3000	1000	3500	5000	300	1500	19000	7600
	Irrigated	-	1500	900	2300	3000	1000	3500	5000	300	1500	19000	7600
	Cereals	500	2400	1250	2500	2200	300	6000	2500	600	1000	19250	7700
	Groundnut	-	1500	850	1500	1800	2200	1550	800	-	500	10800	4320
	Rainfed	-	1500	850	1800	2200	3300	1800	800	500	1200	13950	5580
	Irrigated	-	1500	850	1800	2200	3300	1800	800	500	1200	13950	5580
	Bengalgram	-	1750	800	1000	1500	1600	1000	1800	-	300	9750	3900
Anantapur	Rainfed	-	1750	800	1500	2300	1950	1200	1800	500	700	12500	5000
	Irrigated	-	1750	800	1500	2300	1950	1200	1800	500	700	12500	5000
	Sunflower	-	1500	600	1000	700	450	1600	800	250	250	6900	2760
	Rainfed	-	1500	600	1500	1500	450	2000	800	500	600	9450	3780
	Irrigated	-	1500	600	1500	1500	450	2000	800	500	600	9450	3780
Paddy	450	3000	1500	1200	3500	900	3000	750	500	1200	16000	6400	

Contd..

District	Crop	Nursery preparation	Main field preparation	Transplanting or sowing	Weeding or inter cultivation	Harvesting and threshing	Seed cost	Fertilizer cost	Plant Protection Cost	Irrigation cost	Others	Total Cost (Rs)		
												Per ha	Per acre	
Cuddapah	Groundnut													
	Rainfed	-	1500	800	1250	1900	2500	1700	700	-	500	10850	4340	
	Irrigated	-	1500	800	1500	2400	3400	2000	700	500	1200	14000	5600	
	Bengalgram													
	Rainfed	-	1800	800	1200	1600	1500	1600	1800	-	250	10550	4220	
	Irrigated	-	1800	800	1600	2300	1950	2000	1800	500	500	13250	5300	
	Sunflower													
	Rainfed	-	1500	800	900	800	500	1700	700	-	-	250	7150	2860
	Irrigated	-	1500	800	1300	1500	500	2200	700	500	500	500	9500	3800
	Paddy	500	3000	1600	1200	3500	1000	32000	1000	500	500	1400	16900	6760
	Turmeric	-	3000	1800	4500	14000	12000	6000	2500	500	2000	46300	18520	

COST OF CULTIVATION OF ORCHARD CROPS (Rs/ha)

District	Crop	Field Preparation	Digging of pits	Planting	Wedding and inter cultivation	Harvesting	Planting material cost	Fertilizer cost	Plant Protection Cost	Irrigation cost	Others	Total Cost (Rs)		
												Per ha	Per acre	
Vizianagaram	Mango													
	1st year	3500	1200	700	1500	-	1250	200	100	300	10000	18750	7500	
	>10 year	-	-	-	2000	6000	-	3000	500	1000	15000	27500	11000	
East Godavari	Banana	3200	2500	2500	2200	2500	12500	15000	3750	3000	5000	52150	20860	
	Yam	3000	-	3000	2000	3000	8000	7500	2000	2400	2000	29900	11960	
	Coconut													
Krishna	1 year	2500	1000	600	1000	-	2250	1100	200	200	500	9350	3740	
	>4 years	-	-	-	1500	5000	-	3200	500	400	1000	11600	4640	
	Mango													
Anantapur	1st year	4000	1500	1000	1500	-	1500	1600	200	500	10000	21800	8720	
	>10 years	-	-	-	2500	8000	-	5000	1000	1000	15000	32500	13000	
	Citrus													
Cuddapah	1 year	2500	3000	4000	2500	-	3000	1600	400	1500	8000	26500	10600	
	>4 years	-	-	-	5000	6000	-	3800	800	2000	15000	32600	13840	
	Papaya	-	2500	2500	4000	3500	7500	10000	2000	2500	28000	62500	24600	
Cuddapah	Citrus													
	1 year	3000	3000	4500	3000	-	3000	1500	400	1500	8000	27900	11160	
	>4 years	-	-	-	5000	7000	-	4500	1000	2000	15000	34500	13800	

Cropped areas in different Districts (2001-02)

Area in Ha

District	Paddy	Ground-nut	Chillies	Cotton	Bengal gram	Sun-flower	Mango	Banana	Citrus	Papaya	Coconut	Yam	Turmeric
Vizianagaram	96905	60725	2297	14760	27	0							
East Godavari	384027	1433	1599	7172	28	104							
Krishna	339541	7826	10991	37209	6	28							
Anantapur	64573	765574	4494	7429	49087	53232	3714	1001	20066	74656			
Cuddapah	46707	112004	2244	14385	39913	36130	17031	93943	2537	2537			2441

Bibliography

1. Fertilizer News Vol.47 (9), September, 2002.
2. Marketing Research D J Luck & Rubin. Prentice Hall of India 1998.
3. Principles of Marketing. Philip Kotler and Gary Armstrong. Prentice Hall of India 1997.
4. Survey of Indian Agriculture 2002. The Hindu.
5. w.w.w.cflindia.com

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