

SUCCESS STORY:

# POPLAR FOR PROSPERITY

(A JOINT VENTURE OF FARMERS AND INDUSTRY)



REGIONAL CENTRE

NATIONAL AFFORESTATION AND ECO-DEVELOPMENT BOARD  
AGRICULTURAL FINANCE CORPORATION LTD. BOMBAY

Northern Regional Office, New Delhi

1993

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**REGIONAL CENTRE  
NATIONAL AFFORESTATION AND ECO-DEVELOPMENT BOARD  
NEW DELHI**

**CORE GROUP**

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**AGRICULTURAL FINANCE CORPORATION LTD.  
BOMBAY**

## FOREWORD

*The National Forest Policy of 1988, while emphasising the need for afforestation for environmental management and ecological development, gave equal importance to economic benefits, so that maximum number of tree growers are motivated to adopt the forestry enterprise on individual basis. This is more true in the case of farm forestry - a field which is emerging as an essential area of entrepreneurship at the grass-root level. Farm forestry is mainly concerned with the degraded and marginal land under private entrepreneurship. Another area which promises considerable scope for the promotion of forestry is raising of plantations for meeting the demands of forest based industries which also promises optimum profit to the tree growers.*

*WIMCO-NABARD POPLAR PLANTATION PROGRAMME has opened a new avenue for the promotion of farm forestry through meaningful partnership between the farmers and industry. The success of this programme has established that agricultural and industrial sectors can join hands for serving the cause of entrepreneurial management and also eco-development and generation of employment and income through enterprise of farm forestry. The documentation of this success experience of this programme needs to be fruitfully shared by other industrial sectors in different parts of the country. The documentation of this success story is likely to prove a major step towards the promotion of agro-forestry in the country. I hope, this publication will be received as a valuable contribution in the field of developmental communication in the country.*

**S E ARANHA**  
MANAGING DIRECTOR



## PREFACE

*Forest in India are under pressure to supply raw material to the growing population and therefore there is tremendous urgency to find the ways to manage forest's sustainability on one hand and augment the raw material production on the other. Despite the emphasis on wastelands afforestation and promotion of farm forestry schemes promoted through the initiatives of the Government, the production from these areas is yet to reach the level when it can reduce the pressure on forests. In order to promote afforestation and encourage private forestry development, the industrial sector both public and private, has to play a significant role. For this, there is need to develop and implement some useful models of the partnership between the farmers and the industry with the support of funding and other development agencies. The success of such models is bound to open new avenues for promotion of man made forests on a larger scale.*

*The success of WIMCO-NABARD Farm Forestry Project has shown encouraging results which promises a bright future for the constructive role of the industrial sector in promoting afforestation and promising prosperity to the farming community.*

*This documentation based on the success story is being brought out with the hope that it will spread the expertise and help development of forestry through fruitful partnership between the industry and the farming community.*

*We thankfully acknowledge the support given by NAEB in bringing out this 'Success Story' as a part of the series of such publications. The valuable assistance rendered by Shri S. K. Jatia, Managing Director, Shri S. M. Agarwal, Vice Chairman (WSL), Shri Shankar Ghosh, General Manager and Shri V. K. Sood, Dy. General Manager of WIMCO is sincerely acknowledged.*

**A.P. DIKSHIT**

CO-ORDINATOR RC-NAEB &  
GENERAL MANAGER AFC

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## 1. INTRODUCTION

The WIMCO-NABARD Poplar programme is an Agro-Forestry enterprise which offers farmers unique opportunities of earning income through the optimum use of land resources. This is basically a farmer oriented programme for which WIMCO provides special facilities such as access to top quality plants, technical advice, needed loans and above all assured incentive prices for trees. This programme is an ideal example of fruitful partnership between agriculture and industrial sectors.

Poplar plantation is fast emerging as an area of innovative enterprise in the combined sector of farming and forestry. As such, it has been popularly adopted by the farmers as an enterprise of agro-forestry. The programme is characterised by plantation of fast growing varieties of Poplar and promises better opportunities of higher profits as compared to the crop cultivation. It is estimated that an average yield of wheat may give around Rs. 4,000/- an acre depending on the type of seed and agricultural practices. Poplar plantations give a much higher return on harvest at the end of 8 years and the system would not ask for elimination of wheat obtained. As, more the wood available and the better its quality the more are the returns. The extent of the profit earned through the Poplar like the other enterprise depends on proper management and adequate care. Quite obviously, the profits may fall down if the growth of the plantation is adversely affected due to lack of care. Adequate care and proper management of the plantation therefore, requires special significance to the entrepreneurial behaviour of the farmers as WIMCO offers buy back facility depending on the value of the wood, i.e. quality of the log, volume of wood, etc.

The programme thus, provides a complete package to the farmers in terms of the best possible planting material, most appropriate technical guidance, and of course, the optimum income from the plantation at the end of eight years.

Besides the economic advantages to the farmers, Poplar plantation offers additional advantages in terms of soil management and soil fertility. It has been scientifically established that Poplar plantation results in increased supply of five main nutrients to the soil. During seventh year of the plantation, maximum return of Calcium followed by Nitrogen, Phosphorous, Magnesium and Potassium has been observed as reported by the study conducted at Resources, Survey and Management Division of Forestry Research Institute, Dehradun.



## 2. GENESIS

WIMCO Agro-forestry Programme owes its genesis to early 70s when acute wood shortage became the concern for all, particularly to the wood based industries. The Government made some efforts to improve the situation through the experiment of joint sector plantation or the introduction of the system of leasing the land for the purpose of plantation. These steps however, did not yield the desired results. It was the period during which the maximum supplies of wood had to depend on government forests only. The forestry sector was suffering a significant set back due to the rapid deforestation and slow regeneration process. Not only that the match wood industry was facing the crisis of insufficient supply of wood in terms of the required quantity but also the requirements in terms of the quality wood, specifically the one needed for the industry could not be supplied. The government was not in a position to provide preferential treatments to the match-wood industry due to number of policy constraints and the situation was worsening due to increased competition faced by match wood industry which other wood industries were generating. In addition, the match wood industry had to bear the extra burden of overall input cost due to enhanced expenditure on transportation because of the increased distances between the forest and the factory. The combined effect of all these factors lead to the dwindling supplies, deteriorating quality of the raw material for the industry and the increasing production costs. Under such circumstances agro-forestry in farmers field emerged as the only option for the survival of the match wood industry. Forced by such compulsions WIMCO gave new thrust to its R & D Extension work during the five year period of 1978-83, which showed promising results and lead to WIMCO-NABARD Poplar Project.

Now, the programme has become a model for agro-forestry schemes for generating wood resources and protecting natural forests from further felling of trees. More than 25 lakh trees are being planted every year under the scheme. Now Phase III of the scheme offers even higher returns to the farmers. It offers a complete package of services to the tree growers. These are as follows:

- Best planting material, grown specially in the nurseries and supplied at planting side.
- Complete guidance for 8 years (till harvest of the trees).
- Assistance in obtaining bank loan for expenses of raising the trees.
- Free replacements of plants in first two years (up to 10 percent).
- Guarantee to purchase the trees at the end of 8 years at a minimum support price of Rs. 870 for the trees meeting specifications



### 3. GROWTH OVER THE YEARS

The initial phase of the WIMCO Project started in 1983 with the plantation of 1,26,000 poplar trees on farmers fields for which WIMCO not only motivated and educated farmers but also distributed the planting material entirely free of cost. The farmers were provided with the needed technical guidance and conducted tours to the successful Poplar plantation which were arranged as a part of the package of the extension approach of R & D Programme of WIMCO. This resulted into remarkable response from the farmers. Consequently, the first phase of WIMCO-NABARD Poplar Scheme was launched in 1984. It was a noble venture of joint partnership between the industry and the banking sector of working together for the benefit of the farming community besides serving the cause of eco-development. During the first phase i.e. 1984-87, the total plantation was to the tune of 2.6 million trees while during the second phase i.e. 1988-1991 the figure of total plantation reached to 7.6 million trees. The year-wise growth of the programme during 1984-1991 is presented in the table below :

Table- 1

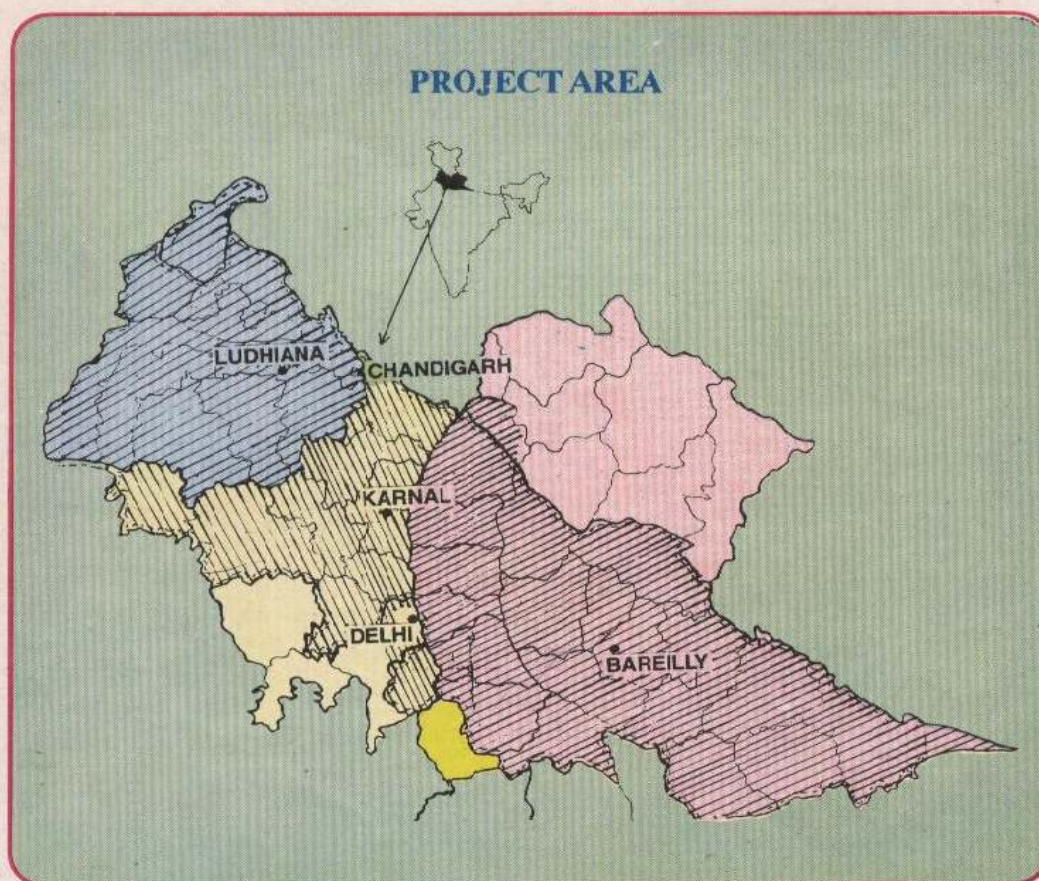
Year	No. of trees planted in each State			Total Plantation
	Punjab	Haryana	Uttar Pradesh	
1984	51000	49000	190000	290000
1985	79000	83000	250000	412000
1986	229000	128000	385000	742000
1987	299000	249000	505000	1053000
1988	50500	411000	1285000	2301000
1989	529000	356000	1251000	2136000
1990	486000	306000	1438000	2230000
1991	490000	161000	1479000	2130000
G. Total	2668000	1843000	6783000	11294000



#### 4. PRESENT SCENARIO

At present WIMCO-NABARD Poplar Plantation Programme covers 21 districts in Uttar Pradesh, 11 in Haryana and 12 in Punjab. More than 86 lakh trees have been planted every year under the scheme. So far 11.30 million plants have been planted and the total area under the plantation has exceeded 22.5 thousand hectares. Also approximately 6 lakh sq.m. of industrial and one lakh of fire wood have been produced every year.

In the light of this success experience the target of plantation in future has been fixed to be 5,000 ha. per year and the number of farmers to be covered has been fixed at 12000.





## 5. PROJECT PROFILE

The main features of the project are as follows :

- Selected clones of Poplars raised in WIMCO Nurseries and delivered to motivated farmers.
- Planting and after care supervised by WIMCO.
- WIMCO also assists in loan processing and disbursements.
- Farmers grow the trees and cultivate inter-species.
- Banks finance project costs through loans disbursed in yearly instalments.
- NABARD sanctions projects costs, gives refinance to banks.
- WIMCO provides buy-back for project feasibility.



*A view of plantation under WIMCO-POPLAR Programme*

The specific roles of the three components of the project namely the farmers, the financial institutions and WIMCO are as follows :

### **ROLE OF FARMERS**

1. Grow Poplars on farm land.
2. Provide inputs for growth and maintenance of plantation during eight years period.



## ROLE OF FINANCIAL INSTITUTIONS

1. Banks provide long term finance to farmers to cover cost of inputs.
2. NABARD - the apex bank provides agriculture refinance to banks.



*A tree grower receiving loan under the WIMCO Plantation Programme*



*A View of Clonal Trial conducted by WIMCO Seedlings Ltd.*

## ROLE OF WIMCO

WIMCO provides such services to the farmers as : supply of genetically superior clonal plants, complete package of practices and extension services, makes available the assured market for Poplars at remunerative price and assists in preparing cases for bank finance.

## WIMCO SEEDLINGS LTD

**WIMCO SEEDLING LTD**  
Which is a unit of WIMCO is involved in the programme through the following roles :

- Multiplication of quality plants in nurseries.
- Provides R & D Support for plantations and intercropping techniques and also develops pest/disease resistant improved clones.



*Research and Development Support makes the Programme a Success.*



## PROJECT IMPLEMENTATION METHODOLOGY

The methodology adopted for implementing the program is carried through three different units of WIMCO, namely Research and Development (RD), Technical and Commercial Wings.

Poplars can grow extremely fast under suitable conditions. In India, selected clones of Poplars have given excellent performance under assured irrigation in the Indo-Gangetic plains of UP, Punjab, Haryana, J & K and Himachal Pradesh above 28° N latitude. Its wood finds many uses, such as for pulp, paper, plywood, matchwood and packing cases.

It is specially suited for agro-forestry as it sheds its leaves in winter, allowing rabi crops the full benefit of sunlight. In addition, the leaves help enrich the soil.

### WIMCO AGRO FORESTRY

R & D	TECHNICAL WING	COMMERCIAL WING	PERIOD
Research on Agro Forestry Packages	* Farmer Motivation (Publicity, Demonstration Fairs, Farmers "Goshties" Advertisements)	Follow up of Loan Disbursement of old Plantations	September
Research on Development of new clones and field testing of clones	* Farmer Identification (Site Inspections, Scheme Details, Plantation Management Details, Intercropping Practices, etc.)	Farmer Identification, Checking Documents, Identity Bank, Prepare Loan applications, Joint Inspections with Banker	to December
Staff Training on Technical and Field Extension Methods	* Planting in Farmers Field Assist/Advise Silvicultural Aspects	Assist in Loan Disbursement	January to February
	* Visit and supervise Tending operations in Plantations, Advise, Intercropping Practices, Monitor Growth and Health of Plantations	* Follow up of Loan Disbursement, Monitor Loan cases at various stages	January to September



## **SECRET OF THE SUCCESS OF POPLAR PLANTATION: WIMCO TECHNOLOGY**

WIMCO Technology has contributed a major share to the success of the programme. The relevant features of this technology are the followings :

### **1. Selection of Site**

Poplars require adequate and regular irrigation. Where drainage is not good, Poplars will not do well. Areas where the water table is higher than 150 cm. the soil is alkaline/ acidic are also not suitable. Thus deep lomy soil, rich in organic mater with good water table which is neither too high nor too low and proper drainage is ideal for growing Poplars.

### **2. On Lifting Nursery Plants**

There are many clones of Poplar. Those doing well in the plains of UP, Punjab and Haryana include G3, G48, D121, S7CB, S7C15 and S7C20 clones. WIMCO nurseries provide the best planting material available. It is essential that one metre deep pits should be prepared for planting the saplings. Such pits can be prepared economically and in less time with augers.

While taking the saplings or ETPs (entire transplants) care should be taken that the roots are kept moist and protected from excessive sun or wind. The saplings should be kept immersed in fresh water for at least 48 hours before planting. While transporting the plants or unloading them, care should be taken that the top does not break. Where this happen, the stem may be cleanly cut with secateurs above a healthy bud.

### **3. Time of Planting**

January-February is the appropriate time for planting as the Poplar is dormat and leafless at this time. However, farmers wishing to plant Poplars should get in touch with WIMCO much earlier, say in July-August so that the site can be examined and processing of cases for bank loans can begin.

### **4. Planting Distance**

Poplars can be grown in the following ways :

In line planting along an irrigation channel at a distance of four to five metres.



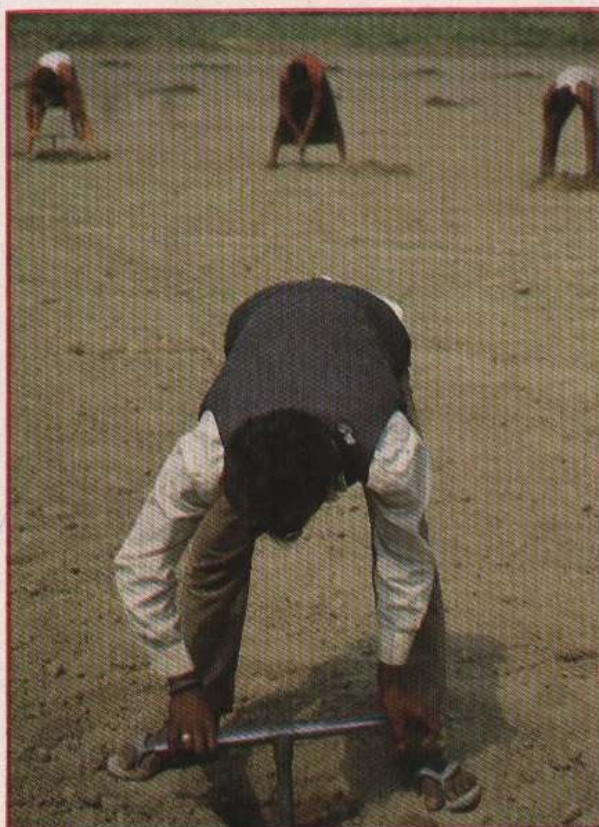
- Where Poplars are to be grown along with crops they can be planted at a spacing of 5 x 4 metres or 6 x 6 metres. The spacing should not be less than 5 x 4 metres. In this spacing, 200 trees can be planted in an acre or 500 in a hectare.

Under this spacing :

- Farm implements can be used with ease and the combination of trees and crops help utilise the potential of the land to the best possible extent.
- And double benefits for the farmer, regular income from intercrops and good earnings from large sized, heatly trees after eight years.

## 5. Planting Method

Broken and damaged roots are cut with secateurs before planting in the field. The roots and the stem up to a height of one metre are kept dipped in Emissan 0.2 per cent solution for 20 minutes.



*Planting Methods is an important component of WIMCO plantation technology.*

- While planting rabi crop irrigation channels at 5/6 metre (according to the spacing adopted) should be prepared as Poplars are planted in January- February by which time the rabi crop has already come up. These channels should be 30 cm. wide and 30 cm. deep. Pits will be dug in these channels at the time of planting Poplars.
- The soil to be filled in the pits should have 10 to 15 gm. Aldrin 5 per cent mixed into it. Mixing of 50 gm single super phosphare in the soil will also be beneficial.
- Well decomposed farmyard manure, 5 kg. per pit, can be mixed into the soil. It should not be used if it is not fully decomposed.



- After pruning the roots as required, place the sapling upright and fill up half the pit and irrigate well.
- After one, well fill in more soil into the pit and keeping the sapling straight to compaction of the soil before irrigating. While doing this it should be kept in mind that the stem or roots of the sapling are not damaged. Compaction will ensure that roots are in contact with the soil and will eliminate air pockets which can be starting point for fungal attack.

## **6. After Planting**

- The soil should be kept moist till the beginning of the monsoon. For this weekly irrigation is essential. Without regular and timely irrigation the trees will not grow well.
- Weeds should not be allowed to grow at all. Therefore, soil operations should be maintained. By doing this, insect and pest attacks are also reduced.
- When shoots begin to appear these should not be allowed to develop in the lower one- third of the stem. However, shoots further- up should not be cut. Secateurs should be used for this operation. The healthiest and most vigorous shoot at the top should be retained to develop as a leader.
- Fertiliser should be applied in the beginning of June. This should be done before irrigation. The fertiliser should not be applied too close to the stem. In subsequent years it may be given as required.
- Protect plants from animals. By rubbing their horns or body against the tree they peel off the bark thereby hampering its growth.
- Where there is an insect/pest attack, the technical guidance from WIMCO staff is sought so that remedial measures are taken.
- Due to constant cultivation, deficiency of some nutrients has become fairly common in some areas, such as of zinc. For this 25 kg. of zinc sulphate per hectare is applied in such fields.

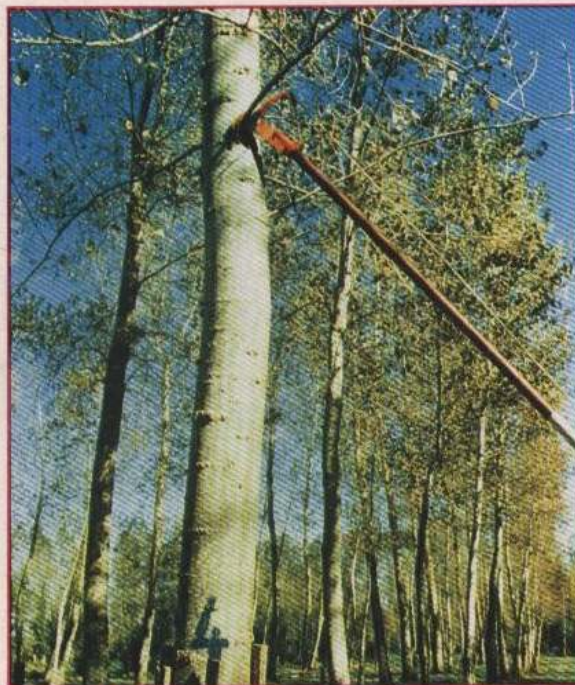
## **Other Information**

Poplars grow rapidly during the first three years and any setbacks to the tree in this period are difficult to overcome later on. Poplars show marked impact of irrigation and soil operations. In the first year from January to July weekly irrigation is essential. From second year onwards to the eight year, irrigation at 7-10 days intervals in summer and 15-20 days in winter is appropriate.



From second year onwards pruning is required. This operation should be done with the guidance of WIMCO staff. While doing this it should be kept in mind that it is leaves which prepare food material for the tree. Therefore, pruning more than necessary is harmful for the tree. This task should be done in winter when the tree is leafless.

As the tree grows its crown can gradually be reduced. However, at the time of its maximum growth at the end of eight years the crown should not be less than one-third of the total height of the tree.



*Pruning of Poplars is a regular silvicultural requirement*

Poplars are extremely sensitive to fire and trash of sugarcane and other crops should not be burnt in the field. Care should also be taken that no damage is caused by similar burning of waste in adjoining fields.

The trees can be damaged by intense sunlight and high temperatures and proper irrigation must be ensured to prevent this.

A watch must be kept against termites, specially in comparatively dry areas. Where necessary Aldrex/BHC 10 per cent dust can be used.

### **And Finally**

- Poplars thrive under agroforestry and field operations in plantations, growing intercrops speed up, Poplar growth. Care should be taken during field operations that trees are not damaged by tractor/farm implements.
- Rabi crops can be grown easily with Poplars. For kharif crop, after the initial years, shade tolerant or fodder crops can be grown. Among these, cultivation of ginger and turmeric is economical. On a small scale winter vegetables can also be grown.
- Paddy should not be grown as intercrop with Poplar at all.
- Planting Poplar without irrigation is a waste of effort and planting material.





*Inter cropping of wheat with Poplars helps in additional income generation*

### **Input Support**

WIMCO offers a complete package of services. These are as follows :

- Best planting material, grown specially in the nurseries and supplied at planting site.
- Complete guidance for about 8 years (till harvest of the trees). Assistance in obtaining bank loan for expenses of raising the trees.
- Free replacements of plants in first two years (upto 10 per cent).
- Guarantee to purchase the trees at the end of 8 years at a minimum support price of Rs. 870 for trees meeting specifications.

Farmer is also free to sell to any other party of his choice.

In addition, insurance cover is also available for the plantation.

### **Loans from Banks**

The scheme has full approval of NABARD (National Bank for Agriculture and Rural Development) and concerned state governments. Commercial banks provide assistance to farmers under the programme by way of loans for meeting plantation costs.



Farmers are required to provide necessary documents showing proof of ownership and credit worthiness prior to loan sanction. The loan is disbursed in 8 annual instalments on basis of standing trees. WIMCO provides assistance in forwarding and follow-up of loan application to the bank. However, delays or refusal may occur, for which WIMCO cannot be held responsible.

### Returns

The returns shown in the tabel below are based on net earnings after deducting loan + simple interest at (15 per cent) repaid on sale of the trees after 8 years. Loan amount and interest have been calculated on basis of 500 trees for first two years and 450 trees thereafter.

**Table - 2**

Particulars		U.P. Rs.	Haryana Rs.	Punjab Rs.
Loan amount per tree		141	166	168
Trees planted per ha.	500			
Assuming 90% reach specified size	450			
Price / tree of agreed specifications	870			
Gross return	450 x 870	3,91,500	3,91,500	3,91,500
Bank Loan		67,350	78,900	79,900
Interest on loan (indicative)		65,192	74,551	75,676
<b>Net Return</b>		<b>2,58,958</b>	<b>2,38,049</b>	<b>2,35,924</b>

*In addition, farmer earns income from other agricultural crops.*





*Mr. Afzal Khan, a poplar farmer of Bisharatganj in Aonla Tehsil of Bareilly district stands proudly next to an excellent potato intercrop obtained in his plantations.*

### **CASE STUDY OF AN ENTREPRENEUR**

Mr. Afzal Khan is a farmer of Bisharatganj in Aonla tehsil of Bareilly district who planted 1400 poplars in 1986. Today he looks forward to harvesting his plantation after just seven years - one year early - as his trees have already reached an average growth of 85 cm. Some trees in fact have even reached 120 cm.

He is doubly satisfied as, apart from raising poplars of high quality, he has also been taking the benefits of inter crops in his plantation. This has helped him increase income substantially. In the first few years crops like wheat, masur, peas, chillies provided good returns, he says. He obtained a noteworthy yield of 16 quintals of wheat an acre for instance.

More recently he grew potato and the results were outstanding. He obtained a yield of 160 qtl/acre. According to him, the good yields were made possible by the use of high-quality seed, timely irrigation and proper inputs of fertiliser. The variety grown was Kufri Badshah. Now he has planted turmeric and ginger which provide excellent results in older plantations. The seed and complete technical guidance is being provided by WIMCO and the Research Centre in Jhansi.



## **AN OVER VIEW OF WIMCO POPLAR PROGRAMME**

- Scheme offers benefits of agro-forestry. Thousands of farmers have joined the scheme. Tree Planted : 25 lakh every year.
- Giving support is WIMCO's 350 strong extension network-offices in every district.
- Farmer Benefits As : Trees fetch excellent returns on harvest after 8 years.
- Other crops too are grown during this period.
- Planting material grown specially in our nurseries supplied at planting site.
- Guidance given on all aspects - inputs, soil operations, intercrops.
- Care of the trees such as pruning, leader training.
- Remedies suggested for deficiencies, pest attack, other damage.
- Monitoring of growth by our staff.
- Backed up by research at Bagwala & Chandain 150 - acre farm for trials.
- Trees are grown for profit, better inputs, better returns.
- Irrigation, fertiliser, farmyard manure, soil working help growth.
- Most major banks lend under scheme.
- WIMCO helps forward applications, does the follow up.
- Demand is wide ranging and increasing-major uses-matches.
- Plywood & veneer.
- Wimco offers assured prices for trees sold to it.
- All adding up to a complete package.



