

**KERALA**

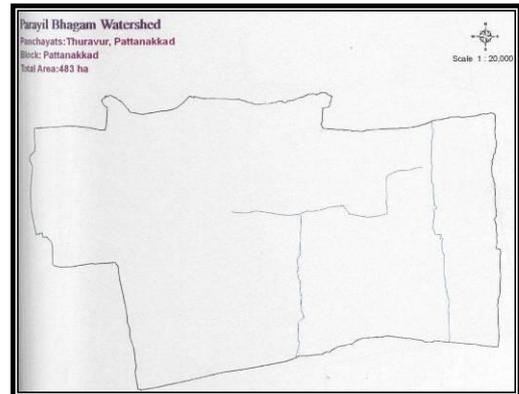
## F.1. MARSH TURNED AGRICULTURE LAND

### *A Case Study from Alappuzha, Kerala*

Parayil Bhagom is a small habitation in Pattanakad Gram Panchayat of Pattanakad Block in Alappuzha district in Kerala. Once famous for vegetable and paddy cultivation, the place has turned into marsh land since the last 20-30 years.

Saline intrusion in summer and floods in monsoon was a regular phenomenon in the area. Two main canals, Desathodu and Ponnarnvelithodu, pass through the region. But silt deposits over the years obstructed the natural flow of water at many places in these canals causing the nearby lands to become waterlogged and marshy.

Paddy in wetlands and coconut in uplands are the major crops in the area. Farmers also grow banana and vegetables as intercrops in uplands. The soil of this region is generally sand to loamy sand. Due to the high porosity, the soil has very poor water and nutrient holding capacity. Overall, the fertility of the soil is poor.

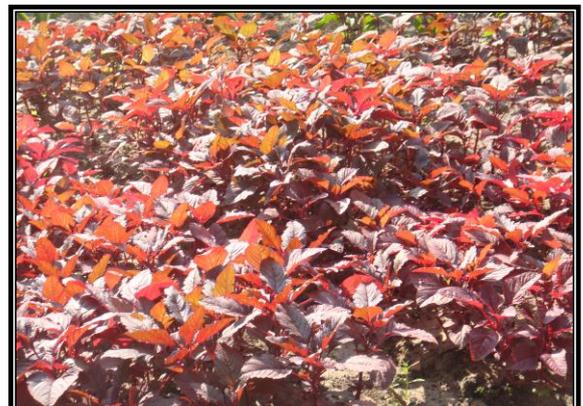


*Photo 1: Map of the watershed*

In 2003, when the government sanctioned a watershed development project in Pattanakad Block under Haiyali scheme, Parayil Bhagom region was included in the area to be treated. The Parayil Bhagom micro watershed extends over 549 hectares (ha), of which 483 ha was considered as treatable area. The main objective behind the treatment was to reclaim the marshy land for agriculture purposes.

So far, about 245 ha out of the total 483 ha have been treated with various measures. The treatment has helped waterlogged areas become fertile and cultivable. There is a provision in the project for supporting group farming of vegetables. The Project promoted 16 groups as part of the farm production system. In the first phase 15 acres of land were taken up for vegetable cultivation. Ten groups were organized and they were given intensive training in growing vegetables like cucumber, melon, amaranthus, bittergourd, ladies finger etc. In the previous season it is estimated that 100 tonnes of vegetable have been produced in this area which seems to be a bumper crop in the present context. The development plan in Parayil Bhagom has three main planks viz. natural resource management (NRM), production system management, and afforestation.

Under the NRM component, the Project is carrying out de-silting and bank stabilization of Desathodu and Ponnarnvelithodu canals. So far, about 50 per cent of these works have been completed. Other works under NRM includes soil conservation works de-silting of streamlines, vegetative stabilization of canal banks, and application of de-silted mud in coconut basins as manure for rejuvenating coconut palms, installation of roof water harvesting structure.



*Photo 2. Amaranthus cropped in the project area*

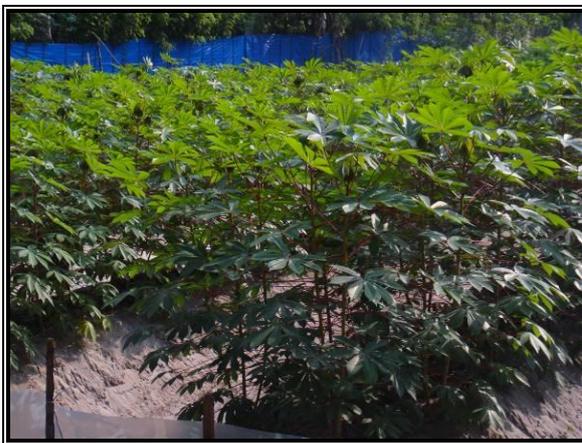
Under the production system management, the Project is promoting organic banana cultivation and vegetable cultivation, and vermin compost units for vegetables.

Maintenance of sacred groves associated with temples, supply of planting materials for agroforestry, and planting of trees on public lands are some of the afforestation work being carried out in the Project.

The project is still ongoing but tangible results are already evident, particularly in organic vegetable cultivation. Significant portions of the land that till recently was marshy and saline and therefore unfit for cultivation, has been made fertile. The good yield of vegetables has been a much needed morale booster to the villagers who had lost their confidence in agriculture. They become more enthusiastic and aware in natural resources management.



*Photo 3. Women beneficiary working in the bitter gourd field*



*Photo 4 & 5. Tapioca and White pumpkin raised under the project*



## F.2. 'HARIYALI' making a huge difference in Kerala *A Case Study from Malappuram, Kerala*

Ernad taluk in Malappuram district of Kerala is one among the many locations selected for the implementation of Integrated Wastelands Development Programme (IWDP) under Hariyali Guidelines. The Project is known as Malappuram II.

The delineation of micro watersheds across the entire geographical extent of a block is no means an easy job, particularly if it is carried out by conventional means. Hence, the Project used Geographical Information System (GIS) and Remote Sensing to delineate the micro watersheds, and analyze their limitations and potential. A land use map of the area has been prepared with the help of Remote Sensing and satellite imageries from LISS III of IRS 1C and PAN of IRS 1D satellites. Extensive consultations with panchayat officials at block and village levels were then carried out to identify the micro watersheds to be included in the Project.

Digital elevation model (DEM) using digital stream network was employed to delineate the micro watersheds. Topographic map published by the Survey of India was used as the base map used for this purpose while the soil map of the area was obtained from National Bureau of Soil Survey and Land Use Planning, Pune. Image fusion has been employed to improve the spatial resolution. Classification of the fused imagery has been carried out to identify the current land uses in the watershed. Ground truthing with the help of Global Positioning System (GPS) has also been done to support and verify the result of classification. The delineated watersheds were overlaid with their respective thematic layers such as DEM, drainage network, land use map, soil map to study the characteristics of individual micro watersheds, evaluate their inherent problems.

With these basic information on the watersheds, detailed PRA exercise were conducted with the community in each watershed. These exercises aimed to identify the problems from a community perspective and to help in the final selection of micro watershed. The PRA exercises also helped to plan appropriate developmental measures for each watershed with adequate technical specification and cost estimates.

Malappuram II targets development of 12 watersheds with an approximate area of 5378 Ha. Total Project cost of Rs 30 million will be shared between the GoI and the government of Kerala (GoK) in the ratio of Rs 27.5 million and Rs 2.5 million. The project follows a unit cost norm of Rs.6000 per hectare. This document covers the processes and results from the Vadassery Potty watershed; one of the 12 watersheds taken up for treatment in Malappuram II.

### **The case of Vadassery Potty watershed No. 24C61a**

Vadassery Potty Watershed is located in the western part of Edavanna Gram Panchayat (GP) in Perakamanna village of Wandur block. Delineated between 110° 11' 30" – 45"N, 76° 5' 30" - 76° 07' 30"E coordinates, Vadassery Potty is a micro-watershed of Perakamanna thodu (stream) draining to Chaliyar river. Its total area is 860 Ha, of which 500 Ha is the area to be treated.

Arimangalam and Pannippara are two major habitations within the watershed inhabited by 870 families belonging to different communities including scheduled castes (SC) who stay in a separate hamlet. Agriculture which has been a mainstay of people's livelihood is dwindling due to acute shortage of labour. Two to three people from almost all the families in these villages have migrated to Gulf countries for work.

Lack of trees in the upper reaches meant that the exposed soil became prone to erosion

during the long rainy season. The persistent erosion along the steep slopes has led to formation of moderate gullies. Further, the absence of tillage has led to hardening of the land surface hindering the infiltration of water resulting in runoff. The unchecked runoff from moderate to steep slopes has eroded the topsoil along with nutrients.

The productivity of land has reduced and the crop yields have become uneconomical. Though the rainfall is abundant and a lot of surface water is seen in the area, shortage of drinking and irrigation water is prevalent during months from March to May. Ironically the rainfall is abundant in the region but lack of water harvesting structures has prevented the people from taking advantage of this and store water for future use. Overflowing tanks and ponds are a common sight in these villages.

The cropping pattern in the watershed is dominated by cash crops. Rubber plantations form about 50 per cent of these crops while coconut forms 25 per cent, cashew 10 per cent, areca nut 5 per cent and mixed crop forms the rest 10 per cent. Both, traditional and modern agriculture practices are seen in the watershed area with a high degree of mechanization in large measure due to the scarcity of labour. Farmers use high doses of chemical fertilizer and pesticides in the paddy fields.

The midlands too have their share of problems. While all the homesteads here have wells, their level goes down up to 12 metres in the summer months. Some wells even completely dry up.

Farmers have increasingly tended to shift from paddy cultivation to cash crops like coconut, banana, areca nut and beetle wine in recent years. This is due to poor availability of water and high labour cost. This shift in the cropping pattern has reduced the availability of fodder, affecting the cattle population adversely. Most of the cattle in these villages do not produce much milk. The situation of marginal farmers who are resource poor is extremely bad. They are not in a position to employ farm labour and find it difficult to sustain their livelihood through farming alone.

People do grow fish in local ponds but its culture is not based on scientific principles and the production is mainly for restricted to domestic consumption.

The watershed however presents the scope for several interventions that can improve the situation appreciably. For instance, numerous drainage channels that are present in the watershed can be made productive with repairs. Further, the scope for biogas generation remains unexplored till now and similar is the case with the use of solar energy based appliances.

## Results

Vadassery Potty micro-watershed has been selected as the most successful of the 12 micro-watersheds in the Ernad taluk. The success is largely due to the active participation of the local communities. To get the involvement of the communities, the Project teams held frequent meetings with the Gram Sabha to discuss, develop and review annual action plans and implementation of the activities. Works under the scheme were carried out based on the consensus from the user groups (UG) and watershed committees (WDC). Involvement of the people in every step ensured transparency in every aspect



*Photo 1. Canal with stone embankment*

of the works. This, in turn led to enhanced enthusiasm among the people and their contribution towards development of the scheme. The implementation of the Hariyali Project has resulted in a sea change in the life in watershed. Water harvesting structures like farm ponds, fish ponds, irrigation canals and provision of high yielding varieties of marketable crops has led to a number of households giving up traditional method of shifting cultivation in favour of settled method of cultivation. Besides, these families received encouragement and technical support from the Project Implementation Agency (PIA) and members of Watershed Development Team (WDT) to help them successfully make this transition.



*Photo 2 & 3: Banana and bittergourd fields in the project area*

The rain water that earlier was being wasted and caused flash floods and siltation is now being stored, helping recharge groundwater. The erstwhile perennial drainage lines that had dried up in last 5 to 6 years due to deficient rains are showing considerable increase. The increase in storage capacity in the watershed has improved the availability of drinking water in the summer season. As the watershed villages are now able to meet their water requirement, they are able to share the surplus with their neighboring villages.

Overall, as a result of the watershed development project in Vadassery Potty, there has been a significant improvement in local employment opportunities arising out of the revival of agriculture. The villages which used to experience lean season migration now report almost no migration. Even some families who had migrated earlier have returned to the villages. Further, people from neighboring villages are also coming to the watershed villages for work.

The water level has risen in almost all the wells in the watershed and there has been an increase in the number of perennial wells. A lot of dry wells have become 'functional'. People are today better equipped to cope with drought and deficient rains. Agriculture in the watershed has been revived with more area being brought under cultivation, increase in the area under irrigation, adoption of better varieties of crop, and diversification of crops. The agriculture yields have registered significant increase.

It is not only the people with land who have benefited from the Project but also the landless. The increased wage availability during the implementation and through agriculture improvement post-project has helped them improve their economic condition. The improved availability of fodder prompted people to take up dairy as a supplementary income source. Many families purchased cross bred/ improved breed of cows.

The demand for credit had gone up significantly and dependence on money lenders reduced due to self help group activity. Community farming, vermi composting, floriculture and so on are handled by women SHG / Kudumbasree units. With strong community involvement, loan

repayments have improved and credit flow has also increased. There are secondary effects like visible improvements in housing and jump in school attendance.



*Photo 4 & 5: Tapioca and bottlegourd fields assisted under the project*

### **Conclusion**

The success of Vadassery Potty has once again proved that techniques tested and adapted to regional needs and context is the need of the hour compared to rigid 'one size fits all' blueprint approach. The micro-watershed approach through local participation enables identification and application of regional solutions. Development calls for integrated solutions through coordinated efforts of multiple agencies instead of sporadic and unidirectional efforts.



## F.3. Towards prosperity

### *Case Study from Hariyali project in Kerala*

#### **Introduction**

The Hariyali project of the Government of India (GoI) for watershed development has had widespread impact on the people of Pazhayannur block panchayat of Thrissur district in Kerala. Pazhayannur block panchayat situated in the North-East region of the district has the Bharathapuzha River to its north, Palanipuzha River on the east, reserve forest on the south and west. The region is richly endowed with natural resources.

The Pazhayannur gram panchayat (GP) is one of the agriculture dependent panchayats in Pazhayannur block. The area receives very high rainfall with average precipitation of about 2800 mm. Due to the undulating topography most of the rainwater flows into the Bharathapuzha with very little being retained in the region. This creates a dichotomy of floods in the monsoon and drought in the summer season. Agriculture which is the main livelihood of the people has become vulnerable to the twin blows. Many farmers therefore shifted from growing food crops to plantation crops like rubber. In worse case some are leaving their paddy fields fallow.



*Photo 1. Map of the Achattupadi & Kallepadam watersheds*

Moreover, the soil was exhausted of organic matter and farmers did not follow scientific farming. The loss of productivity in agriculture has not only affected the farmers but also those who depend on agriculture for wages. While agriculture suffered the people did not also have much of alternative livelihood options.

The topography of Pazhayannur panchayat consists of hilly terrains, slopes and the plains. Major crops grown are paddy, coconut, banana, vegetables and rubber. There are 20 padasekhare samities in the panchayat. The Pazhayannur block has a number of small riverlets and thodu (streams) which drain water into the Bharartapuzha River.

The management of water such that the excess water in monsoon is retained in a manner that does not damage the crops and remains long enough to help the crops in the summer became the most urgent need of the panchayat. At the same time improving the resilience of the livelihoods of the people; both farmers as well as landless agriculture labourers was important. The government therefore felt it appropriate to initiate an integrated watershed development project in the region. There are six micro watersheds in the Pazhayannur panchayat, of which Kallepadam (962.5 ha) and Achattupadi (1154ha) have been selected for treatment under Hariyali.

#### **Process**

To begin with, the Pazhayannur block panchayat entrusted the College of Horticulture in the Kerala Agricultural University (KAU) the critical task of preparing the detailed project report (DPR) and monitoring the implementation of the watershed project. A multidisciplinary team comprising of experts in agriculture and allied fields from KAU assisted by members of the watershed development team (WDT) used a blend of surveys and rapid rural appraisal (RRA) to elicit the data required to prepare the DPR. The Pazhayannur GP under the guidance of the Pazhayannur block panchayat formed watershed gram sabhas in the two

watersheds. These exercises helped identify the needs and priorities of the people, their problems and possible solutions. Since the watershed approach was adopted by the Panchayat, the delineation of the watershed boundary using the ridge-line walk and transect walk was the first step in implementation.

To develop a baseline of the socio-economic situation of the people at the start of the Project in the two watersheds, a questionnaire survey was conducted in all the households. Multidisciplinary teams visited the watersheds and held series of meetings with the gram sabhas to decide location specific interventions and assess their feasibility. The Project gave priority to appropriate and low cost technologies with long term benefits to the people. The interventions finalized in discussions with the Panchayat were then included in the DPR. Based on the DPR and the allocated budget, annual action plans and detailed estimates were prepared for each intervention. The GP implemented the Project and its various functionaries like the agriculture officer, LSGD engineer and the village extension officers (VEO) actively participated in the implementation. The GP formed user groups (UGs) for individual activities who were given the responsibility for implementing them. In the initial years, the Project gave thrust to activities that helped manage excess rain water and had the potential of providing income to the marginalized groups.

### **The two watersheds and their problems**

The Achattupadi watershed fully or partly covers the wards 1, 11, 18, 19, 20, and 21 of Pazhayannur panchayat. The terrain is undulating with elevation ranging from 80-100m. The major soil types are laterite and coarse sand. The watershed has the Kayampooam forest in the north, Vellappara thekkethara in the east, Pangarappilly forest in the south and plantations in the west. The watershed is based on Achattuthodu. Of the total geographic area of 1150 Ha, about 950 Ha is under agriculture. The area sanctioned for treatment under the Project is 825 Ha. The major crops are rubber, paddy, banana, tapioca, pineapple and coconut. Rubber and paddy account for 30 per cent each of the total crops. Paddy is grown twice in the year. Apiculture is an additional source of income to the farmers from rubber plantations. Dairy is also an important livelihood with about 20 per cent people of Achattupadi watershed owning an average of 2-3 cattle. Goat and pig rearing, and pisciculture are also important sources of income.

There is one higher secondary school, three high schools, two L.P. schools and two English medium schools in Achattupadi. There is a primary health centre at Vadakkethara and an Ayurveda Hospital. Punjab National bank, South Indian bank, Dhanalakshmi bank and Lord Krishna bank have their branches in the area. Farmers' cooperative society and cooperative bank also provide credit to the farmers. There are two rice processing mills, a Khadi Board and a 110KV substation of Kerala state electricity board (KSEB) in this area.

Among the major problems listed by the people, the social and environmental problems were beyond the purview of the Project. The major agriculture related problems identified were; lack of irrigation, scarcity of drinking water, very poor percolation of water in to the soil, shortage of labour, declining production and productivity of major crops, lack of efficient marketing facilities, mite attack, price fluctuation in coconut and exploitation by middlemen in vegetable.

### **Kalleppadam Watershed**

The Kalleppadam watershed covers wards 2,3,4,5,6,7,8 and 16 of the GP. About 780 Ha out of the total area of 960 Ha in the watershed has been sanctioned for treatment in the Project. Kalleppadam watershed is based on the Parakkal thodu. The topography is undulating with gentle to moderate slope and elevation ranges from 10-30m. Main source of the water is from Gayathripuzha. Main crops are paddy, coconut, tapioca and vegetables like bitter gourd, snake gourd, cowpea, brinjal and chilly. The public institutions in this watershed include the village office, veterinary hospital, post office, telephone exchange, Ksheera vyavasaya Kendra

and a primary health centre.

Because of the regular overflow from the Kumbalakkadu and Mattinmukal thodu, there would be loss of paddy crop due to shortage of water. The other problems included; scarcity of drinking water in Kallepadam, Alankunnu and Padimythri settlements, procurement of paddy at low rates by private rice mills, lack of irrigation facilities, underutilization of the lift irrigation system, severe erosion of soil leading to destruction of river banks and siltation of paddy fields, unscientific cultivation practices, and exploitation by middlemen in marketing of farm produce

### Activities and their impacts

- Sufficient water boosts production

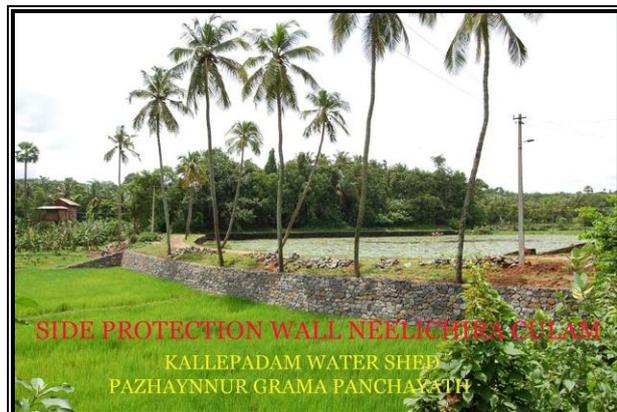
Based on the problems identified by the people and solutions identified in the DPR, the watershed project undertook several activities aimed at redressal of the major problems. These ranged from repair and renovation of irrigation channels, streams, ponds and wells. Besides water availability, the interventions also focused on better water use and application of improved technologies.

Paddy is the major food crop in the area but its production in many padasekharams remains lower than the potential due to lack of sufficient water particularly in the second crop season. In 2007-08, the Project repaired 250 metres of the CADA irrigation channel that was constructed during the 8th plan period, and connected to the main canal from Cheerakuzhy irrigation project.



*Photo 2. Canal with stone embankment*

The immediate result of the repair was that a second crop of paddy could be grown in the Neernamukku padasekharam. Water was now available to an additional 60 Ha of paddy crop in the Mundakan season. The yield of paddy too increased from three tonnes per Ha to 4.5 tonnes per Ha. In all about 108 farmers in the 60 Ha padasekharam benefited from the repair of the CADA channel. An additional 90 tonnes of paddy valuing about Rs.one lakh could be produced. CADA channel-the photo of a winding small cement channel.



*Photo 3. A view of Parakkal thodu      Photo 4. Side protection wall of Neelichira Kulam*

Parakkal thodu is an important drainage channel in the Neelichira padasekharam in Kallepadam. The weakened bund of the thodu would often break during the rains and cause flooding and siltation of the fields. This rendered about 50 Ha unsuitable for cultivation. The hariyali project repaired the side walls of the Parakkal thodu in response to the priority

assigned to it by the Gram Sabha. This was taken up as a major work in 2007-09 and an amount of Rs 13 lakhs was spent for the purpose. The repair improved the management of water in the padasekharam which in turn improved agriculture production. Further, an additional area of 300 Ha was brought under successful cultivation in both the Virripu and Mundakan seasons. The productivity of paddy increased from 2.5 tonnes per Ha to 4.5 tonnes per Ha. Nearly 50 ha of paddy crop is being lost due to breakage of side walls of canal. Significantly, repair to the side wall helped in saving 50 Ha of paddy fields belonging to 110 farmers.

While there are a number of ponds in the watersheds, most had silted up and therefore abandoned. One such pond is the Padinjarechira kulam (pond). Spread over two acres, it is among the bigger and older ponds in the area. The GP decided to renovate the pond so that it could be put back into public use. In 2009-10, it built 76 metres long side protection wall using the funds available in the watershed project. At the same time it linked up with the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for cleaning and de-silting of the pond. The storage capacity of the pond increased to 40,000 m<sup>3</sup> of water. Because of the percolation from the pond, the water level in the nearby wells rose from 5½ m to 7½ m. These wells now have water throughout the year. This work generated 1400 person days of employment under MGNREGS.

Chanthapura well used to have sufficient water for drinking and irrigation needs. But over time it silted up and as a consequence became defunct and dry. Looking at the potential benefit that could result from the well the GP took up its renovation in the year 2008-09. The user group that stood to benefit from the well undertook the renovation that cost Rs.66, 657.

The UG deepened the well by 20 feet, removed the silt and constructed a parapet wall. Now the well provides safe drinking water to 50 families and is also used for irrigating the vegetables grown in the summer fallow.



*Photo 5. A view of the pond maintained by convergence*



*Photo 6. A view of the Chanthapura well renovated under the project*

- Women coming to the forefront in the Project  
Improving the livelihoods of women is an important objective in the Hariyali project. The GP formed self help groups (SHGs) of women and provided them with a revolving fund of Rs 10,000.

Raising horticulture nurseries was among the various business activities that the SHGs started with the revolving fund. One SHG established a nursery for raising nutmeg seedlings as nutmeg is an important cash crop and a suitable intercrop for coconut plantation. Nutmeg besides being a perennial crop with a significantly long economic life of 120 years also enjoys

a stable price in the market. However it was not a common crop in Pazhayannur. The Project by raising the nursery is aiming to popularize the crop and at the same time helping the women earn a viable livelihood. The nutmeg seedlings raised by the SHG are procured by the Krishi Bhavan @Rs.12 per seedling. The group produced 2100 seedlings in the first year and earned an additional income of Rs.25, 200. The supplies from the nursery have helped introduce the crop in an additional area of 30 Ha in the panchayat.

- Income from agriculture increases due to sesame cultivation
- Paddy fields occupy nearly 20 per cent of the cropped area in the panchayat but the crop grown in only two seasons; the second one becoming productive only after Hariyali. The fields remained fallow during the summer for want of sufficient residual moisture. Due to the soil and water conservation activities taken up in Hariyali the farmers are able to now grow sesamum as the summer crop. An area of 26 Ha has since been brought under cultivation in summer.

The farmers of the area have now learnt to grow a new crop all over again. Sesamum used to be grown in this area more than two decades ago but farmers lost the knowledge due to lack of application. Besides, the sesamum helps enrich the soil by fixing nitrogen in the soil. This in turn helps improve the yield of paddy. The most direct and immediate benefit that sesamum gives is the additional returns to the farmer. In the first season, about 400 tonnes of sesamum was produced in the area.

- Animal husbandry provides another alternative livelihood
- The pasture development work by the Hariyali project has resulted in improved availability of green fodder in the watershed. The Project provided farmers with cuttings of fodder grass (Co-3 & Co-4) from the Kerala Agricultural University. About 25,000 cuttings were distributed to 50 farmers. Those who grew the fodder sell the cuttings to other farmers in the following years. The watershed area has now achieved self-sufficiency in green fodder.

### **Replicability and dissemination**

All the interventions under taken are readily replicable in other watersheds. Renovation of Padinjarechira Kulam through the convergence of Hariyali and NREGS is a good example of integration of schemes at grass root level. Re-introduction of sesame cultivation in the rice fallows is an instance of soil enrichment, income enhancement and nutrition security of farm family. Livelihood enhancement of SHGs through nursery activities and distribution of nutmeg seedlings to farmers was created additional and stable income source for more than one group of people. Farmers from neighboring watersheds visited Achattupadi and Kalleppadam watersheds and were impressed with the turnaround they witnessed in these two places. The scientific inputs and guidance of watershed development programme by the KAU is a good model of programme implementation that could be of use in other watershed programmes.



## F.4. vegetable cultivation is ushering in a new way of life

### A Case Study from Alappuzha, Kerala

Alappuzha district is known as the Venice of the East for its huge network of backwaters. While it has a vast coastal area there are no forest areas. The economy of the district nowadays depends on industries like coir, fish, glass, and ice.

Pattanakkad Block, one of the Blocks in north Alappuzha district connects it with Ernakulam District. Its proximity to the commercial capital of Kerala is leading to various industries developing here in recent years. This block consists of eight panchayats namely, Aroor, Ezhupunna, Kadakkappally, Kodamthuruth, Kuthiathode, Pattanakkad, Thuravur and Vayalar.

The soil in Pattanakkad is loose sandy silica and is suitable for vegetable, paddy and coconut farming. However, the presence of vast fallow lands and putting them to cultivation has vexed everyone. A major reason behind the decline of agriculture has been the rising cost of cultivation, particularly labour. As the farmers see their profits from farming dwindling each year, they gradually withdraw from the sector, leaving fertile lands to go barren.

On the other hand, demand for food is growing and lack of local supply has affects food security adversely. The economically weaker section, particularly struggles for food and money. Vegetable farming is increasingly becoming necessary for maintaining food security.

Among the eight panchayats in the block, the Pattanakkad panchayath showed the best potential for vegetable farming. The uncultivated lands soon gave way to green vegetable plots. This was possible only with the complete participation of each and every person in the panchayat. The Hariyali project linked up with the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). The job card holders under MGNREGA worked on the fallow lands to turn them into productive vegetable farms. The reclaimed land was divided among the Neighborhood groups (NHGs) for cultivation. 15 acres of land was divided among 10 groups.

The seeds were sown in mid-November. The groups mainly grew cucumber, melon, *cheera* (red leafy vegetable), bitter gourd, and ladyfinger. It was a win-win situation for both, the farmer and the landless job-card holder. The production of each vegetable was very good and this proved to be a turning point for each individual who took part in this long journey from customer to producer. The vegetable production improved the life of the villagers socially, financially and economically.

