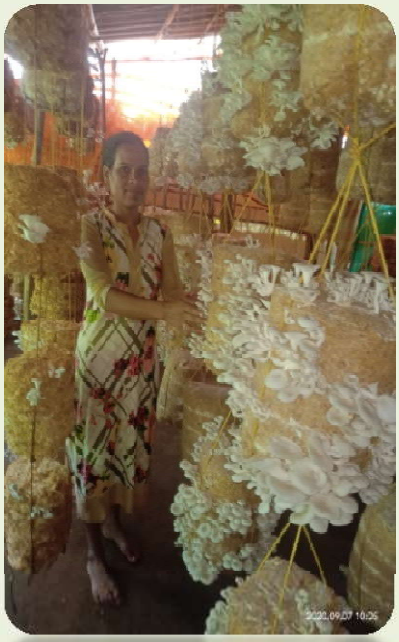
Livelihood Entrepreneurship for Tribal Communities

... key drivers for economic development of tribal families



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Horticulture Nursery : Sapling of Livelihood

Background

Nashik district being in the agro climatically transition tract, has variety of crops in its geographical stretch of fifteen tahsils with fruits, vegetables, oilseeds and pulses & cereal crops. The district accommodates large agriculture dependant populace & the average size of land holdings is declining. The eastern part is with a plain tract, light soils & hard pan beneath receives meagre average 700mm of scanty rainfall.. The western part which is hilly tract, however receives on an average 1200mm extended rainfall and nurtures paddy based cropping system with tribal agricultural livelihood.

Nashik district is a major horticultural district in Maharashtra. Grapes, pomegranates, guavas, tomatoes, capsicums, cabbages, cauliflowers, and chillies are some of the major fruits and vegetables grown in the district. Grape farmers are adopting improved techniques for planting using grape rootstocks, but there is a shortage of manpower for grafting. Krishi Vigyan Kendra, Nashik has decided to train unemployed rural youth in horticulture nursery management and propagation methods to generate income.

In the Western Ghat Zone of Nashik district, which is mostly a tribal belt, there was a heavy demand for mango grafts of the Kesar variety. Farmers in this region have small landholdings and limited access to irrigation, so mango plantation on sloppy, marginal land and farm bunds is a more effective way to get assured income over a long period of time. The demand for quality mango grafts from local farmers was met by nurseries from adjoining states. To meet the demand, KVK Nashik trained rural youths and supported them to start small mango graft nurseries.

Traditionally, vegetable farmers raise vegetable nurseries on soil beds. This can cause heavy mortality due to disease infestation from the soil and open climate. Rural youths and farmers are now being trained about modern, high-tech vegetable nursery raising under protected structures. Seedlings of vegetables are grown in small cells and transplanted to fields.

Intervention

After surveying the need for different types of quality planting material of major commercial horticulture crops in the district, it was found that there was a great opportunity to train and engage unemployed rural youths to generate assured income. Krishi Vigyan Kendra, Nashik planned to engage unemployed rural youths in the nursery services for income generation by skilling youths in horticulture nursery management and propagation methods.

Krishi Vigyan Kendra is conducting 15 to 30 day on-campus vocational training program on nursery management. Different modules were blended for skilling in grafting, operations in protective structures, marketing strategies, market survey, bankable proposals for subsidies, etc. Classroom teaching, hands on practice, exposure visits, participation in day-to-day private nursery works, etc methods were adopted for the trainings.

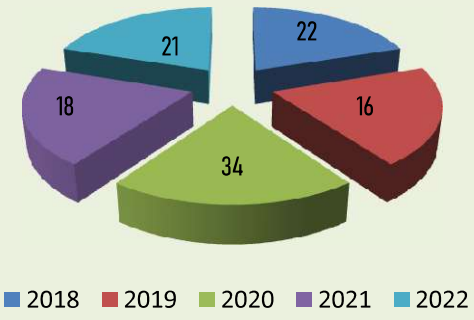
Objectives of Trainings

- To provide rural youths with the knowledge and skills necessary for entrepreneurial opportunities in horticultural nursery.
- To train rural youths in the grafting techniques of different fruit crops and their aftercare.
- To train rural youths in the seedling raising techniques of commercial vegetable, flower, and ornamental crops using modern propagation structures.
- To train rural youths in the marketing of seedlings, grafts of commercial crops, and the development of a nursery as a commercial unit.
- To train rural youths in the development of ornamental plants, landscape gardens, and their maintenance.

Training Methodology

- Theoretical aspects through class teaching, audio-visuals, and slide shows: 10 days.
- Practical training in grafting, cuttings, and budding through actual field-level practice demonstrations: 15 days.
- Exposure visits to commercial nurseries at Pune, Nashik, and Konkan Krishi Vidyapeeth, and government nurseries: 5 days.

Participants for Nursery Management Training

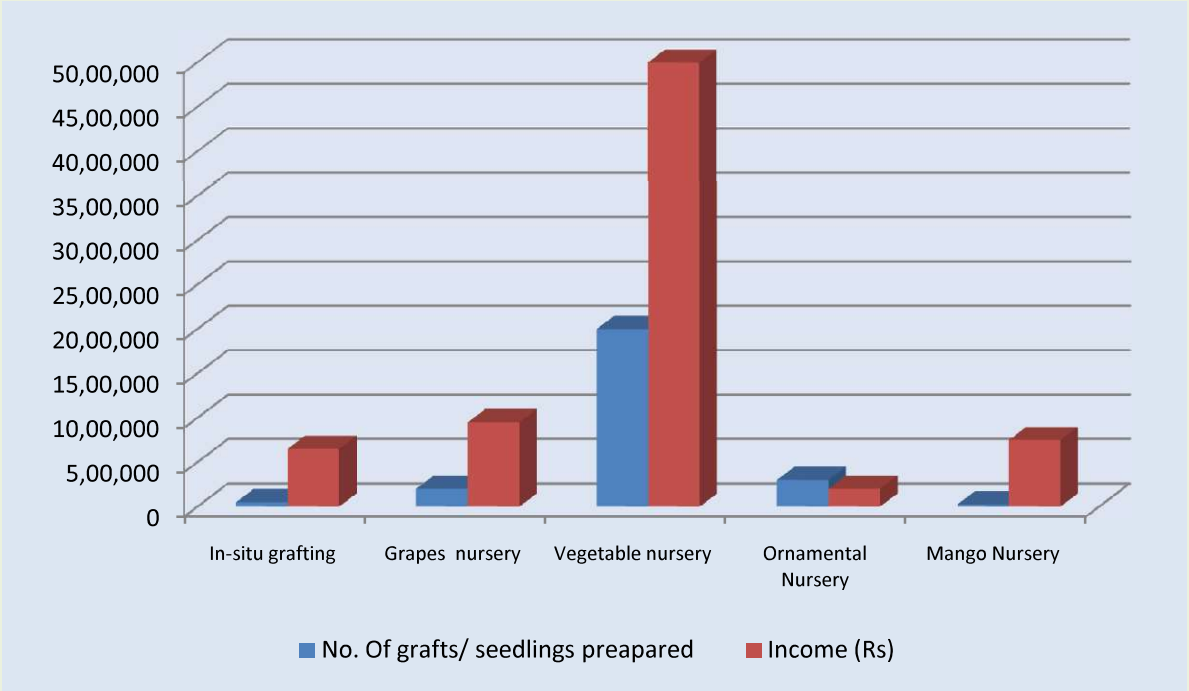


Adoption and Impact of Training

Most of the participants were fully satisfied with the training and acquired the skills of grafting and seedling raising. The success of the training was analysed by the success rate of the grafts they prepared and the knowledge test conducted after the training. Now, the trainee are engaged in different types of nurseries viz. Specialized grape and mango nursery, contracts with grape growers for in situ grafting of grape on rootstocks, ornamental nurseries, protected vegetable nurseries, etc.

Economic Impact of Training

Sr. No.	Nursery Type	No.of trainees engaged	Area of activity	Crop	No. Of grafts/ seedlings preapared	Area covered (acres)	Income (Rs./yr)
1	In insitu grafting on grapes root stock	65	Niphad, Nashik,Dindori, Chandwad	Grape	50,000	500	6,50,000
2	Grapes nursery	04	Nashik Dindori	Grape	200000	200	9,50,000
3	Commercial vegetable nursery	18	Niphad, Dindori, Nashik, Sinnar, Trimbakeshwar, Chandwad	All vegetable crops	2000000	500	50,00,000
4	Ornamental plant Nursery and Garden Development	02	Nashik Corporation area	Ornamental & Landscape Garden	300000	20	2,00,000
5	Mango Nursery	06	Trimbakeshwar, Peth	Mango	25000	5	7,50,000



Benefits to Farmers

- ✓ Seed saving
- ✓ Higher survival rate of seedlings
- ✓ Reduced damage during transplanting
- ✓ Lower incidence of disease.
- ✓ Higher quality and uniformity of transplants.
- ✓ Earlier harvest after transplanting.
- ✓ More suitable for mechanical transplanting.
- ✓ Reliable planning of production
- ✓ Right media – good germination
- ✓ Each seedling – equal area –Uniform growth
- ✓ Seedling mortality, better controlled
- ✓ Transplant establishment, crop stand better
- ✓ Uniform and early maturity
- ✓ Low Viral disease damage

Tribal Youths trained forHorticultural Nurseries...

New dimensions of agri-preneurship for tribal youths

Livelihood Diversification through Mushroom Cultivation

Background

Tribal livelihoods in the Nashik district have been characterized with the undulated patchy lands, uncertain irrigation facilities with crops such as paddy, finger millets and Onion. These are family centric small scale farm enterprises & lacks economy of scale. Perceptions that agriculture is an economically unviable proposition are more relevant especially for tribal agriculture resulting in distress migrations from rural to urban areas in the district.

The typical work of the female agricultural laborer or cultivator is limited to less skilled jobs, such as sowing, transplanting, weeding and harvesting, that often fit well within the framework of domestic life and child-rearing. Many women also participate in agricultural work as unpaid subsistence labor. The percentage of women who depend on agriculture for their livelihood is as high as 84%.

Intervention

Krishi Vigyan Kendra planned and implemented Oyster Mushroom production technology training programmes especially for the tribal women. Major objective behind this was to provide suitable and sustainable agro-entrepreneurship to the tribal women so that they can earn money while performing their regular activities. KVK selected Oyster mushroom because Oyster mushroom are most preferred ones among the edible mushrooms due to their ability to produce quickly and productively in various media, their versatility and absolute ease of cultivating and their nutritional value especially as a source of protein. Crop residues of their own farm can be used as media for growing the mushroom.

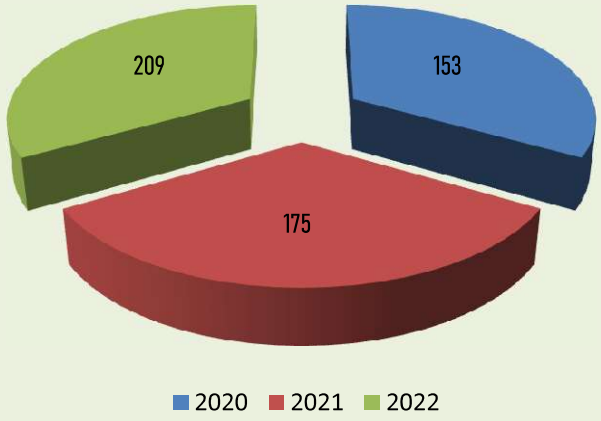
Technical knowhow in cultivating mushroom, method demonstrations on sterilizing the media, filling polythene bags, spawn placement skills were provided by KVK to the women. Besides cultivation aspects, KVK is imparting training for processing and value addition of mushroom. The tribal women provided with polythene bags, quality spawn of oyster mushroom to start mushroom production. KVK especially focused on women group, so that they can collectively grow and market it.

Process and technology

KVK organizes 3 days residential vocational training programmes. Training on technical aspects of cultivation, hands on practice on filling the beds and preparation of various products/ recipe of mushroom are imparted. Mostly tribal women are involved in the training programmes.

The details of the trainigs since last 3 years is as under

Year	2020	2021	2022	Total
No. of trainings	6	7	9	22
No. of trainee	153	175	209	537
No. of Groups established units	3	5	7	15
No. of individuals established units	5	6	15	26



Yearwise number of trainees

Since last 3 years total 22 training programmes were conducted by KVK covering 537 tribal women farmers. The trainee women established the mushroom units individually and in groups as well. Total 15 women groups established mushroom production unit of 200 beds per batch, wherever, 26 units of average 100 bed per batch capacity were established on individual basis.

Impact

Impact of the trainings and demonstration has been measured on two parameters viz. economic gain and employment generation

The economic gain of the programme is shown in following table

Particulars	One batch	One year (3 batches)
Avg. size of unit (No. of beds)	200	600
Cost of cultivation	10000	30000
Avg. Production (Kg)	400	1200
Rate per Kg	250	250
Total Income (Rs.)	1,00,000	3,00,000

The size of mushroom unit is of 200 beds, thus one group of women are cultivating mushroom on 600 beds. They are marketing the produce in their own villages @ Rs. 250 per Kg. The cost incurred per bed was noticed to be Rs. 50 including the inputs and labour charges. Overall, one women group is earning Rs. 3 lakh per year thus, gaining net profit of Rs. 2.7 lakh per year.

Mushroom cultivation is being practiced by 76 women in group. Moreover, 26 women are cultivating the mushroom as independent enterprise. Oyster mushroom cultivation has been proved to be a very promising, technically and economically feasible additional source of income for the tribal women from Nashik district

Agriculture Mechanization
…Making Tribal Agriculture efficient

Background

Nashik district being in the agro climatically transition tract, has variety of crops in its geographical stretch of fifteen tahsils with fruits, vegetables, oilseeds and pulses & cereal crops. The district accommodates large agriculture dependant populace & the average size of land holdings is declining. The eastern part is with a plain tract, light soils & hard pan beneath receives meagre average 700mm of scanty rainfall.. The western part which is hilly tract, however receives on an average 1200mm extended rainfall and nurtures paddy based cropping system with tribal agricultural livelihood. Tribal livelihoods in the Nashik district have been characterized with the undulated patchy lands, uncertain irrigation facilities with crops such as paddy as main crops, finger millets in Kharif & wheat, chickpea in rabi on the residual moisture or protective irrigations.

Issues of poor crop economics

- Tribal agriculture in Nashik district Hs been family centric small scale farm enterprises & lacks economy of scale. Perceptions that agriculture is an economically unviable proposition are more relevant especially for tribal agriculture resulting in distress migrations from rural to urban areas in the district.

- Paddy being the main kharif and assured crop, paddy productivity and profitability play important role in tribal economy. Paddy productivity and profitability has remained low and uncertain due to many factors. The crop operations like sowing, inter-cultivation, harvesting, threshing, post harvest handling in paddy are with the high drudgery level, labour intensive and time consuming & thereby undermining the economics of the crops.

- In addition to the adopting scientific approaches in crop management, use of appropriate cost and time saving, efficient equipments & machineries ply important role in improving crop economics. Also, its up-scaling over the wider and deeper areas is need of the hour.

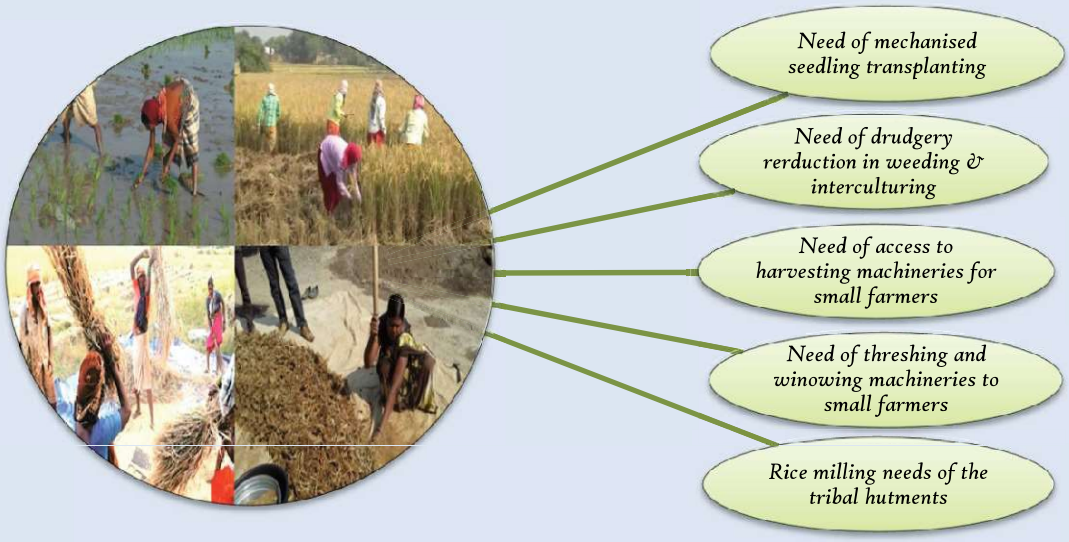
- Due to the limitations of varied topographical situations, shifting cropping patterns and poor socioeconomic conditions in the tribal areas, use of modern high capacity machineries is very low. It is necessary address crop wise selective operations along with appropriate sharing methods for wider access to small farmers.

- Approaches and strategies like, targeting on priority the selective operations with appropriate machineries and tools, ownership & service delivery through self sustainable system would be appropriate strategy.

Plan, Implement and Support

Need of Selective mechanisation with socially embedded sharing service

It is experienced that, commercially available high capacity mechanisations in paddy are unable to serve the tribal agriculture due to various limitations. Learning from the experiences for years down the line from consistent efforts by individuals, institutions & other important stake holders like KVK, State Depts, farmers etc, it is quite evident that it is not practicable to adopt a 'one-size-fits-all' approach in this poorly organised, less equipped diversified environment in the tribal area in the district. Efforts of farm mechanisation in such environment need to be selective one with socially embedded service delivery system



Labour intensive, Drudgerious and Time consuming farm operations in Tribal Agriculture

Capacity building of the Farmers, Agripreneurs and Extension Functionaries

- ✓ KVK has been working closely with Universities and manufactures since last eight years in addressing the issues of farm mechanisation wider numbers of crops and issues with resource sharing on technologies from the different institutions many times helped in faster feedbacks.
- ✓ These institutions include; CIAE, Bhopal, AICRP on FIM, MPKV Rahuri, Innovative Farmers, Farmer groups, potential Custom hiring Technopreneurs nurtured by KVK, Village level self help groups, private manufacturers with the promising solutions.
- ✓ KVK served as a resource centre for formal and informal training cum guidance on availability of technologies, sourcing of machineries & manufacturers.
- ✓ KVK simultaneously through it's through its extension activities hunted the appropriate and best fit solutions in the tribal situations.
- ✓ KVK advised different sharing and service strategies for various small tools & machineries for self sustenance and accelerating mechanisation.
- ✓ Off late, these mechanisation activities are now being supported by RKVY by the state dept through village level groups in the district.

Output & Outcome

Paddy being the main kharif and assured crop, however, productivity and profitability has remained low and uncertain due to many factors. The crop operations are with the high drudgery level, labour intensive and time consuming & thereby undermining the economics of the crops.

Crop operations in paddy right from sowing to harvesting and primary processing were targeted for selective mechanisation suiting to tribal hutments ecosystem.

Targeted farm operations and KVK support	Outcome, Farmers Feedback and Further strategies for up scaling inTribal areas
▪ Paddy seedling transplanters. ▪ Field trials.	▪ Slow Adoption due to, prerequisite of mat type seedlings raising and skills during operations, ▪ Relatively higher cost of machine for Tribal poor ▪ Small patchy land holding restricting the adoption. ▪ Local service providers have now active role in its promotion
▪ Cono weeders in paddy interculturing ▪ Drudgery reduction	▪ Reduced the drudgery & Increased speed of operation to three fold. ▪ Easy sourcing made available from local manufacturer ▪ KVK demonstrated cono weeders for tribal groups. ▪ Advised community use of the sickles.
▪ Paddy harvesting with serrated sickles ▪ Drudgery reduction	▪ Self sharpening sickles ▪ Easy sourcing made available from local manufacturer ▪ KVK demonstrated paddy harvesting sickles for tribal groups. ▪ Advised community use of the sickles by farm women.
▪ Paddy Harvesting with Vertical conveyor reaper of small farmers ▪ Good Selective mechanisation	▪ saving the labour by 80%, time by 51% & cost of operation 60% with the timely operations, ▪ entrepreneur earn on an average of Rs.15,000 to Rs.25,000 per year per unit ▪ Custom hiring services in the villages by the tribal youth group in village Chirapali, Tal Trimbak. ▪ Channelized 18 units through State Dept for up scaling.
▪ Mini self propelled Paddy threshers cum winnower ▪ Multi crop use being Tried	▪ Tried for small farmers with poor access. ▪ Speed of operation is satisfactory. ▪ Work drudgery for Women reduced substantially, particularly for groups with poor accessibility to machineries. ▪ Multiple crop threshing for small farmers and patchy land. ▪ Alternatively mini thresher was tried for finger millet and bajra too for small farmers.
▪ Mini rice mills to meet the needs of Tribal hutments ▪ House hold processing and value addition	▪ Mini rice mill Milling % :72%, Commercial hullers milling%: 56%, ▪ Increase in milling % :16 % with Capacity 100-150 kg per hr ▪ Preferred acceptability as low polish rice. ▪ Avenue for Village level enterprise ▪ Custom hiring services in the villages by the potential tribal youth group in village Chirapali, Tal Trimbak. ▪ Channelized units through State Dept for up scaling. ▪ Proposed in adopted villages for better access.

Impact

It is experienced that, commercially available high capacity mechanisations in paddy are unable to serve the tribal agriculture due to various limitations. Efforts of farm mechanisation in such environment need to be selective one with socially synchronous services

- Efforts were made with the help of universities and alternate manufacturer with different design of Paddy seedling transplanters have already started in coordination with the state department. The results are encouraging and are likely to be included in the list.
- Harvesting of the paddy has been the most laborious and narrow time slot operation in the tribal area. With the introduction of mechanised harvesting with walk behind type reapers and its visible impact, state department has channelized through State Dept for up scaling custom hiring services in the villages by the tribal youth group. KVK also proposed additional units in adopted villages for better access.
- Resource poor tribal hutments had poor access to threshing machineries; Hence, KVK introduced Mini self propelled Paddy threshers cum winnower. Even though the success in the same was limited, it was alternatively found useful for finger millet and bajra too for small farmers.
- Poor milling percentage from commercial hullers in paddy has been the major factor that adversely affects the crop economics. Introduction of Mini Rice Mill with better milling percentage and market linkage for low polish rice. Twelve such units have been channelized through State Dept for up scaling.
- Tribal groups are now demanding household Mini Rice Mills, rice Transplanters to establish village level enterprises.




Upgrading Backyard Poultry:
...Economic Empowerment of Tribal Families

Background

The poultry industry in India has registered a phenomenal growth in the last four decades, making it one of the world leaders in poultry production. However, the development of organized poultry has masked the contribution of backyard poultry or household poultry in the rural sector. Backyard poultry is significantly contributing to the nutritional and livelihood security of the rural poor.

Protein deficiency is a common problem in the diets of rural people, as their diets are predominantly based on cereals, which contain high energy and comparatively low protein. By adopting rural poultry farming, we can help to reduce the incidence of protein hunger in rural populations. Backyard poultry farming is more beneficial to small, marginal farmers, landless laborers, tribals, and backward class people.

Backyard poultry farming can generate petty cash for household expenses in addition to providing a balanced diet with minimal inputs available in rural areas. Feeding backyard poultry is made easy by using household wastes, farm products, green vegetation, waste grains, and insects in the natural environment.

The eggs and meat of birds reared in backyard farming fetch a higher premium due to high consumer acceptability, even in urban areas, despite the availability of plenty of eggs and poultry meat from commercial units. In addition to providing a stable supply of high-quality animal food, backyard poultry production promotes income opportunities for the weaker sections of society in rural areas. Backyard farming will certainly improve the economic status of a majority of rural tribal families from lower socio-economic groups in tribal areas.

Problem Identification

The major hurdle to the success of backyard poultry was observed by KVK to be the high initial mortality rate of 50-60%, which was attributed to improper care, lack of vaccination, and feed management at the initial stages of growth at the farmers' doorsteps. To address these problems, KVK developed an innovative strategy to supply pre-grown, vaccinated, and well-maintained healthy chicks to growers

Intervention

Backyard poultry is a traditional livelihood enterprise for small, marginal and landless farmers in the tribal area. For years, families in India have kept local birds in a free-range system, with almost no investment in food or shelter. The birds relied on nature for everything. KVK planned to introduce improved varieties like Black Australorp to this system without forcing tribals to invest more. Black Australorp is an improved variety with good resistance that can easily adapt to the backyard system and can provide two to three times more returns than the local variety in the same rearing conditions in the form of meat and eggs. These returns will play a major role in meeting the routine financial as well as dietary protein requirements of rural and tribal populations. Frontline demonstrations were planned for self-help women's groups in selected villages.

To implement the activity successfully, KVK studied the constraints faced by various development departments and planned a procedure to overcome them. KVK started rearing day-old chicks on its demonstration farm for the first 21 days. During this critical nursery period, KVK implemented all the necessary standard brooding procedures to get sturdy birds. The necessary vaccinations were also completed on the KVK farm during this time. Only these initially hardened birds were distributed to rural and tribal populations for adoption.

Objectives

- ❑ Provide subsidiary business opportunities to rural and tribal populations under integrated farming systems.
- ❑ Train rural youths in poultry farming for entrepreneurship development.
- ❑ Provide supplementary nutrition to malnourished tribal families.

Methodology

Krishi Vigyan Kendra (KVK), Yashwantrao Chavan Maharashtra Open University Nashik, has taken up backyard poultry as a subsidiary occupation for the tribals. Nowadays, low-input technology birds such as Black Australorp are available in poultry, which thrive well under semi-intensive management systems. These birds are phenotypically similar to desi birds. Additionally, they produce more eggs and grow at a much faster rate than desi birds.

Initially, Vanaraja, Giriraja, and Black Australorp breeds were compared to the local breed. During the experimentation, it was revealed that Black Australorp is more suitable for the tribal and other rural areas of Nashik district. As a result, KVK decided to promote the Black Australorp breed in the tribal region.

KVK has implemented an innovative approach to reduce the problem of mortality in the field by demonstrating the supply of 3 to 4-week-old grown Black Australorp chicks to rural tribal populations. These birds were provided directly or through government agencies such as the Central Poultry Development Organization (CPDO), Mumbai, after being vaccinated against Marek's and Newcastle diseases.

This resulted in a higher survivability of up to 98% under field conditions. In addition, farmers were advised to deworm the birds on a regular basis. These demonstrations were well-supported by specially designed training programs. KVK's training programs included chick rearing practices, vaccination methods, deworming, compound feed preparation and storage, and hatching eggs with local hens for mass multiplication at the village level.

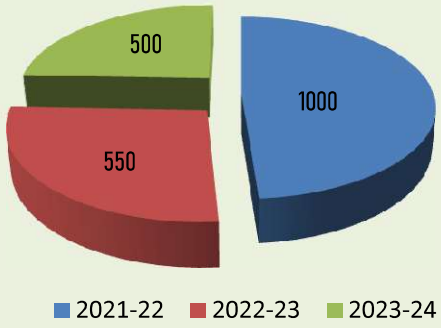
Characteristics of Black Australorp birds in comparison with other breeds : Considering the following characteristics, Kendra decided to promote the Black Australorp breed as a need-based intervention to address the problems with local fowls and conducted demonstrations to enhance backyard poultry enterprise.

Comparative advantage of Black Australorp breed

Sr. No.	Particulars	Giriraja	Vanaraja	Black Australorp	Local
1.	Weight of Chicks (Day old) - gm	45-48	45-46	45-50	30-40
2.	Twelve week body weight - gm (Variable by feeding & rearing pattern)	1200-1800	1200-1700	1200-1850	500-1000
3.	Survivability at 8 weeks (%)	95-98	95-96	97-99	80-90
4.	Age at Sexual maturity (days)	166	170	165	180
5.	Egg production (annual)	130-170	120-150	130-180	50-70
6.	Egg weight - gm	55-60	50-55	55-60	45-50
7.	Hatchability (%)	82-87	80-85	85-88	80-85

Spread of Technology for Demonstration & Breed up-gradation

Krishi Vigyan Kendra (KVK) intervened to improve this enterprise by conducting training programs. More emphasis was placed on the Black Australorp breed and the upgrading of the local breed with Black Australorp in the backyard rearing system. KVK has implemented the program in different areas of Nashik district.



No. of Birds Provided to Tribal Families

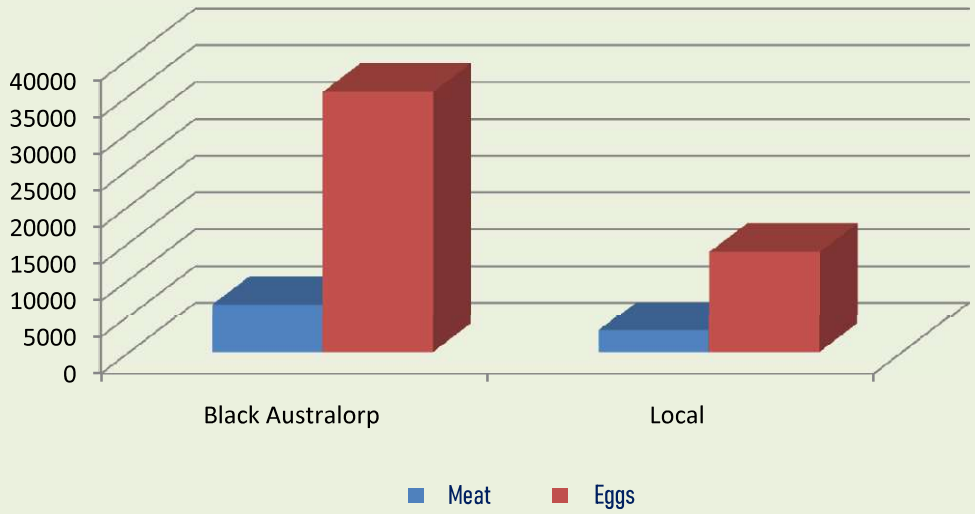
Results

It was observed that the average weight of a Black Australorp bird at 3 month age was 1314.14 gm compared to local bird as 597.95 gm. Similarly, eggs production also shown significant results where a Black Australorp produced 142 eggs per year compared to local bird as 55 eggs per year.

Economic Impact

Average size of flock per family was 25 birds. The economics per family is shown under

Sr. No.	Particulars	Black Australorp Income (Rs.)	Local Income (Rs.)
1.	Meat	6571	2990
2.	Eggs	35500	13750



Comparative income generation out of Backyard Poultry by each family

Outcome

Backyard poultry, when demonstrated to the rural masses, has resulted in subsidiary additional income for rural households. The unproductive human power of the rural population has been utilized in a productive manner. To amplify this assumption, it has been calculated that a backyard poultry unit of 25-30 birds can generate employment of 40-50 man-days. The nutritional aspects of the family are satisfied with the consumption of eggs and meat. The SHG members involved got an opportunity to plan and enhance their management capacity with confidence.

The Zilla Parishad Nashik also honored KVK for bringing 11 undernourished children to a normal weight as a result of the poultry project implementation in its CDPO Trimbakeshwar pocket.

Breed Up-gradation in Goat Farming…
Livelihood Improvement of Tribal Farmers

Background

Nashik district of Maharashtra comprises of 39.86 per cent tribal population. 70% of tribal population is associated with goat husbandry. Tribal agriculture in Nashik district has been family centric small scale farm enterprises & lacks economy of scale. Perceptions that agriculture is an economically unviable proposition are more relevant especially for tribal agriculture resulting in distress migrations from rural to urban areas in the district. Most of the times, climate dependency of crops adversely affects the economics of the tribal families. Subsidiary business can be the probable solution for assured income source in the tribal area.

Goat is hardy animal that thrives on different agroclimatic condition with very limited resources. So, it is easy for the tribal people to manage goat with limited housing, feeding and management. Moreover, goat fetches very good income due to high demand and high price of mutton in local market.

Goats are tolerant to most of the environmental stresses and can survive with least resources. Goat farming can be carried out in less fertile areas like rain fed regions in a sustainable way. Goats rearing is carried out mainly by feeding locally available fodder resources, supplementing with top feeds and crop residues for meeting their feed and fodder requirements. Goat is considered as black gold; the animals can be sold at any time during the requirement of money.

Osmanabadi breed of goat was chosen as it was dual purpose breed with high twinning per cent. It is a famous breed known for high prolificacy, superior meat quality, best quality skin, early sexual maturity, low kidding interval and very good adaptability.

Issues

The major hurdle of successful Goat rearing was observed by KVK that the major inbreeding percentage in field conditions, higher mortality of kids due to lack of vaccination and the feed management at initial stages of growth at farmer's doorstep. To reduce these problems KVK developed innovative strategy to supply pure Osmanabadi males for breeding of local non-descript females at farmer's doorstep. KVK also started farmer's trainings emphasizing on good management practises in goat farming.

Intervention

KVK emphasized intensive study on a particular locality about climate, feed and fodder, market in rural area on goat farming. Trained farmers started to select high quality, healthy parental stock. KVK started to provide pure Osmanabadi bucks from its own demonstration farm and the authentic sources to prevent inbreeding of goats. Farmers are taught to practice deworming regularly. They were trained for isolation and prompt treatment of sick animals, regular health check up, antibiotics sensitivity test for pneumonia, foot rot and mastitis like complex diseases from Veterinarians. Farm hygiene and sanitization, bio-security measures in the farm are also important aspects followed by the farmers.

Rotational grazing pattern on pastures, seasonal management practices to reduce the stress of climatic variation are also the part of farmers practices. KVK emphasized on not to invest more amount on goat shed, not to mix farm pure goats with other species of animals. Besides farmers know that, insects act as vectors for many diseases, so they are controlling insects and external parasites regularly in the farm. Kids should be regularly examined for the ecto and endo parasitic infestation. Weak kids should be given extra care and milk from other goats. Veterinary care should be made available all the time to assist the health problems. Regular changing of pure bucks should be made in the farm to avoid the inbreeding problems.

Breeding policy should be made to enhance the cross breeding for the fast growth and body weight traits. Regular supplementation of mineral mixture provides optimum growth and production. Balanced ration should be given based on the physiological requirement.

Process and Technology

KVK organizes 5 days residential vocational training programmes on Scientific Goat farming. Training on technical aspects of breed selection, feeding, housing, vaccination methods, primary medications, how to avoid inbreeding, bank proposals, market linkages are imparted. The details of last 3 years is as under. Since last 3 years total 16 training programmes were conducted by KVK covering 393 farmers. Total 60 farmers established Goat production units and multiplying their income for achieving better socioeconomic conditions.

Year	2020	2021	2022	Total
No. of trainings	5	4	7	16
No. of trainee	123	93	177	393
No. of units established	20	19	21	60

Impact

Impact of the trainings and demonstration has been measured on two parameters viz. economic gain and employment generation. The economic gain of the programme is shown in following table

Particulars	One Unit	Total Units (60)
Avg. size of unit	15	-
Cost of production/unit (Rs.)	87,000/-	52,20,000/-
Avg. weight gain/Goat (Kg)	38	38
Live Rate per Kg (Rs.)	300/-	300/-
Gross Income (Rs.)	1,71,000/-	1,02,60,000/-
Net Income (Rs.)	84,000/-	50,40,000/-

The average size of each goat unit is of 15 goats now in total 60 units. Thus one units cost of production till market is Rs. 87,000/-, where each group achieving Rs. 84000/- net income till market. The same scenario showing significant figures in all 60 units, where cost of production till market is Rs. 52,20,000/, where achieving Rs. 50,40,000/- net income till market.

Osmanabadi Goat production is being practiced by 60 entrepreneurs. This enterprise has been proved to be a very promising, technically and economically feasible additional source of income for the farmers from Nashik district.