

# **Report on: Social Activities carried by Vigyan Ashram Technology Foundation (VATF) Apr 2021 to March 2022**

VATF is formed on 18<sup>th</sup> February 2021, with the objective to scale up innovation made by Vigyan Ashram in the areas of education, technology and rural development. Its objective is to promote Dr. Kalbag's vision of 'Rural Development through Education System (RDES) into practise. VATF aims to provide services to rural community in the area of appropriate technology development (research and development), skill training (training and capacity building) and dissemination of technology (technology services).

Following are highlighted activities / projects implemented by VATF for 2021-2022.

## **1. Research & development work:**

### **1.1 Fodder cultivation for yield improvement:**

VATF started trial on fodder production at its 2000 M<sup>2</sup> agriculture farm. Aim of trial is to record data for yield of fodder crops like maize, jawar etc. Trial also aims in production of silage to calculate its profitability for small dairy & goat farmers. During past 6 months we produced approximately 10 ton of green fodder and sold to near by dairy unit. Data on productivity Vs soil fertility, Productivity Vs cost economics, silage production etc will be used for farmers training / further technology development.

### **1.2 Azolla feeding trial for poultry & fish farming:**

VATF also started experimentation on azolla cultivation & its utilization as fodder for Animal husbandry. The study aims in testing reference data with field applications. In general recommended feeding doses of fresh azolla for dairy/goat/ poultry farming is around 5 to 10 %. Even after higher protein content azolla can't be used in higher amount in animal feed due to some of the anti-nutritional factors. We are conducting scientific trial of its feeding for poultry & fish farmers.

During past 6 months, 2 sets of trials (each on poultry & fish) were started at Pabal farm. Fish farming trials is in progress for 'climbing perch' fish breed while poultry feeding trial is underway for 'Kaveri' breed with different levels of processed & raw azolla. At present we are collecting experimental data on weight gain, FCR, acceptability etc to design further experiment & recommendations.

### **1.3 Black-Soldier-Fly raring experimentation:**

Black-Soldier-Fly (BSF) *Hermetia illucens* are common fly's cultivated in east Asian countries for their high protein content. They survive on kitchen waste, so can be utilized for recycling urban waste with valuable protein production. A trial study was undertaken by VATF for

standardizing its cultivation practices. During August & September month trials were conducted for studying its life-cycle and food waste utilization capacity. Study aims to record various life-cycle parameters of these fly's like climatic parameters, egg production, waste food properties, weight gain etc.

#### 1.4 Hydroponics vegetables fertigation trials:

Hydroponics farming is another area of exploration under R & D activity. Study was conducted on standardization of fertigation doses for hydroponically grown spinach crop. Experimentation trial was conducted compare effect on nitrogen source for hydroponics farming mainly Calcium nitrate [Ca(NO<sub>3</sub>)<sub>2</sub>] Vs Nitric acid [HNO<sub>3</sub>]. Initial trial showed that nitric acid can be easily produced and utilized in hydroponics farming with lower input cost & higher productivity. Further investigation is planned to replicate results on larger scale.

## 2. Training & capacity development:

Technology based Entrepreneurship Development trainings (EDP):

During past 9 months following trainings / webinar sessions were conducted as –

Sr No	Name of training	Duration	Target beneficiary	Number of participants
1	Regenerative agriculture (offline)	3 Days	Rural youth / farmers	22
2	Webinar on 'Opportunities in food-based entrepreneurship' (online)	1 Day	Rural youth	36
3	Pickle making enterprise (online)	4 Days	WSHG's	29
4	Potato Chips making enterprise (online)	3 Days	Rural youth	26
5	Hydroponics farming (online)	5 days	Aspiring farmers	5
6	Goat farming (offline)	3 days	Farmers	4

## II. Activities during January 2022 to January 2023:

### i. Skill Training of Rural Youth

#### 1. Diploma in Basic Rural Technology:

Diploma in Basic Rural Technology (DBRT) is a residential skill training program based on philosophy of '**Learning while Doing**'. It is multi-disciplinary training course with emphasis on developing self-employment at local level. It is a yearlong program. In DBRT, student learn various skills in metal fabrication, electrical fittings, food processing, agriculture and animal husbandry through hands-on activities. Students also practices and re-fine their skills through community

services and on-job internships. DBRT program is accredited by National Institute of Open Schooling (NIOS). VATF supports implementation of DBRT program with an aim of creating cadre of technology-based youth entrepreneurs in rural area.

In September 21, Indian Institute of Education (IIE) had some financial and legal issues. Therefore, IIE was not able to transfer the fund for DBRT program from grant received for the course. VATF along with M/S Praj foundation came up and bear hostel and education expenses of 54 students on campus for uninterrupted student education. From September 21 to January 22, VATF implemented DBRT program with Praj foundation support.

The DBRT program is implemented in three states; Maharashtra, Telangana, Odisha.

## 2. Entrepreneurship Development Trainings:

Technology based Entrepreneurship Development Program (TEDP) is another important area of focus for VATF. TEDP initiatives are designed with awareness workshops, short term training on particular technology including soft skill (entrepreneur aptitude) development modules for youth, college faculties, farmers, WSHG etc. During 2021-22 following highlighted training were conducted as –

- Entrepreneurship Development Training for Collage Youth: A 3 days training workshop for 2<sup>nd</sup> year students of Sanjeevani College of Engineering, Kopargaon was conducted during 22<sup>nd</sup> to 24<sup>th</sup> November 2021. It was attended by 65 students to learn skill in goal setting, validating business idea, preparing business plan, marketing etc. Mr. Kiran Inamdar & Dr. Yogesh Kulkarni conducted the workshop through various group activities & discussions.
- Advanced Poultry Farming Training: A 2 days on-field training workshop for farmers was conducted on 11<sup>th</sup> & 12<sup>th</sup> December 2021 at Mulshi village (Dist- Pune). This hands-on training was attained by 16 youth farmers from nearby villages to learn advanced practices like breed selection, vaccination, feed management, egg incubation etc. in commercial poultry farming. Training was organized in collaboration with Mulshi Shaikshanik and Sanskrutik Sanstha (Mulshi) as local training partner.

## 3. Technology Development and Field Testing:

Technology adoption, development, field-testing and validation are important component of VATF's work. VATF director, Dr. Yogesh Kulkarni has given his personal agricultural land in village Pabal on lease for conducting agricultural trials. During 2021-22, VATF worked on field-testing/ prototyping of technologies in the area of farming, food processing, waste management, engineering & digital fabrication-based solution etc. Following are some of the highlighted technology testing trials –

- Fodder development trials: A cultivation & yield improvement trial conducted for common fodder crops like Jawar, Maize, Napier etc on 2000 M<sup>2</sup> area. Approximately 10 ton green & 2 ton of dry fodder was produced during trial. Green fodder was processed for silage making while dry fodder treatment for increasing nutritional value & palatability.
- Azolla cultivation & poultry feeding trials: The study aims in testing reference data with field applications. In general recommended feeding doses of fresh azolla for dairy/goat/ poultry farming is around 5 to 10 %. Even after higher protein content azolla can't be used in higher amount in animal feed due to some of the anti-nutritional factors. We are conducting scientific trial of its feeding for poultry & fish farmers. So far, 2 sets of trials (each on poultry & fish) were started at Pabal farm. Fish farming trials is in progress for 'climbing perch' fish breed while poultry feeding trial is underway for 'Kaveri' breed with different levels of processed & raw azolla. At present we are collecting experimental data on weight gain, FCR, acceptability etc. to design further experiment & recommendations.
- Agricultural waste composting: Farmers burn higher lignin content waste in field as it does not have much fodder value and also affect subsequent crops with nutrient (nitrogen) sink in soil. Field trials on faster composting of lignin rich agro-waste was conducted with aim of standardizing methodology making of pile, use of effective microbial culture. Farmers demonstration at 30+ location in Pabal, Vadgaon-pir, Gosasi villages were conducted to test SOP.
- Waste water treatment: A lab trial experiment initiated to develop industrial waste water treatment using effective microbial consortium. A microbial consortium from phenol based industrial waste water is isolated and cultured in

pure form for studying application for commercial industrial Effluent Treatment Plant (ETP).

- Kitchen waste composting by using Black Soldier Fly (BSF): Trial are underway for developing rearing practices of BSF & its application in field. During 2022, data on BSF breeding, rearing practices, FCR (waste to larvae production) collected. VATF also applied for Pimpri-Chinchwad Municipal Corporation (PCMC) 'Swatch Challenge 2022' in December months.
- Sanitary pad incinerator: Development of LPG based sanitary pad incinerator is developed with 5 pads / batch capacity. It uses LPG burners to incinerate pads with automated flame control. It produces very low smoke due to complete combustion of pads. Cost of incineration Rs.0.70/pad as compare to Rs.5/ pad in electrical incinerator. VATF has taken a work order for supply of incinerator with 60 pad/batch capacity.

#### 4. Technology services to community:

VATF has offered following technology-based community services to farmers, rural entrepreneurs etc.

- Soil & water analysis to farmers- 114 samples
- Potable water analysis (H<sub>2</sub>S) testing for villagers- 40+ samples
- Animal husbandry feed / fodder analysis- 13 samples
- Food ingredient analysis- 8 samples
- Marketing service: VATF registered on Amazon online marketplace for sales & promotion innovative products of small enterprises. As a trial, 3 units of 'Akshay Home Composter' were sold to learn various aspects of sales, payment etc. We are also providing guidance to alumni for online marketing.

#### 5. Construction of training hostel:

Looking into need of VATF started construction of student hostel for skill training course beneficiaries. Hostel will be built on rented land located at Pabal village. Land is leased from Dr.Yogesh Kulkarni for 10 years period. The said hostel will be of 1944 Ft<sup>2</sup> constructed area with stay facility for 20 to 25 students. Construction

work started in the month of December 2022 and its expected to complete by May 2023.