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CULTIVATION OF MEDICINAL PLANT : AN OPPORTUNITY FOR FARMERS.

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ABSTRACT

It is believed that economic strength is the basis of Social, Political and Psychological power in society. India is one of the richest countries in the world in terms of biodiversity has 15 agro-climatic zones. More than 7000 are estimated to have medicinal usage in folk and documented systems of medicine (AYUSH). Maharashtra is blessed with biodiversity. Mumbai is capital of Maharashtra and economic capital of India. Pusad is a small city in Yavatmal District previously yavatmal was referred as "White Gold City". But in last decades the district is in focus due to "Farmer suicidal Cases". According to the NCRB between 1995 to 2013 Maharashtra reported 60,750 farmer suicides. In 2016 Maharashtra reported 3,052 farmer suicides. The Vidarbha division in Maharashtra has reported highest number of farmer suicides -907 followed by Aurangabad division-789. As per the data reported by the six divisional commissions across the state 2,414 farmer suicides were reported in the state between Jan-Oct 2017(27-Nov-2017). Thus the lower status of farmers mostly stems from their economic status and subsequent dependence and lack of decision making power are responsible to commit suicide. Therefore if farmers gain economic strength they gain visibility and voice. So it becomes necessary for farmers to pave the way. They should change their mind according to need and time. Traditional crops production is not sufficient to support the economic status. So they have to generate other sources. Farmers are in grave situation so its need to boost their minds and give moral support. Cultivation practices of medicinal plants can pave to success and gain glory. The present study is an attempt to help farmers in the district. The study was carried at Pusad. *Andrographis paniculata* is hard medicinal plant. It benefits the grower as cultivation cost is low and high yield. Every herbal industry is in search of quality raw material. Hence farmers have an opportunity to cultivate medicinal plants and provide quality raw material to the herbal industry and get benefited.

Keywords: Cultivation, Irrigation, Harvesting, Yield and Marketing.

INTRODUCTION AND DISTRIBUTION

The domestic demand of the medicinal plants has been estimated 1,95,000MT for the year 2014-15 and export demand of medicinal plants has been estimated 1,34,000 MT. Total consumption of herbal raw material has been increasing day by day. The major export value increase from 345.80crores in 2005-06 to 3211crores in (Nine folds increase). 2014-15. To fulfill the demand one cannot depend on forest resources so its very urgent to take cultivation practices of medicinal plants. Hence, growing demand of herbal material is an opportunity for farmers. The plant selected for present study is in high demand as it is used in many herbal formulation.

The medicinal plant "*Andrographispaniculata*" is distributed throughout India. The drug is extracted from dried or fresh leaves or aerial portion of the plants.

Andrographispaniculata, *Kalmegh*(Sanskrit), *Bhuinimb* (Marathi), *Kumari* (Hindi) is an annual herb and belong to Family- *Acanthaceae*. It's grows in Assam, West Bengal, Madhya Pradesh, Andhra Pradesh and also in some

others states of India. It is also found in Sri Lanka and Bangladesh. Also found cultivated in Assam and West Bengal and few parts of Maharashtra. It is also grown in china, Thailand and England. It is an ancient Indian medicine since the period of *Charaka*. It is well known for its bitter principle and is also commonly known as "*King of Bitters*" in English. It is found in deciduous, forests. The plant is found throughout India. It is grown in Maharashtra, Karnataka, UP, A.P and M. P. The Plant also cultivated as an ornamental plant due to its shining dark green leaves and quadrangular stem.

MORPHOLOGICAL DESCRIPTION

The plant is a herb which grows abundantly in moist shady, waste grounds and in dry forests. It is an erect herb growing up to height of 30-110 cm. in moist shady places. Plant bear rich glabrous green leaves and quadrangular stem, white flowers with rose purple spots on the petals and consisting of tap roots. Leaves are lanceolate with entire margin and acuminate apex, the length of leaves in 3 to 7 cm and breadth 1 to 3 cm. Branching is

profuse, quadrangular dark green about 0.3 - 1m in height and 2-6 mm in diameter. It consist of longitudinal furrows and rings on the angles of the younger stems. Flowers are small and solitary, corolla is whitish hairy, petals with few spots at base. Fruit is capsule linear, oblong acute at both ends seeds numerous, the capsule dehisces when the seeds dried at maturity whole plant is uprooted at its maturity, dried and marketed. The fruit capsule is linear, oblong measures 2-3 cms in length and 2-4mm in diameter.

CULTIVATION PARAMETERS

Soil: Plant grows on variety of soil, sandy loamy with rich organic matter is suitable for its growth. It is also found growing on sandy clay soil. Soils with water logging conditions are not favorable.

Climate: It grows well in tropical and subtropical regions however it is seen as a shade loving plant.

Temperature: Ranging between 25°C - 40°C is suitable for this crop.

Humidity: 45 to 70 % humidity require for this plant.

Rainfall: Well distributed in the range of 40-50 cm

CULTIVATION DETAILS LAND PREPARATION

Deep cultivator and rotavector was used to expose soil to sun light. Two cross ploughing were done. Later FYM was applied and spread uniformly. Again two ploughing and two cross ploughing were done.

i) **Propagation:** The herb propagated by seeds.

ii) **Sowing:** The cultivation done as per the method carried out by Gondi and Shrinivasan (2004). Seeds are very small, oval with smooth surface, dark brown in colour. Seedling are raised on nursery beds. Propagation by seeds is economical and easy for commercial purpose. First the seeds are sown on the nursery beds, for raising nursery period before onset of monsoon i.e. in May - June and for transplanting 2nd week of July is the best period. When the seedling bears 5-8 leaves they are ready for transplanting. Sowing carried on 23rd, 27th, May, 7th, 19th June in respective years 2004, 05, 06 and 07.

When the seedling are ready for transplantation then first of all we have to choose the right spacing so that luxuriant growth occurs & one can get more yield. The spacing of 30 x 30 cm. gives better results. The new seedling are carefully transplanted at the desired places.

iii) **Crop Duration:** 7-8 months

iv) **Irrigation:** Mainly the plant grows as rain fed crop. But in case of dry weather then at initial stage irrigation is given at intervals of 4 to 5 days. Later on after one week and once the crop establish than one to two irrigation given at fortnight. In all 6-7 irrigations required.

v) **Weeding:** It is herbaceous plant so the field should be free from weeds at the initial stage of growth, the crop should be weed free to promote growth of the crop. First weeding is done after one month of planting and one or two more weeding at interval of 1.5 days is required.

vi) **Plant protection:** *Andrographis paniculata* is a hard plant and generally not attacked by any serious pest.

vii) **Harvesting and Marketing:** The harvesting is done when the crop bears maximum branches and green leaves. Total 2-3 harvestings can be done in a season, i.e. period of 9-10 months. The crop is ready for first harvest after 4 month. (Sept. 4th, 9th, 1st, 1st of respective years) The appropriate period of collection is when it starts flowering. Harvesting the plants with the help of sharp sickle. The plants are cut at its base leaving 15 to 20 cm above ground. Stem for regeneration of the crop are left. After first harvesting the crop is again supplied irrigation at an interval of 4 to 6 days. Total 3 irrigations are given after first harvesting. The crop will be ready for second harvesting after 45 to 50 days. In this way final harvest can be done after 2 months of second harvesting. (Feb. 1st, 3rd, 9th, 2nd) Due to its regrowth and re-harvesting yields increases. The plants after harvesting are dried in sun light for 2-3 days and then dried completely in shade and stored in dry place. Healthy plants are left in field for seed production. Seeds are collected from the pods and preserved for next season.

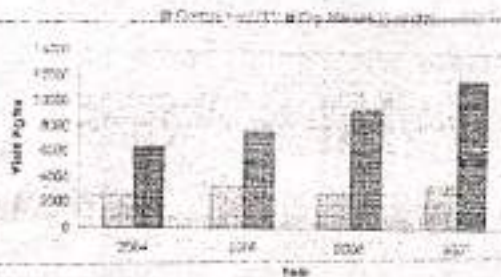
The plant material is dried properly for 10 to 15 days and then packed in gunny bag and marketed. On the bags the date of harvesting and the date of packing should be mentioned. The gunny bags were stored in dark, airy and moisture free covered places, and then marketed. While transporting the care should be taken, other goods like oils, acids, chemicals etc. can contaminate the plant raw material. So take care of it.

Yield: Gondi and Srinivasan, (2004) worked on cultivation practices of *Andrographis paniculata*. They used FYM and they got the average yield of whole plant 2.5 tonnes of dry herb/ha. Yield obtain during the present study are mentioned in table 4.2.

As compared to T1, T2 yield shows tremendous growth. The use of organic manure enhances the foliar growth and it is clear from the yield obtained as compared to previous seasons—shows slow growth for the starting seasons but later in last season's (i.e. 2007-08) it shows tremendous growth and the yield was 11840.94 kg/ha.

Table-4.1: Yield obtained of *Andrographis paniculata*

Sr. No.	Duration of Crop	Plnc./quad.	Av. wt. (gm/pl)		Yield (kg/quad)		Yield (kg/ha)	
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
1	June-04 Jan.-05	250	23	60	6.00	15.00	2583.47	6458.69
2	June-05 Jan.-06	250	30	72	7.50	18.00	3229.34	7750.43
3	June-06 Jan.-07	250	25	88	6.25	22.00	2691.12	9472.75
4	June-07 Jan.-08	250	32	110	8.00	27.50	3444.63	11840.94



Graph 4.2(a): Productivity of *Andrographis paniculata*

CHEMICAL COMPOSITION

Kalmegh contains a bitter compound andrographolide to the extent of 1 percent, it is a bicycle diterpenoid lactone and kalmeghin. Some other compounds like neo andrographolide, andrographosterd, andrographiside, flavonoids, phenolic compounds and some waxy material is present (Rangari 2005).

MEDICINAL USE

A much branched erect, annual herb is known as 'King of bitters.' It is the source of several diterpenoids of which the bitter water-soluble *Andrographolide* is important. It possess bitter, tonic, febrifuge, anti-dysentery, anti-pyridic properties. It is effective against chronic malaria, jaundice, anemia, bowel complaints and loss of appetite (Gondi and Srinivasan, 2004). *Andrographis paniculata* is a bitter tonic and stomachic, anti-worm, It is also known as green chiretta in India which is a reputed drug especially

in the treatment of torpid liver and Jaundice. It has been proved to be hepato-protective (Purohit and Vyas-2005). It is used in treatment of viral hepatitis as a bitter tonic in the treatment of diminished appetite, in dyspepsia and dysentery. It possess anti-typhoid and antibiotic activity. Decoction of the plant parts specially stem is an effective blood purifier. The decoction of leaves is given with spices such as *cardomom*, *clove* or *cinnamon* for stomach ailments in Instant (Naik, 1998b). The potency of *Kalmegh* is considered due to its mechanism of action is perhaps by enzyme induction.

Charaka has described the use of plant in two *Ayurvedic* formulations: *Panchatiktaghrita* and *Katukadyaghrita*, the latter being used for the treatment of jaundice. It is commonly used as liver stimulant in *Ayurveda*. *Kalmegh* is used in *Ayurveda*, *Unani*, *Siddha*, *Homeopathy* and other systems of medicines.

According to Joanna and Edward (2004) the plant is used to treat upper respiratory track infections and leaves are used to treat many infectious diseases.

MARKET PRODUCT

Ayurvedic formulations Major ingredient of *Panchatiktaghrita* and *Katukadyaghrita*; individual preparations as *Panchanga-durnaor*, *Kalmegharasa*, *Kalmeghnawayaslanh*, *Sudarshanacurna*, *Chinnodbhuvadikvathacurna*. Patented medicines: Tefroli, Hepargen, Siomethionine, Livopep, Livotrit liquid, Liv-52 etc.

CONCLUSION

Creating opportunities will make the difference between success and failure. Farmers from a village should come together to form a SHG. In a village 3-6 SHG may exist each with minimum 20-25 members, if approach any near or far herbal industry and as per their requirement cultivate medicinal plants and provide them. It may benefit farmers. *Andrographis paniculata* is one of the important medicinal plants of *Ayurveda*. It is used in many formulation (Products). As this plant requires low cultivation cost and benefits the grower by high yield. Due to increased adulteration rate herbal companies are facing very critical (conditions) problems so they are in search of quality raw material and this gives farmer an opportunity to cultivate the medicinal plant & market it through proper channels and get benefited.

On 24 Nov.2000 National Medicinal Plant Board has been established by Government of India to co-ordinate with all matters related to medicinal plants and supports policies and programs for growth of trade, export, conservation and cultivation. Farmers should make contact and take guidance from experts of NMPP.

"Nothing is impossible if efforts are coupled with action"

In this grave situation farmer from different villages should come together to fight the condition and form a SHG through which a bulk of medicinal plant raw material can be produced and marketed.

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21. Cultivation Practices of 'Ashwagandha' to Preserve the Wild Species

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Abstract

Objective of this paper is to promote cultivation practices of medicinal plants to protect the wild flora and economic upliftment of farmers in yavatmal district. *Withania Somnifera*, known commonly as Ashwagandha, Indian ginseng, winter cherry is a plant in the Solanaceae family. Ashwagandha is a traditional medicinal herb with multiple health benefits. It can reduce anxiety, stress, depression and boost fertility, testosterone in men and even boost brain functions. According to the 'Life Extension Magazine' article "Stress Reduction Neural Protection and a lot more from an Ancient Herb" by Dale Kiefer, Ashwagandha can naturally lower cortisol levels upto 26% (Oct. 5, 2011) which helps to reduce weight. The plant is native to drier parts of India.

Keyword : cultivation, weeding, harvesting, yield & marketing.

Introduction and Distribution

The root of these plants is used in Indian traditional systems. It is a perennial shrub, found in wasteland, cultivated fields and open grounds. It is strongly growing as bush occurs in dry and subtropical regions of India. *Withania somnifera* (L) Dunal, is widely cultivated in certain areas of Madhya Pradesh and Rajasthan took the project to utilize the thousands of hectares degraded land due to various reasons. These lands can be effectively utilized for cultivation of medicinal plants and save it from erosion.

In India it is found in natural habitat in North Western parts of Gujarat, Rajasthan, Madhya Pradesh, Utter Pradesh, and planes of Punjab. It occurs in South Africa, Egypt, Morocco, Jordan, Pakistan and Afghanistan.

Morphological Description

It is herbaceous plant grows to 1-2m tall, stem erect, hard woody, branched, densely clothed with whitish stellate, solid, covered with woolly hairs buff to yellowish green in color. Leaves smooth, soft and green, leaves simple; alternate, entire, ovate-ellipsoid, 4-8x2-3.5cm, cuneate at base and is densely hairy beneath. Petioles 6-12mm long, stellate tomentose; Inflorescence - Axillary umbellate cyme; Flower - Sessile, subsessile fascicles; greenish-yellow,

pentamerous, hypogynous; Calyx- Sepals gamosepalous, persistent, stellate tomentose outside, teeth linear; Corolla- Petals 5, gamopetalous, greenish-yellow, 7-8mm long, divided more than half way down; Androecium -Stamens 5, epipetalous, anthers elliptic orbicular; Gynoecium- Bicarpillary, syncarpous superior, bilocular, septum oblique; Fruit-Berry, red, globose, enclosed in persistent calyx; Seeds-subreniform, 2mm in diameter, yellow; Flowering and Fruiting period starts from September- December; Roots-Tap root system, Roots-straight, unbranched, thickness varying with age, roots bear fiber-like secondary roots, outer surface buff to grey-yellow with longitudinal wrinkles; crown consists of 5-6 remains of stem base; stem bases variously thickened; nodes prominent only on the side from where petiole arises; Odour- bitter and acid (Cooke,1967; Kirtikar and Basu 1984).

Material & Method

- 1) Seeds were collected from wild sources.
- 2). Land preparation : Well pulverized by ploughing, disking / harrowing after this the field was leveled by the application of pata, only organic manure was used.
- 3) T₁ - control & T₂ - FYM applied plots.

Cultivation Parameters

- i. Soil: Sandy loam or light red soil with good water drainage gives best result soil pH - 7.2-7.5.
- ii. Climate: Dry and subtropical parts, grown as Kharif crop in Yeotmal district
- iii. Temperature: Ranging between 30 to 38 °C.
- iv. Humidity: Requires about 45-55 %.
- v. Rainfall: 660-750 mm rainfall is suitable for cultivation.



Plate-1.1: Seedling ready for transplant



Plate-1.2: Plant bearing fruit



Plate-1.3: Roots of Withania somnifera

Cultivation Details

- i) **Propagation:** Propagation of *Withania somnifera* is usually done by seeds; using broadcasting method directly or by transplanting. Seeds are very small so nursery raising is preferred. About 500 – 600 gm seeds are sufficient for 1Ha field. Seeds are treated with Dithane M45 at the rate of 3gm /kg seeds before sowing protect from seed borne diseases.
- ii) **Sowing:** Sowing is carried directly by broadcasting in rainy season. The seeds are very small hence raised on nursery bed.

Raised nursery bed of 2m long and 1m wide and 20-25cm high mixed with high dose of organic farmyard manure are prepared. Broadcasting method is used to sow seeds and light irrigation is given and after 30-40 days the seedlings are ready for transplanting.

After 2-3 rainfall the plant can be cultivated in any type of soil. Seedlings raised on nursery beds are transplanted.

Transplanting is usually performed during late afternoon. It is carried in the month of July i.e. after 2 to 3 rain soil is saturated. Seedlings are planted at the distance of 30x30 cm. Once established the crop grows rapidly.

iii) **Crop Duration :** 8 –9 months approximately.

iv) **Irrigation:**

As it is a rainfed crop it does not require irrigation, but if rainfall is not in time then irrigation may be required.

v) **Weeding:** Weeding increases the yield and quality of crop, hence the field should be kept weed free; first weeding is done after 20-25 days after transplanting and second weeding is done after two months.

vi) **Plant Protection:** No serious pests infect the crop. It is found that crop is susceptible to fungal infection during seedling stage and can be treated with Carbofuran at the rate of 5-6 kg/ha at the time of sowing or spraying crop with Dithane M45 at the rate of 3gm/lit of water for 30 days old crop.

vii) **Harvesting and Marketing:** The plant bears flowers and fruits during the month of January, this is the appropriate harvesting time and is initiated from February to last in March. (Kokate, et.al.2004). The harvesting was carried on 17th feb, 24th feb, and 4th, 5th, March respective years. Eight days before harvesting light irrigation is given and then whole plants are carefully uprooted from the soil manually to prevent damage to roots.

After uprooting the entire plant, the roots are separated from plants and later on roots are collected and washed and cut into pieces of different size and then dried in sun light first for 5-7

days and then completely dried in shade. For sample roots were dried at 45-60°C in over for 48-50 hr. to constant dry weight.

According to Kokate, et.al (2004) the length and thickness or roots, they are graded as:

- **Grade-I:** Root pieces of 7 cm. in length and diameter 1.0 – 1.5 cm. straight solid and pure white in colour, other root pieces are graded separately.
- **Grade-II:** 5 cm long, diameter 1 cm bright and white in colour.
- **Grade III:** Small pieces, semisolid and branched.

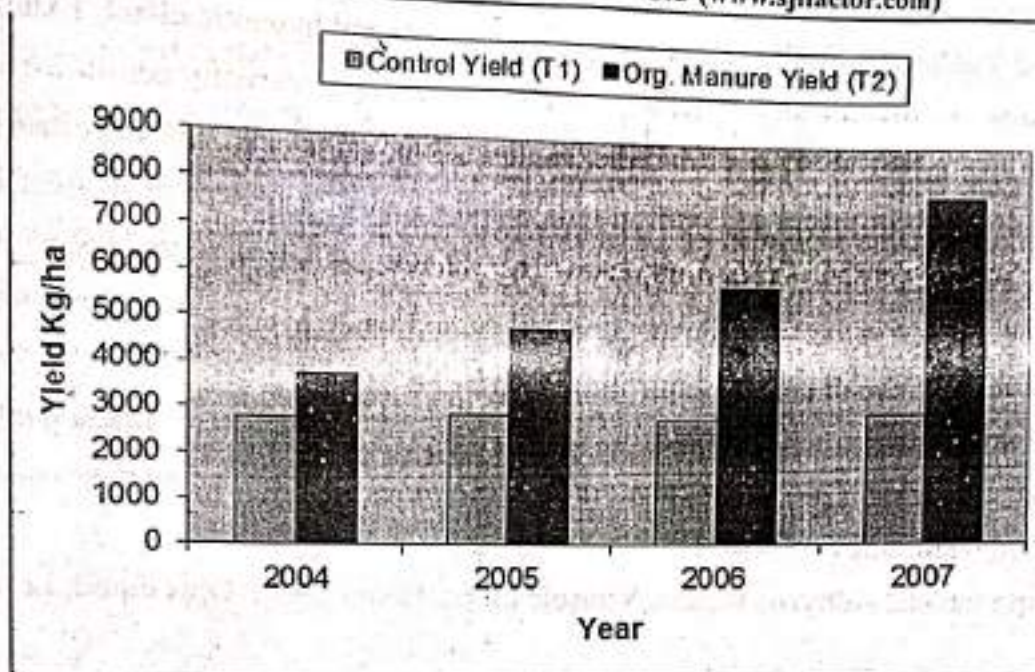
Results & Yield

Purohit and Vyas (2005) obtained 300 to 500 kg/ha. of dried roots and 50 to 75kg/ha. seeds were obtained.

The good crop gives 10-12 qu./ha. of dry roots. Kokate et.al. (2004) obtained an average of 3 to 5 qu./ha. of dried roots and 50 kg/ha seeds. The yields obtains during the present study are given in table 4.8. The yield obtained in IV season is 7858.08 kg/ha. It is observed that the results showed successively double than T₁ (Control) treatment as compared to T₂. The yield increased per year i.e. 3767.57, in 2004 4844.02 in 2005, 5812.82 in 2006 and 7858.08 in 2007. This indicates that organic fertilizers play significant role in the productivity.

Table 1: Yield obtained of Withania somnifera

Sr. No.	Duration of crop	Plts./quad.	Av. wt. gm/plt.		Yield Kg/quad.		Yield Kg/ha	
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
1	June.04 Feb.05	250	26.0	35	6.50	8.75	2798.76	3767.57
2	June.05 Feb.06	250	27.2	45	6.80	11.25	2927.94	4844.02
3	June 06 Feb.07	250	26.1	54	6.52	13.50.	2809.53	5812.82
4	June 07 Feb.08	250	27.3	73	6.82	18.25	2938.70	7858.08



Graph 1(a) : Productivity of Withania somnifera

Chemical Constituents

Main constituents are alkaloids and steroidal lactones main alkaloid is withanine, others like semiferine, somnine are present. Two acyl-steryl-glucosides like sitoindoside VII and sitoindoside VIII are present.

The three withanolides withaferin A, withanolides A and Vithanone content in leaves is present by HPLC method (Khajuria et al.2004)

The leaves contains steroidal lactones as withanolides also contain mixture of fatty acids containing cerotic acid, oleic acid, plamitic acid and stearic acid etc.

Medicinal Uses

According to "The Ayurvedic Pharmacopoiea" (1966 and 1989) the plant is used on multipurpose and used as under:

The leaves are applied to tumors and tuberculous glands. The tuber is slightly bitter, tonic aphrodisiac, emmenagogue, good in asthma, inflammations, bronchitis, arthritis and leucoderma (Yunani). The root is regarded as tonic, used in consumption emaciation of children, debility from old age, rheumatism etc. It has alronarcotic, dluretic and deobstdruetnt properties. Tubers useful in Vata and Kapha asthma, ulcers and scabies Sitoindosides (VII and VIII) have been shown to passers antistress activity. It has been widely used as sex stimulant and rejuvenator and is considered as strengthening and vigor promoting drug. It is very effective in plague. The seeds are used to coagulate milk and also used as substitute for animal rennet for making cheese.

Rao and Vadlamudi (2006) reported its main sedative and hypnotic effect. Externally it is used in treatment of inflammatory condition, ulcers and scabies, internally consumed with milk and ghee produces nutrition. Roots restore loss of memory, also used as important immuno modulator agent. It is also used to reduce side effects of medications used to treat cancer & Schizophrenia, reduce fat & sugar level in blood, safe supplement for most peoples.

Marketed Products

Ayurvedic Formations

Ashwagandharasayana, Ashwagandhawalhe, Saraswat Churna etc. Mahanarayan taila, Balasvagandha laksadi taila.

Patented Medicines

Geriforte tablets, Addyzoa tablets, Vitasule drops, Hemo-plex , Ojus liquid, Lezuna etc.

Conclusion

- 1) Present study result shows that ashwagandha plant can be grown on any type of soil, no need of special attention towards imigation, and pest control as it is a hard plant.
- 2) Low cost of cultivation and high yield will definitely help for economically benefits to the farmers.
- 3) Cultivation practices play an important role to preserve wild flora.
- 4) Ashwangandha is a multipurpose important Ayurvedic medicine, hence it has great demand at national and international market.

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Status of Farmers in Drought Prone Regions of Maharashtra

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Abstract

Despite having 60 percent fertile land and 35 percent of which is naturally irrigated, India is 7th largest country by area and Israel is 150th still our farmers are suffering because in India agriculture improvement is just a permanent part of government manifestoes. Nobody really care about farmers if government is really interested for progress and development of farmers they would have taken positive progressive and productive measures to produce a concrete action plan if its possible in Israel than why not in India? Out of total cultivable land in Maharashtra about 60% land is under food grain crops and Maharashtra contribute only 5.8% production of food grains in India because Jowar is dominating crop but its yield is low (583 kg/ha). The state agriculture census conducted in 2015-16 pegged the total number of farmers is nearly 15.3 million.

Keyword : *Agriculture, economic status, development positive approach and action plan.*

Introduction :-

Nearly 80 percent of the farmers in India belong to marginal (less than 1 hectare) or Small farmers (1-2 hectare) category. The agriculture supports nearly 50% of the employment but contributes only 15 percent to the Gross Domestic product (GDP). The condition of most of the farmers is horrible. Israel is a country in Middle East known for their agriculture technology, where more than half of the land is desert and remaining land is also not supported by water resources and only 20 percent of land is naturally arable. Despite these things Israel produces 95% food by their own.

Agriculture improvement is just a permanent part of government manifestoes, nobody really cares about farmers. They think "Kary Maa-i" is the solution of every problem farmer's face. Governments have to organize companies to promote farmers to adopt new trends and technology.

Problems Of Farmers :-

- 1) **Lack of education:** Most of the farmers adopt traditional farming and don't have knowledge about how and which fertilizers should be used and which precaution should be taken while spraying pesticides. Due to lack of education they are not ready to accept the changes due to modern technology used in agriculture. Even they don't used the recent communication on technology.
- 2) **Technology:** Our farmers are using the most outdated equipments as well as traditional crops. New irrigation methods and practices are not taken seriously as well as new harvesting technology, processing units for post harvested farm produce, storage methods and marketing system are also neglected and are forced to adopt the old methods only for all purposes.
- 3) **Seeds :** Seed is a critical and basic input for attaining higher crop yields and sustained growth in agricultural production. Unfortunately good quality seeds are out of reach of the majority of farmers, especially small and marginal farmers mainly because of exorbitant prices of better seeds. Most of the damage is due to this factor were the rate of manipulation is high.
- 4) **Soil erosion:** Land suffers from soil erosion due to wind and water.
- 5) **Manures, fertilizers and Biocides:** Growing crops over generations without caring much for replenishing led to depletion and exhaustion of soils resulting in low productivity manures and fertilizers play the same role in relation to soil as good food in relation to body. Well nourished soil is capable of giving good yields. Thus increase in consumption of fertilizers is a barometer of agricultural

- prosperity. Now a day's crop produced through organic farming are in demand so cattle rearing is very essential and farmers need education of this purpose.
- 6) **Lack of Mechanisation:** Little or no use of machinery is made in ploughing, sowing, irrigating, thinning and pruning, weeding, harvesting, threshing and pruning, weeding, harvesting, threshing and transporting the crop. It results in huge wastage of human labour and in low yields per capital abler force.
 - 7) **Agricultural Marketing:** Due to absence of sound marketing facilities the farmers have to depend upon local traders and middleman for the disposal of their farm produce at throw-away price. Most of villages' farmers sell their produce to the money lender from whom they borrow money. This situation arises due to the inability of the poor farmers to wait for long after harvesting their crops. In the absence of an organized marketing structure, private traders and middle men dominate.
 - 8) **Inadequate storage facilities:** Most of rural areas lack storage facilities hence compelled to sell their produce immediately after the harvest at the prevailing market prices which are bound to be low hence deprives the farmers of their legitimate income.
 - 9) **Inadequate transport:** Most roads in the rural areas are Kutcha (bullock-cart roads) and become useless in the rainy season. Under this circumstances it's difficult to carry their produce to main market and are forced to sell in local market at low price.
 - 10) **Scarcity of capital:** The role of capital input is becoming more and more important with the advancement of farm technology. Since the agriculturist's capital is locked up in his hands and stocks, he is obliged to borrow money for stimulating the tempo of agricultural production. The money lenders, traders and commission agents who charge high rate of interest and purchase the agricultural produce at very low price.

Discussion:-

Income of farmers in 17 states of India is Rs. 1666/- month due to mismanagement on part of government. Farmer is paid rupees 5 per kilo of vegetable and sold at 15 to 20 Rs. per kilo at retail. In Maharashtra majority of farmers hold 2 hectares of land. Besides exploitation farmer face many climatic calamities like drought and famine contribute major loss for farmers. Floods, bad weather, high amount of chemical fertilizers, poor quality seeds are their common relatives. Out of six divisions of Maharashtra the Konkan has highest percentage of small and marginal farmers 84.5, Pune division 84%, Aurangabad 79.5%, Nashik division has 78%, Nagpur has 76% and Amravati 73% data collected by Agriculture censuses in Maharashtra in 2015-16.

It is estimated by FAO that during 2005 to 2015 more than 6,43,000 crores worth crop damaged due to natural disasters.

In the past two decades 3 lakh peoples committed suicide and every day nearly 2000 people are leaving agriculture due to agriculture land turning into commercial purposes.

Maharashtra state agriculture conducted in 2015-2016 pegged the total number 15.3 million farmers. As of 2014 in Maharashtra more than 60,000 suicides had taken place with an average of 10 suicides every day. Due to failure of crops, family problems with spouse, chronic illness, high loan percentage and other reasons.

In 2018-2019 unseasonal rains hit one crore farmers in the state. Between October to November 2019-300 suicide cases reported.

The drought prone belt of Marathwada recorded the highest number of 120 cases in Nov-2019 while Vidarbha recorded 112 cases.

Conclusion:-

"Hard work is their investment and losses are their output." We must recognize their efforts and boost them by educating them.

In order to solve problems of farmer government has to prepare and implement a standard action plan the schemes like 'Kartu Maar' is not solution of every problem they face but it is just to encourage the farmers to take a loan again expecting it will be paid by govt. again. So overall the condition is bad and needs lot

reforms 6000 per month type scheme is just a scam to make farmers more depended on government. We need to introduce new trends, technology and educate farmers and that is the only solution.

Recommendations:

- 1) Recognize their efforts and help them by education.
- 2) Government need to educate them regarding advance technology used in agricultural sectors.
- 3) In order to solve 'See I' problems NSC should take necessary action against malpractices.
- 4) Supply of good quality manures and fertilizers.
- 5) High yield variety programme to increase the production of food grains in the country.
- 6) Provide loans (Subsidies) to build infrastructure and storage facilities.
- 7) Linking each village by metallic road.
- 8) Educate farmers to sell their produce at capital markets.
- 9) Introduce medicinal plants cultivation methods than cultivars.
- 10) Establishment of capital markets and processing units and factories at every district places in state.

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Cultivation Practices of Medicinal Plant : *Phyllanthus Amarus* Schum

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ABSTRACT

The resource pool of the medicinal plants were abundant in forest areas are dwindling fast due to anthropogenic pressure therefore the alternative means to generate more raw materials could be only through cultivation of medicinal plant in agriculture fields. National Medicinal plant board is working to promote cultivation under centrally sponsored scheme of National mission on medicinal plants since 2008-09. Medicinal plants are valuable natural resources. Unplanned development & overexploitation put many medicinal plants on way to endanger. Excess use of weedicide in agricultural fields affected many weeds sp. which were used for their medicinal properties. *Phyllanthus amarus* schum is one of the medicinal plant naturally occurring as weed. It is a broad spectrum medicinal plant that has received worldwide recognition (Etta, 2008)

Phyllanthus amarus has been used in the Ayurvedic system of medicine for over 2,000 years and referred to as *Bhumyamalaki*, which is widely used to treat liver disorders, Bladder infections & kidney related disorders.

The plant of the genus *Phyllanthus* are widely distributed in most tropical & subtropical countries and have long been used in traditional medicine to treat chronic liver disease (Liu et al., 2003) The plant is found growing abundantly through out India. The plant has antiseptic, diuretic, antiviral, ant diabetic, hypertensive and antipyretic properties and also used in the treatment of Jaundice, diarrhea, dysentery, wound, ulcers & Urogenital diseases. (Calixto et al., 1998; Santos et al., 1995)

Cultivation ensure botanical identity, genetic improvement, quality and continuity in supply of raw materials for Pharma Industries and also promote Socio-economic growth of farmers. The present paper gives details regarding cultivation parameters, cultivation details, harvesting techniques, Marketing, Chemical Composition, Medicinal use and productivity. The study conducted at Pusad, Dist. Yavatmal, Maharashtra. The cultivation cost required for *Phyllanthus amarus* is low, no extra expenses on pesticides & fertilizers Hence beneficial for grower.

Keywords: Cultivation, Medicinal plants, Harvesting, Marketing.

I. INTRODUCTION

The plant is indigenous to South Africa but is found in all warm countries. In India prominently found as a weed in central and Southern India up to 1000 mt altitude.

It is a small annual herb known since the ancient period of Charak for its medicinal use. It grows up to 20-55cm consisting of root, stem, and leaf. The fresh juice of whole plant is found to be useful in various liver disorders. It belongs to family *Euphorbiaceae*. The plant is found growing abundantly throughout India mainly in the states of Maharashtra, Uttar Pradesh, Punjab, Bihar, Orissa, Andhra Pradesh and Some parts of Madhya Pradesh, Karnataka and Bengal etc Many times occurs as weed growing on fields or dump and waste soil.

The traditional uses of *Phyllanthus amarus* for kidney stones and gall bladder stones have been validated by clinical research where *P. amarus* extract was found to exhibit a potent & effective non-concentration dependent inhibitory effect on calcium oxalate crystal formation, the building blocks of most kidney stones (Calxto, 2000) This may explain why it has long been used in traditional medicine as prevention against kidney stone formation (Compos and Schor., 1999) In study *Phyllanthus amarus* has been found to be 94% successful in elimination stones (Maxwell, 1990)

Literature reviews show that *Phyllanthus amarus* is generally employed to reduce pain, expel intestinal gas, to stimulate, promote digestion, as anti-helminthes to expel intestinal worms and acts as mild laxative.

II. MORPHOLOGICAL DESCRIPTION

Habitat -Terrestrial; Habit - Erect herbs or under shrubs 25-45 cm tall; Root - Tap root system, roots small, 2.6 -10cm long, nearly Straight, gradually tapering, with a number of fibrous secondary and tertiary roots, external surface light brown; fracture, short. Stem - Erect, smooth slender, glabrous; 20-60cm long, branching profuse towards upper region bearing 5-10 pairs of leaves, internode 1-3 cm long; odour, indistinct; taste- slightly bitter, greenish yellow, weak stem; Leaves - Pinnately compound actually small simple leaves arranged in two files. rachis; alternate, opposite and decussate almost sessile, stipulate, oblong, entire; green colour, bitter-taste. Flowers-minute axillary, Radial, Stellate, male flowers are star shaped (2 mm wide size), fruit many smooth capsule, depressed, globose, scarcely lobed, triangular, Seeds very tiny (Cooke,1967;).

III. CULTIVATION PARAMETERS

- i). Soil: *Phyllanthus amarus* is adopted to wide variety of soil, preferably well drained, rich organic manure added and light textured soils are best for this crop. It also grows luxuriantly on sandy loam soil.
- ii). Climate: *Phyllanthus amarus* is very susceptible to climatic conditions.
- iii). Temperature: Very high temperature or very low temperature conditions are harmful to this crop. It grows well between 25-38°C.
- iv). Humidity: 40-75% required
- v). Rainfall: Water logging conditions are harmful to crop. Rainfall in the range of 40-45 cm. thrives best.

IV. CULTIVATION DETAILS

i) Propagation:

It is propagated by seeds and by broadcasting method as well as nursery raising. The seeds are very tiny hence mixed with sand and broadcasted for present practise.

Plate10: *Phyllanthus amaru*Plate-1: *Phyllanthus amarus* seedlings

Plate-2 : 2 months old crop

Plate-3: *Phyllanthus amarus* bearing fruits

Plate-4: Mature crop

ii) Seed rate and pretreatment :

4 kg / hectare of area no specific pretreatment of Seed is recommended.

iii) Sowing:

Sowing is done after 2-3 rains when the soil consists little moisture and humus. For sowing the seeds are mixed with sand and broadcasted directly in field. After 4-5 days of sowing the seeds germinate. The plant is adaptive to climatic and soil conditions. Sowing was done on 6th, 9th, 1st, 3rd of July in 2004 to 2007.

iv) Crop Duration:

The crop matures within three to four months. (80 to 90 days)

v) Irrigation:

For proper growth of this plant regular irrigation is necessary but avoid it if rainfall is frequent. In the conditions when rainfall is inadequate requires irrigation i.e. 6 to 8 irrigations at the interval of 4 to 6 days. It is very necessary to keep the land moist as it affect the crop and production.

vi) Weeding:

As it is a small herb, regular hand weeding at an interval of 15 to 20 days is preferred to keep the crop-weed-free promoting its healthy growth.

vii) Plant Protection:

No disease as pest of serious kind is reported to attack the crop.

viii) Harvesting and Marketing:

The first harvesting carried in first week of September and the second in last week of December. The plants manure within 3 to 4 months. It has maximum active chemical ingredients at fruting period. They are usually harvested after rainy season is over, when the amount of green leaves is in abundance is the correct time for harvesting. Since the active constituent is present in leaves, higher leaf mass is expected during harvesting. For harvesting, sharp sickle is used. The field is again given 3-4 irrigations and plants are again allowed to grow and at final harvesting the whole plants are uprooted manually.

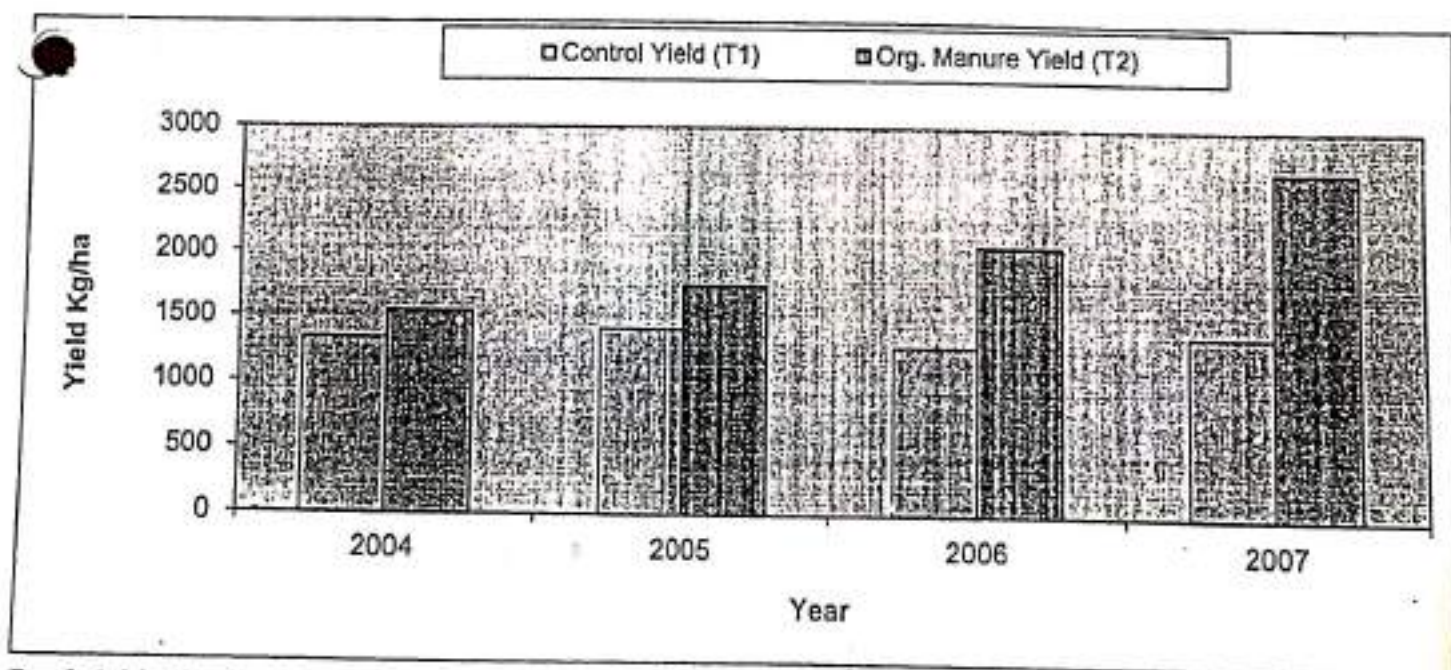
The collected whole plants are shuffled and the mud is separated, cleaned externally and later they are allowed to dry in sun light for 1-2 days and afterwards in shade. After complete drying the plant raw material is preserved in polythene lined gunny bags at cool, well ventilated place (godwons)

V. OBSERVATIONS

The yield obtained are given in table 1. Kokate et.al. (2004) obtained yield of fresh herb per hectore was about 3 tonnes by application of FYM. Due to the application of organic manure the fresh yields obtained was satisfactory in every season has shown gradually increase in yields. The yields of *phyllanthus* was 1550.08, 1765.37, 2066.78 and 2669.59 kg/ha. obtained during the present study.

Table 1: Yield obtained of *Phyllanthus amarus*.

Sr. No.	Duration of crop	Yield Kg/quad.		Yield Kg/ha	
		T ₁	T ₂	T ₁	T ₂
1	June-Dec. 04	3.1	3.6	1334.79	1550.08
2	June-Dec. 05	3.3	4.1	1420.91	1765.37
3	June-Dec. 06	3.0	4.8	1291.73	2066.78
4	June-Dec. 07	3.2	6.2	1377.85	2669.59

Graph 1.(a) : Productivity of *Phyllanthus amarus*.

VI. CHEMICAL CONSTITUENTS

The plant extract have been found to contain high levels of saponins, tannins, flavonoids & alkaloids (Fernand, 1998; Naaz 2007; Krithika and Verma 2009). Plants contain constituents some tend to possess some level of toxicity have been reported (Santos et al., 1995; shaw et al 1997; kaplowitz, 1997)

The leaves, stem, root and seeds contains lignans as phyllanthin, hypophyllanthin, Leucodelphimidin, alkaloids, flavonoids as quercetin, Astragalgin, Quercitrin, Isoquercitrin and rutin. It also consists phyllanthine and hypophyllanthine. The complete herb contains alkaloids as Sicurinin, nirurin, norsicurinin, methoxysicurinin; benzenoids-galic acid, corilagin, flavonoids- quercetin, quercitrin, iso-quercitrin, rutin, kaempferol-4-rhamnopyranoside, eriodictyol-7-rhamnopyranoside. In terpenoids- leupeol acetate, leupeol, tetracosenen, phyllanthusiin-D; culic tannin as amarulones, amariin, geraniin, quercetin-3-O-glucoside are also present.

Medicinal use:

In a Brazilian researches in the mid 1980's reported the alkaloid extract demonstrated smooth muscle relaxation specific to the urinary & biliary tract (Miller 1998, Calixo 1984) *P. amarus* has been classified among plants with low potential for toxicity with an LD 50 averaging 2000 mg/kg/day (Krithika & Verma, 2009)

The complete herb is astringent, anorexic, antidiarrheal, antiseptic, bitter, cooling, carminative, diuretic, stomachic. The drug is used as hepatoprotective, 10-20ml. Of drug extracted in juice form is advised (Kokate, 2002). It is mainly used in treatment of viral hepatitis and various other liver disorders. It is taken in powder form also (4-6gms/day) for diuretic problems. It is used to treat Oedema. Externally used to relieve inflammation. It is a good appetizer. It is anti-hepatotoxic, antilithic, antihypertension, anti HIV and antihepatitis-B. (Naik and Juvekar, 2003). It is effective on hyperacidity. It may reduce urinary calcium and inhibiting kidney stone (Nishiura, et. al. 2004).

Market product:

Ayurvedic formulation: Brown colored Powder-Churna, Citraka haritak; Madhuyastyddi taila; Pippalyddighrta; Chyavanaprasa; Satavari-guda.

Patented product: Vimliv, Nirocil.

VII. CONCLUSION

Medicinal plants can be cultivated as alternative income source for farmer's along with traditional crops. In order to meet the growing demand for raw material medicinal plant cultivation practices must be promoted for socio economics upliftment of farmer cultivation cost is low so it benefits the grower. chemical fertilizers not used only in used to ensure natural growth of plant & preserve its original chemical composition. Cultivation ensures botanical identity, genetic improvement, quality and continuity in supply of quality raw material to industries.

Recommendation :-

There should be an organised marketing system, network. The grower have to depend largely on the middlemen, who deprive the farmers of their legitimate share of revenue.

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**Changing lifestyle, its impact on health and diseases****Dr. Aruna Pawar,**Dept. Biological SciencesSmt. Vatsalabai Naik Mahila Mahavidyalaya, Pusad Dist. Yavatmal,E-mail – aruna.pawar1961@gmail.comMobile No. - 9423653880**ABSTRACT**

In recent decades lifestyle as an important factor of health is more interested by researchers. Lifestyle is a way used by people, groups and nations is formed in specific geographical, economic, political, cultural and religious text. Lifestyle includes day-to-day behaviours and functions of individuals in a job, activities, fun and diet.

What is the greatest impact on our health? Obviously food, exercise, nutritional supplements an other matters connected with how do we like and work i.e. style of living and working. We can stay healthier throughout our life by making positive lifestyle changes so that diseases can be prevented or any disease that develops can be detected and treated early. Proper food and adequate exercises being on top, can prevent most of the diseases.

Exercise as a style of healthy living comes on top. Nature intended us to move for healthy living comes on the top in search of food and work. But now more people die due to eating excess food coupled with no exercise. Smoking drugs and alcohol or health devastating agent. The abuse of alcohol inflicts much more damage volume terms. It is toxic to liver and other vital organs.

Human beings are a part of nature. Many mineral from earth's crust, as well as nutrients from vegetable and animal sources, are represented in our bodies. It is therefore logical to assume that only those natural, wholesome foods which occur in nature are suitable for human consumption, both as food and medicine.

KeyWords- Health, Diet, Exercise, Lifestyle, Diseases.

-INTRODUCTION-

Human beings are a part of nature. Many mineral from earth's crust, as well as nutrients from vegetable and animal sources, are represented in our bodies. It is therefore logical to assume that only those natural, wholesome foods which occur in nature are suitable for human consumption, both as food and medicine. Health is not a commodity to purchase market. It has to be earned the hard way, by getting every cell in our body under our control. Many of us give up the struggle halfway through and take recourse to drug. It is important to emphasise that most common diseases are caused by deficiency of nutrients in the body. These deficiencies develop gradually over the years of eating on unbalanced diet. Bad eating habits cause ill health.

According to Aarti Bhatia (2000), The general trend today is back to nature. Highly processed foods are increasingly being rejected in favour of simple, natural foods. Exactly what is meant by the term HealthFoods? Natural foods much richer in specific nutrients than ordinary foods. A health food is a natural food which has been grown organically and prepared as simply as possible, without destructive processing or chemical additives; Contains nutrients in their natural proportions. Kitchen gardening is the best and simplest way of food security.

This general awareness that healthy food and sensible eating habits can prevent and even cure nagging elements safely, conveniently and without harmful side effects. More and more people are turning into vegetarian or macro biotic way of life. People who prefer a more traditional mix of food there is growing interest in natural, holistic or Biologic nutrition. Biologic nutrition means eating a great variety of natural foods, raw or with a minimum of cooking and supplement the diet with necessary nutrients. Every person is an individual in the biological and metabolic sense. Diet and supplements should therefore be adjusted to the needs, weakness, allergies, Hereditary traits and lifestyle of the individual. The present paper is an attempt to study lifestyle and diseases and its impact on the society.



According to Dr. Kumar (2003), Environment and healthy lifestyle contribute to both physical and mental (Social) health of an individual. Environment is becoming unfriendly by natural and man-made pollution of air, water and earth. Global warming changed the weather conditions and atmospheric pollutions from smoke and industrial firms are new challenges to the environmentalists in the world ever with No Quick Solutions. Under such circumstances we have to develop a healthy lifestyle to minimise the impact of unhealthy environmental influence.

According to Dr. Dash R.J (2003), Impact of healthy lifestyle has demonstrated reducing incidence of diabetes, hypertension, cardiovascular diseases, cancer and infections. The message to the target group is simple; Do not eat improperly, depend more on your own feet than your vehicles and move on your own hands than servants. Let the sweat flow out from appropriate physical activity, lead a life of restraint with activity to generate holistic work life equilibrium.

DISCUSSION,

According to WHO 60% of related factors to individual health and quality of life are correlated by lifestyle [Zigleoe, et.al;2004]. Millions of people follow unhealthy lifestyle and hence they encounter illness, disability, skeletal problems, cardiovascular diseases, hypertension, overweight, violence and even death. What is the greatest impact on our health? Obviously food, exercise, nutritional supplements and other matters connected with how do we like and work i.e. style of living and working. We can stay healthier throughout our life by making positive lifestyle changes so that diseases can be prevented or any disease that develops can be detected and treated early. Proper food and adequate exercises being on top, can prevent most of the diseases.

Finally, variables of lifestyles that influence on health can be categorised in some items as follows :-

- **Diet and Body Mass Index (BMI).** Diet is the greatest factor in lifestyle and has a direct and positive relation with health. Poor diet and its consequences like obesity is the common health problem in urban society. Unhealthy lifestyle can be measured by BMI. Urban lifestyle leads to nutritional problems like using fast food and poor foods leading to cardiovascular diseases. (Mozaffarian D, et al 2011). We eat a variety of vegetarian foods, with the largest portion of our calories coming from complex carbohydrates, especially those found in whole grains, beans, vegetables and fruits. It is important to eat in moderation. Taking in more calories (than our body can burn) can lead to Obesity. This in turn weakens the body and makes a person more susceptible to heart diseases, diabetes, rheumatoid arthritis and several other disorders. A diet high in saturated fats raises the risk of cardiovascular diseases and cancers. A better approach is to reduce both fats and carbohydrates in your diet and minimise meat diet.
- **Regular Exercise.** Exercise as a style of healthy living comes on top. Nature intended us to move for healthy living comes on top in search of food and work. But now more people die due to eating excess of food coupled with no exercise. According to Kumar (2003), in India, 3 out of 4 people are said to be completely inactive in even Moderate Physical Activity. Burning as few as 150 Calories per Day can reduce the risk of Cardiovascular diseases, high blood pressure, Cancer and diabetes. Considerably according to this report, children and adults should set a goal of at least 30 minutes of moderate intensity physical activity on most and preferably all days of week. Exercise does help in prevention of lifestyle disease. Walking regularly is an ideal outdoors exercise that can be done in all seasons. Swimming, brisk walking, riding a bicycle, washing and waxing the car, climbing stairs and cleaning up the yard etc. If you do this there is no need to join gym or a health club. Muscle fibres like all the other cells in the human body, run on a molecular fuel called ATP which the body makes naturally from nutrients in the foods you eat. When we talk about burning calories during exercise, we are really talking about burning ATP. Dr. Steven Blair, editor of the U.S. Surgeon Generals, report on physical fitness says, "people who go from a sedentary lifestyle to moderate rate; in fact burning as few as 150 calories a day (by mild exercise) can reduce the risk of heart disease, high blood pressure, cancer & diabetes." When you select an exercise activity, it is important to choose something that you enjoy doing. Otherwise, you will not make it a part of your lifestyle. The U.S. National Institutes of Health suggests that as a general guideline, children and adults alike should set a goal of accumulating at least 30 minutes of moderate intensity physical activity on most and preferably all days of the week.



- **Sleep.** Sleep is an essential part of life. Sleep disorders have several social, psychological, economical and healthy consequences. Lifestyle me up effect on sleep and sleep hazard clear influence on mental and physical health. (Farhud DD, at.el.2013).
- **Substance Abuse.** These are health devastating agents. The Who report estimated that on a global scale, smoking claims 3 million lives annually. Cigarette smoke contains over 4000 health threatening compounds, of which 200 are known poison. EU S Department of Health and human life worldwide services says "Every year, drug abuse kills 14,600 Americans. Further in its report it estimates, every year anywhere from 1,60,000 to 2,10,000 people from worldwide die from injecting drugs". In addition, Millions Use other types of harmful drugs such as Khat (Green-Leaf Stimulant), betel nut and hard drugs like cocaine and heroin. The abuse of alcohol inflicts much more damage in volume terms. It is toxic to liver and other vital organs. In India, one in five of males and one in 20 of female death is due to smoking habits in age group of 32 to 69 says a new study report by Stirling villa Grande in 2008, she further reported that country is in the midst of a Catastrophic Epidemic and one who smokes cigarette lose about 10 years of his life.
- **Sexual behaviour.** Normal sex relation is necessary in a healthy life. Dysfunction of sex relation is the problem of most of societies and it has a significant effect on mental and physical health. It may result in various family problems or sex related illness like AIDS, syphilis, gonorrhoea, etc.
- **Application of Modern Technologies.** Advanced technology is a boon as well as a curse as it has a great impact on Human Psychology. Advanced technology facilitates the life of human beings, but misuse of technology may result in unpleasant consequences for example using of computer and other devices up to midnight may affect on pattern of sleep an it may disturb the sleep. Addiction to use mobile phone is related to depression symptoms. (Thomees , at.el.2011).
- **Battle of the Bulge.** Obesity in India especially in Punjab has come as an epidemic that shortens lax a lives a year, afflicting its victim with diabetes hypertension heart disease and certain types of cancer. According to doctor minal Kumar (2003), more than 1/3 of adults and more than 20% of children are overweight in India and the situation is in a steadily rising pattern. Hence exercise more and lose weight. Loss of weight means a permanent change of lifestyle. Planning against the hazards of obesity has to be started in early childhood. Overweight developed health problems cardiovascular diseases, strokes, diabetes, cancer, bladder disease etc.
- **Eat and Let Die.** Perils of modern Punjabi, lifestyle has been focused by *The Tribune* dated March 3 2002. it was observed that favourite pastime of Indian is eating. The eat when we're hungry, we eat even when we're not hungry, we dine when we are happy, we hog when we are sad or upset. In short, every time is eating time. The digestive system has to struggle hard to deal with the overload that we thrust upon it.
- **Epidemic of Top Killers.** The WHO experts Have identified close links between certain nutritional factors and risk factors of major cardiovascular diseases and brain strokes. Imported nutritional risk factors are high blood LDL cholesterol , elevated blood pressure, elevated blood glucose and obesity. Reduced intake of fruit vegetables and increased intake of meat, animal fats and sugar. When these associate with reduced physical activity it leads to obesity. Salt consumption is also high in our population which contribute to elevated blood pressure level which increases the risk of cerebrovascular strokes. In India Punjab is showing science of obesity related to epidemic of CVD due to excessive intake of saturated animal fat salt. Tamil Nadu is suffering from high incidence of heart attack due to excessive edible oil delivered from coconut and palm.

Major Health Problems Due to Change in Lifestyle

1. **Cancer-** The cause of all cancers are not fully understood the key to surviving almost any type is to catch it early before it can spread through out the body. Breast, coal on, prostate and testicular cancer are easily detected by examination and tests and are highly treatable in the initial stage. Lung cancer on the other hand is hard to spot early and is among the biggest killers.
2. **Heart Disease -** This is one of the World's Major Leading Killers as Heart diseases are Often Undetected until its too late. Doctors now recommend that all men over age of 30 and women over age of 50 should get a cholesterol screening done every 5 years. Topper is factors of this disease are family history, cigarette smoking, high blood pressure, elevated cholesterol levels



and obesity. The incidence of hard disease is lower in women as compared to men, but Fatality rate is higher in women who have heart attack.

3. **Hypertension**—hypertension is hitting more people today than ever before. Many do not know that they have it. It is also linked to cigarette smoking, stress, high Fat diet, high salt diet and being overweight. And treated hypertension can damage arteries and lead to heart attack or stroke. Luckily hypertension is easy to detect and usually controllable.
4. **Diabetes Mellitus**—diabetes is the inability to use sugar as fuel of body in a normal way. Typical symptoms include and insatiable appetite and thirst, frequent and excess urination, slow healing of wounds blood vision recurring gum infections intense itching and pain or tingling in legs or feet. Diabetes can also lead to blindness, heart disease, stroke and kidney failure.
5. **Impotence**— According to Dr. Dash, R.J (2003), Impotence is the inability to keep up erection long enough for a Satisfactory sex in at least One out of Four Tries . It is estimated that one out of three men have potency problems by the age of 40.

Environment and health both must go hand in hand. One who has recently visited a polluted and noisy metro city (Delhi or Bombay) will vouch for it. He may have come back with running nose, red and The itchy eyes, burning skin of face or a resistant headache. So clean air and drinking water are important for good health. Polluted air and drinking water can bring sudden ill-health. Similarly, poor ventilation in a home, clutter in and around the house, lack of tidiness in the locality, unkempt garden can all expose you to stress, as well as myriad of ailments you can't remain happy or healthy, if your environment brings a feeling of irritability instead of a feeling of ease and peace of mind.

Many people place great emphasis on material pleasures. Such a lifestyle however can carry its own set of health risks, which means high morbidity and untimely deaths. Advent of automobiles and their increasing use has been found as a better lifestyle, while it may offer temporary convenience and comfort to health. Thus a large number of our people are spending a good percentage of their increased buying power to purchase such things as addictive drugs, alcohol and tobacco. Moreover, American Scientists say "An astonishing 30 percent of fatal cancers can be blamed primarily on smoking and an equal number on lifestyle, especially dietary practices and lack of exercise.

CONCLUSION -

The Choices that we make about the way we live have a major impact on our health. Balance diet and regular exercise have a big role in improving our health. A healthy eating plan should be designed around the food you like to eat, keep count in line with your weight loss, weight gain or Maintain. Pick food from the Fruit and whole grain group as a Top Priority. You should also take food in Fun Ways. Combine a couple of fruit servings in a Blender with milk and make a Healthy Shake for Breakfast. During breakfast, Maintain a Proper Supply of Oxygen in your Body. A working Muscle burns about 70 times more Oxygen during Moderate Exercise than it does at Rest. The first time when we came around the track, our body increase the Oxygen Supply. Neuron Chemical Signals instructed in your heart increase your Breathing Rate too. This results in delivery of more oxygen to the Blood Stream. Subsequently Arteries and Capillaries dilate and Muscle receives Oxygen Rich Blood. In regard to each factor The systemic planning in micro and micro level can be established. It can provide a social and individual healthy lifestyle.

TIPS TO LEAD A HEALTHY LIFE :-

1. Stop Smoking
2. Stop Substance Abuse
3. Maintain a Balanced Diet with High Fibres
4. Improve environment with less pollution.
5. Impart Education at School level for Better hygiene and Health needs.
6. Better control of Menopausal syndrome in women
7. Better care during Pregnancy
8. Careful Use of Contraceptives and Hormone Replacement Therapy.
9. Always be Aware of Seven Warning Signals for Cancer.
10. Regular Health Check Ups.

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Effect of E-waste on Human Health : A Review

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ABSTRACT

More and more states are trying to keep electronic waste out of their community landfills by requiring them to be recycled instead. New York in 2015 made it illegal to leave computers and other electronics for curbside trash pickup.

Electronic industry is the world's largest innovative and fastest growing industry. Although this development has helped the human race, mismanagement has led to the new problems of contamination, pollution and hazardous effect on human health.

E-waste recycling activities are conducted in internal settings with very few controls protections and frequently performed by women and children. Solid waste Management which is already a mammoth task in India and is becoming more and more complicated by the invasion of e-waste, particularly computer waste. The Hazardous Content of These E-Waste materials pose a threat to human health and environment too. This article highlights the hazardous of e-waste on human health.

E-waste contains many hazardous metals such Cadmium Beryllium, copper, aluminum, Lead, Mercury, Arsenic, etc. here we are going to discuss effect of lead, mercury and Arsenic on Human Health.

Keywords : E-Waste, Health, Hazards, Lead, Mercury and Arsenic.

Introduction

World's Biggest Challenge is management of e-waste. Which arise from a lack of technical Skills, Poor Infrastructure, inadequate financial Support, and inactive community engagement. Electronic industry is the world targeted, innovative and fastest growing industry during the last century which radically changed the people's lifestyle. Although Technology helped human race, but mismanagement has led to a new problem of contamination, pollution and hazardous effect on human health.

Almost all used electronic items are considered as e-waste. Such as discarded cell, phones, camera, CD player, TV's, Radios, Drills, Fax Machines, Photocopiers, Printers, Toners, ink cartridges, Clocks, CRT monitors, Electronic Solders, Computers Mother Boards, Keyboards, Industrial and household electronic machinery such as Oven, Fridge, Sewing and Washing Machines, Fan, Air Conditioners, Grinder's, Iron Heater, Military and laboratory requirements etc. In most of the above-mentioned electronic waste contains many hazardous metals That affected human health & environment. An estimate 65 million Tons of e-waste was Created Globally in

2017, due to the great expenses of proper disassembly and disposal of e-waste. Infrequently Shipped to developing Countries.

When it is Disassembled & Recycled in informal settings with very few protections & frequently Performed by women & Children's Hence, They Got Exposed to There Hazardous e-waste.

In 2012, the U.S. alone generated more e-waste per resident than other nation; more than 5 million Tons of electronic equipment in the approximately 74 pounds of e-waste per person.

Different types of anthropic activities such as mining, smelting & different kind of industrial wastes are the main sources of the any metals.

Material and Method

For this Paper Review of Literature and systematically searched electronic database, WHO reports Research Papers and associated other reading material references in concern to e-waste and hazardous effect on human health were studied in detail. The effect of e-waste are discussed in present paper.

Discussion

According to the report, Asia generated the greatest volume of e-waste in 2019. Some 24.9 Mt. following by the Americans 13.1 Mt. & 0.7 Mt. respectively.

E-waste is a health and environmental hazard containing toxic additive and hazardous Substances such as mercury lead Arsenic, cadmium etc. which damages the human brain, Organs, etc. Immune system & coordination system If there's one key reason as to why there's been such a surge of interest in e-waste recycling it could be summed up in two words "Environment protection and

Health " When e-waste is exposed to the heat toxic chemicals are released into the air damaging the atmosphere & is one of the biggest challenges. Those toxic materials can then seep into the ground water affecting both land & sea animals.

There have even been studies done that indicates a link between e-waste in landfills and possible threats to human health including Serious respiratory issues, renal failure, lungs, brain & Immune damage. The journal 'Environmental Research Letters' has reported that researchers took air samples from a large e-waste dismantling area in China and large e-waste determined that these products had a negative impact on human lung cells due to inhale contaminated air. A study of 300 school children near Dandora, Nairobi found that half the children had tested positive for respiratory problems and 30% had blood abnormalities.

Effect of lead on Human Health:-

Lead exposure can have serious consequences for the health of children. At high levels, of exposure lead attacks the brain and central nervous system, causing Coma, Convulsions and even death. Children who Survive severe lead poisoning may be left with intellectual disability and behavioral disorders. Lead is now known to produce a spectrum of injury across multiple body systems. In particular, lead can affect children's brain development.

Lead exposure also causes anemia, hypertension, renal impairment, immunotoxicity and toxicity to the reproductive organs.

According to WHO report as of July 2021, leaded fuel for cars and lorries is no longer sold anywhere in world. Once lead enters the body, it is distributed to organs such as the brains, Kidney, liver & bones. The body stores lead in the teeth & bones where it accumulates over time & later released into the blood.

Excessive exposure of the human body to lead results in disturbance of body function, which can be neurological, cardiovascular, hematologic, and reproductive. Blood containing high level of lead causes inadequate functioning of the central nervous system (CNS) and consequently lead to encephalopathy and edema that mainly affects the cerebellum. (Pal M, Sachdevam, et al. 2015) & (Rao JV, Vengamma B, et al.2014)

In pregnant women, high amount of lead in the body can cause miscarriage. Prolonged lead exposure was found to decrease potency of males (Amadi CN, et al.2017 & Vigeem, Smith Dr.et al.2011)

Wherever contamination is feasible, regular checkup and lead levels of blood have to be set [10] (Wani AL, Ara A, et al.2015)

Sources & routes of exposure: - People can become exposed to lead through occupational & environmental sources. This mainly results from:

In halation of lead particles generated by burning materials containing lead ex: - Smelting, Recycling, Stripping leaded point & using aviation fuel.

Ingestion of lead contaminated dust, water (leaded pipes) & food (from lead - glazed or lead - soldered containers.)

An excellent approach to Larsen the lead toxicity is to suggest people about CDC guidelines and by creating awareness about lead poisoning.

Every parent should frequently wash their children's hands and parent children from placing their hands in mouth habitually.

It is suggested that every family should use cold water because hot water contains high amount of lead [10].

Vit. 'C' has antioxidant properties, which is capable of removing radicals & alleviating oxidative stress. Therefore, the physician should suggest that taking Vit. 'C' containing food in the diet regularly because they minimize lead toxicity easily. (Gupta S.et 2014)

A chelation therapy is for removal of lead from the body. Lead chelating agent has more attraction towards lead than calcium & is excreted in Urine.

(Ferreira's - Martinez R, Esteban - Gomez D, et al. 2011)

I. Effect of Mercury

Mercury has no positive role in the human body & very difficult to determine. Its present environment in several different forms which are toxic to human health. Mercury in human body is a free radical that can cause depletion of glutathione (GSH) and hoarding of H₂O₂ leading to shorten the age of erythrocytes and cause hemolysis. Approximately 90% of organic form can be absorbed by the intestinal wall while inorganic forms are only 10%

Mercury is also easily bound by sulfhydryl groups where in the group is able to inhibit their function of enzymes that are important for metabolism in the body (Dewi N. R. et al 2013)

Exposure to mercury can have very varied effect depending on the level and durational of exposure, age & health status & individuals (Afriza D.et al,2013) Furthermore, it may cause biochemical damage to tissue and genes through various mechanism such as interfering with intercellular calcium homeostasis, disruption on

membrane potential, Change on protein Synthesis, inhibiting enzyme and disruption of amino acid pathways in the central nervous system. (Bjorklund G. et al;2017) processor will be exposed to mercury vapor through inhalation. Mercury evaporation occurs in the process of spawning. Mercury vapors inhaled 80% will be absorbed into the lungs, which then can be penetrate the blood barrier of the brain and placenta and disturbed throughout the body. (Bjorklund.G,et al 2017,Bjorklund D. et al 2018 & Zulaikhah S.T, et al. 2015)

Mercury is still a big problem that requires action for proper control in many developing countries. Many effects must be made to reduce emissions & prevention of exposure (Genchi G. et al. 2017) The main on health is neurotoxicity & Kidney failure.

Sources & route of exposure

E-waste contributes substances to the environment through improper disposal to fluorescent tubes, tilt switchers, older Computers, flat-screen monitor, batteries and even paints. Most of the living organisms can be exposed to mercury through contact with exposed substances, earthworms in soil O2 seafoods and dental amalgam.

Mercury salts have immunomodulatory and allergen properties. Mercury contamination occurs through ingestion i.e., food, drinks, breathing & skin contact, Organic mercury is found in various sources such as fish, poultry, insecticides, fungicides, pesticides and vaccines containing thimerosal (crowe W. et al. 2017)

Effect of Arsenic

Arsenic in the body is fairly constant but widely distributed in organs such as skin, lungs, liver & kidney (Hong et al 2014)

Arsenic has been associated with persuading a variety of complications in body organ systems, integumentary nervous, respiratory, cardiovascular, hematopoietic, immune, endocrine, hepatic, renal, reproductive system and development. Strikingly, arsenic has been able to induce epigenetic charges (in ufu) and genetic mutations (a leading cause of cancer) in the body. Brain is key target organ of arsenic toxicity affecting learning and concentration due to its ability of crossing blood brain barrier easily (Munday et al 2013)

Arsenic is a metalloid ubiquitously available in the earth's environment & considered to be a globally health risk factor. Essentially arsenic concentrates in earth's crust, bedrocks and leaches gradually into the drinking water (Vahter,2008).

Being a metalloid, arsenic exists in Various allotropic forms such as elemental, sulfide and Carbonate forms (Henk,2009)

Low doses and long term exposures of arsenic leads to arrange of medical complications termed as "Arenicolids" (McCarty et al, 2011) Arsenic are distributed in all parts of brain however highest accumulation was observe in hypophysis (Sanchez- Pena et al,2010). Arsenic is capable of including a range of autoimmune diseases including diabetes, atherosclerosis & non-melanoma. Skin Cancer (Banerjee et al,2009)

Source and route of exposure

Ingestion and inhalation skin eye contact & injection routes of exposure to arsenic. Inorganic arsenic compounds are found in sails, sediments and groundwater. Organic arsenic compounds are found mainly in fish & shellfish.

Naturally arsenic is present at high levels in the groundwater & highly toxic in its inorganic arsenic form. During recycling processes of e-waste in organic arsenic can be released the amount of e-waste generated worldwide has risen from 33.8 million metric tons in 2010, 44.7 mt. in 2016 (Balde, et.al 2017)
Recycling activities of: e-waste such as batteries, printed circuit boards, Cathode ray tubes, flat screens, LED light, Semiconductors and electrical solders release many hazardous Substances like lead, cadmium, mercury & arsenic.

Conclusion

1. As technology improves & each device is up graded with additional features the older versions become obsolete.
2. When you purchase a new product, do some research and look for products that have longer lifespans.
3. Educate yourself and help others i.e., public awareness & limit your electronics gadget and devices.
4. look for an environmentally friendly labelled product.
5. Children are our future and it helps if we can enunciate eco-friendly ideas to them at young age and save their life and mother earth.

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Chapter - 6

Training for Extension Education

Dr. Shital M Rathod and Dr. Aruna T Pawar

Abstract

Training is the function of helping other to acquire and apply knowledge, skill abilities and attitudes which they do not possess but which are needed. Training is a systematic attempt to develop the human resources- individual, group and organizational competence required to manage some present tasks and situations as well as those in future. Training programs provide a host of benefits. They enhance employee, students performance, boost productivity, reduce turnover and improve culture. Explore the importance of training for students, employees and employers by pursuing a career in human resource development. It is there fore necessary to document the training needs in home and other activities.

Keywords: extension, training

Introduction

Training is critical input for the human resource development. It plays an important role in initiating and accelerating the process of bringing about the changes in human behavior. Training being a tool for making interventions at the level of human resource is increasingly becoming crucial for development in almost all fields with growing sophistication in technology. It forms the basic tool for today for increasing the effectiveness and efficiency of any organization. It has become powerful instrument for developing human resource and reducing adolescence in the people and organization in the face of relentless technological innovations. With the recent explosion in the every field of science and technology has undergone a great advancement and sophistication.

Meaning of training

Training means to educate the person so as to be fitted qualified, proficient in doing some jobs. Extension workers training includes education which ends at bringing a desirable change in behavior of the trainee or the learner. This change requires a change in his knowledge, skills, attitudes,

values, beliefs and understanding so that he fits in his job and become qualified and proficient in communicating the desirable knowledge to his client system i.e. the farmers, animal breeders, home makers etc.

Training of employees has been defined by Milton Hall as the process of aiding employees to gain effectiveness in their present or future work through the development of appropriate habits, thoughts, action, skills knowledge and attitude.

Need for training

It is felt that a young person entering a career will have to be trained for two or three profession in a span of their active lines of works. Training is a means to reduce the obsolescence among the people and recognition in the face of relentless technological evolution. The professional worker must keep a breast of the latest development in his potential and capacities.

Training improves a person's skill, his power of intelligence and develops in him the desired attitudes and values require for his work. It helps the new entrant to acquire an occupational work, skills and the latest knowledge makes him familiar with objective of the organization to which he belongs and helps to make his potential contribution in promoting focus at his organization.

Training has special significance in the field of agricultural development and in the contest of community development. It has been pointed out that extension involves not only education to rural people in determining their problem and methods of solving them but also inspiring them towards positive action. Government servants must approach to villager as a friend one who wants to and will help the villager learn how to make decision and achieve for himself and his family a better way of life,

Training vs Education

- 1) Education usually refers to general instruction received in schools colleges and universities whereas training refers to specific instruction received with vocational purpose to earn a living.
- 2) While education deals with individual's general growth and development, the focus in training is on developing competencies and capabilities of on the job persons or better performance of specific roles.
- 3) The objectives of education are broader and those of training more narrowly defined.

- 4) Education is concerned mostly with gain in knowledge and understanding whereas training focuses more on acquisition of skills.
- 5) The main focus of education is on general learning, which has not immediate practical application.
- 6) The learning in training on the other hand ends at need base, problem centered and skill-oriented learning for immediate practical application.

Learning in education follows a fairly strict schedule with lightly controlled curricula and course material. As against this learning in training is *far* less structured and of less expectation nature. The training syllabus is not fixed or uniform as in case of education. It is tailored to the requirements, needs, resources and potential of the target hoods.

- 7) As compared to education courses planned in training are of greater variety and are organized at much shorter notice and in more diverceed areas.
- 8) The group of learner in education is homogeneous in terms of age, mental Level, interest and experience as opposed to the heterogeneous in training.
- 9) Learning education is imparted through lecture method. But in training variety of instructional methods are used.
- 10) It is an instructor in training seldom meets unquestioned expectance of every Word he speaks but school and college teachers often.
- 11) There is hardly any disciplinary problem in training, a situation not found in Schools and colleges.
- 12) The duration of any training is usually very short as compared to data of education. In other word training is a short-term learning process and education a long term one.



Training on Drafting and Cutting clothes

Principles of extension training

Some of the basic principles of training are briefly discussed below

- 1) Motivation is basic to good training. A good trainer must stall his work by creating of need or want in the trainee since the actual willingness and desire to learn come from within the person. Basic needs, wants desires, motives, incentives or urges have been classified broadly in four ways.
 - The desire for security-economic, social, psychological and spiritual.
 - The desire for new experience adventure new interests, new ideas, new Friends and ways to doing things.
 - The desire for affection and response-companionship, gregariousness and social mindedness; the need for feeling of belongingness.
 - The desire for recognition-status, prestige, achievement and being looked up to. These are all powerful motivating forces for learning.
- 2) Good training requires specific and clearly defined objectives. The different aspects of training objectives namely the persons to be trained, the behavioral changes to be developed in them, the content or subject matter to which the behavior is related and the real situation in which the changes are to take place must be clearly spell out in the training objectives.
- 3) Good training must accomplish certain kinds of educational changes in relation to subject matter learned-These may be changes in knowledge or things known; changes in skills or ability to do new things, including mental skills and manual or physical skills and changes in attitudes or feelings for or against things and issues, points of views etc. including changes in interest and changes in understanding.
- 4) Good training should provide effective learning experiences to the trainees.
- 5) Good training requires usually a combination of training technique Training should involve appropriate activities engaging the maximum number of senses and combination of techniques such as oral, visual, audio and doing things.
- 6) Good training requires effective learning situation which includes five major elements i.e. teacher, learner, subject matter, teaching aids and facilities or environment.

- 7) Training should be challenging and satisfying. To be challenging, subject matter must be presented in the form of problems for which trainees should be encouraged to find solutions. Appropriate and timely recognition should be given to the trainees achievements. Fear and ridicule have no place in the training process and their use in training program is usually an adverse reflection on the ability of the trainer.
- 8) Good training requires careful evaluation of results.

Definition: Training is a systematic attempt to develop the human resources-individual, group and organizational competence required to manage some present tasks and situations as well as those in future.

Three basic phases of training

Kurt Lewin (1947) described development as succession of three phases i.e. unfreezing, moving and refreezing. This phenomenon has been equated to three phases of training viz: Creating readiness, action learning and support. Unfreezing is necessary because participants and their organizations come to training with their own feelings, thoughts, and reutilized action, all of which reinforce each other.

To influence them through training, their normal habits have to be questioned, disturbed or unfrozen. Training can do this by focusing attention on needs that participants can not satisfy by habitual behavior. Into this slate, trainers then introduce other events, which enable participants to try new ways of behavior i.e. moving. If they find the behavior more useful to meet the new needs, participants can then be helped to it habitual in time. Individual thus gain new identity which then freezes.

Training modalities

Modality provides frame for designing and sequencing training inputs and selecting methods to produce desired effects. Three types of training modalities identified are as follows

- a) **Direct contact v/s distant training:** In direct contact training trainers and trainees are face to face. This limits the number of participants. Distant training can meet the needs of large and reach them wherever they are. It allows the learner to learn at their own place.
- b) **Formal v/s non-formal training:** as an alternative to training, in direct formal program at a particular place, training can be planned and conducted through various non-formal modalities. E.g., through

action research participants get tutoring, supervision and guidance during their participation and get trained. Here emphasis is on conscious, guided experience,

- c) Centralized v/s dispersed organization of training', in a centralized model is incharge of planning, guiding, funding and supporting all aspects of training, in a dispersed model, central institute, designs, initiate and guide training and the subsidiary institutes carry out its plan.

Training orientations

Based on the content six types of orientation to training are detailed below

- a) **The academic orientation:** Gives prominence to understanding of concepts. The basic assumption is that knowledge can be transmitted by those who know to those who are ignorant. The methods used are lectures, seminar individual reading etc.
- b) **The laboratory orientation:** The assumption here is that people are able to transfer laboratory experience to actual life situation ex. Language; laboratories and human medicine.
- c) **The activity orientation:** Emphasis is on practice of skill. The principle involved is 'try, try and try again until the participant can do the job.
- d) **The action orientation:** Is akin to activity orientation. The training Component of many community action programs is based on this.
- e) **The person-development orientation:** This gives weighting to both tasks and Process learning. At the end of training, the individual not only learns how to do a specific job but also understands.
- f) **The organization development orientation:** It goes beyond the person Development in one respect. The organizational change is explicit and forms the central focus. This is a new approach.

Training process

The training process can be viewed from the point of participants or from the point of training organizations. From the view point of participants:

- 1) Pre-training; to learn, people need to feel the need for learning. Some People feel that training is essential for their survival or to qualify for doing a Particular job well. Others reject or play it down. Hence the participants

- 1) Motivations expectations will determine their focus of attention and learning.
- 2) Training:

The exposure to learning opportunities training provides come in a series of stages like

- a) Selection of some items for learning: each participant, and not the trainer, decides the focus of her/his attention and learning.
 - b) Initial trial of experience: the participant uses the item selected as trial for the first time.
 - c) Feedback from initial trial: if the experimentation is rewarding the learner is satisfied.
 - d) Reinforcement and continued practice: the satisfaction from positive Feedback reinforces the new pattern of behavior.
 - e) Internalization: the item learned is assimilated into person's behavior.
- 3) Post training:

After returning home, the trained are eager in put that they have learned into practice. The organizational support or lack of it decides how the trained person acts. Verbal support as well as adequate facilities, organizational policies, altitude of colleagues all have to be lined up for change.

From the point training organizations

- 1) Pre-training; the organization's concern before training Tail mainly under four areas
 - i) Clarity the objectives of training.
 - ii) Selection of suitable participants.
 - iii) Building favorable expectations and motivation in the participants.
 - iv) Planning for improved task performance such as physical and organizational arrangements.
- 2) Training: The organizations should ensure that no distractions occur to participants during training.
- 3) Post training: A participant back after training needs to be encouraged to use the things he has learned. Opportunities may be created for him to discuss his training experience to his colleagues.

Training methods

1. Lecture

It is a method of verbal presentation on a topic by the speaker to a group of audience. Lecture should be well organized & well prepared so that it can draw attention of audience & convey message to them. Visual aids may be used during the talk & a question answer session may follow it. A series of lectures on particular theme shall facilitate the audience to develop a comprehensive idea on the topic & gain by His rich experience of speakers. Lecture facilitates the presentation of the information in a systematic way. The limitation in the lecture is the passive role of the audience,

2. Group discussion

The lecture method may be made more participative if at the end audience are allowed to discuss the topic in presence of speaker & elicit the latter's comment and clarification on the points raised, This shall lead to the better understanding of the topic as the participants are more actively involved, have the opportunity to express their views & get their doubts cleared. Learning is informed through interaction the audience with the speaker. Limitations of traditional group discussion are that group members may pursue an idea to the exclusion of other alternatives & pressures confirm can discourage the expression of deviant opinions

3. Seminars

It is one of the most important forms of the group discussions and is more formal in nature. The seminar enables a study in depth to be made in specific areas under the guidance of experts. In seminars the discussion papers prepared by the participant on the basis of research are presented & discussions are based primarily on these papers. A seminar may have one or more plenary sessions This method has an advantage of pulling together the opinions of number of peoples. At the end some conclusions & recommendations are arrived at for taking the action.

4. Panel discussions

A panel or group of four or more experts in a specific area of specialization may be invited to address a group of trainees on a particular subject- The mutual interactions of the panelists among themselves & with the audience can lead to effective understanding of the topic, A panel discussion should be guided by a strong moderator to ensure enough time to each panelist, to oversee the question answer session & sum up the entire proceedings

5. Colloquium

This is modified version of panel discussion in which three to four resource persons discuss on a specific topic. The audience is free to express the opinions, raise issues & ask questions. In colloquium there is more of audience participation.

6. Symposium

It is meeting in which a small number of resource person present short prepared papers on a given topic. Each one speaks for a definite amount of time & present a different phase or subdivision of a general topic. The speakers are of approximately equal ability to avoid domination by a speaker or giving the audience a distorted view of the subject. Interaction with the audience is not expected. Symposium is primarily meant for information gathering at the professional level.

7. Workshop

A workshop is cooperative gathering of individuals who discuss & apply practical skills under expert supervision. It may be held for a day or a number of consecutive days. These planning sessions where all participants are involved in the beginning. Considerable time should be allotted for the work session. In workshop method participants exchange ideas, experiences & skills & on this basis produce product or prepare a program for future action. It helps in correctly doing the job & proper shaping of an action-oriented program.

8. Syndicate method

A syndicate is primarily a study group the members of which present the principal sub groups participating in a program. The syndicate has a chairperson & a secretary the offices of which are generally held in rotation by the participants.

A problem is assigned to syndicate for study & solution. The group works on its own with only minimum guidance from the training staff, makes its own library studies, collects data, exchange views & experiences and avails itself of the facility of consulting specialists in the field & finally prepares a report on assignment. The report of each syndicate is presented to an assembly of training faculty & all the syndicates in the training program as a whole for comments and discussion. The study on any subject may continue for a month or more, with 10-12 sittings.

9. Case study

In this method a written case or problem situation is presented to participants in a program for a careful study & examination from all facts so as to enable them to exercise their analytical, synthetically & decision-making powers. As there is no single infallible solution to a problem, different solutions will be evolved & in single course of evaluations of these solutions, participants are enabled to appreciate the view point of others & also see the lacunae in their own thinking & analysis. The inter-relatedness of various factors operating in a situation is also highlighted.

10. Role playing

The participants can be made to act & relive a particular situation so that they get a real feel of roles they are actually called upon to play. Successful role playing requires good empathy.

Role playing is a particular technique, which gives an insight into the complex behavioral paler of individuals. Even the observers tend to see in the roles played by others the images of their own behavior & attitude. Role playing units should be small in size so that the trainee can really identify with the live roles they play. Special emphasis should be put on the discussion following the exercise.

11. Brain storming

A small group of knowledgeable persons is given a problem & to produce as many solutions as possible within a given period. Spontaneity & creativity is important. The purpose is to promote the group activity so that all aspects of a problem are considered. It should be restricted under twenty people per group.

The ideas presented are recorded so that everyone can see them. When large number suggestions are made the group is asked to reflect on them & evaluate their merits & demerits. A reasonably small number of worthwhile final solution may emerge from this evaluation.

12. Buzz session

This technique involves dividing a large group into much smaller one in which a topic is discussed within a limited period of time. The groups are expected to react i.e., produce ideas, opinions, questions etc. within about five minutes & make oral report to all group involved in the exercise. The purpose is to involve each & every participant. This method is sometimes used to break up large meeting & to add variety & interest -At may also be used to solicit solution to the problem or to gather opinion,

13. Sensitivity training

Members are brought together in a free & open environment in which participants discuss themselves & interact. The discussion is lightly directed by a behavior expert, who create an opportunity for participants to express their ideas, beliefs.

The objective of this method is to provide the participants with increased awareness of their own behavior & of how others perceive them gather sensitivity to the behavior of others & increased understanding of group processes, specially it aims at increased ability to empathies with others improved listening skills greater openness, increased tolerance for differences & improved conflict resolution skills.

14. Interactive video

It refers to a video program with which an individual can interact. Allows the user to take part in the sequencing selection of video material & control the program according to one's own pace of learning.

According to Aram (1993) the program progresses step by step through carefully structured sequences, Each step takes the user forward to another significant step. Incorrect responses results in the further information to clarify! Doubts. Only he correct response allows the program to continue. Testing is done to ensure that the sequence has been understood,

Components of training

Training objectives

Training, objectives are the direction of a training course. These may also be called as course objectives, Thus have to be formulated properly before conducting a training course otherwise quality of course will be poor. The training objectives have to be formulated either to change attitude of trainees or to improve their knowledge to develop skill among them. If the course is of sufficient duration the course objective may include all three aspects as change of attitude, improvement in knowledge and development skills.

Type of training/course objectives

There are two types of training objectives.

1. General objectives

It means indication of what will be the overall impact of training course on persons who are attending the particular training course e.g. a general

objective of training course on communication skill of all the participants. It is not clear from this general objective that which aspect of communication skill will get improved.

2. Specific objective

While formulating a specific objective for a training program it has to be clearly stated that which aspect of course will get improved. The specific objective has to be formulated specifically either to change attitudes of trainees or to develop their skills in a particular subject of training. While formulating a specific objective it has to be borne in mind that a particular aspect of training course is the focus e.g. a training course on communication the specific objective may be formulated as-After attending the training course on communication at least 60 per cent participants will be able to communicate new technology to the people/farmer/client.

Points to be considered while formulating training or course objective

Course director has to be very careful and sincere while formulating training objectives.

The training course objective should be formulated on the basis of assessed training needs. The training need may be either to bring improvement in the attitude or the knowledge or skill or all three aspects together.

The training objectives should be well defined means in which area the skills have to be developed and up to what extent.

Training objective should be clearly specified what type of change has to be brought in attitude, knowledge and skills of participants.

The criteria of SMART should be adopted while formulating the objectives S-Simple M-Measurable A-Attainable R-Realistic T-Time bound.

Training objective should be formulated quantitatively means the extent of achievements after the course should be quantified in terms of per cent improvement in attitude, knowledge and skills of trainees e.g. a training objective for a training course on communication may be at least 50 per cent participants will be able to prepare and use three types of visual aids successfully.

The use of indirect verbs like learns, follow and understand etc. should be avoided while formulating the training objectives.

While formulating the training objectives it should be kept in mind that formulated objectives are achievable e.g. The accounting skills of all the

trainees will definitely to improved after training course is not a training objective three accounting skills of at least 50 per cent trainees will be improved after the course" is an achievable training objective.

Course content

Content-Subject matter/curriculum of subject. Main idea of knowledge.

Factors for consideration in planning course content:

- 1) Aim and purpose of course to be offered.
- 2) Characteristic and need of trainee.
- 3) The educative environment of trainee.
- 4) The source of information available.
- 5) Demands/requirements of profession.

Steps in selecting course content:

- 1) List all major areas to be included in the course.
- 2) Break each unit into its logical component or parts of success.
- 3) Estimate how long it will take to teach the area.
- 4) Add up all the time you have indicated including, to teach the area.
- 5) Check the number of days available to teach.
- 6) Calendarize what you have left on the subject to be taught. Plan the visit and make arrangement for transport, what to be show resource person, farmer, VLW etc.

Obstacles in the training

- 1) Regarding the content of training Subject matter is many a lime is not related with working situation.
- 2) Regarding a trainer-A gold medalist trainer may also may not able to express his knowledge or they may lacking a technique of transferring knowledge & skills. A trainer must be good in delivering lecture.
- 3) Lack of clear concept or wrong attitude of trainer or trainees-What is to be taught is not clear to trainers. If trainers or trainees have negative Attitude towards each other it may affect the training process.
- 4) Lack of proper motivation & incentives e.g. to get promotion or increments.

- 5) Disparities among the trainees. there are many variation among trainees & it is very difficult to manage them all at a time,
- 6) Information overloading.
- 7) Training schedule implementation. If implementation of training schedule is not matching then it becomes obstacle. Lack of communication in post training phase and feedback in post training phase, Non-cooperation in training agencies, Problem of selection/recruitment of right kind of trainer and raining.

Functional aspects of home science or home economics training

According to 1991 census the total population of women is 406.61 million, of which of 304.04 million (75%) are living in rural areas. Rural women constitute majority of India's poor, and suffer more acutely due to decline of social values and environmental degradation. The gender biases has been observed in all agricultural systems, present a major obstacle for achieving sustainable development. In comparison with men rural women have more limited access to all kinds of resources-Functional aspects:

- 1) **Collectivization:** Bringing a group of women together at a base to become an integral part of an economic activity is an important of the strategy towards their empowerment.
- 2) **Capacity building:** Once women start coming together, the next step is to enhance their capacity to work as a group and to play different roles, necessary for development and maintenance of group.
- 3) **Ownership and control:** Once women start acquiring capacity to work a group, planning, executing and monitoring the activity, the issue of taking control of whole activity becomes critical. A sense of belonging and owning good and bad consequences of their own activity is the first step in that direction.
- 4) **Mediation:** Another important aspect of empowerment of women is to strengthen their capacity to mediate with external world. Mediation entail relating with outside world, with the markets, with the financial institutions, with competitors, with the host of policy makers and other important segments of external environment i.e. politicians, bureaucrats, and officials etc.

An integral component of empowering women is to strengthen their works. The meaning of wok is application of efforts for survival and for earning a basic livelihood. Some ways of earning livelihood are:

- Harming in a small piece of land
- Raising livestock
- Fishing collection of forest produce
- Manufacturing at home or in sheds
- Hawking, vending, trading
- Providing services
- Selling manual labor

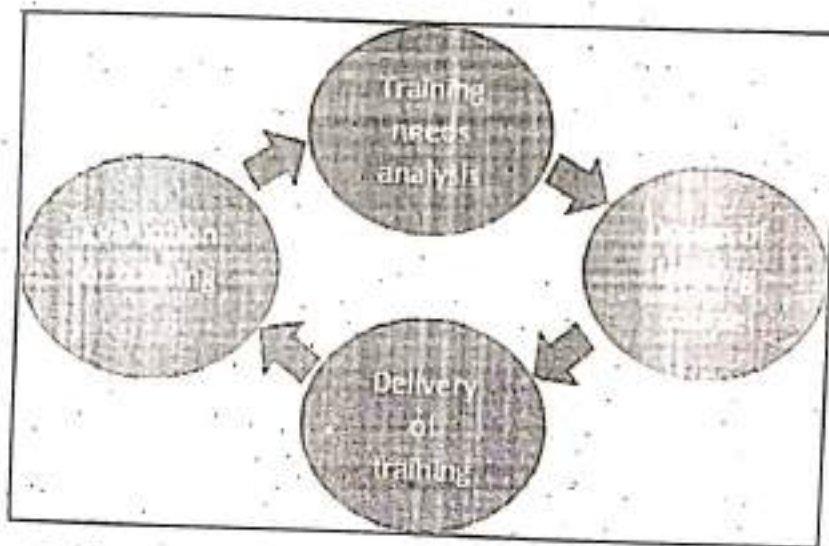
Broad types of women activities are:

- Production which entails transformation of some inputs and outputs.
- Trade-which implies providing goods at certain place and time for the price.
- Service-which entails provision of facilities to support production, trade or human population at a price.

According to Mathur (1997) the best guarantee for sustainability of development is greater self-reliance of women. This implies allowing women to have greater control, greater recognition, and greater ability to define and respond to their need and perspectives. They should be given with opportunity to be able to influence social choices and decisions affecting them and their environment. Planners and implementers must ensure that the relationship with decision-makers in the programs can be changed to allow women to act as definers or creators of programs.

Training evaluation

According to Hamblin, training evaluation means any attempt to obtain information on the effects of a training program, and assess the value of in the light of that information. By definition training evaluation can us in sharply defining the training objective, getting rid of unnecessary content, make training methods meet the requirements of the trainees, the them to their training needs and reduce training cost's. To derive human benefit from it, training evaluation should be treated as a process and be undertaken before, during and after training.



Training evaluation

According to Hamblin, training evaluation means any attempt to obtain information on the effects of a training program and to assess the value of the training in the light of that information. By definition training evaluation can help us in sharply defining the training objective, getting rid of unnecessary training content, make training methods meet the requirements of the trainees, relate them to their training needs and reduce training costs. To derive maximum benefit from it, training evaluation should be treated as a process and must be undertaken before, during and after training.

Stages of training process

A typology of training evaluation can be developed based on the stages of training process. This approach appears to be logical and precise than other classification of training evaluation.

If training is perceived as a process, four stages of training process are clearly identifiable namely,

- i) The planning stage.
- ii) The implementation stage.
- iii) The stage immediately after termination of training.
- iv) The impact stage.

Corresponding to each of these four stages of training four types of training evaluation can be defined as follows

i) Evaluation for planning

It provides information for planning a training program. It consists of two phases namely;

- i) Training needs.
- ii) Assessment of training methods and technologies.

The first phase covers job analysis, task analysis, and gap analysis, trainee characteristic, development of training objectives and selection of contents. The second phase covers determination of most appropriate instructional procedures and pilot testing

ii) Process evaluation

Process evaluation say Raab *et al.*, is a method of obtaining feedback from trainees and others involved in the training activity. Process evaluation is conducted to detect or predict defects in a procedural design of a training activity during the implementation phase. Key elements of training activity are monitored in a systematic manner with a goal of identifying potential problems before they become serious. It covers a wide range of training activities factors affecting training activities, and interim results of training activities like change in trainee KSAOs knowledge, skills, attitudes and other things, effectiveness of training methods and technologies, performance of trainers, finances and physical facilities.

iii) Terminal evaluation

Terminal evaluation is used; say Raab *et al.*, to determine the effectiveness of a training activity after it has been completed. It is method for collecting information on trainee and training activity achievement. The primary objective of terminal evaluation is to determine the degree to which the intended objectives and goals have been met and to relate these findings to evaluation information collected earlier in the evaluation process. It also includes interpretation of the outcomes.

The terminal evaluation primarily concerned with learner performance. To be meaningful the learner performance has to be measurable. Two types of terminal evaluations are available

- i) Norm-referenced evaluation.
- ii) Criteria-referenced evaluation.

In the non-referenced terminal evaluation pretraining measurements are compared with post training measurements. Results show up as learning gain. In the criteria-referenced evaluation what has been taught to the trainee is compared with that he has learned.

Apparently training evaluation covers many of the same areas as are covered by training process evaluation like organization, facilities and resources.

Two general methods are used in terminal training evaluation

- i) Measurement of change in trainee KSAOs and competence.
- ii) Measurement of trainee perception about the training activity.

These methods use questionnaires, essays, rating scales etc.

iv) Impact evaluation

An impact evaluation say Raab *et al.* is a method of assessing changes in on-the-job behavior as a result of training effort. It is also a way to get additional feedback from the trainees and their supervisors on how appropriate this new behavior is in the workplace.

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ABSTRACT :-

Environment is the nature and surrounding in which all plants, animals, human being and other non living things only other hand. Women are always close to nature and very much dependent upon the nature. Women are playing a key role in protection and conservation of environment. The publication of 'Women's role in economic Development' by Easter Boserup in 1970 emphasised women connection with the environment which was sparked largely.

Women participation in Environmental Protection can be traced back to 1731, near Jodhpur; Rajasthan by the Bishnoi Tribe Women. Amrita Bai of *Khejarali* village sacrificed her Life as she embraced the *Khejri tree* as bishnois regarded this tree as Sacred. As a Consequence, there was a Strong Resistance in village. Amrita Bai and her Band of Women Bishnois can be considered as the "FIRST ENVIRONMENTAL MOVEMENT OF THE WORLD". In general, one of the first ecological movement started in *Champaran* district of Bihar. In 1917 led by Mahatma Gandhi, against the Indigo cultivation of British planters without giving payment for it and finally plantations were abolished. Secondly the infamous Salt Satyagraha Movement was also led by Mahatma Gandhi in 1930 against the British Salt Tax Monopoly. In both of the above movement Women had vehemently participated as well as supported but mostly they were from urban areas.

According to the World Bank report in 1991, 'Women are playing an essential role in management of natural resources including soil, water, forest and energy'. They often have a profound traditional and contemporary knowledge of the natural world around them.

Environment movements are organised from time to time in various parts of the world. Anthropogenic activities lead to degradation of natural resources. For household management women are more dependent on natural resources. Hence various significant environmental movements like Bishnoi, *Chipko*, *Aapiko*, *Silent valley*, *Narmada Bachao Andolan*, Kenya's *Greenbelt* movement and many other Environmental Protection movement took place in leadership of women environmentalists and activists like Jane Goodall, Greta Thunberg, Malika Vaz, Catherine Heyhoe, Julia Lorraine Hall, Rachel Carson, Vandana Shiva, Sunita Narraine, Sumaira Abdul Ali, Kinkari Devi, Medha Patkar, Menaka Gandhi and many more are playing Key role for conservation and protection of environment. In the 42nd amendment act of 1976 of Indian constitution have made a fundamental duty to protect and improve the natural environment.

Keywords - Women, environment, movement, protection and conservation.

Introduction :-

Mother earth nurtured every living being by providing natural resources, but the Super animal human being has been aggressively exploiting the natural environment to fulfil his or her own needs. Population explosion and anthropogenic activities are putting threats to the environment and exploit the natural resources. Time to time conscious people have raised voice for Environmental Protection and Conservation all over the world. Though environment movements in India had the recent origin but it has intensified rapidly from the last few decades. Women are more close to the nature and they are more sensitive to degradation of environment as they are mostly dependent on the natural resources for household management and conserving natural resources for their family. Women play a significant role in raising the voice against environment degradation with the advancement of education and technology. Indian Women largely visible in environment protection movement against deforestation and conservation of water resources. Environment movements are organised from time to time in various parts of the world for the protection and conservation of the environment. Anthropogenic activities lead to degradation of natural resources. This paper analyses the role of women in Environment Protection and environment movement. So here we can cite some very important environmental movements in India led by Women.

Objective :-

1. To Study Women participation in various environmental movement



- 2.To understand the leadership qualities in women.
- 3.To focus women gratitude towards environment.

Methodology :-

The present study is based on secondary data including books, journals, newspapers, Government records as well as Internet source.

Discussion :-

Women participation in Environmental Protection can be traced back to 1731, near Jodhpur; Rajasthan, by the Bishnoi Tribal Women. Amrita Bai of *Khejarali* Village sacrificed her Life as she embraced the *Khejri tree* as Bishnois regarded this tree as Sacred. As a Consequence, there was a Strong Resistance in Village. Amrita Bai and her Band of Women Bishnois can be considered as the "FIRST ENVIRONMENTAL MOVEMENT OF THE WORLD". In general, one of the first ecological movement started in *Champaran* district of Bihar in 1917 led by Mahatma Gandhi, against the Indigo cultivation of British planters without giving payment for it and finally plantations were abolished. Secondly the infamous *Salt Satyagraha* Movement was also led by Mahatma Gandhi in 1930 against the British Salt Tax Monopoly. In both of the above movement Women had vehemently participated as well as supported but mostly they were from urban areas.

It was from 1970s, the Women also rural India came into the front. In 1972, Chamoli district in Uttarakhand, chipko movement had started by Sunderlal Bahugana. Bachani Devi and Gaura Devi, these two Environmentalists played an important role. Another environmental movement was Silent valley movement in 1978, on the Silent valley, *Palakkad* District of Kerala. Here also, Sughatha Kumari, a women poet had played an Important Role. The movement was against the construction of hydroelectric project to conserve the Evergreen forest that runs through the silent valley. In 1982, *Navdanya Movement* was started by Environmental Activist Vandana Shiva. It was an equal feminist movement as she established *Navdanya*, an organisation promoting biodiversity and engaging Women. Again in 1983, *Aapiko Movement* was started by the people of Uttarakannada District of Karnataka state in the southern India shoes a large number of rural women participation. The movement was against the commercial forest policy which had caused the destruction on ecosystem of Sirsi Forest. Another most significant environmental movement where women had played a Pivotal role is *Narmada Bachao Andolan*. In 1989 under the leadership of *Medha Patkar* had launched this movement against the construction of sardar sarovar dam on the Narmada river Gujarat. Besides the above mentioned many other women actively contributed for the protection and conservation of environment. Padmashri Award winner *Sunita Narain*, who focuses on Sustainable development and fighting for climate change. Another Padmashri Award winner *Jamuna Tadu*, who is known as 'Lady Tarzan' of Jharkhand forest. She along with 100 Adivasi Women has been protecting Jharkhand Forest from mafia since last 20 years.

Our human society and environment or nature has an inseparable bonding. Society emerged as per the prevailing environment. Therefore the living styles dressing, food culture language and festivities occasion of the people are distinct. People living in hilly area have separate culture and habit from people living in plane areas. Environment can be divided into two categories that is natural environment and man made environment. With the exclusion of human population environment had started degradation very harshley due to which today entire world is suffering from global warming frequent earthquakes exclusion of volcanoes Tsunami flood, acid rain and droughts etc. Dankelman and Davidson (1998) Said that women are playing an important role in the management of their natural environment and its resources and take various mechanisms to deal with the different types of environmental crisis.

Women have personified as powerful symbols of nature like Another Earth, Earth Goddess an Artemis in Greek mythology and Mother river etc.

The origin of environmental protection movement in India dates back to *Khejarli* Movement and Gained it's Momentum via *Chipko* Movement, *Aapiko* Movement, *Save Silent Valley* Movement, and *Narmada Bachao andolan* And the major trend in the Environmental Protection movement in India emphasises the fact that most participants are Women, adivasis and poor people.

More than 70% of the Indian population is rural based. Biomass plays a crucial role in meeting the daily survival needs of the vast majority of the households. Developmental imperatives have inevitably led to the destruction of the biomass through deforestation and environmental degradation.



Throughout history, men have looked at natural resources as a commercial commercial entities or income generating tools, while women have tended to see the environment as a resource of support to their basic needs. Rural women collect the dead branches which are cut by storm for fuel would to use rather than cutting the live trees. Any changes in environment like deforestation have the most effect on women of that area and cause them suffer until they can cope up with these changes. An example of predominance in the defence of natural forest comes from india in 1906. As forest clearing was expanding conflicts between loggers an government and peasants communities increased. To thwart resistance to the forest leaning, the men were diverted from their villagers at fictional payment compensation site and loggers were sent to the forest. The women were left in the villages however protested physically hugging themselves to the trees to prevent the trees from Cutting Down. This gave rise to What we Call "Chipko" Movement. Women are more concerned about Environmental Protection and ecological preservation.

Moser (1991), distinguishes between 3 roles for Women

1. As managers or maintainers of Environment
2. Rehabilitators of the natural environment in the sense of sustainable development.
3. As innovators in use of appropriate technology in creation of the new environment.

Relevant legal provisions on environment in India:-

The constitution, (42nd Amendment) Act of 1976 had made it a fundamental duty to protect and improve the natural environment .

Article 51 (a) provides that it shall be the duty of every citizen of India to protect and improve the natural environment, including forest, lakes, reverse and wildlife and have compassion for living creatures .

Article 21 of Constitution guarantees the right to life, a life of dignity to be lived in a proper environment, free from danger of diseases and infectious.

In addition to Indian constitution aspect, certain special legislations are also available in India to environmental protection such as:

- * The Air (Prevention, control of pollution) Act 1981.
- * The Water (prevention and control of pollution) Act, 1974.
- * The Wildlife Protection Act, 1972
- * The Indian Forest act, 1927
- * The forest conservation act, 1980
- * Environmental protection act, 1986.

Recommendations:-

- * Women should be encouraged to participate in committees on environmental protection, projects, programmes and policies to address gender, imbalance in decision-making
- * Environmental education is required for every citizen for sustainable development and produce change in attitude of the peoples
- * Separation of plastic from municipal solid waste and recycling of plastic will help to reduce the contribution of plastic solid waste
- * Women, education and access to education for girls should be seen as a policy priority
- * To bridge the gap between environment and development women can play a significant role so it must be recognised recognise and sustained.

Conclusion:-

This paper discussed the Women active participation in environment, protection and conservation of natural resources management in order to ensure sustainable use of it. The critical role of Women as resource managers as community activities as environmental advocates must be recognised when strategies for the protection of the environment are being developed, women's should be encouraged to participate at the local, regional, national and international level.

History witnessed that how we have been playing an integral part and parcel in conserving and protecting environment, which is so much successful so far every time they come forward and protected the environment, whether it was 'tree hugging or long time hunger strike' without bothering about their life. 'Development is necessary but it should not be at the cost of environment'.



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