

STATUS OF SUNFLOWER RESEARCH IN BANGLADESH ¹Mirza Md. Sirazul Hoque and Hamizuddin Ahmed ²

ABSTRACT

Sunflower (*Helianthus annuus* L.) is a newly introduced oilseed crop in Bangladesh. It is gaining popularity among the farmers for its quality oil and easy extraction method. Now it is being grown in 16 districts of Bangladesh and the average production is about 1.2t/ha, which is quite encouraging. The oilseed production in Bangladesh is largely dependent on three major oilseed crops like rapeseed mustard, sesame and groundnut. Rapeseed mustard has been suffering badly during last few years due to late shower and flood and other environmental factors. At present major part of groundnut is consumed as palatable roasted nuts and is sold out at higher price as snacks. Sesame is a summer crop and highly susceptible to water logging. On the other hand sunflower as a photo and thermo neutral crop can be grown in both rabi and kharif seasons in Bangladesh. So it bears bright prospect to fill up the gap between production and consumption of edible oil by expansion of its area and production. It is therefore, considered essential to diversify the oilseed production programme through extensive research, seed production and field demonstration of sunflower.

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Introduction

The gap between production and consumption of edible oils in Bangladesh is increasing every year due to increasing population. The average consumption of vegetable oil in Bangladesh has been fixed at 10g/h/d, which has been worked out as an average consumption of 5 years (Table 1). On this basis, the projected requirement of oils by the end of FFYP for the projected population of 122.5 million is estimated to 447 thousand tons. This requirement would be met by local production upto 33.2% in the initial year (1990-91) of FFYP and 53% in the last year (1994-95) of the Fourth Five Year Plan (Table 2). So, emphasis should be given to local production (Anonymous, 1990).

Table 1 : Local production of vegetable oil, its import and consumption/head/day (1985-1989) in Bangladesh.

Year	Quantity (tons)			Population (thousand)	Consumption (g/h/d)
	Import (M.T)	Local (M.T)	Total (T)		
1985	214346	83	297346	99235	08.20
1986	272354	135	407354	101720	10.97
1987	326823	141	467823	104113	12.31
1988	246751	125	371751	106645	09.55
1989	314210	153	467210	109133	11.73
Average of 5 years	2,74,897	123	3,98,697	1,04,169	10.49

Source : DAM for import and BBS (1990) for local production.

The oilseed production of Bangladesh is largely dependent on three major oilseed crops. The most important of these are rapeseed-mustard, sesame and groundnut. The yield of rapeseed-mustard crop is not very stable owing to unfavourable climate and diseases. The sesame is a summer crop and highly susceptible to water logging.

Table 2. Projected production and requirement of vegetable oil at the rate of 10g/h/d for the period 1990-91 to 1994-95.

Year	Projected population (million)	Requirement (000t)	Local prod. Target(000t)	Requirement to met by local production (%)
1990-91	112.3	410	136	33.2
1991-92	114.8	419	162	38.7
1992-93	117.3	428	177	41.4
1993-94	119.8	436	205	47.0
1994-95	122.5	447	235	52.6

Source : Action Plan on Oilseeds and Pulses, Fourth Five Year Plan (1990-91 to 1994-95), Ministry of Agriculture, Government of Bangladesh.

Sunflower is a photo and thermo neutral crop and therefore, grows well in both seasons in Bangladesh. Now it is being grown in 16 districts of Bangladesh and the average production is about 1.2t/ha. So it is prospective and important to increase oilseed production through increasing sunflower cultivation and popularizing consumption of its oil, which is favourable both for quantity and quality.

There is scope for growing sunflower after harvest of transplanted Aman rice in few northern districts of the country where enough moisture or irrigation is available. Under dry land condition like Barind tract cultivation of sunflower is more favourable than groundnut and sesame (Zaman, 1988). When there is late rain/flood the sowing of mustard is delayed causing reduction both in area and production. Under such conditions, sunflower stands as good substitute to fill up the gap of mustard.

PRESENT RESEARCH STATUS:

1. Breeding:

Effective research for promotion of Sunflower in Bangladesh was started by the Pulses and Oilseeds Division of ARI, Dhaka in 1975, which included varietal development, agronomic study, post harvest processing etc. From 1975 to 1982 this research was concentrated to introduction of exotic varieties, evaluation of germplasm and also on different cultural management practices. After preliminary evaluation of the germplasm, the promising lines were tested under regional yield trials at Joydebpur, Ishurdi and Jamalpur.

However, after evaluation and rigorous selection the cultivar Kironi or DS-1 was released by the National Seed Board (NSB) in 1982. From 1985-90 no encouraging research were done due to shortage of fund and manpower. In 1990 a contract research project entitled " Development of dwarf types of sunflower " was undertaken financed by World Bank. Under this project a good number of dwarf lines were identified.

2. Cultural management:

Optimum time of sowing was found from 15th October to 15th November. Experiment conducted at Ishurdi indicated that early sowing produced highest yield (2250kg/ha) with less sterility in seeds (Table 3). 100-seed weight was also high in early sowing. A population of 70 to 80 thousand plants per hectares at a row spacing of 50cm and plant to plant 25cm was recommended.

Table 3. Effect of time of sowing of sunflower (Variety Kironi).

Treatments (Date of sowing)	Maturity (days)	Plant ht. (cm)	Sterility (%)	100-Seed wt.(gm)	Yield (Kg/ha)
15th October	100	197	07.25	7.00	2,250
15th November	96	185	10.50	6.78	2,200
15th December	95	198	13.00	6.60	1,820
15th January	95	183	20.25	6.40	1,150
15th February	94	157	13.25	6.13	1,220
15th March	89	171	12.00	6.53	1,470

Source: Annual Report, Oilseed Research Project, BARI, 1985-86.

Fertilizer at the rate of 150:150:70:100 kg/ha of Urea, TSP, MP and Gypsum are recommended. Sunflower as an oilcrop has been introduced in the farmers' field in Bangladesh in 1985. The yield has been found satisfactory. It is now grown in the districts of Comilla Rajshahi, Pabna, Gazipur, Natore, Barisal, Dinajpur etc. with cost benefit ratio of 1: 1.41. Training of extension personnel, farmers, field day, farmers' rally etc. were conducted by BARI regarding sunflower cultivation. Sunflower and groundnut inter-cropping was found beneficial for the farmers having moderate resources (Table 4).

Table 4. Total production and cost benefit analysis of various combination of sunflower intercrop.

Sl. No.	Treatments	Yield of sunflower (Kg/ha)	Yield of groundnut (Kg/ha)	Total yield (kg)	Cost of production/ ha. (Tk)	Gross income/ ha (Tk)	Total net-income ha (Tk)	Cost benefit ratio	LER
1.	Sunflower	2471	-	2471	10135	24710	14675	1: 2.44	1.00
2.	Groundnut	-	1557	1557	10995	23355	12340	1: 2.12	1.00
3.	1row G + 2row S	2235	1001	3236	19375	37365	17990	1: 1.98	1.53
4.	2row G + 2row S	2388	1140	3528	17834	40980	23146	1: 2.30	1.70
5.	3row G + 2row S	2202	945	3147	21685	36195	14510	1: 1.67	1.50

Price: Sunflower Tk. 10/kg and Groundnut Tk. 15/kg.

Source : Annual Report, Oilseed Research Centre, BARI, 1990.

Post harvest:

Sunflower takes 90-110 days for maturity. At the time of harvesting, the plants turn yellowish and flower head bends down. Seeds become black and plump. Storage of sunflower seeds for long period has also been developed. For this purpose after proper drying the seeds are kept in air tight polythene bags and then stored in kerosine tin, drum or big earthen container fitted with lid. Sunflower seeds contain 40-44% oil. It can be easily crushed in local 'ghani' and expeller. After crushing 25% and 30% oil is extracted from local ghani and expeller respectively. Oil is used as a cooking oil and oil cake as cattle feed. The seeds can be roasted and used like those of groundnut.

Some of the major constraints, which hamper the production of sunflower in Bangladesh are noted below:

1. Acute shortage of good seed.
2. Bird damage.
3. Sterility.
4. Damage of kharif crop by stormy wind.
5. Lack of incentive to popularize as quality oil crop.
6. Lack of dwarf variety.
7. Lack of self compatible variety.

Useful information generated:

The following informations are generated for future recommendation.

1. To overcome the lodging problems, development of dwarf types of sunflower are going on.

2. By growing the crop in a large area the bird damage which was devastating in the initial stages has been reduced considerably.
3. Seed filling has been improved through increase in population of honey bees by placing beehives in the field.
4. Collection of self compatible varieties are going on for overcome the sterility problem in the sunflower seeds.
5. Selection of dropping head type is also going on for the protection of bird damage.
6. Quality of seed has been improved by adopting special breeders seed production programme every year.

Recommendations, suggestions and steps being taken:

1. Adequate demonstration both for production and consumption essential.
2. Training and demonstration should be strengthened.
3. There should be cooperation and participation in germplasm collection, evaluation and conservation by local and international bodies.
4. Appropriate production technologies for small farmers should be developed.
5. Breeding programme for the development of high yielding sunflower cultivars having early to medium maturity, short height and other related agronomic characters should be developed.
6. Infrastructure and inter-linkage among researchers, producers, processors and marketing agencies should be improved to facilitated better communication for exchange of ideas, findings and implementations.

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