

**Short Communication**

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**AGRO-CHEMICAL DATA ON *CUCURBITA PEPO***

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In order to identify and maximise the available vegetable oil resources a number of approaches have been adopted in recent years. Introduction of new or non-traditional sources, evaluating the existing non-conventional sources, modifying the processing techniques for better recovery of oil and exploitation of the forest and agriculture by products and wastes are some of the examples [1]. All these steps are aimed at reducing the import gap of vegetable oils (0.8 million tons/yr) which is steadily increasing because of population increase (about 3.0%/yr) and almost static local production (0.2 million tons/yr). Efforts have,

given in Table 1. The oil yield (40%) from the pumpkin seeds compares well with rape seed (40%-45%), ground nuts (45-48%) and sunflower (35-45%). The characteristics of the oil and its fatty acid composition (Table 2) is similar to other *Cucurbitaceae* seed oils and suggests that it can safely be used as an edible oil [4]. Utilisation of such oils for industrial and edible purposes elsewhere in fact has already been reported. [3].

Because of the shortage of edible oils in Pakistan even such meagre sources be considered for effective utilisation. Efforts should also be directed to develop a variety of the

Table 1. Eco. meteorological data for the cultivation of *Cucurbita pepo*

S. No.	Cultivation State	Date	Immature		Humidity		Irrigation
			Min	Max	Min.	Max.	
1.	Sowing	19.03.1987	13.3	26.5	25.5	78	Fort-nightly
2.	Germination	25.03.1987	16.1	28.3	40.0	78	"
3.	Flowering	03.06.1987	28.0	41.4	27.0	42	After 20 days
4.	Starting of fruiting	24.06.1987	23.6	39.0	23.0	56	Monthly
5.	Completion of fruiting	05.08.1987	29.5	40.0	44.0	67	"
6.	Ripening of fruiting	22.08.1987	29.1	32.2	74.0	69	"

also been made to introduce oil bearing materials with a view to study their adaptation to Pakistani environment [2].

In continuation of this general interest data on agro-chemical aspects of *Cucurbita pepo* (N.O. *Cucurbitaceae*) commonly called bitter bottle gourd or pumpkin seed oil has been obtained. Since the plant is capable of growing throughout Pakistan it was desired to study it as an oil seed crop particularly when it is already cultivated for using the fruit as a seasonal vegetable or for making sweets from its pulp. The seeds are usually a waste product of the ripe fruits. Cultivation trials were carried out at PCSIR Laboratories, Lahore and the ecometerological data are

Table 2. Physico-chemical characteristics and fatty acid composition of Pumpkin seed oil.

1.	Oil percentage	= 40
2.	Colour of the oil	= Clear light yellow
3.	Refractive index	= 1.4730
4.	Saponification value	= 193.5
5.	Iodine value	= 129.0
6.	Fatty acids	= %
	C <sub>14:0</sub>	= Traces
	C <sub>16:0</sub>	= 16.15
	C <sub>18:0</sub>	= 8.3
	C <sub>18:1</sub>	= 31.10
	C <sub>18:2</sub>	= 44.45

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crop that has less pulp and more seeds in the fruit. This will generate considerable socio-economic dividends as the crop is capable of thriving even in the arid areas. After the extraction of the oil the meal can be used as a constituent of animal feed as it is also rich in proteins (about 3%).

*Key words:* Agriculture, *Cucurbitaceae*, Seed oil.

## REFERENCES

1. A. Sattar, S. Mahmood and S.A. Khan, Pakistan J. Sci. Ind. Res., **30**, 631 (1987).
2. M. Rafiq, M. Hanif, F.M. Chaudhry and S.A. Khan, Pakistan J. Sci. Ind. Res., **30**, 367 (1987).
3. M.S. Malik, M. Rafiq, A. Sattar and S.A. Khan, Pakistan J. Sci. Ind. Res., **30**, 369 (1987).
4. D. Muhammad, A.W. Omer, L. Stephen Force and S. A. Khan, Pakistan J. Sci. Ind. Res., **29**, 138 (1986).
5. S. Hamid, Salma, A.W. Sabir, and S.A. Khan, Pakistan J. Sci. Ind. Res., **31**, 212 (1988).
6. E.S. Lazos, J. Fd. Sci., **51**, 1382 (1986).
7. S.A. Khan, D. Mohammad, M.J.I. Khan and M.K. Bhatti, Pakistan J. Sci. Ind. Res., **28**, 27 (1985).