

## QUERCUS SEEDS AS A SOURCE OF POULTRY FEEDING STUFF

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**Summary.** Seeds of *Quercus ilex*, *Quercus dilatata* and *Quercus glauca* were analysed for Carbohydrate, protein, Cellulose, oil moisture and ash. The results obtained were compared with those of seeds of an exotic species of *Quercus incana*. The results compared well and justified the exploitation of the indigenous *Quercus* species as a poultry and live-stock feed on a cottage Industry level. It was also concluded that because of their high carbohydrate content they can be used for the preparation of alcohol by fermentation.

**Introduction.** Carbohydrate, protein, cellulose, oil and tannins can be obtained from the seeds of *Quercus ilex*, *Quercus incana*, *Quercus dilatata*, *Quercus glauca*, and other *Quercus* species. *Quercus ilex* has a wide distribution, occurring in different soils and climate and showing considerable variation in different localities. It extends west-wards to France, Spain and Portugal, often occurring in arid situations and on dry hill-sides. It is widely distributed in the Mediterranean countries including Morocco, Algeria and Tunis. It is often cultivated in England, where it reaches large dimensions.

In Indian region it is found in the inner arid tracts of the Himalya from Sutlej valley west-ward to Afghanistan. In Kashmir it is common on the hot southerly slopes in the lower part of the valley of the Kishan ganga and its two tributaries the Karna and the Jagran at an elevation of 3500-7000 ft. (6, 8).

In Pakistan *Quercus ilex* and other species grow as dry oak scrubs in Dir, Swat, Chitral districts of N.W.F.P. and in Azad Kashmir (4). In Chitral it is a common companion of the deodar, especially at the elevation of 6000-8500 ft. It is common in eastern slopes of the sulaman range at 5000-6000 ft. elevation. *Quercus incana* and *Quercus dilatata* grow in scrub oak forests of Hazara, Swat and Dir Forest division, at an elevation of 3000-6000 ft. *Quercus glauca* grows densely in Haripur forest division. The leaves and acorns of these *Quercus* species are used as winter fodder by live-stock and wildlife. The present study was taken up with a view to find the nutritive value of the seeds of the indigenous *Quercus* species and to compare these with the results of the exotic species in order to explore the possibility of their commercial utilization as a poultry feed and as a source for the preparation of alcohol by fermentation.

**Review of Literature:** Though the acorns contain an astringent matter, as feeding material they are neither abnoxious nor harmful to the cattle and poultry. Some chemists have already reported that dried acorns made a useful

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feeding material on account of their high starch content and digestive fibre (6). The fruits of halm and cork oak (*Quercus Ballota* and *Q. Suber*) and similar species are even used as human food in Spain and Morocco. *Quercus incana* has already been analysed and the results are: moisture, = 12.2%; oil, 16.0%, Ash, 1.47%, protein, 3.0%, cellulose, 1.4%, and carbohydrate, 59.5-61.8% (6). The food value of acorn is equivalent to a mixture of oats and Maiz. They may replace grain in poultry feed if their slight deficiency in protein is made up by combination with other suitable material of high protein contents. It is recorded that English acorns (*Q. suber*) containing 52% carbohydrate yield 27.5% alcohol by fermentation method.

**Material and Method.** The acorns of *Quercus ilex*, *Quercus dilatata* and *Quercus glauca* were collected from Dir, Swat, Chitral Hazara and Haripur forest divisions. They were dried in shades for one month, and were powdered in willey mills and sieved through 20 m.m. mesh. The oil was extracted with the help of soxhlet apparatus using petroleum ether as solvent and was purified by the method of Jamieson (3). Carbohydrate, protein, cellulose, ash and moisture contents were determined using A.O.A.C (1) and Jacobs (2) methods.

**Results and Discussion.** The yield of oil from the seeds of *Quercus ilex*, *Quercus glauca* and *Quercus dilatata*, was found to be 14.50%, 11.25%, 5.0% and 14.15%, respectively. The oil was light brown in colour as compared to that of exotic species (yield 16.0%) having almost the same colour and odour. The oil yield of *Quercus glauca* is comparatively low. The yield of carbohydrate, protein and cellulose from the seeds of indigenous species is quite satisfactory as compared with the seeds of an exotic species.

The nutritive components such as carbohydrates, protein, cellulose, oil and moisture as determined of the seeds of *Quercus ilex*, *Quercus dilatata* and *Quercus glauca* are compared below with the results of the seeds of an exotic species of *Quercus incana*.

Name of constituent	<i>Quercus ilex</i>	<i>Quercus dilatata</i>	<i>Quercus glauca</i>	<i>Quercus incana</i>
	(Lab. Work) %	(Lab. Work) %	(Lab. Work) %	(Reported) %
Moisture	11.25	1.40	12.60	12.20
Ash	2.09	1.90	1.26	1.40
Oil	14.50	14.15	5.00	16.00
Protein	4.04	4.15	3.30	3.00
Cellulose	1.85	1.50	1.90	1.40
Carbohydrate	60.05	62.20	59.50	61.00

It is obvious from the above table that results obtained from the seeds of *Quercus ilex*, *Quercus dilatata* and *Quercus glauca* compare well with those of an exotic species of *Quercus incana*.

### Conclusion

1. The seeds of the indigenous species, as their results indicate can be used for the manufacture of poultry feeding stuff on a cottage Industry level.
2. Because of their high carbohydrate content they can also be used for the preparation of alcohol by fermentation.

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