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## Results of the experimentation and cultivation of lucerne in Albania

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**Summary** - Albania is a Mediterranean country very rich of precious wild forage crops. An important part of which are the different species of alfalfa (*Medicago spp.*). There are 3 important ecotypes of alfalfa in Albania "Tomin", "P.K.L", and "Gjirokastra". Lucerne has been for a long time an important forage crop in Albania. The scientific research has been concentrated in genetic improvement of local ecotypes, technological aspects of cultivation and seed production. From realized studies it results that local ecotypes "Tomin" and "Gjirokastra" have provided about 8-12% production of biomass, dry matter and protein over other varieties. These ecotypes are cultivated in 95% of the surface with Lucerne. Results obtained from some foreign researchers from Albanian local ecotypes have been interesting. The French variety "Du-Puits" is the best for seed production. Albania has suitable climatic conditions for seed production.

**Key-words:** lucerne, time of mowing, seed production, ecotypes, dry matter

**Résumé** - La luzerne est la principale culture fourragère en Albanie où elle couvre plus de 100 000 ha. Les travaux de recherche ont été axés sur l'amélioration génétique des écotypes locaux, les techniques culturales et la production de graines. Les écotypes locaux "Tomin" et "PKL" ont fourni un rendement supplémentaire de 8 à 12% en phytomasse et en protéine. Ils sont utilisés sur 95% des surfaces en luzerne. La variété française Du-Puits présente la meilleure production de graines or l'Albanie présente un climat très favorable à cette production avec une absence de précipitations et un abondant ensoleillement de la floraison à la maturation.

**Mots-clés:** luzerne, production de graines, coupe, ecotypes, rendement

### Introduction

Albania, situated in southwest of Balkan peninsula in front of Southern Italy, has great climatic and soil possibilities for cultivation of forage crops in general and for lucerne in particular. Lucerne has been and remains one of the most important forage crops (Table 1).

Table 1. Lucerne in the structure of planting (ha).

Crops	Before market economy	After market economy
Wheat	220,000	110,000
Maize	70,000	60,000
Forage crops	60,000	60,000
Lucerne	50,000	100,000
Industrial crop,	60,000	10,000
Vegetable	40,000	60,000
Meadows	-	100,000

During the years of centralized economy, lucerne was cultivated up to 50,000 ha. With transition of Albania in market economy after 1990, cultivation of lucerne started to be extended at great rapidity.

As it can be seen (Table 1) the surface of bread grain (wheat and maize) and industrial crops has decreased in favor of increase of the lucerne and other forage crops (Figure 1).

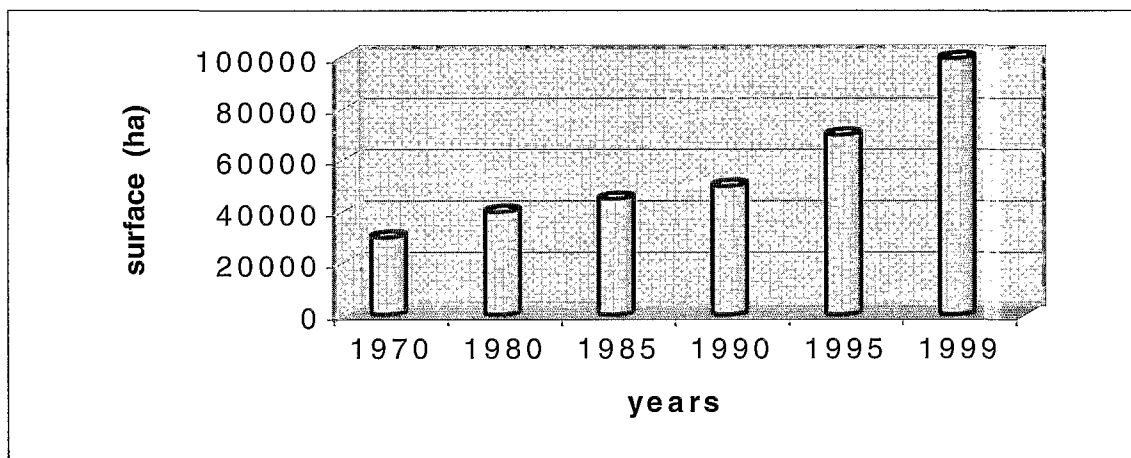


Figure 1. The trend of cultivation of lucerne in Albania.

### Materials and method

The experiments have been set up in different soil-climatic zones to study the trend of the lucerne in Albania. The studies aimed at the evaluation of the local ecotypes and introduced cultivars from European countries (Figure 2) for yield of biomass and seeds. The experiments have been led by researcher of the Forage Research Institute in Fushe-Kruje. About 100 introduced cultivars and local ecotypes have been studied. From this the 13 best local ecotypes and cultivars have been tested in different sites of Mediterranean lowland zone and Mediterranean continental one of Albania.

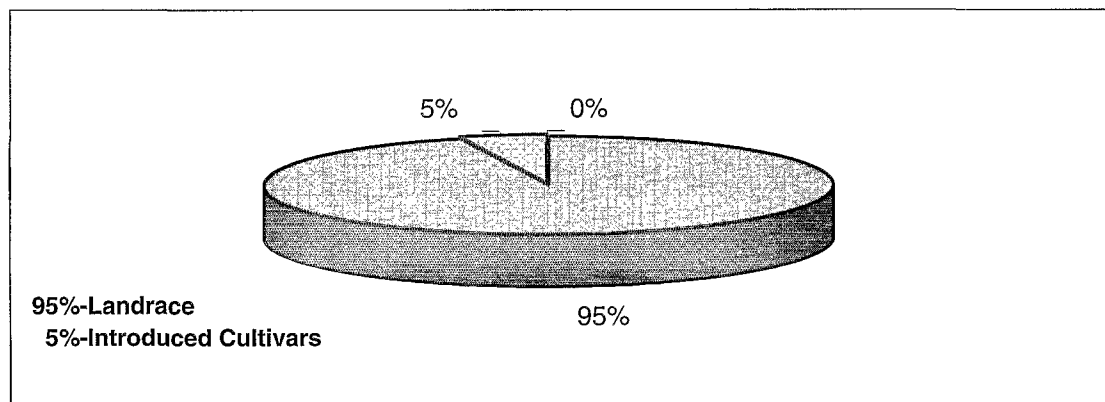


Figure 2. Cultivated *Medicago sativa* in Albania.

## Results and discussion

The production of biomass has been the main objective for lucerne. On the table are reported the results of the study of local ecotypes and introduced cultivars, after cutting, weighing and chemical analysis.

Table 2. The yield of ecotypes and cultivars of lucerne in lowland. Albania, Fushe-Kruje (3-Year average 1995-1998).

N.	Ecotypes, cultivars	Biomass	Yield t ha <sup>-1</sup>	
			Dry matter	Protein
1	Ecotype "Tomin"	87.0	17.4	3.4
2	-/-/-/ "Gjirokastra"	80.2	16.0	3.2
3	-/-/-/ "P.K.L"	92.0	18.0	3.6
4	Cultivar Wiserat	78.5	15.7	3.1
5	-/-/-/ Prima	79.0	15.8	3.2
6	-/-/-/ Orchesiene	78.0	15.6	3.1
7	-/-/-/ Europea	81.0	16.2	3.0
8	-/-/-/ Florimant	82.0	16.4	3.3
9	-/-/-/ Du-puits	78.0	15.8	3.2
10	-/-/-/ Hunt River	78.5	15.7	3.2
11	-/-/-/ Borsia Orange	84.0	16.8	3.3
12	-/-/-/ Nr. 581	77.0	15.5	3.1
13	-/-/-/ Nr.5929	78.0	15.6	3.1

From the data of the experiment of lucerne trend, it results that in general the local ecotypes provide higher yield than introduced cultivars from other countries. This is explained with their good adaptability with soil and climatic conditions of Albania. This conclusion can not be final, but until now the experimental data and the experience of the cultivation of lucerne are in favor of local ecotypes. With great interest is "P.K.L" ecotype, selected from germoplasm of "Tomin" ecotype.

The studies for trend of lucerne in Albania have been carried out even in the mountain and hilly zones. In fact, the introduction of lucerne can play an important role anywhere environmental condition (soil and climatic) are favorable.

From achieved results for trend of ecotypes and cultivars of lucerne in altitude 800 m a.s.l. it is noticed the same phenomenon (Table 3). The local ecotypes have priority to introduced cultivars. After a long-term scientific work we conclude that lucerne find suitable conditions for its cultivation all over Albania until 800-1000 m. a.s.l. (Shundi, 1980). This conclusion has served us as a scientific platform for enlargement of surface from 50,000 ha in 1990 before establishment of market economy to 100,000 ha in 1999.

Table 3. The yield of ecotypes and cultivars of lucerne 800 m a.s.l Korca, Albania (1991-1994).

N.	Ecotypes, cultivars	Biomass	Yield t ha <sup>-1</sup>	
			Dry matter	Protein
1	Ecotype "Tomin"	82.0	16.4	3.2
2	-/-/-/ "Gjirokastra"	75.2	15.1	3.0
3	-/-/-/ "P.K.L"	88.0	17.6	3.5
4	Cultivar Wiserat	73.0	14.6	2.9
5	-/-/-/ Prima	74.9	14.8	2.9
6	-/-/-/ Orchesiene	73.0	14.6	2.9
7	-/-/-/ Europea	78.0	15.6	3.1
8	-/-/-/ Florimant	77.5	15.5	3.1
9	-/-/-/ Du-puits	73.5	14.7	2.9
10	-/-/-/ Hunt River	74.0	14.8	2.9

**Seed production** is the main factor for enlargement of the cultivation of lucerne. To this purpose experiments have been set up on influence of the time and height of mowing in seed production (Figure 3).

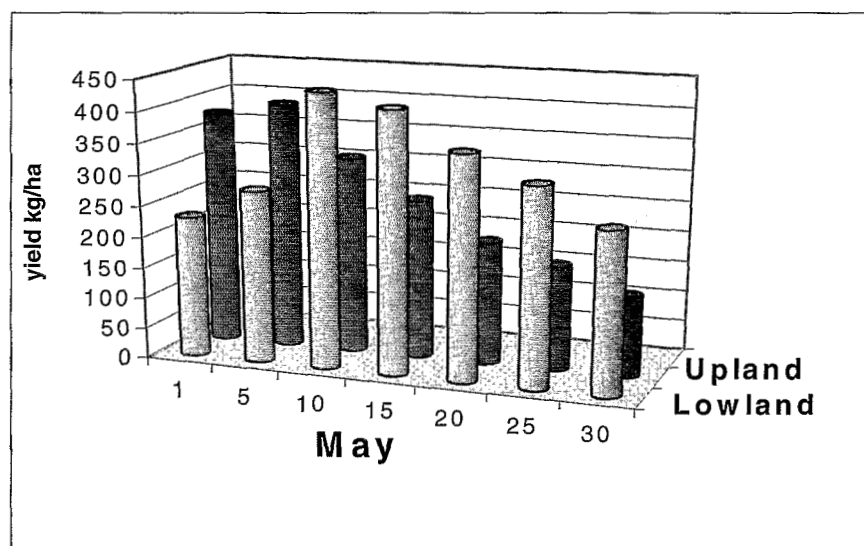


Figure 3 Time of mowing and seed production of lucerne.

As it can be seen clearly, the time of mowing has a powerful influence in seed yield. In lowland zone the best time of mowing is 10-15 May. For upland zone, seed plots must be cut about 10 days earlier, from 1 to 5 May.

From the results this experiment, it comes out the conclusion that the mowing height 8-12 cm is the best variant for the production of seed. In this height predominate the seedy tendershoot (Schmid and Klos, 1984) more than the unseedy ones.

The mowing height of 4 cm are not recommended because it develops the buds of the root spring that are not seed productive (figure 4).

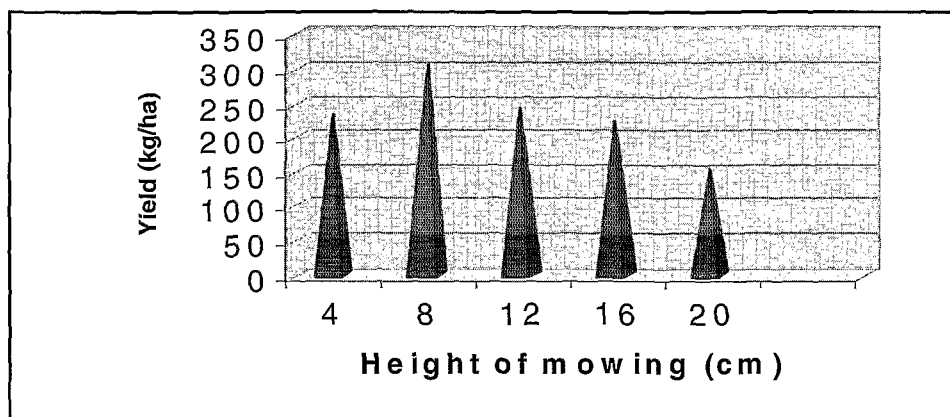


Figure 4. Height of mowing and yield ( $\text{kg ha}^{-1}$ ) of lucerne seed.

According to the data of experiments and gained experience, Albania offers good climatic conditions for seed production of lucerne. This is explained with the fact of the abundant sunshine and lack of precipitation during the flowering and ripening phases. About 80% of precipitation are concentrated from October to April. This climatic factor enables seed production and realization of good yield. The seed yield in Albania ranges from 200 to 300 kg per ha. In special plots have been obtained up to 1000 kg per ha.

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