ANGLISTICUM
International Journal of Literature, Linguistics & Interdisciplinary Studies

Research of Several Wheat Varieties *(Tritikum Aestivum L.)* From Hungry, Croatia and Slovenia in Agro-Ecological Conditions of Kosova

Bakir Kelmendi[1], Violeta Berlajolli[2], Nexhdet Shala[3], VloraGashi[4], Defrime Berisha[4], Ismajl Cacaj[4]

[1] Institute of Agriculture Kosova – Peja, Rr. Adem Jashari, 30000 Peja, Kosova.

[2] Public University "Haxhi Zeka" – Eliot Engel, 30000 Pejë, Kosova.

[3]Technologist in Producing Brewery, Sh. A."Birra Peja" Rr. N. Basha 160, 30000 Peja, Kosova.

[4]Institute of Agriculture Kosova – Peja, Rr. Adem Jashari, 30000 Peja, Kosova.

bakir222@yahoo.com[1] violeta523@hotmail.com[2] nshala1@hotmail.com[3] defrimeb@yahoo.com[4]

Received: 30 January 2013; **Revised:** 10 February 2013; **Accepted:** 18 February 2013

Abstract: The object of study is investigation of suitability of certain cultivars of wheat (Triticum aestivum L) of Hungary, Croatia and Slovenia. In research have been only 5 cultivars of wheat: Kolo, Marshall, Illyria, Super Zhitarka and Lara meanwhile as comparative cultivars was Europe 90. Investigations were conducted in two agro-climatic regions of Kosova (in Arbnesh the research farm of the Agricultural Institute of Kosova, Peja - Dukagjini Plain, and in Pestova - Kosova Plain, Research "Pestova" private property company, have been tested yield (kg / ha), weight (1000 seeds in gram), hectolitar weight (kg), protein content (%), humidity (%), gluten and sedimentation. Agro-climatic and pedological data in Kosova, compared with obtained yields in culture wheat shows no use of genetic potential of cultivars that are cultivated in. For this reason should be applied a contemporary agrotechnics to be used genetical potential, and reached higher yields. The obtained results indicat that have been significant statistical differences of diverse levels for investigated features of all cultivars included in plots compared with the standard (Europe 90) and between localities.

Keywords: small-scale trials, winter wheat, yield, 1000 seeds weight in gram, hectoliter weight kg, yield kg/ha.

Introduction

Wheat (Triticum aestivum L.) arable crop year from family Poacea (Gramine) Triticum sex belonging heksaploid group (2n = 42 chromosomes) [9]. Wheat in Kosova, is strategic culture which annually planted in an area of 65 000 -72 000 ha by failing to meet the needs of this culture. Medium productivity realized in recent years is about circa 3.5 t / ha. Kosova's agro-climatic and pedological data, compared with the yields obtained in the culture of wheat show no use of cultivated cultivars genetic potential [1], [12]. For this reason should be applied to a modern agro to exploit the genetic potential, and obtain higher yields [4] [5]. Kosova has very good agro-ecological conditions for the cultivation of this culture.

Object and purpose of the research

The object of study is the investigation of suitability of some wheat cultivars originating from different countries [2] [3]: Hungary, Croatia and Slovenia. In research has have been 5 wheat cultivars meanwhile as comparative standard cultivar is taken Evropa 90. Cultivar in modern agriculture is not a natural occurrence, but a group of plants, which is created or selected by man to serve a particular purpose [7] [8]. International term cultivar shows a pile of cultivated plants which is clearly distinguished from a character (morphological, physiological, or other chemical Cytological) which when reproduced (sexually or aseksualisht), retains its

distinctive characteristics.

Materials and Methods

Plots were organized lines and cultivated land area of real property Agricultural Institute of Kosova in location Arbnesh, 6 km from Peja. Soil type, soil brown lesivuar above sediments kuqremta, and the altitude are 488 meters and the Kosova Plain (Pestova and Miradi) where type is smonic land, and the height is 560 meters. Exsperiments has been set according method of randomized blocks in three repetitions [6] [11]. Surface of each experiments plot was 10 m^2 (10 m length x 1 m width). Research have been conduct in two agroclimatical region of Kosova (in Arbnesh in research farm of Agrocultural Institute of Kosova, Pejë-Dukagjini Plain, too in Pestovë-Kosova Plain, private property of company "Pestova"). Experimental plots were established by the method of Fisher randomizura blocks, three repeat [10] [13]. Planting plots have done with experimental plant machine type Hege 80.

Results

Weight of 1000 seeds (gr), hectoliter weight (kg), productivity (kg/ha), content of humudity (%), protein content (%), Gluten, Sedimentation. Processing of data was done in tables and graphs.

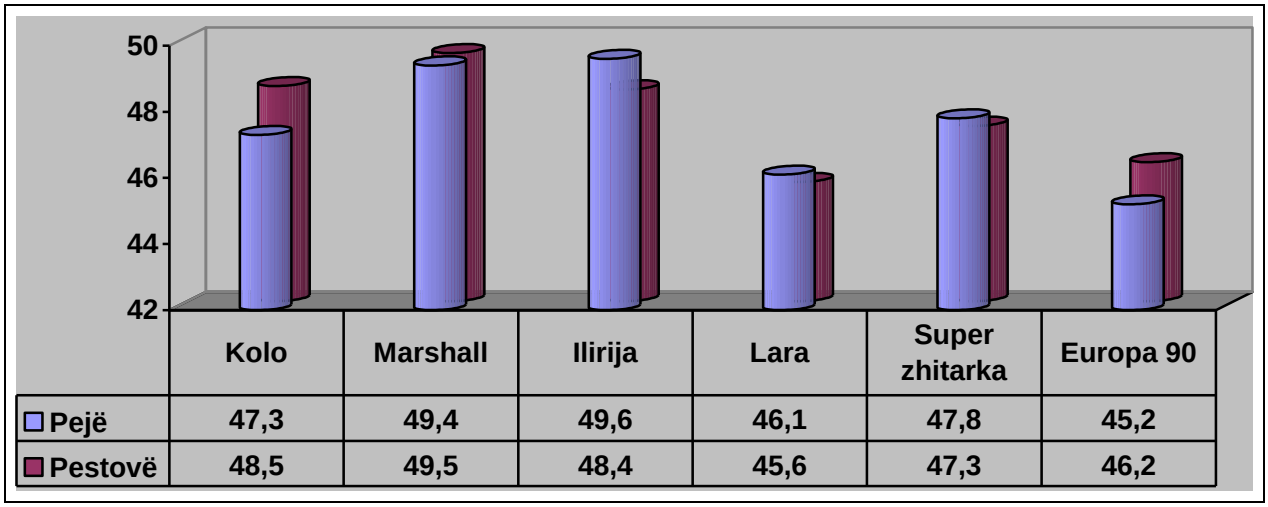
Table1. Wheat cultivars searched parameters.

Cultivars	*Locality*	*Weight of 1000 seeds (gr)*	*Hectoliter weight (kg)*	*Productivity(kg/ha)*
Kolo	Pejë	47.30	81.70	7200
	Pestovë	48.50	81.30	7300
Marshall	Pejë	49.40	81.30	7400
	Pestovë	49.50	80.70	7550
Ilirija	Pejë	49.60	81.30	7350
	Pestovë	48.40	81.70	7450
Lara	Pejë	46.10	80.30	6800
	Pestovë	45.60	81.30	6950
Super zhitarka	Pejë	47.80	80.70	6850
	Pestovë	47.30	80.70	7050
Europa 90	Pejë	45.20	78.90	6850
	Pestovë	46.20	79.30	6950

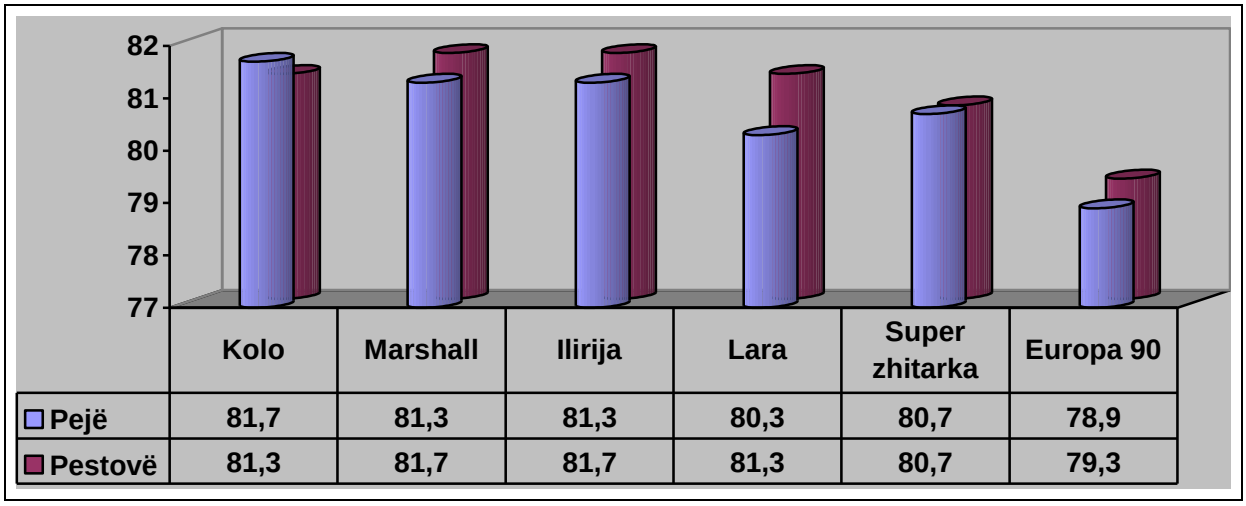
From upper table is notice that have been emphasize differences between test cultivars in relation to standard cultivars (Evropa 90) regarding weight of 1000 seeds. In gjeneral higher weight of 1000 seeds (absolute weight) was ascertain to cultivar Ilirija (49.60 gr) meanwhile low weight of 1000 seeds (absolute weight) was ascertain to cultivar Lara (45.60 gr). Beside standard (Europa 90 with weight 45.20 gr) Regarding hectoliter weight (kg), have been ascertain differences between searched cultivars and standard cultivars (Table.1) and in this course higher hectoliter weight, was the cultivar Kolo, Ilirija 81.70 kg, meanwhile low hectoliter weight the Lara 80.30 kg. Beside standard cultivar 78.90 kg. Regarding weight productivity (kg),

are ascertain differences between searched cultivars and among standard cultivars (Table.2) and in this direction higher productivity had been cultivar Marshall 7550 kg/ha, meanwhile low cultivar Lara 6800 kg/ha. Beside standard cultivar 6850 kg / ha.

Graph 1. Weight of 1000 seeds of explored varieties



Graph 2. Hectoliter weight of explores varieties



Graph 3. Productivity of explored varieties

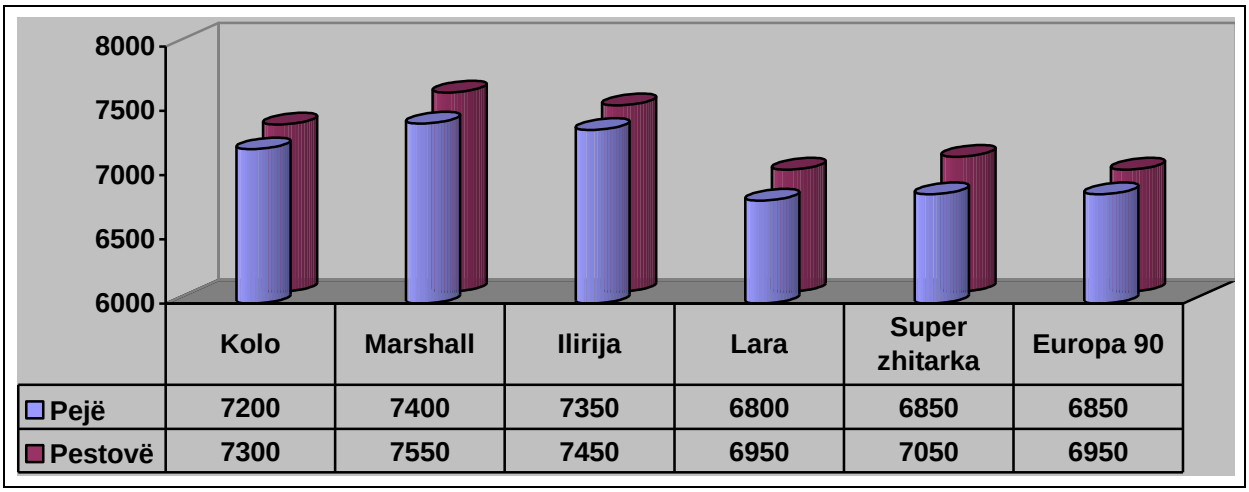


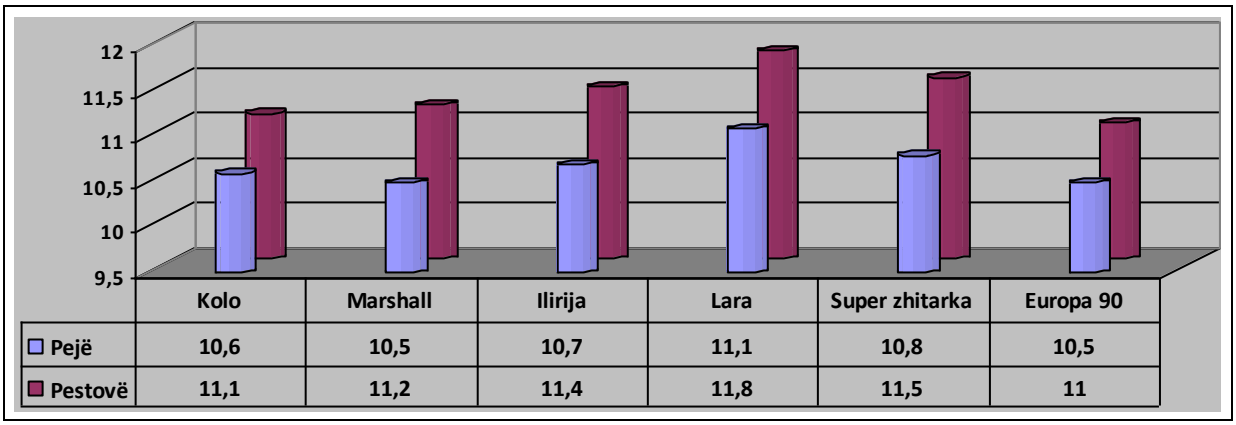
Table. 2. Content of protein, gluten and productivity to wheat cultivars

Cultivars	*Locality*	*Humudity (%)*	*Protein (%)*	*Gluten*	*Sedimenation*
Kolo	Pejë	10.6	13.7	35.2	55.4
	Pestovë	11.1	13.9	34.7	56.5
Marshall	Pejë	10.5	13.2	33.4	56.0
	Pestovë	11.2	13.6	32.8	56.8
Ilirija	Pejë	10.7	13.8	34.0	55.0
	Pestovë	11.4	13.5	34.5	56.9
Lara	Pejë	11.1	13.1	31.0	48.7
	Pestovë	11.8	12.9	31.5	47.5
Super zhitarka	Pejë	10.8	13.0	32.4	54.0
	Pestovë	11.5	13.2	33.7	56.0
Europa 90	Pejë	10.5	13.2	30.2	51.7
	Pestovë	11.0	13.4	31.0	52.2

From table.2 column1, is seen emphasized differences between tested searched wheat cultivars in relation to standard cultivar (Evropa 90) and regarding humudity in %. In general low weight (% of humudity) was ascertain Marshall 10.8% (Variety from Hungary) meanwhile higher variety Lara with 11.8 % (Variety from Slovenia) beside standard Evropa 90 (11.0 %). From tab.no 2 column 2 regarding content of protein were ascertain low differences between searched cultivars and standard cultivar and in this course cultivar Kolo 13.9 % (Variety from Hungary) while Lara 12.9% (Variety from Slovenia) beside standard cultivar Evropa 90 (13.2 %). From table 2 column 3 regarding gluten were ascertain small differences between searched cultivars and among standard cultivar and in this course higher weight Kolo, 35.2 (Variety from Hungary), while low weight cultivar Lara 31.0 (Variety from Slovenia). Beside standard cultivar Evropa 90 (30.2). From table 2 column 4 regarding sedimentation were ascertain small differences between searched cultivars and among

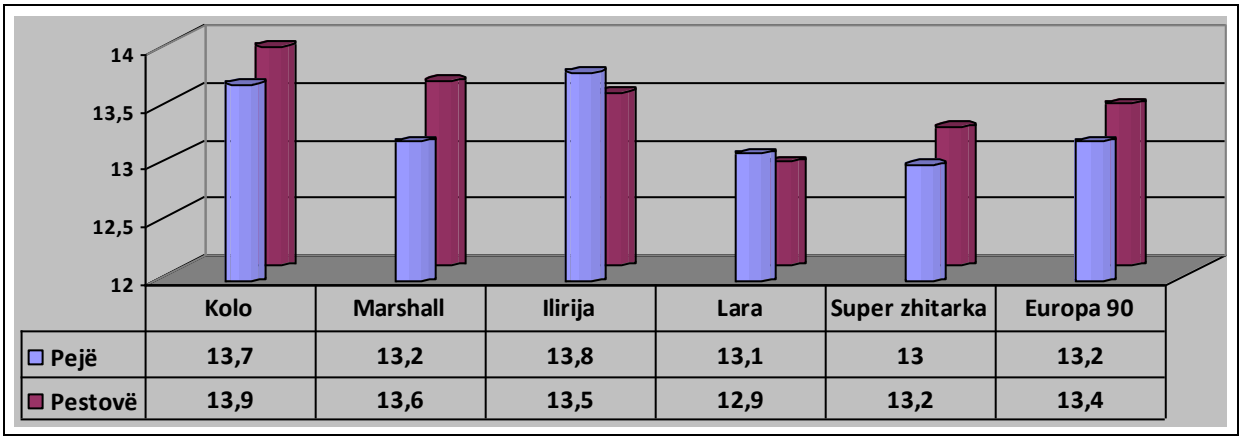
standard cultivar and in this course higher was Ilirija 56.9 (Variety from Croatia), meanwhile low the cultivar Lara 47.5 (Variety from Slovenia) beside standard cultivar Evropa 90 (51.7).

Graph 4. Presentation of parameters of humudity, searched varieties.



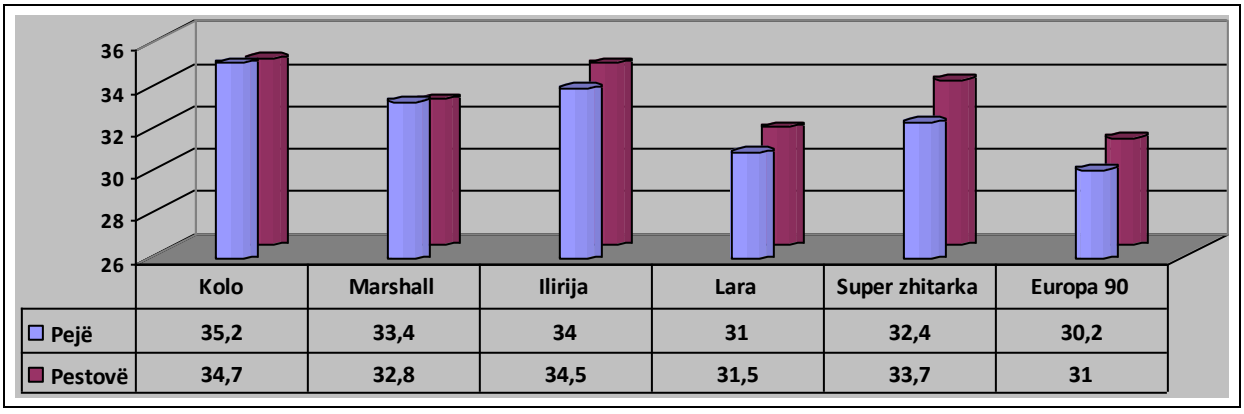
	Kolo	Marshall	Ilirija	Lara	Super zhitarka	Europa 90
Pejë	10,6	10,5	10,7	11,1	10,8	10,5
Pestovë	11,1	11,2	11,4	11,8	11,5	11

Graph 5. Presentation of parameters of protein to searched varieties



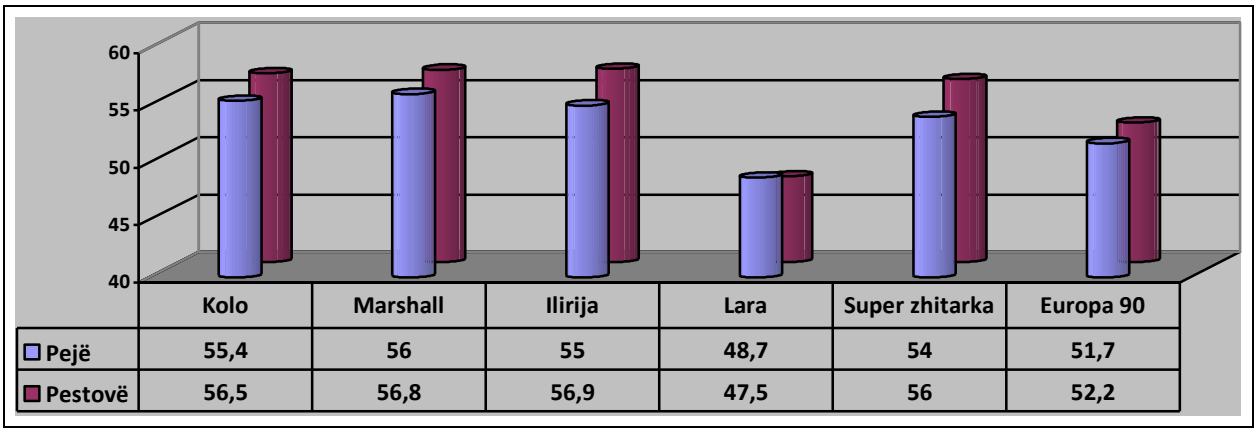
	Kolo	Marshall	Ilirija	Lara	Super zhitarka	Europa 90
Pejë	13,7	13,2	13,8	13,1	13	13,2
Pestovë	13,9	13,6	13,5	12,9	13,2	13,4

Graph 6. Presenation of parameters of gluten to searched varieties



	Kolo	Marshall	Ilirija	Lara	Super zhitarka	Europa 90
Pejë	35,2	33,4	34	31	32,4	30,2
Pestovë	34,7	32,8	34,5	31,5	33,7	31

Graph 7. Presentation of parameters of sedimentation to searched varieties



	Kolo	Marshall	Ilirija	Lara	Super zhitarka	Europa 90
Pejë	55,4	56	55	48,7	54	51,7
Pestovë	56,5	56,8	56,9	47,5	56	52,2

Conclusion

Based on the research can be concluded: Regarding weight of 1000 seeds. In general higher weight of 1000 seeds (absolute weight) was asceratin to cultivar Ilirija (Variety from Croatia) (46.60 gr) meanwhile low weight of 1000 seeds (absolute weight) was asceratin to cultivar Lara (Variety from Slovenia) (45.60). Beside standard (Europa 90, 45.20 gr). Regarding hectoliter weight (kg), were ascertain small differences between searched cultivar and among standard cultivar and in this direction higher hectoliter weight was to cultivar Kolo and Ilirija 80.30 kg (Variety from Hungary and Croatia) while hectoliter weight to cultivar Lara (Variety from Slovenia) 80.30 kg. Beside standard cultivar Evropa 90.78.90 kg. Regarding weight productivity (kg), were ascertain differences between searched cultivars and among standard cultivars (Table.1) and in this direction higher productivity was cultivar Marshall 7550 kg/ha, while low productivity cultivar Lara 6800 kg/ha. Beside standard cultivar 6850 kg/ha. Regarding humidity in % (Table.2) in general low weight (% of humudity) was ascertain the Marshall 10.8% (Variety from Hungary) while higher the variety Lara with 11.8 % (Variety from Slovenia) beside standard Evropa 90 (11.0 %). Regarding content of protein were asceratin small differences between searched cultivars and among standard cultivar and in this direction Kolo 13.9 % (Variety from Hungary) while Lara 12.9 % (Variety from Slovenija) beside standard cultivar Evropa 90 (13.2 %). Regarding gluten were ascertain small differences between searched cultivars and among standard cultivar and in this direction higher weight Kolo, 35.2 (Variety from Hungary), while low weight cultivar Lara 31.0 (Variety from Slovenia). Beside standard cultivar Evropa 90 (30.2). Regarding sedimentation were ascertain small differences between searched cultivars and among standard cultivar and in this direction higher Ilirija 56.9 (Variety from Croatia), menwhile low the cultivar Lara 47.5 (Variety from Slovenia) beside standard cultivar Evropa 90 (51.7). Kosova's agro-climatic and pedological data, compared with obtained productivity in wheat culture shovs for no use of genetic potential of cultivars cultivated in. For this reason should be applied contemporary agrotechnics to be use genetic potential and to got higher productivity. Kosova has very good agro-ecologycal condition for cereals cultivation.

References

[1] Abbate, P.E., Andrade, F.H., Culot, J.F., 1995. The effects of
Radiation and nitrogen on number of grains in wheat. J. Agric. Sci. 124, 351–360.

[2] Bassett L.M., Allan R.E., Rubenthaler G.L (1989). Genotypex Environment interactions on soft white winter wheat quality. *Agronomy J*. 81: 955-960.

[3] Borojević S. 1972. Agriculture Research Institute Serbia, Genetski pristup izgradnje modela visokoprinosnih sorti pšenice. Genetika, 4.1. pp. 105-117.

[4] Calvin˜o, P.A., Studdert, G.A., Abbate, P.E., Andrade, F.H., Redolatti, M., 2002. Use of non-selective herbicides for wheat physiological and harvest maturity acceleration. Field Crops
Res. 77, 191–199

[4] Ghandi, S. M., K. sanghi, k. s. hathawat & m. p. bhatnagar. 1964. gentotypic variability and correlation on phenotypic traits related to grain yield in Indian wheats. The Indian J. of Gen. Plant Breed, pp. 24, 1-8. ISSN: 0975-6906.

[5] Hochman, Z.V.I. 1982. Effect of water stress with phasic development on yield of wheat grown in a semi-arid environment. *Field Crops Res.*, 5: 55-67.

[6] Horva, D.t." Uticaj Visokomolekularnih Pojedinica Gluteina (HMW) na Pekarsku Kakvoču OS Kultivara Pšenice" Osjek 2001, pp. 30 (3-4), 415-422.

[7] International Association for Cereal Chemistry. ICC-Standard No106/2 Working Method for the Determination of Wet Gluten in Wheat Flour, Approved 1960, Revised 1984, pp.128-131.

[8] Jurković, Z., Sudar, R., Drezner, G. (1998.): Osjek, Croatian HMW subjedinice glutenina OS kultivara pšenice i njihova veza s pekarskom kakvoćom. Poljoprivreda. 4 (1), 59-66.

[9] Method for the Determination of the Moisture Content of Cereals and Cereals Products, Approved 1960, Revised 1976.

[10] Payne P. I. (1987), Cambridge CB2 "LQ, United Kingdom, Genetics of wheat storage proteins and the effect of allelic Variation on bread baking quality. *Ann Rev Plant Physiology* 38: 141-153.

[11] Proceedings 46th Croatian and 6th International Symposium on Agriculture. Opatija, Croatia, pp. 613-616

[12] Salillari A. S. Hoxha. 2002, "Gjenetika" Tiranë, pp. 125-167.

[13] Thomson J. R. 1979. Amsterdam, "An introduction to Seed Technology", pp 1- 245.