

MONTHS	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	TOT.
POREČ (WESTERN AREA)													
T (°C)	4,5	4,9	7,6	12,1	16,7	20,3	23,2	22,0	19,4	14,3	9,7	6,4	/
P (mm)	56	62	54	50	71	69	66	64	84	114	101	78	869
PAZIN (CENTRAL AREA)													
T (°C)	2,5	3,3	6,2	10,4	14,8	18,0	21,1	19,3	16,8	11,8	7,3	4,1	/
P (mm)	78	80	75	68	84	85	74	70	96	128	136	98	1072

T - temperature P-precipitation

The main goal of this research is to determine the influence of soil (terra rossa or flysch) and of altitude (low and high localities) on the quality of three autochthonous Istrian cultivars, "Istrian White Malvasia", "Porec Rosy Muscat" and "Momjan White Muscat". With this aim localities in Porec, Motovun and Momjan have been chosen.

From obtained research results on Istrian White Malvasia can be established that soil type and altitude have a significative influence on quality and market of Istrian White Malvasia (Staver, 1999).

2. MATERIAL AND METHODOLOGY

Researches on Istrian White Malvasia have been performed in 1996, 1997 and 1998 on grapes and in 1998 on vine. During the harvesting 1999 researches on Istrian White Malvasia continued and were extended to two new cultivars, Momjan Muscat and Porec Rosy Muscat.

Homogeneous vineyards in full production and good cultivation condition, grown as "Istrian-Guyot" cultivation form (plantation distance: 280 x 100 cm), were chosen for this research.

For every cultivar five grouped parts, in two vineyards on terra rossa and flysch, and on low and higher altitude, were chosen. On terra rossa, vineyards of Malvasia on localities respectively on 80 (MTR 80) and 220 (MTR 220) of altitude, for Momjan Muscat on 50 (MMTR 50) and 200 (MMTR 50), and for Porec Rosy Muscat on 50 (MRTR 50) and 250 (MRTR 250) were selected. On flysch, vineyards of Malvasia on localities respectively on 50 (MF 50) and 185 (MF 220) of altitude, for Momjan Muscat on 220 (MMF 220) and 350 (MMF) 350 were selected. Vine screws timely randomised, from the central part of grouped parts were selected.

A sample of approx. 100 kg of Istrian Malvasia grapes was taken during harvesting on four localities, Momjan Muscat on locality MMTR 50 and Porec Rosy Muscat on locality MRTR 50. A sample was used for chemical analysis and vinification (after technical intervention on sugars) in Institute of Agriculture and Tourism Porec vine cellar. Vinification of other grape samples was carried on in producer's vine cellars.

Chemical analysis, organoleptic estimation and economic quality (national currency) were performed on vine. The last one was calculated on basis of organoleptic estimation, intrinsic value of product and sintony with local market (Cargnello G., 1994). Local market acceptability was estimated distinguished from those of national market.

3. RESULTS AND DISCUSSION

Data for Malvasia cultivar is presented in tables 2 and 4. Data for Malvasia from table 2 show that on flysch and terra rossa in low localities almost the same quantities of sugars were accumulated, while

on terra rossa in high locality more sugars, for approx. 4 °Kl was accumulated. Values of acids and pH, as well as of sugars vary on high terra rossa locality, while in other localities changes were slight.

Table 2. Chemical analysis of Malvasia must, harvest 1999.

LOCALITY	DATE	SUGARS ° Kl	TOT. ACIDS g/l	pH	t/ha
MTR 80	15.09	15,0	7,2	3,2	11,5
MTR 220	15.09	19,0	5,9	3,3	11,0
MF 50	15.09	15,5	7,4	3,3	11,0
MF 185	15.09	15,5	6,7	3,3	10,5

Chemical Malvasia vine analysis (table 3) show that total acids on low terra rossa location and high flysch are different, approx. 1.0 g/l higher. In extracts was not present any difference between terra rossa and flysch localities, while low and high localities on terra rossa were different. High localities had more extracts for approx. 1 g/l. Ashes values were rather uniform (slightly higher values on high flysch localities).

Table 3. Chemical analysis of Malvasia vine in 1999.

LOCALITY	Alcohol Vol. %	Total acids g/l	Volatile acids g/l	Extracts g/l	Sugars g/l	Extracts without sug. g/l	Ashes g/l	pH
MTR 80	12,5	7,03	0,47	18,7	1,1	18,6	1,98	3,2
MTR 220	14,5	5,42	0,45	20,3	1,6	19,7	1,88	3,3
MF 50	12,8	7,5	0,60	19,7	1,2	19,5	1,97	3,2
MF 185	13,7	6,3	0,62	19,7	1,4	19,3	2,28	3,3

From Malvasia organoleptic estimation came out that vines from MTR 80 and MF 50 were still not formed, while those from MTR 220 and MF 185 localities were sufficiently formed and thus ready for the market. All samples of Malvasia were estimated as very typical, those however from localities MTR 80, MF 185 and MF 50 better than MTR 220 vine.

Table 4. QE values, organoleptic comprehensive quality (OCQ) and tipicity (T) for Malvasia.

MARKET	SAMPLE	QE	OCQ (0-100)	TIPICITY (0 - 100)	PREFERENCE (0 100)
Local	1	7,2			
	2	6,6			
	3	6,6			
	4	6,6			

National	1	6,0			
	2	7,0			
	3	6,9			
	4	3,5			
General	1	6,8	67	73	65
	2	6,8	73	74	60
	3	6,7	70	70	75
	4	3,7	50	59	70

1 = MF 185 2 = MTR 80 3 = MF 50 4 = MTR 220

On basis of obtained and presented results (table 4), it is evident that sample MF 185 should have the highest value on local market, followed with almost same values for MF 50, MTR 80 and MTR 220 (sample MTR 220 is the most acceptable for local market as vine, but because of the low price, QE is equal as for the other three samples).

National values order is different, as visible from the table 5, the highest values on this market should belong to samples MF 50 and MTR 80. Sample MF 185 backward slightly compared to other samples, while the lowest result belong to sample MTR 220.

Considering a general economic value, samples MF 185, MTR 80 and MF 50 are considerably different from sample MTR 220. Sample MTR 220 backward in all aspects, having the lowest absolute value.

From organoleptic quality is evident that samples MTR 80 and MF 50 have the highest value with the same organoleptic quality. Sample MF 185 backward slightly, while the lowest values belong to sample MTR 220.

From preference results can be noticed that the highest value was obtained from sample MF 50, followed with sample MTR 220, MTR 80 and finally MF 185.

Market capacity estimation show that a consumption of this Malvasia, in spite of QE values could exceed 10 000 hl/year.

Data regarding cultivar Momjan Muscat are presented in tables 5 and 7. Data in table 5 show that in Momjan muscat on terra rossa was accumulated less sugars. On flysch and terra rossa have been found higher values on high localities. Acid quantities and pH values are different only in low localities and terra rossa (low acidity and high pH), while the others were rather uniform.

Table 5. Chemical analysis of Momjan Muscat must, harvest 1999.

LOCALITY	DATE	SUGARS °Kl	TOT. ACIDS g/l	pH	t/ha
MMTR 50	23.09	19,0	6,8	3,3	8,5
MMTR 200	23.09	20,0	7,5	3,0	8,0

MMF 220	23.09	19,5	7,5	3,0	8,0
MMF 350	23.09	20,5	7,5	3,0	7,0

From chemical analysis of vine (table 6) can be observed that there were not big differences in acidity quantities of Momjan Muscat. Altitude didn't influence considerable these results. From extracts quantities, can be observed that higher values were obtained on flysch, and that altitude didn't have a relevant influence. Some differences were found on terra rossa, the sample from low terra rossa had 1,7 g/l more extracts. pH values were only slightly diverse, the lowest value was found in high terra rossa sample. The highest value of ashes was measured in high flysch.

Table 6. Chemical analysis of Momjan Muscat vine in 1999.

LOCALITY	Alcohol Vol. %	Tot. acids g/l	Volatile acids g/l	Extracts g/l	Sugars g/l	Extracts without sug. g/l	Ashes g/l	pH
MMTR 50	13,3	6,54	0,40	22,0	3,0	19,0	1,8	3,2
MMTR 200	12,4	7,10	0,36	22,3	6,0	17,3	1,6	3,0
MMF 220	12,5	6,32	0,52	40,0	20,0	20,0	1,7	3,2
MMF 350	13,6	7,15	0,47	35,0	15,0	20,0	2,2	3,1

Organoleptic estimation showed that two vines of Momjan Muscat were still not completely formed (MMTR 200 and MMF 350). All the vines were estimated as typical, but the best results had samples from low terra rossa and flysch, as the most typical momjan Muscat was declared a sample MMTR 50.

On basis of economic values on local level, as observed from table 7, the highest value was calculated for sample MMF 220, followed by MMTR 50. Sample from MMTR 200 and MMF 350 locality had the lowest value.

National level values, from the table 7, show that samples from low terra rossa and flysch had equal values, both higher than those from high terra rossa and flysch.

Table 7. QE values, organoleptic comprehensive quality (OCQ) and tipicity (T) for Momjan Muscat

MARKET	SAMPLE	QE	OCQ (0-100)	TIPICITY (0 - 100)	PREFERENCE (0 100)
Local	1	6,2			
	2	7,9			
	3	10,6			

MRTR 50	14,5	6,55	0,64	35,3	9,0	26,5	3,0	3,35
MRTR 250	13,2	6,88	0,40	37,1	12,0	25,1	2,3	3,3

From organoleptic values (table 10) can be observed that the most typical was Porec Rosy Muscat from low terra rossa locality. The same sample obtained the highest QE value for local market. The other values were almost equal.

Table 10. QE values, organoleptic comprehensive quality (OCQ) and tipicity (T) for Porec Rosy Muscat.

MARKET	SAMPLE	QE	OCQ (0-100)	TIPICITY (0 - 100)	PREFERENCE (0 100)
Local	1	7,8			
	2	9,3			
National	1	8,6			
	2	8,6			
General	1	8,1	66	60	70
	2	8,4	67	74	75

1 = MRTR 250 2 = MRTR 50

4. CONCLUSIONS

- Research results on terra rossa confirm former researches showing that Istrian Malvasia gives better results on lower localities. On contrary, better results on higher flysch haven't been acknowledged, minimal differences in values have been established.
- This results on Momjan Muscat show that better results could be obtained on terra rossa and flysch lower localities.
- The present results on Porec Rosy Muscat show also better results on terra rossa lower localities.

REFERENCES

1. G.CARGNELO,1995., Ricerca sulla qualita economica, taste VIN, pp:35-42.
2. G.CARGNELO,1997., Scelte imprenditoriali "economiche", taste VIN, pp:10-12.
3. GROUP OF AUTHORS, 1996., Razvoj éupanije Istarske od 1996-2010.g., Pula.
4. Đ. PERÄURIC i sur.,1998.,Neki pokazatelji klime i oötećenja tla kao osnova za

koncipiranje modela poljoprivredne proizvodnje u vodozaštitnom području

Istre,HAZU-Zagreb,str.135-142.

5. KORIĆ A, 1987.,Pedosfera Istre,Zagreb

6. M.STAVER i sur., 1999.Environmental studies: influence of soil and altitude on wine qualities "Teran" and "Istrian Malvasia", XI giornate GESCO,Palermo