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VITIARIUM:
BANCA DEI VIZIATI (BANK OF VINES) OF SAN FELICE

I. CLONAL SELECTION:

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- B. Observations on the behavior of 37 clones (ratified or in the process of ratification). Vineyard: Field B, **VITIARIUM**

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VITIARIUM
OF AGRICOLA SAN FELICE

In the Latin dictionary, the word vitiarium is defined as "nursery", collection of vines". But for us, it conjures up a much broader meaning, so we chose this word deliberately to define something far more complex and ambitious: the viticultural research and experimentation that has been going on for more than ten years in the vineyards of San Felice by the Department of Horticulture of the University of Florence, with the enthusiastic collaboration of our wine estate.

To illustrate clearly and concisely the purpose and functions of this research, we provide the following synopsis, divided into 6 sections.

I. CLONAL SELECTION

There are currently 3 research projects in operation, each started at a different time, which are being conducted in experimental vineyards. They all relate to the important area of research and development, and their common purpose is to make significant contributions to the progress of viticulture.

The first project began in 1974, and is going on in an experimental vineyard of 0.6 hectares called «Vigna del Pozzo». The purpose of this project is to acquire more extensive knowledge of the behavior of several presumed clones, comprise of the following: 5 Sangiovese, 6 Vernaccia di San Gimignano, 2 Malvasia Nera, 1 Colorino and 2 Roussane. The vines (of clonal selection) are grafted onto rootstock "1613 Couderc".

The second project is going on in an experimental vineyard of 1.8 hectares. It was planted in 1987 and is located to the right of the «VITIARIUM» gate. The research here is based on a series of observations, studying factors such as ampelographic characteristics (related to climbing vines); vegetative and productive behavior, and above all, the quality of the wine produced from: a series of already approved clones, from others in the process of ratification, and from some "presumed" clones.

The clones being researched include the following varieties: Albana, Ancellotta, Arneis, Biancame, Bonamico, Brunello (Sangiovese Grosso), Canaiolo Bianco, Canaiolo Nero, Canaiolo Rosa, Colorino, Cortesem Durella, Inzolia, Malvasia di Candia, Malvasia Lunga del Chianti, Malvasia Nera, Merlot, Montepulciano, Montu", Morone, Moscato Bianco, Muller Thurgau, Pinot Bianco, Pinot Nero, Prugnolo Gentile, Riesling Renano, Roussanne, Sangiovese, Tocai Fiulano, Traminer Aromatico, Trebbiano Toscano, Verdello di Pitigliano, Verdicchio, Vermentino Bianco, Vermentino Nero, Vernaccia di San Gimignano and Vespaia.

The third project, started in 1990, is part of the "Chianti Classico 2000" research, and takes place in an experimental vineyard of 1.7 hectares located in the «Antichi Filari» area, a few hundred meters to the left of the village's entrance. The project is part of the research program coordinated by the «CONSORZIO DEL CHIANTI CLASSICO», which involves the scientific collaboration of the Horticulture Department of the University of Florence and the Department of Cultivation and Protection of Ligneous Species at the University of Pisa.

The fundamental purpose of this project is to observe the biological, vegetative and productive behavior, and above all, the oenological value of the ratified clones of important Tuscan red grape varieties. This project is expected to last a minimum of 9 years. The clones under observation are: 10 Sangiovese, 2 Canaiolo Nero, 1 Malvasia Nera and 1 Prugnolo Gentile.

Three separate projects, started in different years, are being devoted to this project.

II. THE OPTIMAL RELATIONSHIP BETWEEN 4 IMPORTANT PRODUCTIVE COMPONENTS OF THE VINE

Among the many factors that influence the quality of production, the most important ones include: «plant density; rootstock; the training system, and the method of pruning.» Four different research projects are currently being devoted to the specific study of each of these factors, and to their manipulation for the enhancement of quality.

The first project, on «plant density», began in 1988 with the establishment of a 2.2 hectare experimental vineyard located at "Le Bonce". Here, the Sangiovese Grosso clone of Brunello and Cabernet Sauvignon were grafted onto two rootstocks of different strength, 1103P and 420A, at a density of 2,222 plants; 4,665 plants, and 7,243 plants per hectare respectively.

The basic idea of this research project is to study the possibility of improving the «quality» of the grape, which involves reducing the «quantity» of grapes produced per plant, while maintaining the same productions per hectare. In this context, apart from studies on the vegetative strength of the plants, particular attention is being paid to the qualitative characteristics of the products, to the extent that--starting with the 1992 harvest--the grapes are vinified separately, and each wine is subjected to specific analyses and tastings.

The purpose of the second research project is to observe the behavior of certain rootstocks in the Chianti area, and is being conducted in a 2-hectare vineyard at "Villa a Sesta", above the main road between San Felice and Castelnuovo Berardenga.

This research began in the winter of 1982-1983 when Sangiovese and Trebbiano Toscano vines were grafted onto 140R, 1103P, Kober5BB, 420A and S04. This research is particularly important, considering the strong influences that the rootstock has on both the behavior of the vine in general and on the quality of the resulting product. Experts have observed repeatedly that the Kober 5BB, widely used in vineyards planted in the 1960s and 1970s, has proved unsatisfactory in many situations.

The third and fourth projects, which focus on training systems, are being executed in two different areas: one at the Campogiovanni Estate in the Montalcino area, and the other at "Le Bonce", a 0.6 hectare experimental vineyard.

The purpose of the research in the Campogiovanni vineyard (planted in 1983) is to observe the qualitative characteristics if the grapes from Brunello di Montalcino «Sangiovese Grosso», as grafted onto the 420A rootstock. The training system used in the «California cordon», with spur pruning at various heights from the ground.

The fourth project, at "Le Bonce", is based on aa Sangiovese vineyard which was planted in 1983; the purpose her is to study the influence of certain training systems on the productivity and quality and quality of the vine--especially those training systems which are labor-saving at pruning time.

The main objective here to evaluate the research results with the emphasis on improving quality. Beginning with the 1990 harvest, there have been separate vinifications of the grapes from each training system. In this way, superior results can be confirmed by analysis of the must.

III. VINE LIBRARY

This is a large project, which consists of collecting, classifying and conserving the rich genetic heritage of the old Tuscan vines «the so-called viziati».

This painstaking work, which has already brought back about 300 presumed varietals of red, white and rosé grapes, has three important objectives:

- A. to conserve a precious and highly valued genetic, historical, and cultural heritage which would Otherwise be in danger of gradual erosion and eventual extinction;
- B. to choose vines which, due to their particular qualitative characteristics, could be put into production either in Chianti Classico or in the creation of new wines adapted to the changing Requirements of the market;
- C. to select material useful for eventual future crossings.

The progressive abandonment of less well-known varietals can be attributed To various causes. The following, in chronological order, are among the most important:

- 1. The mix of varietals from Chianti Classico, which derives from the studies and conclusions of Baron Bettino Ricasoli in the pre-Phylloxera period, made a large contribution to the expanded use of Sangiovese, Malvasia del Chianti, Canaiolo and Trebbiano, to the detriment of other varietals. These other varietals were generally less cared for and unjustly defined as "secondary", although at the beginning of the 19th century, they were still widely planted «e.g. Mammolo, Occhio di Pernice and Roverusto».

It is well known that the findings of Baron Ricasoli, presented in April 1947 to a congress of economists, provided the basis for the first D.O.C. Chianti in 1967.

- 2. The re-planting of the vineyards in the post-Phylloxera period further reinforced the dichotomy between the «principal» and the «secondary» vines.
- 3. The continued rationalization of methods of cultivation resulted in the rapid spread of specialized vineyards in the post World Ware II period, often planted with non-indigenous genetic material.
- 4. The introduction of production codes, which were often limiting and restrictive.

Last but not least, there is the fact that many of the «viziati» are not included in the list of vines approved for cultivation in Tuscany.

Although these events could have had positive repercussions and contributed to the creation of a much more progressive viticulture, related to the actual needs of wine production in Tuscany, instead they caused some difficult problems. These included the clear reduction and impoverishment of a precious viticultural heritage, developed over centuries.

In order to save this wealth, a careful project was started throughout Tuscany, with the financial support of the C.N.R. of the Department of Horticultural of the University of Florence, in collaboration with the Department of Cultivation and Protection of Ligneous Species in Pisa. In 1987, this resulted in the creation of a vineyard of about 2 hectares, located near the village of San Felice, where about 300 varieties from Tuscany's old vineyards have been collected. This authentic "library" of «viziati» (Field "A") is located on the left of the «VITIARIUM» entrance. In the future, a huge amount of work is anticipated: not only in the field, but also in the cellars and laboratories of San Felice, as well as computer-based work in the University computer office.

IV. THE BEHAVIOR OF RED AND WHITE VARIETALS ORIGINATING OUTSIDE TUSCANY

This project is particularly relevant at this time, since its goal is to analyze the behavior of various red and white varieties planted in the Chianti area. Anyone who has been following the viticultural developments in Chianti over the last decade is aware of the many experiments and resulting conclusions in the field, often executed without adequate professional techniques and data.

In order to tackle such a topic, a precise distinction must be made between the different problems which relate to two different types of vine, red and white. In the case of the reds, it should be noted that the principal variety--Sangiovese has its own intrinsic characteristics, unquestionably of high quality. This means that possible crosses with different varieties from other areas can be justified more for reasons of scientific curiosity, or at best for back-up in the continuing struggle for improvements in the field of viticulture, than for realistic needs of production.

In the case of the white varieties, however, it should be noted that the two types of vine traditionally the most widely planted throughout Tuscany--Trebbiano Toscano and Malvasia Bianca lunga di Chianti--have certain limits in terms of quality, which do not always correspond to the particular tastes of today's Italian, European, and overseas consumers. This in this second case, the analysis of the results can--or rather must--show how to arrive at innovative solutions.

Specifically, an area of 3.5 hectares in two different parts of the San Felice Estate has been dedicated to this project.

The research for the first project on white varieties, generously sponsored by the «Regione Toscana», began in 1982 with the planting of a

vineyard of 2.5 hectares at "Cimitera di Villa a Sesta", where for more than four years, a series of agronomical and oenological observations have been carried out on 17 species of vine, some from this region and some from different parts of Italy and abroad.

These include Canaiolo Bianco, Chardonnay, Bianco Fedit 51 Cross, Manzoni 6.0.13, Malvasia Bianca lunga del Chianti, Malvasia Istriana, Moscato Bianco, Pinot Bianco, Pinot Grigio, Riesling Italico, Riesling Renano, Roussane, Sauvignon, Semillon, Trebbiano Toscano, Vericchio and Vermentino.

The purpose of the research is to highlight data which is useful in a practical way for local wine producers of the area. The phenological stages, the vegetative development, the fertility, the production and the morphological characteristics of the grape bunches of each vine are all studied. When observing the must, the maturation curve of the grapes is plotted. Finally, the wines which are produced by separate vinifications, undergo chemical analysis and tastings.

The second project, which deals with red varietals, is based exclusively on noble vines originating outside Tuscany, and is being carried out on a 1-hectare plot, overlooking the village. The vineyard was planted during the winter of 1989-1990, with the following wines: Aglianico, Cannonau, Cesanese, Montepulciano, Nebbiolo and Sagrantino «the latter is a vine originally from the Montefalco area in the Province of Perugia».

V. VARIOUS FORMS OF REGRAFTING AND THEIR OBJECTIVES

This research consists of two different projects. The goal of the first one, which is being carried out on 0.2 hectare of Field "B" of the «VITIARIUM», is to ascertain the degree of influence of the intermediario (i.e. the remaining part of the first grafted varietal) on the vegetative and productive activity of the vine. This experiment has a very important practical value. On the one hand, it allows the choice of the rootstock to be based exclusively on soil characteristics, while on the other hand, it permits altering the behavior of different varietals, using the intermediario either of different vitis vinifera' or of different rootstocks.

The objective of the second project, which began in 1986 on 0.8 hectare in San Carlo, is to observe the vegetative and productive behavior of adult grafted vines.

In recent years, the changing needs of the market have revived the interest of wine producers in grafting, because this technique allows one vine to be replaced by another vine, more suited to market trends, without resorting to grubbing out and replanting a new vineyard.

Research carried out on Trebbiano vines grafted with Pinot Grigio has already produced very useful results on a practical level, indicating the most advantageous type of grafting, in terms of success rate, and the speed with which the vine can become fully productive again. Research is also continuing in order to confirm other possible influences, brought about by the presence of the intermediario «formed by the preceding cultivar» on the vegetative behavior and on the quantity and quality of production of the grafted variety.

VI. OBSERVATIONS ON VINES GROWN ON THEIR OWN VARIETAL ROOTSTOCK

This project is mainly scientific in nature, since its purpose is to ascertain possible changes in the biology of Phylloxera, and to learn more about its relationship to both the vine and to micro-organisms in the soil.

It is well known that Phylloxera vastatrix, a tiny aphid of American origin, appeared in Europe for the first time in 1864, in the Gard area of France. In the following decades, it spread to all the wine-producing areas of Europe.

After thorough and profound study, the answer was discovered in the rootstocks obtained from several species of grapes which originated in America. An experiment using Sangiovese, Trebbiano Toscano, Cabernet Sauvignon and Chardonnay has been going on since 1984 in a vineyard of 0.3 hectare called "I Colti".

The last project is concerned with the effect of thinning vines on grape quality.

In the vine-growing areas dedicated to the production of superior quality products, a constant high standard of grapes is indispensable.

It should be noted, however, that beyond certain limits, the quantity of production has negative results on the quality, depending on the fertility of the buds, the setting, and the weather, which has been subject to major variations over the years.

Since it is not possible to totally regulate production by pruning in the winter, it is clear that when production is excessive, it is necessary to eliminate a portion by thinning out the bunches.

A series of research projects related to this subject has recently been instituted in the vineyards of San Felice. Naturally, the evaluation of results will be based on the quality of the wine produced.