

INTEGRATED PRODUCTION : CHALLENGES AND IMPLEMENTATION

World congress of the Vine and the Wine, OIV; 2002

Joel ROCHARD

National Expert Sustainable Development

French Institute of the Vine and the Wine

E-mail: joel.rochard@vignevin.com

I. INTRODUCTION

Any human activity, which is domestic agricultural or industrial contributes to modify the balance of the natural environment. Of a mode of production based on a know-how ancestral, viticulture as agriculture gradually associated the contributions of modernity (mechanization, chemistry) within the framework of an orientation productivist imposed in particular by requirements of self-sufficiency, of shortage of manpower and profitability. But this evolution quickly reached its limits so much by the appearance of certain technical dead ends (phenomena of resistance), that by the emergence of the requirements of the general public for natural", respectful mode of production a "of the environment, and security of the consumer.

For the wines parallel to these new food requirements an emotional load, related to the festive and cultural dimension of its consumption is added. Thus, the image of a wine, support of valorization, also associates concepts of ethics, authenticity, tradition.

In the prolongation of the concept of sustainable development, the national or international wine institutions, must be able to propose an adaptation of the sector to these new requirements for which the integrated production is a particularly important aspect.

II. HISTORY

The genesis of the integrated production is related to comprehension at the beginning of the 20th century of the complex mechanisms based mainly on the transfers of energy and matter which determines the balance of a medium (Ecosystem). Initially, the concept of integrated fight, conceptualized by 1944, was initiated in fruit-bearing arboriculture in 1956 (Canada, the USA) starting from the observations showing the increase in the population of the psylle of the pear tree associated with the insecticidal fight against the caterpillars with the carpocapse. Beyond the integrated fight, under the impulse in particular of the OILB (Biological International Organization of Fight), conscious that the protection of the plant did not guarantee to it only product quality and the respect of the environment, the approach was extended to the whole of the wine practices (plantation, mode of control, maintenance of the grounds, fertilization, pulverization).

The OILB thus constituted a commission in 1978 (commission on the valorization of the integrated production), animated by J. THIAULT and Mr. BAGGIOLONI, intended to define the directives of applications in 1993 (minimal requirements and general terms) in in 1996 for the viticulture.

In Parallel, the concept of sustainable development established during the conference of UNO in Rio in 1992 starting from the Brundland report, was gradually involved in the new orientations of the sector. To Meet the needs for the present, without compromising the capacitance of the future generations to be satisfied their own need, justifies a comprehensive approach taking of account the natural resources,

waste, but also the contribution of the sector with respect to the social aspects, territorial, cultural, component key of the multifunctionality.

HISTORY OF PRODUCTION INTEGREE

- 1942 Birth of the theory of ecosystem (R.L. Lindeman)
- 1944 Concept of integrated fight (W.E. RIPPER)
- 1959 Concept of Integrated unit (VM Stern and Coll) the populations of plant and animals including the man and the nonalive environment constitutes a unit integrated into the ecosystem
- 1992 Conference of Rio I and II (Sustainable development)
- 1993 Directive of the OILB. Guide orientation of the regional approaches integrated production
- 1996 Directive III of the OILB
- 1999 Directive OPILB. Definition of the methods of approval of the regional approaches integrated production

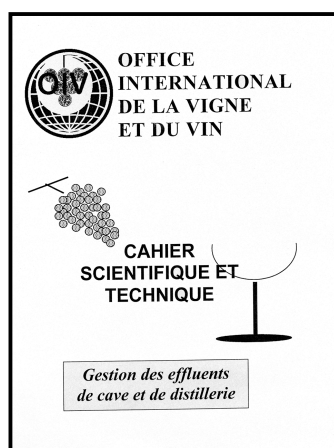
In enology, the approach is more recent, even if the environmental aspect related to the management of the effluents of cellar is a concern which emerged in particular for the important structures as from the decade 80-90. This aspect led parallel to the techniques of processing, to an adaptation of the development process, in particular aiming reducing water consumption and at ensuring a better management of the by-products and waste. But the oenological processes do not escape either the wishes from the general public to consume authentic and sure products for which the chemical inputs or of dubious origin can be regarded as harmful for health. Thus, the concept of integrated oenological processes, is justified in the prolongation of the viticulture.

It is advisable to announce that the OIV, parallel to the many communications relating to the environmental set of themes had the occasion to stress the importance of these problems by the means of a resolution.

Oeno/2/97 Resolution: Environment in the viticultural sector

The general meeting on Commission proposal II “enology”, after study of the group of expert “technology of the wine”, considering that each branch of industry must take part in the safeguarding of the environment, recommends to develop the techniques of development of the wines and other products resulting from the vine, wine and spirits contributing to limit the sources of pollution. Thus, the rating of the environmental impact must be integrated in the oenological techniques and in particular in the protocols of experimentation concerning the oenological techniques, also recommends that the Member States support search and the formation in this field.

In addition, a scientific and technical book bearing on the management of the effluents of cellar and distilling, written by a ad.hoc group of expert, was published.



A first definition of this integrated concept, applied to enology, was introduced at the time of the congress of conference MONDIAVITI in 1998 (J. ROCHARD and coll) *“Together of the practices related to the development of the wine privileging the physical and biological methods, associating an implementation reasoned of the oenological products within the framework of a process of respectful vinification of the environment”*

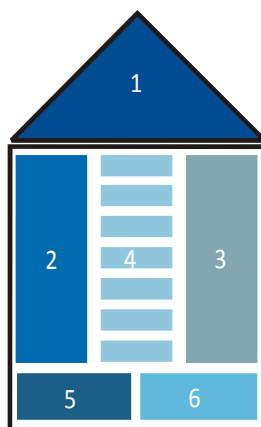
III. BASES OF THE INTEGRATED PRODUCTION

According To the OILB, precursor in the approach *“the integrated production is an agricultural system of production of food and other products of top quality, system which uses natural resources and natural mechanisms of regulation to override detrimental contributions with the environment and which ensures a viable agriculture in the long run”*.

This definition underlines the comprehensive approach of the systems for which the farm constitutes the base unit. The driving role of the agro-ecosystems and the balanced cycle of the nutritive elements are particularly proposed.

The approach comprises 5 main aims:

- To Privilege the natural resources and the mechanisms of regulation in the activities of the exploitation in order to contribute to a reduction of the inputs
- To Ensure a durable production of food by the preferential use of respectful technologies of the environment
- To Maintain the trading income agricultural
- To Eliminate or reduce the sources of pollution
- To Support the multiple job functions of agriculture.



Concept OILB of the Integrated Production is based on a set of 6 components

- (1) Conceptual Vault: definition/objective/principle of the P.I.
- (2) General Organization and members
- (3) General agronomic Characteristics
- (4) Specific agricultural Directives (wine)
- (5) International team of experts
- (6) Certification

Of these objectives, rise for the viticulture the following orientations:

- To Promote a viticulture respectful of the environment, economically viable and which maintains its job functions multiple in particular with regard to the social aspects, cultural and entertaining
- To Ensure a durable production of healthy grapes, top quality with a minimal presence of phytopharmacological residues of products
- To Protect health from the handling producers phytopharmacological products
- To Promote and maintain a high biological diversity of the wine ecosystem and its neighborhoods
- To Privilege the use of the natural mechanisms of regulation
- To Preserve then to improve quality of the ground in time
- To Minimize the air and ground, water pollution.

IV. ORGANIZATION

The objective of this approach based on the voluntariate of the wine growers is to contribute to a significant evolution of the wine practices without falling into a reserved approach to an elite.

Several organisational aspects must be associated with the approach

- **To Privilege the approaches of group**

The complementarity between the experiments, the observations, the exchanges, collective decision making are as many elements likely to conclude a approach which privileges in its principle the reasoning, compared to the processing of insurance. In Parallel, the collective approach often makes it possible to profit from the assistance of an adviser, dedicated partially or completely to the group.

- **Specifications regional**

The viticulture has a great diversity according to the areas (climate, mode of control, diseases, development...). If the spirit of the approach must be tallied by a national or international document, it is essential to draw up specifications in detail regional defining the practical methods.

- **Formation and information**

The integrated production requires a more important technical skill compared to a approach of insurance what justifies to privilege initial training. It also imposes the permanent adaptation to the technical and lawful evolutions by continuing education.

The documents of popularization which mention experience feedbacks, experiments, and observations are essential tools for the wine growers. This information is generally ensured at 2 levels.

- A guide pre-countryside which treats thoroughly of different the wine and oenological stages from the regulation and the general guidelines

- An information support during the countryside (or the expert testimony of an adviser) which makes it possible to specify in detail the interventions to be carried out according to the conditions of the year

- **Traceability**

The recording of the operations aims to make reliable the interventions and if necessary to identify the origin of a problem or an abnormal operation of which the effects are perceptible only with in the short or the long term

- **Diagnosis**

This diagnosis makes it possible to locate the exploitation compared to the requirements of the regional reference document.

Starting from a list of criterion preestablished, a data entry form makes it possible to determine by a note or a percentage, the level of the exploitation compared to the objectives. The diagnosis is interpreted either starting from an overall score or in the form of a diagram “radar” which makes it possible to visualize progress to be realized.

- **Control**

The credibility of the approach passes by a monitoring system independent of the professional structures or consulting. This check out is generally managed either by an official structure or by a specialized company in certification. It is also useful to specify that the observance of the local regulation is a precondition to the implementation of the Integrated Production

- **Communication**

The commitment in a approach integrated production generally leads to an increase in the manufacturing costs what justifies the wish of the professionals to profit from a means of recognition which can be communicated to the purchaser. Various forms of communication can be considered

Private Brands, labels (individual or collective)

Generally, this approach is associated with specifications whose application is controlled by an organization considered as independent of the elaborative one. (Integrated Production associated with a brand for example)

Official Labels or signs

Recognized by a national legislation, European or international, this category comprises the ecolabels which for the moment do not relate to the food substances. The wines resulting from the biological viticulture can be integrated in this category. It could be about it in the same way in the long term of the integrated production provided that she it by specifications is recognized on the national plan or international.

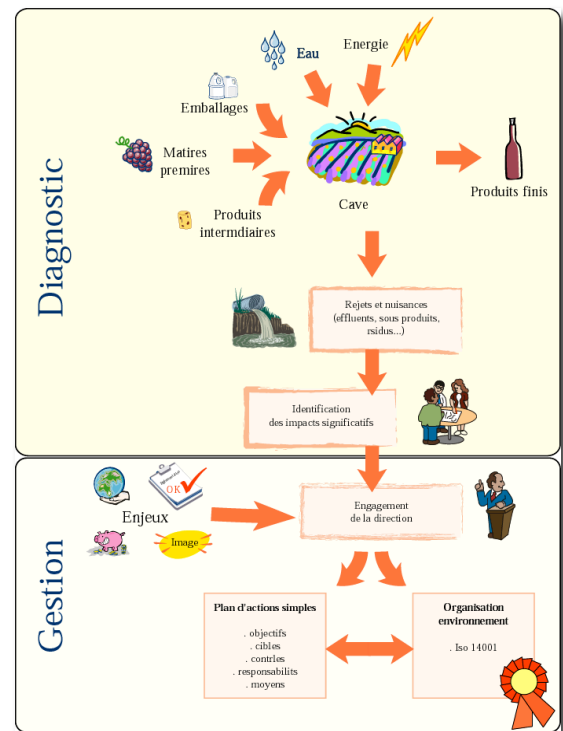
The approach ISO 14,001, not dependant on a label but on a certification undertaken can also be comparable with a communication validated by a procedure officially recognized on the international plan.

With respect to the wines profiting already from an official sign of quality arises the difficulty of the superposition of a complementary identifier leading probably to a market segmentation or integration under the conditions of production of the new environmental requirements.

Approach ISO 14,001

Definition

Together of provisions and technical measures, organisational and administrative integrated in strategy of the company allowing to know, to control and minimize the effects of its activity on surround.



V. IMPLEMENTATION

Viticulture

Several aspects are taken into account:

- Protection of the natural wine agrosystèmes (ecological zones reserve, protection of the waterways)
- Installment/plantation of the vineyard (amendment before plantation, disinfection of the grounds)
- Maintenance of the grounds (weeding, fight against the streaming and erosion)
- Irrigation (reasoned management of water)
- Work in green (ventilation of the fruit-bearing zones, method of training)
- Protection (safeguarding of the auxiliaries, choices of the products, methods biological)
- Pulverization (security of the user, diagnosis of the pulverizer, management of the rinsing)
- Handling of the plant health products, security of the manipulator, surface of filling, storage and management of packing

Enology

In enology, the approach is more recent. Reference frames were established, in particular in South Africa and France



Integrated Production of Wine
Geïntegreerde Produksie van Wyn

WINE AND SPIRIT BOARD
SOUTH AFRICAN GUIDELINES FOR
INTEGRATED PRODUCTION
OF WINE

compiled by ARC Infruitec-Nietvoorbij
in conjunction with the vitivinicultural industry

2000/2001 and 2001/2002 production years

Tableau 3 : Échelle des points pour la production intégrée de vin.

Évaluation par poste selon les directives	Bon 5	Moyen 3-2	Mauvais 0	Total
1 - Producteurs				
2 - Qualité des raisins				
3 - Transport des raisins				
4 - Équipements				
5 - Niveaux de SO ₂ (x2) B				
6 - Substances ajoutées au vin				
6.1 - Précipitants B				
6.2 - Agent de collage B				
6.3 - Matériels de filtration B				
7 - Fermentation				
8 - Refroidissement B				
9 - Eau (x2) B				
10 - Agents de nettoyage B				
11 - Déchets B				
12 - Nuisances sonores B				
13 - Fermetures B				
14 - Capsules B				
15 - Matériels d'embouteillage B				
Total sur 100 pour les caves et 80 pour les matériels d'embouteillage				

Note de qualification pour les caves : Total de 50 points ou plus sur 100

Note de qualification pour les matériels d'embouteillage : Total de 40 points ou plus sur 80

Disqualification :

1 - Si les raisins utilisés pour la vinification ne sont pas conformes pour la PIV

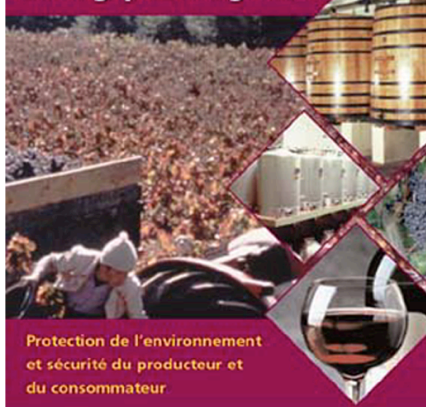
2 - Si les documents prescrits ne sont pas remplis

3 - S'il existe des résidus non autorisés dans le vin.

Source : A. TROMP et E. MARAIS

In South Africa (A. Tromp), a total approach (viticulture and enology) was installation. Each aspect retained in the reference frame, is the object of a notation good (: 5, bad: 0). Initially, the minimal requirement corresponds to 50% of the points.

**Référentiel national
des « pratiques
œnologiques intégrées »**



**Protection de l'environnement
et sécurité du producteur et
du consommateur**

Groupes de travail national
« Production Oenologique Intégrée »
Octobre 2001



Principal aspects

- Qualification and formation of the vinificator
- Traceability
- Control harvest, transport, rollout of the vintage
- Control production equipments
- Valorization of the potential of the raw material by one transformation adapted to the produced objectives
- Control conditioning
- Control hygiene
- Control and viticultural effluent and waste processings.

In France, the national reference frame of the oenological processes established by a national working group was published by ITV France in November 2001, in the prolongation of the national reference frame for the production of grapes (published in October 2000).

The reference frame specifies that *“the integrated oenological processes, fall under a production of wines, economically viable in the duration. It consists in developing the qualitative potential of the grapes*

throughout the processes of development which will be reasoned, chosen, controlled, by taking into account a vaster whole of respectful considerations of the human health, environment and product" These documents will be used as framework with the qualification of the exploitations "reasoned agriculture" for which the superior council of orientation and coordination of the agricultural and food economics has just published his project of orientation. This document applies to the whole of agriculture. The application to the wine sector is in the course of discussion.

Parallel To the approaches sectors, it is advisable to announce the commitment of certain cellars in a certification ISO 14,001 International standard relating to the environment.

VI. CONCLUSION

Parallel To the lawful aspects, the environmental food safety and concerns are integrated more and more in the qualitative perception of the consumers. The challenges for the sector, beyond the initiatives and of the communication at the individual level justify the definition of a total coherent strategy as well on the national plan as international. So of many approaches were already committed in viticulture under the impulse of the OILB, it appears desirable to prolong the approach for enology.

The OIV which already initiated actions in this field, must be able to finalize a document support which will be used as a basis for the implementation of the approach at the national level. This objective seems to raise several questions which will have to be discussed within the authorities of the Office

- Comprehensive approach or sectoral (viticulture and enology)
- Level of detail of the document (support of orientation, guide of implementation)
- Communication associated with the approach
- Method Of Assessment

BIBLIOGRAPHY

- COULON T., technico-economic Validation of the production integrated in viticulture, establishment of a diagnosis of exploitation, Euroviti conference, ITV France, Paris, 2001
- ROCQUE B., Food safety and safeguarding of the environment to the vineyard reports reflections actions, phytoma n°521, November 1999
- ITV France, national Reference Frame of the integrated oenological processes, Paris, 2001
- ITV France, national Reference Frame for the integrated production of grapes, Paris, 2001
- LINDEMAN R.L., The trophic dynamic aspect of ecology, Ecology n°23, n°4, 1942
- RIPPER W.E., Biological Control ace has natural supplement to chemical control of insect 153
- ROCHARD J., LORD OF THE MANOR C., environment: a new challenge for the international exchanges, the formation, the communication of the wine sector, congress OIV Mainz, 1999, Re-examined oenologists n°94, January 2000
- ROCHARD J., LEROY F., MOUTON-FERRIER V., Application of the standard Iso 14001 to the cellars, congress OIV, Adelaide, 2001, Re-examined oenologists n°102, 2001

- ROCHARD J., VIAUD MNV., DESAUTELS F., SHEEP V., integrated Enology and tech news of processing liquid waste of cellar, Mondiaiviti, ITV France, Bordeaux, 1998
- SENTENAC G., MOLOT B., COULON T., Of the protection reasoned with the integrated production: approaches suggested, Euroviti, ITV France, Paris, 2001
- STERN V.M., A.F. SMITH, A. VAN DEN BOSCH, K.S. HAGEN, The integrated control concept, Hilgardia, Vol. 29, n°2, 1959ide, Australia, 2001
- TROMP A., Integrated production of wine (IPW) the south african system ace benchmark to total set standards for protection of to environment consume and the environment, conference of the OIV, Adelaide, Australia, 2001
- TROMP A., integrated production of wine (PIV), the South-African process like guarantee for the consumers, Follow-up of the oenologists n°101, November 2001