

DOKUMENTATION  
DER  
WEINBAUFORSCHUNG

Über aktuelle Themen stellt die Dokumentation der Weinbauforschung die Literatur der letzten Jahre zusammen. Diese Zusammenstellungen — mit zahlreichen Referaten — können zur unten genannten Schutzgebühr bezogen werden. Die Gebühren verstehen sich zuzüglich Versandspesen. Weitere Reihen sind in Vorbereitung.

The Documentation of Viticulture compiles literature on topical subjects published over the past years. These titles — accompanied by numerous abstracts — are obtainable at cost-price, as mentioned below. The prices are to be understood plus forwarding charges. Further series are in preparation.

Bisherige Veröffentlichungen zu folgenden Themen:

Publications at present available on the following subjects:

- 1) Gehalt an schwefliger Säure in Mosten und Weinen 1963—1978 · Sulphurous acid content of musts and wines 1963—1978 (255 titles and abstracts) (DM 10.—)
- 2) Rückstände von Pflanzenschutzmitteln und Herbiziden im Boden, in der Rebe und im Wein 1963—1981 · Residues of plant protectives in soil, grapevine and wine 1963—1981 (250 titles and abstracts) (DM 10.—)
- 3) Wasserhaushalt und Bewässerung der Rebe 1963—1976 · Water regime and irrigation of vines 1963—1976 (471 titles and abstracts) (DM 8.—)
- 4) Mineralstoffernährung der Rebe 1963—1976 · Mineral nutrition of vines 1963—1976 (1033 titles and abstracts) (DM 16.—)
- 5) Weinbau am Hang 1964—1977 · Viticulture on slopes 1964—1977 (230 titles and abstracts) (DM 5.—)
- 6) Mechanische Lese 1964—1978 · Mechanical grape harvesting 1964—1978 (237 titles and abstracts) (DM 6.—)
- 7) Organische Düngung im Weinbau 1964—1978 · Organic manuring in viticulture 1964—1978 (176 titles and abstracts) (DM 7.—)
- 8) *Botrytis cinerea* PERS. 1965—1981 (450 titles and abstracts) (DM 10.—)

## A. ALLGEMEINES

GÖTZ, B., MADEL, W. (Hrsg.): **Deutsches Weinbau-Jahrbuch 1982** · German viticultural yearbook 1982

Waldkircher Verlagsges., Waldkirch i. Br., 33, 287 S. (o. J.)

Even in the 33rd year of publication the 'German viticultural yearbook' presents a good summary of topical problems of German viticulture. The reports on grape breeding inform of problems in selection of clones and protection from viruses. Besides reports on enological topics, problems in viticultural ecology, like wine growing on steep slopes and the use of catch crops, are discussed. In addition, many statistical data and tables are presented on grape and wine production, wine trade and wine consumption in Germany and other countries, grape varieties, calculation for the plantation of a vineyard, chaptalization of must and on fungicides, insecticides and herbicides (with application instructions), finally the addresses of all German viticultural organisations are given.

*E.-H. Rühl* (Stuttgart)

STEINMETZ, H. (Hrsg.): **Weinbautechnik. Mehrsprachen-Bildwörterbuch** · Viticultural technique. Multilingual illustrated dictionary

Betzdorf/Sieg, 320 S. (1981)

Jeder, der mit fremdsprachlicher Fachliteratur zu tun hat, wird das Erscheinen des Büchleins sehr begrüßen: Wo sonst findet man schon Fachausdrücke wie „Mulchbalken“ oder „Schwinghebelregner“ in gleich 5 Sprachen (deutsch, englisch, französisch, spanisch, italienisch)? Die Einteilung ist sinnvoll, das (natürlich) 5sprachige Register verhilft zum schnellen Finden, die Zeichnungen sind instruktiv und ersetzen wortreiche Erläuterungen. Die Mitwirkung in- und ausländischer Fachleute garantiert eine korrekte Terminologie. — Für eine weitere Auflage wäre allerdings noch die eine oder andere Verbesserung wünschenswert: Auf S. 158 sind nicht erläuterte Abkürzungen verwendet; „vermiculite“ (engl.) ist nicht „Styromull“ (S. 172); auf S. 187 oben fehlt eine Seitenangabe, um nur 3 Beispiele zu nennen. Auch die Einbindung — gerade für ein Wörterbuch — dürfte etwas stabiler sein.

*H. Berndt* (Geilweilerhof)

## B. MORPHOLOGIE

BERNARD, A. C.: **Contribution à l'étude de la biologie et des méristèmes des Vitacées** · Study on biology and meristems of Vitaceae

Thèse Univ. Sci. Tech. Languedoc, Acad. Montpellier, 215 S. (1980)

The development of *Vitis vinifera* is analysed by means of biometry as well as histological methods. In part I, the development of vegetative organs as well as fruits from the bud to the adult plant is described, whereas in part II all types of meristems occurring during the life cycle of *V. vinifera* are considered. Both cytological and histological investigations are included and biochemical and physiological analyses are added. The results are presented in numerous tables and more than 200 photographs on 33 plates. The paper may be considered as a very comprehensive reference-book for all workers on the field of developmental biology of *V. vinifera*.

*R. Blaich* (Geilweilerhof)

CONSIDINE, J. A.: **Stereological analysis of the dermal system of fruit of the grape *Vitis vinifera* L.** "Stereologische Analyse" des Dermal systems bei Trauben von *Vitis-vinifera*-Sorten

Austral. J. Bot. (Melbourne) 29, 463—474 (1981)

Sch. Bot., Univ. Melbourne, Parkville, Vic., Australien

The relative contributions of cell area and cell number to fruit surface area (fruit size) were determined by stereological analysis (according to UNDERWOOD 1970). Differences in surface area of fruits of 9 cultivars are due more to changes in cell number than changes in cell area. The epidermis has more cells than other dermal layers. Although there is a difference in cell shape and volume between layers of dermal cells with increasing distance from the epidermis analysis shows both continuous and discontinuous variation.

*L. Peterson* (Guelph)

CONSIDINE, J. A.: **Correlation of resistance to physical stress with fruit structure in the grape *Vitis vinifera* L.** · Korrelation zwischen Resistenz gegenüber physikalischer Belastung und Beerenstruktur bei *Vitis vinifera* L.

Austral. J. Bot. (Melbourne) **29**, 475—482 (1981)

Sch. Bot., Univ. Melbourne, Parkville, Vic., Australien

6 fruit characteristics, wall thickness, cuticle thickness, mean cell volume, number of cell layers with thickened walls, fruit shape and fruit radius were studied for possible correlation with the resistance of fruit to osmotic stress. Resistance was calculated by determining the critical turgor pressure which caused 50 % of the berries to split. The critical turgor pressure varied from 1.15 MPa to 5 MPa depending on cultivar. The thickness of dermal cell walls as determined by measurements of glycol methacrylate-embedded tissues, was the only parameter showing a positive correlation with resistance to stress in the 9 cultivars used. Measurements of dermal cell wall thickness and the number of layers of cells with thickened cell walls varied considerably among cultivars.

L. Peterson (Guelph)

SCHNEIDER, W., STAUDT, G.: **Eine einfache Methode zur Bestimmung von Blattflächen bei Reben** · A simple method for the determination of the leaf size of vines (m. engl., franz. Zus.)

Mitt. Klosterneuburg **31**, 186—189 (1981)

Staatl. Weinbauinst., Freiburg/Br.

Eine einfache Methode zur Bestimmung der Blattfläche am Standort ist die Messung der Länge und Breite der Blattspitze. Das Produkt dieser 2 Zahlen nähert sich der wirklichen Größe der Blattfläche. Berücksichtigt man einen von Rebsorte und Blattgröße abhängigen Korrekturfaktor, ergeben sich noch geringere Fehler.

A. Hegedüs (Budapest)

### C. PHYSIOLOGIE

BECKER, N., KLEIN, R.: **Transpiration und Blattemperaturen von Reben bei hochsommerlichem Kleinklima dreier Standorte im Kaiserstuhl** · Transpiration and leaf temperatures of vines under the midsummer site climate of three locations in the Kaiserstuhl area (m. engl., franz. Zus.)

Mitt. Klosterneuburg **31**, 190—199 (1981)

Staatl. Weinbauinst., Freiburg/Br.

In a short term assay the transpiration of irrigated and water-stressed Riesling and Ruländer vines, potted in 50 l-containers, was measured by weighing the pots; the test plants were placed in the plain, on the slope or at the plateau, respectively. Of these locations the evaporation was lowest at the slope, while the transpiration at the slope was only slightly reduced. Transpiration of leaves which, prior to detachment, were grown in shadow, was lower than that of leaves which formerly had been exposed to the sun. As no synchronism of evaporation and transpiration was to be detected during the day, Authors assume distinct control movements of the stomata. The vines at the slope showed the highest over-temperatures at the sun-exposed leaves. [Data characterizing stress intensity are not given. — Ref.]

H. Düring (Geilweilerhof)

GAPRINDASHVILI, G. V.: **Sugar and acid content of grapevine berries as influenced by exposure to light** · Zucker- und Säuregehalt der Weinbeeren in Abhängigkeit von der Belichtung (russ.)

Sadovod. Vinogradar. i Vinodel. Moldavii (Kishinev) **36** (6), 52—53 (1981)

14 cultivars differing in ripening time were analysed: 1) technical ripeness at the end of August or beginning of September (Black Pinot, Shardone, Aligote), 2) in the second half of September (Basaleturi, Goruli mtsvane, Tetri kapistoni, Saperavi, Rkatsiteli), 3) in the first half of October (Krakhuna, Tsitska, Tsolikouri) and 4) in the first half of November (Chkhaveri, Odzhaleshi, Otskhanuri sapere). — During 3 years, the sugar content and the acid content of the berries, which were exposed to light or to shade on the shoots, were measured. In the berries exposed to light, the sugar

content was higher and the acid content smaller than in shade berries. The difference in sugar content between light and shade berries was the smaller (from 2.40 to 0.62 %) the later the grapes ripened. The highest differences in acid content (1.79 g/l) were found in grapevine cultivars of middle ripeness.  
*I. Tichá (Prag)*

**IZVORSKA, N., LILOV, D.: Participation of gibberellic acid (GA<sub>3</sub>) in the induction of morphogenesis of tissues isolated from various grapevine organs · Beteiligung der Gibberellinsäure an der Induktion der Morphogenese von Gewebeisolaten verschiedener Reborgane (bulg. m. russ., engl. Zus.)**

Fiziol. Rast. (Sofia) 7 (1), 23—29 (1981)

Inst. Fiziol. Rast. "Metodi Popov", Sofia, Bulgarien

The influence of exogenous gibberellic acid (GA<sub>3</sub>) on the morphogenesis of isolated shoot tip tissues, winter buds and tendrils was investigated. It turned out that the stimulating and inhibiting effect of gibberellic acid was changed under the influence of other stimulators: auxin, adenin, cyto-kinin. The different content of endogenous stimulators in some organs is the main reason why the addition of gibberellic acid causes different effects on the morphogenesis of some vine tissues.

*M. Milosavljević (Belgrad)*

**JOHNSON, D. E., HOWELL, G. S.: Factors influencing critical temperatures for spring freeze damage to developing primary shoots on Concord grapevines · Faktoren, die die kritischen Temperaturen für Spätfrostschäden an wachsenden Haupttrieben von Concord-Reben beeinflussen**

Amer. J. Enol. Viticult. 32, 144—149 (1981)

Dept. Hort., Michigan State Univ., East Lansing, Mich., USA

Von im Januar geernteten Haupttrieben einer 6 Jahre alten Concordanlage wurden Stecklinge hergestellt, ausgetrieben und unter verschiedenen Versuchsbedingungen gefrostet. Die Frostresistenz der austreibenden Knospen nahm mit fortschreitender phänologischer Entwicklung ab. Die kritische Temperatur, bei der 50 % der austreibenden Augen erfroren, betrug beim Knospenschwellen -8,1 °C, beim Sichtbarwerden der ersten Blätter -6,6 °C. Eine Benetzung der Pflanzenoberflächen führte ebenfalls zu einer stark verminderten Frostresistenz in allen Entwicklungsstadien, die kritische Temperatur war um durchschnittlich 3 °C erhöht. Austreibende Knospen von Stupfern aus dem Gewächshaus und dem Freiland sowie von ganzen Topftreben zeigten gleiches Verhalten. Unterschiedliche Temperaturen vor dem Frosten hatten keinen Einfluß auf die spätere Frostempfindlichkeit.

*U. Stein (Geilweilerhof)*

**MANTLER, J.: Untersuchungen über den Einfluß des Nährstoffzustandes auf das Auftreten von Chlorose bei Weinreben im Gefäßversuch · Examinations concerning the influence of the nutrient supply on the occurrence of chlorosis with vines in containers (m. engl., franz. Zus.)**

Mitt. Kosterneuburg 31, 181—185 (1981)

In einem Gefäßversuch mit der Rebsorte Grüner Veltliner/Kober 5 BB wurde versucht, durch Steigerung der Nährstoffe K (15—424 mg K<sub>2</sub>O/100 g Boden) und P (11—440 mg P<sub>2</sub>O<sub>5</sub>/100 g Boden) die Chlorose künstlich auszulösen. Dabei zeigte sich, daß bis zur höchsten P-Gabe das Wachstum der Reben nicht beeinträchtigt war. Auch eine K-Steigerung bis 274 mg K<sub>2</sub>O/100 g Boden erbrachte keinen negativen Einfluß auf das Rebenwachstum (erst der doppelte Wert führte zum Absterben der Pflanzen). — Obwohl die Mineralstoffgehalte der Rebblätter — bes. in Relation zueinander — viele Parallelen zu Werten aufwiesen, die in der Literatur als typisch für Chlorose angeführt werden, konnten in allen Varianten keine chlorotischen Erscheinungen beobachtet werden.

*K. Herwig (Geilweilerhof)*

**MARCY, J. E., CARROLL, D. E., YOUNG, C. T.: Changes in free amino acid and total nitrogen concentrations during maturation of Muscadine grapes (*V. rotundifolia*) · Veränderung im Gehalt der freien Aminosäuren und dem Gesamtstickstoff während der Beerenreife von Muscadiniaweintruben (*V. rotundifolia*)**

J. Food Sci. (Chicago) 46, 543—547 (1981)

Inst. Food Agricult. Sci., Agricult. Res. Educ. Center, Lake Alfred, Fla., USA

Verf. untersuchten die Akkumulation von freien Aminosäuren (AS), Ammoniak und Gesamt-N während der Beerenreife in Weinbeeren von Carlos und Noble Muscadine (*V. rotundifolia*). Der Gehalt von Ammoniak nahm in beiden Rebsorten im Verlauf der Beerenreife ab. Der Gesamt-N schwankte und war nicht signifikant mit der Beerenreife korreliert. In beiden Sorten waren in unreifen Weinbeeren Threonin, Histidin und  $\gamma$ -Aminobuttersäure die Haupt-AS. In reifen Beeren herrschte bei Carlos Arginin und bei Noble Alanin vor. Im wesentlichen wurden in den Beeren beider Sorten ähnliche Gehalte an freien AS gefunden, wie sie für Beeren von *V. labrusca* und *V. vinifera* in der Literatur angegeben werden. Die bei *V. vinifera* gefundene deutliche Zunahme von Prolin bei der Beerenreife konnten bei den beiden Muscadiniasorten nicht nachgewiesen werden.

A. Rapp (Geilweilerhof)

MORRIS, J. R., CAWTHON, D. L.: **Effects of ethephon on maturation and postharvest quality of 'Concord' grapes** · Einfluß von Ethephon auf Reife und Qualität des Lesegutes bei Concord-Trauben

J. Amer. Soc. Hort. Sci. **106**, 293—295 (1981)

Dept. Hort. Food Sci., Univ. Arkansas, Fayetteville, Ark., USA

The use of ethephon as an aid in mechanical wine grapes, Concord cv., has been considered and its effect on maturation and postharvest quality was examined. 2 experiments were carried out: 1. Concord grapes were sprayed with several ethephon concns (0—500 ppm) 8 d before harvest. 2. A single application of ethephon (0—800 ppm concn) was given to Concord grapes 20 d before harvest and a split application of 0—400 ppm ethephon, 20 and 10 d before harvest. — Fruit removal force was measured at harvest. Quality analysis at harvest and 12 and 24 h after harvest at temperatures of 18, 24, 30 °C was also determined. — High concns of ethephon, in both experiments, enhanced fruit abscission. There was no effect of ethephon on maturity or quality of Concord grapes, but alcohol production at high holding temperatures was reduced.

S. Guelfat-Reich (Bet Dagan)

NUTSUBIDZE, N. N., TATANASHVILI, G. A.: **Die Wirkung unterschiedlicher Formen der Stickstoffernährung auf die Besonderheiten der Nitratreduktaseaktivität bei Reben** · The influence of different forms of nitrogen feeding on the peculiarities of grapevine nitrate reductase induction (russ. m. grus., engl. Zus.)

Soobshch. Akad. Nauk Gruzinsk. SSR (Tbilisi) **101**, 137—140 (1981)

Sämlinge von Rkatsiteli wurden mit Ammonsulfat oder Kalksalpeter, beide <sup>15</sup>N-markiert, gedüngt. 2 d später wurde in den Wurzeln kein NH<sub>4</sub> gefunden, NO<sub>3</sub> in den Wurzeln nur der NH<sub>4</sub>-gedüngten Variante. In den Trieben war bei beiden Varianten der NO<sub>3</sub>-Gehalt höher als in den Wurzeln (der NH<sub>4</sub>-Gehalt etwa doppelt so hoch wie der NO<sub>3</sub>-Gehalt). Aus dem geringen Anteil beider N-Formen an <sup>15</sup>N wird geschlossen, daß endogenes NH<sub>4</sub> zu NO<sub>3</sub> oxidiert wird. — Nach 10 d war in der NH<sub>4</sub>-Variante der NH<sub>4</sub>-Gehalt erhöht, der Gehalt an <sup>15</sup>N jedoch gering. In der NO<sub>3</sub>-Variante hingegen wurde — bei ebenfalls erhöhtem NH<sub>4</sub>-Gehalt — eine starke <sup>15</sup>N-Anreicherung beobachtet, was auf eine hohe Aktivität der NO<sub>3</sub>-Reduktase zurückgeführt wird. — Während der Dormanz enthielten die NO<sub>3</sub>-gedüngten Reben doppelt soviel NH<sub>4</sub> wie die mit NH<sub>4</sub> gedüngten, bei deren Wurzeln nur 1,5 % des NO<sub>3</sub>-N aus dem Dünger stammte. Andererseits überwiegt NO<sub>3</sub> bei den mit NH<sub>4</sub> gedüngten Pflanzen, bei deren Wurzeln 16 % des NH<sub>4</sub>-N aus dem Düngemittel kam. Somit war auch während der Dormanz die NO<sub>3</sub>-Reduktase aktiv. Vermutlich wurde der markierte N aus dem Ammonsulfat assimiliert und das beim Metabolismus entstehende NH<sub>3</sub> nach Oxidation als Nitratsalz gespeichert.

V. Kraus (Lednice na Morave)

OHKAWA, M.: **Budbreak and xylem exudation in greenhouse-grown *Vitis vinifera* L. cv. Muscat of Alexandria** · Knospenaustrieb und Blutungssaft der im Gewächshaus kultivierten *Vitis-vinifera*-Sorte *Muscat of Alexandria*

J. Jap. Soc. Hort. Sci. **50** (1), 10—14 (1981)

Fac. Educ., Kanazawa Univ., Marunouchi, Japan

Seasonal and diurnal changes in volume and composition of exudates from cuts made on previous year's canes of grapevines (*Vitis vinifera* L. cv. Muscat of Alexandria) were determined from the dormant season to the bloom time. The amount of exudate increased up to the budbreak period, when it reached a maximum of 525 ml/vine on April 11. The pH showed a pattern inversely proportional to the exudate, while the amount and concentration of organic acids and the amount of sugar — expressed by fructose, glucose, and, to a less extent, by sucrose — varied proportionally with it.

The sugar concentration, however, was high early in the season, decreasing sharply thereafter, exception made to a peak in middle March. The amount of exudate and the organic acid concentration fluctuated diurnally, being greater at night than during the day. The pH declined quickly at the end of the day and increased during the night to its day-time value. The sugar level decreased in the first 4 h of the night.  
A. Miele (Bento Gonçalves)

PIERGIOVANNI, L., VOLONTERIO, G.: **Research on the anthocyanin pigments of red grapes. I.** · Untersuchung der Anthocyanfarbstoffe in roten Trauben. I. (ital. m. engl. Zus.)

Vignevisini 8 (10), 49—53 (1981)

Ist. Ind. Agrar. Univ. Stud., Mailand, Italien

It has been possible to prove the reproducibility of some chromatographic procedures for purification, separation and recognition of anthocyanins present in grape peels. 20 samples of grapes, cultivated in different regions of Northern Italy, have been examined to detect significant differences among the various cultivars. It seems that the ripening degree could affect the amount of anthocyanidines and that the ratio of the acetate forms of the anthocyanidines shows significant differences among different cultivars only. Further investigations are requested to explain the composition of the esterified anthocyanidines.  
G. Lombardo (Mailand)

SCIENZA, A., FREGONI, M., MIRAVALLE, R., ZAMBONI, M., DOROTEA, G.: **Further observations on the effects of some growth regulators on the productivity of Picolit** · Ultérieurs résultats de l'emploi de certains régulateurs de croissance sur la productivité du Picolit (ital. m. franz. Zus.)

Vignevisini 8 (9), 33—40 (1981)

Catted. Viticult., Univ. Catt. S. C., Piacenza, Italien

Some growth regulators show favourable effects on the productivity of Picolit, whose androsterility is well known. In fact, the treatment with GA<sub>3</sub> (100 + 100 ppm) 4 and 15 d after blossom, or with 4 CPA (10 ppm) in full blossom followed by GA<sub>3</sub> (100 ppm) 15 d after full blossom, improves remarkably the productivity. The treatment with gibberellins increases the mean weight of the bunch and the whole productivity, while the sugary titre appears slightly reduced, similar results are obtained after treatment with 4 CPA and GA<sub>3</sub>.  
G. Lombardo (Mailand)

SILVESTRONI, O.: **Preliminary experiences on micropropagation of grape (*Vitis vinifera* L.)** · Erste Erfahrungen bei der Mikrovermehrung von Reben (ital. m. engl. Zus.)

Vignevisini 8 (10), 31—37 (1981)

Cent. Ric. Vitic. Enol., Univ. Bologna, Italien

Some grape cultivars (Trebbiano di Castelvetro, Montuni, Rossiola, Lambrusco Marani, Lambrusco Maestri, Lambrusco Oliva, Tarrango, Carina, Goyura, Tullilah) were propagated *in vitro* via microcuttings. An intermediate proliferation phase was used to enhance the yield. Author reports no basic problems with this method and proposes micro-propagation as a rapid alternative for multiplication of vines.  
R. Blaich (Geilweilerhof)

SRINIVASAN, C., MULLINS, M. G.: **Modification of leaf formation by cytokinin and chlormequat (CCC) in *Vitis*** · Veränderte Blattbildung durch Cytokinin und Chlormequat (CCC) bei *Vitis*

Ann. Bot. (London) 48, 529—534 (1981)

Dept. Agron. Horticult. Sci., Univ. Sydney, N. S. W., Australien

Application of the cytokinin, 6-(benzylamino)-9-(2-tetrahydropyranyloxy)-9H-purine (PBA, 1 mM) and the growth retardant, 2-chloroethyl trimethyl ammonium chloride (chlormequat, 3 mM), to grapevines induced gross modifications in leaf formation, such as fused leaves (2 laminae and 2 petioles) and double leaves (2 separate petioles each with a single lamina). Double leaves were found in *Vitis vinifera* L. seedlings, and in plants produced from rooted cuttings of *V. riparia* and *Muscadinia* (*V. rotundifolia*). Some treated vines produced leaves with opposite phyllotaxy; anomalies of tendril and bud arrangement also occurred, and some tendrils grew into shoots. It is considered that cytokinin had disturbed normal development at the apical meristem, and that the effects of chlormequat may have been due to changes in endogenous cytokinin levels.  
K. G. M. Skene (Adelaide)

TANURKOV, G. R.: **Influence of the microelements zinc and manganese on frost resistance and productivity of vines** · Einfluß der Spurenelemente Zink und Mangan auf die Frostresistenz und Produktivität der Rebe (russ.)

Sadovod. Vinogradar. i Vinodel. Moldavii (Kishinev) **36** (5), 39—41 (1981)  
Sel'skokhoz. Inst., Odessa, UdSSR

0.03 %  $MnSO_4$  and 0.03 %  $ZnSO_4$ , added to the  $CuSO_4$  solution, and 2 treatments of the cv. Aligote with this solution (after blooming and when the berries had the size of peas) led to an increase of the protein content of the leaves by 3—5 %. Winter frost damages were decreased by 7—9 % in the central buds and by 11—12 % in the secondary buds. Zn influenced mainly the yield and Mn the grape quality.  
M. Milosavljević (Belgrad)

TEZUKA, T., SEKIYA, H., OHNO, H.: **Growth regulation of the first crop and induction of a second crop of 'Kyoho' grapes due to CCC application under field conditions** · Wachstumsregulierung der ersten und Induktion einer zweiten Traubenernte der Rebsorte "Kyoho" durch CCC-Behandlung unter Freilandbedingungen

J. Japan. Soc. Hort. Sci. **50** (1), 15—20 (1981)

Lab. Hort. Sci., Fac. Agricult., Nagoya Univ., Chikusa-Ku, Nagoya, Japan

Trials were carried out to produce a second crop per year of 'Kyoho' grapes by CCC application (500 ppm) under open air conditions, followed by shoot topping. Results have shown that CCC application delayed ripening for 40 d compared to the untreated crop, increased the number of berries per cluster, but decreased their size. Only the lateral shoots were bearing a second crop, which matured (16 °Brix) 3 weeks after the CCC-treated vines.  
B. Daris (Athen)

WALKER, R. R., TÖRÖKFALVY, E., STEELE SCOTT, N., KRIEDEMANN, P. E.: **An analysis of photosynthetic response to salt treatment in *Vitis vinifera*** · Untersuchung der Reaktion der Photosynthese auf Salzbehandlung bei *Vitis vinifera*

Austral. J. Plant Physiol. **8**, 359—374 (1981)

Div. Hort. Res., CSIRO, Merbein, Vic., Australien

Rooted *Vitis vinifera* L. cv. Sultana cuttings were grown under glasshouse conditions and supplied with dilute complete nutrient solution containing either 0 or 90 mM of added NaCl. Growth and photosynthetic response to salt treatment and subsequent recovery were followed over a period of 80 d. Shoot growth and photosynthesis were reduced by salt treatment. At relatively low concentrations of leaf chloride (< 150 mM on a fresh weight basis), photosynthesis was largely due to increased stomatal resistance. Internal disturbances were involved when  $Cl^-$  concentration exceeded 150 mM, causing a faster rate of photorespiration. Levels of fraction I protein and specific activity of ribulose-1,5-bis-phosphate carboxylase, measured *in vitro*, were not reduced by salt treatment. Vines were able to adapt to high levels of salinity and leaves maintained positive turgor despite leaf  $Cl^-$  concentrations exceeding 300 mM, implying osmotic adjustment. Cessation of salt treatment led to an immediate decrease in leaf  $Cl^-$ , a promotion of shoot growth and a progressive recovery in photosynthesis accompanied by a marked, but not necessarily concurrent reduction in both stomatal and internal resistances. Leaves could tolerate  $Cl^-$  levels up to 200 mM without sustaining permanent reduction in photosynthetic activity. New shoot growth formed subsequent to stress relief was not necessary for  $Cl^-$  retranslocation from mature leaves.

W. M. Kliewer (Davis)

ZHURAVEL', L. N.: **Relationships between the potassium content in vine organs and yield** · Beziehungen zwischen dem Kaliumgehalt der Reborgane und der Ertragshöhe (russ.)

Sadovod. Vinogradar. i Vinodel. Moldavii (Kishinev) **36** (7), 27—29 (1981)

During the technological ripeness of grapes, potassium content in leaves and shoots is the smaller the higher the grape yield is. This could be established using the Fetiaska white cv. in experiments from 1972 to 1975 with different quantities of added fertilizers: N120 P120 K120; N180 P180 K180; N240 P240 K240. Moreover, the negative correlation was shown by the control plants and by lower doses of fertilizers. The decrease of K content depending on grapevine yield was more pronounced in shoots than in leaves.  
M. Milosavljević (Belgrad)



## D. BIOCHEMIE

BRIESKORN, C. H., BLOSCZYK, G.: **Neue Triterpensäuren der Weintraubenschale** · New triterpenic acids from the peel of grapes (m. engl. Zus.)

Z. Lebensm.-Untersuch. u. -Forsch. **172**, 201—205 (1981)

Inst. Pharm. Lebensmittelchem., Univ. Würzburg

Durch Säulenchromatographie des Petroläther- und Ätherextraktes der Beerenschale und nach Abtrennen der Oleanolsäure konnten Verff. neben anderen Verbindungen 5 Triterpene des Oleanentyps isolieren. Neben 3-Oxo-olean-12-en-28-säure, 3- $\beta$ -Hydroxy-olean-12-en-28-aldehyd, 3- $\beta$ -, 29-Dihydroxy-olean-12-en-28-säure konnten in der Cuticula von Beerenschalen noch 2 bisher im Pflanzenreich nicht bekannte Triterpensäuren isoliert werden. Ihre Strukturen werden durch spektroskopische Daten als 16- $\beta$ -Hydroxy-3-oxo-olean-12-en-28-säure und 16- $\beta$ -Hydroxy-3-oxo-olean-1,12-dien-28-säure belegt.

A. Rapp (Geilweilerhof)

DATUNASHVILI, E. N., MANRIKYAN, E. G., EZHOV, V. N., LEDENKOVA, T. P.: **Investigations on the high molecular water-soluble complexes of biopolymers of a grape berry** · Untersuchungen über die hochmolekularen wasserlöslichen Komplexverbindungen von Biopolymeren der Weinbeere (russ. m. armen., engl. Zus.)

Biol. Zh. Armenii (Erevan) **34**, 119—128 (1981)

Vses. Nauchno-Issled. Inst. Vinodel. Vinogradar. Magarach, Yalta, UdSSR

In grape juice, there are numerous biopolymers originating from the cell wall of the berries. They belong to the groups: proteins, hydrocarbons and polyphenols. Parts of the water-soluble biopolymers, found in grape juice, appear in the form of complexes. The most frequently occurring substances of the complexes are: saccharides: arabinose and galactose; proteins: oxiprolin, serine, tyrosine and phenylalanine; phenol-matters: epicatechin and cis-cinnamic acid.

M. Milosavljević (Belgrad)

MOSKOWITZ, A. H., HRAZDINA, G.: **Vacuolar contents of fruit subepidermal cells from *Vitis* species** · Gehalte der Vakuolen in subepidermalen Zellen von Beeren bei *Vitis*-Arten

Plant Physiol. (Washington) **68**, 686—692 (1981)

Dept. Food Sci. Technol., Cornell Univ., Geneva, N. Y., USA

Enzymic treatment of DeChaunac grape skins followed by filtration through glass wool was used to produce vacuoles. The isolated vacuoles were then lysed by sonication. Both grape skins and vacuole lysate extracts were analyzed for content of hydroxycinnamic acid esters, flavonol glycosides, anthocyanins, carbohydrates, anions, and cations. By determining the amount of flavylium ions in relation to total anthocyanin content, Authors estimated the vacuolar pH to be 2.54—2.99. However, comparison of the anion to the cation content would indicate that the pH should be much greater. No explanation was given for the discrepancy. Authors conclude that color expression in the grape is due to self-association effects of the anthocyanins rather than complex formation with other flavonoid compounds, hydroxycinnamic acid derivatives or metals.

C. W. Nagel (Pullman)

SPETTOLI, P., BOTTACIN, A.: **Nicotinamide nucleotide transhydrogenase from *Vitis vinifera* cv. Raboso grape berries** · Nicotinamidnucleotid-Transhydrogenase aus Beeren der *Vitis-vinifera*-Sorte Raboso

Amer. J. Enol. Viticult. **32**, 87—89 (1981)

Ist. Chim. Agrar. Ind. Agrar., Univ. Padova, Italien

Das aus Beeren isolierte Enzym hat maximale Aktivität bei pH 7 und 35 °C, ein Molekulargewicht von etwa 100 000. Es konnte etwa 35fach angereichert werden, bei einer Ausbeute von 94 %. Die  $K_M$ -Werte für NADPH liegen bei 0,2 mM, für 3-Acetylpyridin bei 3 mM. Die Beteiligung des Enzyms beim Malatabbau wird diskutiert.

R. Blaich (Geilweilerhof)

STOEV, K., SHARAF, M., MIKHAILOVA, S.: **Content and dynamic of nitrogen and 15 other mineral elements in vine organs depending on vine age and soil differences (univer-**

**sal conclusions)** · Teneur et dynamique de l'azote et de quinze autres éléments minéraux dans les organes de la vigne, en raison de leur état d'âge et des diversités du sol (déductions de caractère général) (bulg. m. russ., franz. Zus.)

Gradinar. Lozar. Nauka (Sofia) **17** (7—8), 81—90 (1980)

Inst. Lozar. Vinar., Pleven, Bulgarien

Studies were carried out on the cv. Bouquet grown on 2 soil types with regard to the dynamic of N, P, K, Ca, Mg, Na, Fe, Zn, Mn, Cu, Al, Co, Ni, B, Cr, Pb in all organs and in different phases of the growing season. The accumulation depended on the role of the individual elements in the various phases and processes. During the growing season some elements increased, while others initially increased and did not change afterwards. The dynamic of accumulation was different in young plants compared with fruit-bearing plants.

*M. Milosavljević* (Belgrad)

## E. WEINBAU

CARBONNEAU, A., CASTERAN, P., LECRAIR, PH: **Principes de choix de systèmes de conduite pour des vignobles tempérés et définitions pratiques utilisables en réglementation** · Principles and criteria for choosing a system of trellising and training for the vineyards of temperate climates (m. engl., dt., span., ital. Zus.)

Connaiss. Vigne Vin (Talence) **15**, 97—124 (1981)

Sta. Rech. Viticult. (INRA), Pont-de-la-Maye, Frankreich

This comprehensive paper relates the biological requirements of vines for the production of grapes of optimal quality to the choice of a practical system of vine training and trellising. Stable variables (planting density, spacing between and within the row, row orientation, form of trunk, type of pruning) and unstable variables (node number, foliage distribution, summer pruning, pre-harvest defoliation) are discussed and some are tabulated for several systems used in practice or in experiments. For Bordeaux conditions, a spacing of 2,000 or more vines of appropriate pruning level, best exposure to sunlight of the foliage and a microclimatic equilibrium between leaves and grapes are required. Vines formed as "lyres" fulfil these requirements better than traditional, widely-spaced or even closely-spaced vines.

*P. May* (Adelaide)

CONRADIE, W. J.: **Seasonal uptake of nutrients by Chenin blanc in sand culture: II. Phosphorus, potassium, calcium and magnesium** · Jahreszeitlich bedingte Nährstoffaufnahme bei in Sand kultivierten Chenin-blanc-Reben: II. Phosphor, Kalium, Calcium und Magnesium

S. Afr. J. Enol. Viticult. **2**, 7—13 (1981)

Oenol. Viticult. Res. Inst., Stellenbosch, RSA

This paper describes the seasonal uptake and distribution of P, K, Ca, and Mg in the various parts of Chenin blanc/99 R. vines under South African conditions. — The absorption of all 4 nutrients was greatest after bud burst through veraison. P, Ca, and Mg absorption then slowed until a second but less prominent peak from about 4—5 weeks after harvest until leaf fall. However, K continued to be actively absorbed until 4—5 weeks after harvest. Thereafter K absorption ceased. — Much of the P and K absorbed during the post harvest period was retained in the vines' permanent parts. However, most of the post harvest gains in Ca and Mg were lost through leaf fall. K was translocated from the leaves to the vines' permanent parts during leaf fall. This was not noted for any of the other 3 nutrients.

*P. Christensen* (Fresno)

CONRADIE, W. J.: **Nutrient consumption by Chenin blanc grown in sand culture and seasonal changes in the chemical composition of leaf blades and petioles** · Nährstoffzusammensetzung bei in Sand kultivierten Chenin-blanc-Reben und jahreszeitlich bedingte Veränderungen in der chemischen Zusammensetzung von Blattspreiten und -stielen

S. Afr. J. Enol. Viticult. **2**, 15—18 (1981)

Oenol. Viticult. Res. Inst., Stellenbosch, RSA

This paper describes the seasonal fluctuations and utilization of N, P, K, Ca, and Mg in the various parts of Chenin blanc/99 R. vines grown in sand culture under South African climatic conditions. The seasonal accumulation of N, P, K, Ca, and Mg by the bunches was 2.12, 0.35, 2.17, 0.31, and 0.17 kg/ton of grapes. The permanent parts accumulated 0.73, 0.10, 0.19, 0.14, and 0.08 and the vegetative growth accumulated 1.77, 0.37, 0.88, 1.70, and 0.43 kg of the nutrients, respectively. The amounts of N, P, and K consumed by the crop and vine growth compare well with previous reports; differences observed for Ca and Mg are ascribed to differences in soil types. The chemical composition of both leaf blades and petioles changed appreciably during the sampling period but was most stable about 1 month after bloom, verifying previous reports. This sampling period is suggested as the most useful in vine tissue analysis work.

P. Christensen (Fresno)

DOBROLYUBSKII, O. K., TANURKOV, G. R., STRAKHOV, V. G.: **Effectiveness of manuring with zinc, manganese and titan in vineyards** · Die Wirksamkeit von Zink, Mangan und Titan in Rebanlagen (russ.)

Sadovod. Vinogradar. i Vinodel. Moldavii (Kishinev) **36** (6), 33—35 (1981)

Sel'skokhoz. Inst., Odessa, UdSSR

Independently of the climatic conditions, Zn, Mn, and Ti increased the harvest of grapes by about 5,3—16,9 %. The most important effect had Zn. These microelements increased also the sugar content of the berries by 0,5—2,1 %, even under unfavorable climatic conditions. Their application for the southern Ukraine is recommended.

J. Blaha (Brno)

ELIÁŠ, P.: **Erigeron canadensis L. — an unpleasant weed in vineyards** · *Erigeron canadensis L. — ein unangenehmes Unkraut in Rebanlagen* (slowak.)

Vinohrad (Bratislava) **19**, 200—202 (1981)

The vineyard weed plant, *Erigeron canadensis L.*, is spreading largely in the Slovakian vineyards owing to the high production of seeds. It seems necessary to take steps for special control measures because it covers the soil between the stocks. The necessity of complete biological and chemical control measures, by means of herbicides containing Triazin, is obvious. Their effect, however, is limited only to the first vegetation period of *Erigeron*. The outgrowing plants must be pulled out or cut down by hand. The flowers are of medical interest.

J. Blaha (Brno)

FREGONI, M.: **Environments and grape varieties adapted for sparkling wines** · Eignung von Umweltbedingungen und Rebsorten für die Herstellung von Schaumweinen

Vignevisini (Bologna) **8** (10), 23—28 (1981)

Catted. Viticolt., Univ. Catt., Piacenza, Italien

Author notes the increasing demand for sparkling wines in USA, England, Germany, and enumerates the factors for the production of such wines, in order of importance: varieties, climate, soil. 2 main methods of fermentation are distinguished: classical, in bottle (Champagne type) and auto-clave fermented (Charmat type). Best varieties for champagne type are: Pinot noir, Chardonnay, Meunier and to a lesser extent Pinot blanc and Pinot gris. The most adapted climate is a temperate cold one. During maturation the malic acid to tartaric acid ratio should be about 1 : 1 with the pH of juice 3 or below. Even with as little sugar as corresponds to 8.5 ° alcohol, a good champagne can be obtained. Soil is of less importance, but high N nutrition and low K are preferred. For production of Charmat type wines, dry and sweet, climatic and edaphic conditions are less rigid. Various cultivars are used in Italy, foremost being Prosecco, Riesling, Durello for dry sparkling wines and various Muscats for aromatic and sweet types. — Whenever vines are grown in warmer environments for the production of sparkling wines, lower vine density, higher forms, late maturing varieties and earlier harvesting are preferable practices.

P. Spiegel-Roy (Bet Dagan)

MCCARTHY, M. G., DOWNTON, W. J. S.: **Irrigation of grapevines with sewage effluent. II. Effects on wine composition and quality** · Die Bewässerung von Weinreben mit Abwasser. II. Wirkung auf die Zusammensetzung und Qualität des Weines

Amer. J. Enol. Viticult. **32**, 197—199 (1981)

Div. Hort. Res., CSIRO, Adelaide, S. A., Australien

The use of sewage effluent for the irrigation of grapevines significantly altered the chemical composition of wines. Na, Cl, B, N, Mg, K, P levels in wines from effluent treatment were higher than is

usual for Australian red wines. The higher K concentration in wine was associated with increased pH. Although the majority of industry wine tasters in a panel detected significant differences between wines from the various irrigation treatments, they were divided in their preferences.

H. Eschnauer (Ingelheim)

PORTNOI, M. M., SHCHERBII, P. Ya.: **The influence of herbicides in vineyards** · Über die Wirksamkeit von Herbiziden in Rebanlagen (russ.)

Sadovod. Vinogradar. i Vinodel. Moldavii (Kishinev) 36 (8), 28—30 (1981)

Studies were carried out on the combined use of the herbicides simazin, atrazin, prometrin and polytriazin in plots without and with fertilization (N20 P60 K120). The effect of herbicides was smaller in the fertilized plots. The best order of herbicides was: 1st year atrazin, 2nd year polytriazin, 3rd year prometrin, and the best combination: polytriazin — atrazin — simazin. Atrazin and polytriazin used in the first 2 years proved to be better than simazin and prometrin.

M. Milosavljević (Belgrad)

POUGET, R.: **Action de la température sur la différenciation des inflorescences et des fleurs durant les phases de pré-débourrement et de post-débourrement des bourgeons latents de la vigne** · Temperature effects on the differentiation and development of flower organs during the prebursting and postbursting phases of latent buds in *Vitis vinifera* (m. engl., dt., span., ital. Zus.)

Connaiss. Vigne (Talence) 15, 65—79 (1981)

Sta. Rech. Viticult. (INRA), Pont-de-la-Maye, Frankreich

Grapevines of the cvs. Merlot and Cabernet Sauvignon have been exposed to different temperatures (12 or 25 °C) during the prebursting and postbursting phases of latent buds. After exposure to 12 °C, the inflorescence average number/shoot appears reduced, compared with the results obtained after treatment at 25 °C; the shoots grow shorter (this fact was observed in Merlot but not in Cabernet) and the flower average number/inflorescence is much higher. It follows that the grapevines, that have been exposed to 12 °C, show a higher productivity than those exposed to 25 °C. It seems that low temperatures promote the differentiation of flower organs, while higher temperatures enhance the growth of the vegetative ones.

L. Carraro Zanazzi (Mailand)

PUCHEU-PLANTÉ, B., SEGUIN, G.: **Influence des facteurs naturels sur la maturation et la surmaturation du raisin dans le Sauternais, en 1978 et 1979** · Influence of environmental factors on the berry ripening and overripening in 1978 and 1979 in the vineyards of Sauternes (m. engl., dt., span., ital. Zus.)

Connaiss. Vigne Vin (Talence) 15, 143—160 (1981)

Inst. Oenol., Univ. Bordeaux II, Talence, Frankreich

The quality of the Sauternes sweet white wines depends on the extent of the development of *Botrytis cinerea* in the form of "noble rot". This happens only when 2 requirements are fulfilled: 1. During the ripening period the berries should not split (the soil plays here a fundamental role in regulating the water supply to the vine). 2. During the overripening period, the climatic conditions must both favor the *Botrytis* (little rain) and the concentration of the juice in the berry (dry periods between the rains). Highest quality premium wines can only be expected when all these specifications are met.

R. Wagner (Villeneuve les Maguelonne)

RIEDER, W., DITTMANN, M.: **Ein Vorschlag zur Hangkartierung von Rebflächen** · Proposal to mapping slopes of vineyard areas

Dt. Weinbau 36, 1463—1465 (1981)

Bayer. LA f. Weinbau Gartenbau, Würzburg-Veitshöchheim

Mit dem Beitrag wird der Versuch unternommen, der bisher in Statistik und allgemeiner Literatur eher abstrakten Einteilung der Weinbergslagen über eine Hangkartierung nach Hangneigung und Mechanisierbarkeit mehr Aussagekraft zu verleihen. Zur Darstellung der potentiellen Bewirtschaftbarkeit werden 4 Lagekategorien definiert. Die Flächlagen mit 0—20 % Neigung sowie die

befahrbaren Terrassen lassen eine Direktzugmechanisierung aller Arbeiten einschließlich der Lese zu. Die Hanglagen von 21—40 % Neigung werden ebenfalls zum Direktzugbereich gerechnet. Als schwierig wird die von den Bodenverhältnissen und der Schlepperbauart abhängige Abgrenzung zur Steillage bezeichnet. Die Bewirtschaftung der Steillagen mit > 40 % Neigung kann mittels Seilzug und Geräteträgersystem erfolgen. Sonstige Lagen sind alle Rebflächen mit ausschließlicher Bearbeitung von Hand, die sich einer Mechanisierung entweder durch Hangneigung oder nicht mögliche Erschließung entziehen. — Verff. wenden die vorgeschlagene Einteilung auf die Flächen eines Betriebs beispielhaft an und verweisen auf die damit gewinnbaren Entscheidungshilfen.

W. Rühling (Geisenheim)

**SABATELLI, M. P., STENDARDI, M. L.: Influence of some meteorologic factors during the first months of the vegetative cycle on the sugar content in the berries of some grape cvs.** · Einfluß einiger meteorologischer Faktoren während der ersten Monate des vegetativen Wachstums auf den Zuckergehalt in den Beeren einiger Rebsorten (ital. m. franz. Zus.)

Riv. Viticolt. Enol. (Conegliano) **34**, 271—276 (1981)

Ist. Ind. Agrar., Univ. Florenz, Italien

In the Tuscan environment the knowledge of the rainfall during April, May and June allows the forecasting of grape sugar content at harvest. The influence of climatic factors (effective temperatures, quantity and distribution of rainfall) on the sugar content of the berries is different in the various cultivars. In detail, sugar present at harvest appeared strongly correlated with the sum of the efficient temperatures and with the frequency of rain in the cultivar Sangiovese. In the cultivars Canaiolo and Malvasia sugar was correlated with the number of rainy days and the amount of the rain.

A. Scienza (Mailand und Piacenza)

**SINYAVSKII, P. V., GNATYSHIN, M. S., RUDCHENKO, T. N., PETRENKO, L. K.: The basic regularities in repeated minimal air temperatures and their significance for grape culture** · Die grundsätzliche Bedeutung wiederholter minimaler Lufttemperaturen für die Kultur der Rebe (russ.)

Sadovod. Vinogradar. i Vinodel. Moldavii (Kishinev) **36** (9), 32—37 (1981)

Study and analysis were conducted on minimal air temperatures and day-to-day temperature fluctuations, based on 50-year-data obtained in Kishinev, Moldavia and from the Kishinev School for Viticulture and Oenology. Tables of repeatability (number of occurrences during 50 years) were set up for day-to-day temperature changes and minimal air temperatures. — Of practical interest are the frequencies of minimal temperatures below critical values for bud and inflorescence development. Histograms also show the frequency (in % of total years observed) of absolute minimal air temperatures during every month and a table gives both frequency and duration (in days) of specified minimal temperatures below 0 °C. Thus, temperatures below -20 °C have been registered mainly in January and February, with a 3.8 % frequency also (1 d) in December. Based on this study, isotherms for plots, especially prone to cold hazard, can be constructed.

P. Spiegel-Roy (Bet Dagan)

**SCHRUFF, G.: Auftreten und Bedeutung von Regenwürmern im Weinbau** · Occurrence and importance of rainworms in viticulture

Bad. Winzer (10), 444—447 (1981)

Staatl. Weinbauinst., Freiburg/Br.

Nach allgemeinen Ausführungen über die Biologie und die Bedeutung der Regenwürmer für die Bodenfruchtbarkeit wird über ihr Auftreten im südbadischen Weinbaugebiet berichtet. Im Sommer 1979, Herbst 1979 und Frühjahr 1980 wurden aus 8 Gemeinden bzw. 16 Rebanlagen jeweils 4 × 1 m<sup>2</sup> Boden untersucht. In diesen 192 Proben wurden insgesamt 9 262 Regenwürmer gezählt. Die weit-aus meisten Individuen entfielen auf die Streu-abbauende Art *Lumbricus rubellus* (84 %), gefolgt von *L. terrestris* (8 %), der tiefe Bodengänge anlegt, und *Allolobophora caliginosa* (3 %). Die vorliegenden Bodentypen (Vulkanverwitterung, Löß, Granitverwitterung) wirkten sich kaum auf den Regenwurmbesatz aus, während die Art der Bodenbearbeitung und die allgemeine Bewirtschaftungsweise einen deutlichen Einfluß zeigten. Unter Dauerbegrünung wurden die meisten, in offen gehaltenen Böden die wenigsten Regenwürmer festgestellt (verringertes Nahrungsangebot, Gefahr der Austrocknung, direkte Störung durch die Bodenbearbeitung); in mit Stroh abgedeckten Böden

lag ein mittlerer Wurmbesatz vor. Alternativ bewirtschaftete Flächen — als Fungizide nur Cu-Präparate und Netzschwefel, an Spezialprodukten Steinmehl, Brennessel-, Schachtelhalm- und Rainfarn-Jauche, ferner Hornspäne, Oskorna, Stallmist, Hornmist — besaßen bedeutend mehr Würmer als konventionell bewirtschaftete Flächen von Privatbetrieben, diese wiederum etwas mehr als die konventionellen Institutparzellen.  
G. Rilling (Geilweilerhof)

VÖLKEL, R., ENKELMANN, R.: **Versuche mit Müllkompost im Weinbau** · Tests concerning the use of refuse compost viticulture

Rebe u. Wein **34**, 362—364 (1981)

Landwirtsch. Untersuch.- Forschungsanst., Augustenberg

Tests with increasing applications of refuse compost (240, 450, 900 t/ha) were carried out to investigate the influence of heavy metals in different soils (granitic weathering soils and loess). Using refuse compost the contents of the heavy metals Cu, Zn, Pb, Cd, Ni, and Hg were accumulated in the topsoil, more intensive in loess than in granitic weathering soils. The limiting value for Pb was observed when applied 450 t/ha and for Zn when applied 900 t/ha. This quantity caused also a remarkable increase of heavy metals in the subsoil. In the vine leaves, only a slight increase of Cu, Zn, Pb was observed, but no Hg and Cd was detectable. In the must, the contents of heavy metals were not remarkably increased. During fermentation heavy metals, mainly Cu, Cd, and Hg were reduced, thus in wines only little values for Cu, Zn, and Pb were noted.

G. Mayer (Klosterneuburg)

## F. BODEN

TREIKYASHKI, P.: **Dynamics of soil moisture in a vineyard planted on recultivated soil** ·

Dynamik des Bodenwassergehaltes in einer Rebanlage auf rekultiviertem Boden (bulg. m. russ., engl. Zus.)

Pochvozn. Agrokhim. (Sofia) **15** (6), 3—13 (1980)

Inst. Pochvozn., Sofia, Bulgarien

Recultivated soil of the Marica-Istok stone-carbon region (Marica-East) appears as green and black clays. Dynamic of water is different in these 2 types of clays. In green clay, only layers down to 10 cm very often remain without water, while in the other layers the water increases with the deepness. This type of clay is convenient for vine growing. In black clay, however, there is very often water deficiency and for this reason, vine does not grow well.  
M. Milosavljević (Belgrad)

## G. ZÜCHTUNG

ABADZHYAN, R. A., KAZARYAN, L. V., NAGAPETYAN, ZH. A., MESROPYAN, M. B.: **Some biochemical parameters connected with mildew resistance of grapevine** · Biochemische

Parameter der *Plasmopara*-Resistenz der Rebe (russ. m. armen. Zus.)

Biol. Zh. Armenii (Erevan) **34**, 415—416 (1981)

Aus den Untersuchungen geht hervor, daß die Widerstandsfähigkeit der Rebe gegen *Plasmopara* nicht durch das Nahrungsangebot für den Parasiten, sondern durch Menge und Wirksamkeit von Toxinen bestimmt wird. Bei widerstandsfähigen Sorten wurden in Pollen 11,88—15,84, in Blättern 6,40—6,93 mg Phenole/g gefunden, in empfindlichen Sorten dagegen 8,86—10,86 bzw. 3,26—4,90 mg/g.  
L. Avramov (Belgrad)

ANONYM: **Remaily Seedless — a breakthrough table grape for the east** · Remaily Seedless — ein Durchbruch beim Tafeltraubenanbau im Osten

Eastern Grape Grower Winery News **7** (4), 24—25 (1981)

A major goal of the eastern North American grape grower is to produce a table grape that can successfully compete with Thompson Seedless which cannot be grown economically due to pathogen sensitivity and lack of winter hardiness. The available labruscana hybrids had lower consumer

acceptance due to one or more of: slip skin, berry texture faults, lack of crispness, presence of seeds or foxiness. The Remaly selection has many of the desirable traits of the Thompson Seedless and can be grown successfully in the American North East. Many of the new vines in the nursery came from *in vitro* propagation ensuring greater clonal stability and virus free stock.

R. Subden (Guelph)

CRESCIMANNO, F. G., LORENZO, R. DI, SOTTILE, I.: **Regards on the production of hybrid seedlings *Berlandieri* × *Rupestris*** · Technische Gesichtspunkte bei der Anzucht von Kreuzungssämlingen (*V. berlandieri* × *V. rupestris*) (ital. m. engl. Zus.)

Vignevisini (Bologna) 8 (7—8), 23—27 (1981)

Ist. Colt. Arbor., Univ. Palermo, Italien

Pollen storage, seed germination percentage and quality of seedlings have been the technical aspects for the production of hybrid seedlings (*Vitis berlandieri* × *V. rupestris*). Pollen has been stored at 5 °C. The percentage of hybrid seed germination has been over 90 % and the first quality seedlings obtained have been over 80 %, either in the field or in polyethylen bags. Height, trunk diameter and root number of 350 investigated seedlings have shown high variability.

G. Fanizza (Bari)

FINGER, H., MERTES, H.: **Oppenheimer Unterlagsrebenzüchtungen im europäischen Wettbewerb** · Rootstock varieties from the LLVA Oppenheim in the European competition

Dt. Weinbau 36, 1367—1370 (1981)

LLVA f. Landwirtschaft., Wein- Gartenbau, Oppenheim

The breeding of rootstocks SO 4 and Binova is quoted as an illustration of the breeding procedure of rootstock varieties. The following subjects are treated: Preservation of varieties, sanitary selection, scion-rootstock affinity, choice of the suitable rootstock cv. with regard to the production area, proportionate production and grafting of rootstock cvs. cultivated in West Germany.

B. Hill (Lauffen)

GRASSO, S.: **Magnesium deficiency of some grapevines in Sicily** · Magnesiummangel bei einigen sizilianischen Reben (ital. m. engl. Zus.)

Riv. Patol. Veg. (Pavia) 17, 55—60 (1981)

Ist. Patol. Veg., Univ. Catania, Italien

Grapevines grown in some hillside vineyards near Catania show evident symptoms of chlorosis. This disease is caused by deficiency of Mg and Ca exchangeable ions and high K/Mg ratio in the soil. Mg sulphate added to the soil or sprayed on the leaves reduces the chlorosis; whereas organic fertilizers containing 0.5 % Mg added to the soil appear to be less successful.

G. Lombardo (Mailand)

KAMOEN, O., JAMART, G., DECLERCQ, H., DUBOURDIEU, D.: **Des éliciteurs de phytoalexins chez le *Botrytis cinerea*** · Phytoalexin elicitors produced by *Botrytis cinerea*

Ann. Phytopathol. (Paris) 12, 365—376 (1980)

Sta. Phytopathol., Cent. Rech. Agron., Merelbeke, Belgien

The production of phaseolin by young leaves of *Phaseolus vulgaris* after treatment with fractions of glucanes and other polysaccharides from *Botrytis cinerea* was tested. The glucane is normally fixed to the cell walls of *Botrytis* but is soluble after agitating the culture (mol.wt. 1 000 000). A heteropolysaccharide was characterized. It has a mol.wt. of 40 000 and is composed of mannose, glucose, galactose, and rhamnose. Both types of polysaccharides induce the formation of phaseolin after 3 d treatment of the leaves with the inducing solution (1 mg/ml), which was applied by vacuum infiltration.

R. Blaich (Geilweilerhof)

LEFORT, P.-L., BRONNER, A.: **Modalités, contraintes et efficacité de la sélection sur descendance de plein-frères chez la vigne (*Vitis vinifera* L.)** · Procedure, constraints and efficiency of selection among full-sib progenies in the grapevine (*Vitis vinifera* L.) (m. engl. Zus.)

Agronomie (Versailles) 1, 667—678 (1981)  
Sta. Rech. Vitic. Oenol. (INRA), Colmar, Frankreich

In the absence of a large number of highly inbred lines, breeders have used for the gene by gene construction of crops such as cereals or tomatoes, the grape breeder must utilize the mechanics of qualitative genetics to select desired cultivars. This paper is part of an ongoing study on the heritability and environmental factors affecting the resistance to coulure (shelling and shot berries), flavor, onset of veraison, date of harvest and chemical composition of the grapes. Authors propose several formulas for estimating genetic variability and the breakdown of clonal stability. Several grapevine and harvest parameters are ranked according to their heritabilities.

R. Subden (Guelph)

MOLCHANOV, V. L., BALYASNIKOVA, T. I.: **Muskat-Sorten sowjetischer Selektion in Usbekistan** · Muscat cultivars of Soviet selection in Uzbekistan (russ.)  
Vinodel. i Vinogradar. SSSR (Moskau) (2), 31—33 (1981)

In Usbekistan gibt es ausgezeichnete Standorte für die Produktion von Naturdessertweinen, wobei die Muskatweine eine besondere Rolle spielen. Neben den hierfür im Anbau stehenden Rebsorten Aleatico, Muskat (M.) rot, ungarischer M. wurden neue Sorten geprüft. In den geprüften Anlagen mit Standweiten von 2,5 × 2 m waren die Reben im Winter mit Erde bedeckt und wurden im Sommer 2 × bewässert. Die Standardsorten trugen 12—18 t/ha. Neue Sorten sind M. Susanna und Dessertmuskat mit schneller und hoher Zuckerakkumulation bei hohem Ertrag und guter Weinqualität, armenischer M. und östlicher M. mit guter Weinqualität, M. Harmus mit hohen Erträgen, aber geringerer Weinqualität, M. Schiro, usbekischer M., M. VIR, Kibrajer M., Jubiläumsmuskat. Der auch als Tafeltraube geeignete Dessertmuskat sowie M. Susanna werden für die Erzeugung von Naturdessertweinen empfohlen.

V. Kraus (Lednice na Morave)

RAJU, B. C., GOHEEN, A. C.: **Relative sensitivity of selected grapevine cultivars to Pierce's disease bacterial inoculations** · Relative Anfälligkeit ausgewählter Rebsorten gegen Beimpfung mit Pierce's-Disease-Bakterien  
Amer. J. Enol. Viticult. 32, 155—158 (1981)  
Dept. Plant Pathol., Univ. California, Davis, Calif., USA

Dormant cuttings of 25 grape cultivars were inoculated with Pierce's disease bacteria. After rooting the cuttings were analyzed for infections by means of ELISA (enzyme linked immunosorbent assay) the results of which were congruent with the visual estimation of burning symptoms. Chenin blanc and Sylvaner were the most tolerant cultivars, whereas French Colombard and Sauvignon blanc were very susceptible. The results corroborate the observations on susceptibility of cultivars in commercial vineyards.

R. Blaich (Geilweilerhof)

## H. PHYTOPATHOLOGIE

BALDACCI, E.: **A key to virus and virus-like diseases of the grapevine. An approach to the classification of virus diseases** · Ein Schlüssel für Viruskrankheiten und virusähnliche Krankheiten der Rebe. Ein erster Versuch zur Klassifizierung von Viruskrankheiten (m. ital. Zus.)  
Riv. Patol. Veg. (Pavia) 17, 90—105 (1981)  
Ist. Patol. Veg., Univ. Mailand, Italien

A key for the identification of 32 virus and virus-like diseases of grapevine is presented. It is based mainly on symptoms and functional alterations produced on the cultivated grapevines or on specific *Vitis* indicators. The diseases caused by some of the sap-transmissible viruses, however, can be distinguished only on the basis of virus identification by serology.

R. Bovey (Nyon)

BALDACCI, E., BELLI, G.: **Grapevine fanleaf virus (GFV) in plants of the variety Picolit** · Fanleaf-Virus bei Reben der Sorte Picolit (ital. m. engl. Zus.)



Riv. Patol. Veg. (Pavia) 17, 111—113 (1981)

Ist. Patol. Veg., Univ. Mailand, Italien

Symptoms were produced on *Chenopodium* and *Gomphrena* indicator plants following inoculation with sap from leaves of the grapevine cultivar Picolit showing leaf deformations, shot berries and low production. An isometric virus 28—30 nm in diameter isolated from these indicator plants was identified as grapevine fanleaf virus by serology (double diffusion in agar and immune electron microscopy). It is considered by the Authors as a possible cause of the well known low productivity of Picolit grapevines. R. Bovey (Nyon)

BESSIS, R., FOURNIOUX, J. C., OLIVAIN, C.: **Divers aspects de la fertilité de la vigne après une grêle** · Different aspects of bud fruitfulness in grapevines after hail damage (m. engl., dt., span., ital. Zus.)

Connaiss. Vigne Vin (Talence) 15, 53—64 (1981)

Lab. Bot. Appl., Fac. Sci. Vie Environ., Univ. Dijon, Frankreich

A serious hail damage occurred in Burgundy in June, 1979, a few days before blooming. — The best bud fruitfulness was noticed on the shoots which grew after the hail, no irregularity appeared in the distribution of the fruitfulness of the buds along the shoots. On the contrary, on the shoots which were injured by hail a disturbed fruitfulness occurred. — A careful study of the influence of hail has allowed to determine the parameters that should be taken into account in choosing the course of action to follow. If re pruning should take place, it must happen in any case as soon as possible after the hail. R. Wagner (Villeneuve les Maguelonne)

BRENDEL, G., BÄCKER, G.: **Prüfung reduzierter Wasser- und Wirkstoffaufwandmengen beim Einsatz von Pflanzenschutzmitteln** · Examination of reduced quantities of water and active substances when using plant protection products

Rebe u. Wein 34, 327—328 (1981)

Inst. Phytomed. Pflanzensch., FA f. Weinbau Gartenbau Getränketechnol. Landespflege, Geisenheim

The prescribed doses of active ingredients (a. i.) are usually applied in water quantities up to 2 000 l/ha. In the present experiments various concentrations (100 % — 75 % — 50 % — 25 %) were dissolved in 100 l/ha and the infections of *Oidium tuckeri*, *Plasmopara viticola* and *Botrytis cinerea* were estimated on the cvs. Müller-Thurgau and Scheurebe. — When controlling *O. tuckeri*, the variant with 25 % a. i. in 100 l/ha still exceeded the method used in practice as to its efficacy. The organic fungicides were superior to the classic preparation sulphur. — Although there was an increased infection level, the reduction of a. i. to 50 % showed evident success in controlling *P. viticola*. — Even in case of the protection against *B. cinerea* the decreased quantity of 100 l water/ha did not effect the results unfavourably. However, the dose of the a. i. should not be diminished to less than 75 %, in order to guarantee a satisfactory effectiveness. B. Hill (Lauffen)

ERCOLE, N. D', NIPOTI, P.: **Biology of *Botrytis cinerea* on the grapevine: I. Overwintering of the parasite** · Die Biologie der *Botrytis cinerea* bei der Rebe: I. Überwinterung des Schädlings (ital. m. engl. Zus.)

Riv. Patol. Veg. (Pavia) 17, 35—43 (1981)

Ist. Patol. Veg., Univ. Bologna, Italien

Observations on the overwintering of *Botrytis cinerea* on grapevines of different cultivars, grown in different environments, have been carried out for 3 successive years. It was ascertained that the mycelium represents the overwintering form of the fungus in the buds and scales and in the proximal parts of the canes. Sclerotia prevailed in the distal tracts of the canes instead. Since these are eliminated with pruning, mycelial forms are mainly responsible for the survival of the parasite. On the canes, vegetative fungal structures were considerably more frequent from the 4th node upwards, their amount being directly related to the intensity of the epiphytotics of the preceding season. However, the inoculum level was lower in vineyards protected with specific chemicals, where the fungus occurred mainly under sclerotial forms. Invasion of the scales was strictly tied to bud infections which, in turn, had a direct bearing on infections to the nodes. In general, fungal structures were more frequently found in white-berried than in red-berried cultivars. An antagonistic action of *Cladosporium* sp. towards *B. cinerea* was also observed. G. P. Martelli (Bari)

HOPKINS, D. L.: **Seasonal concentration of the Pierce's disease bacterium in grapevine stems, petioles, and leaf veins** · Jahreszeitlich bedingte Konzentration von Pierce's-Disease-Bakterien in Sproßachsen, Blattstielen und Blattadern der Rebe  
Phytopathology **71**, 415—418 (1981)

Agricult. Res. Center, Univ. Florida, Leesburg, USA

The seasonal variation of the intravascular concentration of Pierce's disease bacterium was assessed by serial sectioning 0.5 cm long pieces of stem, petiole and leaf vein, sampled from naturally infected vines of *Vitis labrusca* L. cv. Schuyler. In the first sampling, at the end of March, bacteria were detected in the old wood, whereas the new growth remained free from them for about 4 weeks. Bacterial concentration then increased rapidly to reach the highest values in the June and July samplings. A marked decrease was observed in October. Totally occluded vessels were more frequent in petioles and leaf veins than in stems. The highest frequency of plugging was observed in the veins of leaves with marginal necrosis in which about 80 % of the xylem vessels were completely occluded. The seasonal variation and concentration of intravascular bacterial populations correlated very well with symptom development and with the pattern of natural transmission by the vectors.

G. P. Martelli (Bari)

JUBB, G. L. JR.: **Beneficial insects in the vineyard** · Nützliche Insekten im Weinbau  
Eastern Grape Grower Winery News **7** (4), 19—21 (1981)

A descriptive review is presented of selected beneficial arthropods found to be present in vineyards in eastern USA. These are classified as either predators or parasites. Insects, spiders, mites etc. are listed together with details of their morphology, time of appearance and abundance in the vineyard, tolerance to insecticides, and their role or potential role as agents of biological control.

M. Barlass (Merbein)

LEAR, B., GOHEEN, A. C., RASKI, D. J.: **Effectiveness of soil fumigation for control of fan-leaf-nematode complex in grapevines** · Die Wirksamkeit einer Bodenbegasung zur Bekämpfung des Fanleafvirus-Nematoden-Komplexes

Amer. J. Enol. Viticult. **32**, 208—211 (1981)

Div. Nematol., Univ. California, Davis, Calif., USA

The effectiveness of soil fumigation for killing nematodes and residual root fragments, and for the control of the fanleaf-nematode complex was tested in California. Optimum treatment for carbon disulfide (CS<sub>2</sub>) was considered to be injection of 3530 kg/ha at a depth of 20 cm, for methyl bromide (MBr) 448 kg/ha injected at 51 to 91 cm, and for 1,3 dichloropropene (1,3 D) 2802 kg/ha injected at 2 depths: 2242 kg at 76 cm and 560 kg at 20 cm. CS<sub>2</sub> proved to be not sufficiently effective against the fanleaf-nematode problem. MBr was effective provided the soil type and structure permitted penetration to sufficient depths. 1,3 D was the most effective fumigant. Both 1,3 D and MBr proved to be economically feasible in sites where the soil permits fumigant penetration.

B. Weischer (Münster)

MENKE, F.: **Neue Kontrollmethoden erleichtern die Traubenwicklerbekämpfung** · Novel control methods facilitate grape berry moth control  
Obstbau Weinbau (Bozen) **18**, 294—295 (1981)

2 species of grape berry moths, *Polychrosis botrana* and *Clysia ambiguella*, occur in South Tyrol. Both species develop 2—3 larval generations per year: the 1st one appears during the hay-harvest ("Heuwurm") and the 2nd attacks the grapes while the berries are still sour ("Sauerwurm"); only isolated individuals develop to a 3rd generation shortly before the grape-harvest ("Süßwurm"). The damage caused by the different larval generations, and the control methods used to combat them from earlier times up to the present day, are described briefly. Flight activity was previously monitored with bait traps (jam jars filled with after-wine, vinegar and sugar, hung at the height of the grapes) and now with pheromone traps. Since the peaks of moth captures and egg-laying coincide, hatching time and hence the right time for control measures against the larvae can be calculated for every part of the season: in South Tyrol egg-hatch of the 1st generation occurs ca. 12—14 d, and of the 2nd generation 6—8 d after flight peak. With the help of flight data, which are collected throughout the grape-growing area of South Tyrol by employing 36 pheromone traps, the Extension Service (Beratungsring) succeeded in reducing drastically the quantity of insecticides applied, with the concomitant use of less toxic compounds. An enquiry showed that only 50 % of the growers had

to spray against the 1st larval generation, and more than 70 % managed with just 1 treatment against the 2nd. It was shown that no control measures are necessary against the 3rd generation.

K. R. S. Ascher (Bet Dagan)

RANDAZZO, G., CAPASSO, R., REGA, G., BOTTALICO, A., FRISULLO, S., BALLIO, A.: **Die Produktion von Phytotoxinen durch *Phomopsis viticola* (SACC.), den Erreger der Schwarzfleckenkrankheit** · Production of phytotoxins by *Phomopsis viticola* (SACC.), the causal agent of grapevine dead-arm disease (ital.)

Phytopathol. Mediter. (Bologna) **19**, 171—172 (1980)

Ist. Chim. Org. Biol., Univ. Napoli, Italien

Aus einem Lyophilisat des Kulturmediums von *Phomopsis viticola* konnten Fraktionen erhalten werden, die auf Blättern von Kartoffelpflänzchen Blattnekrosen hervorriefen. Die toxischen Prinzipien sind stabil zwischen pH 2 und 10 und können bis auf 70 °C erhitzt werden, ohne an Wirksamkeit einzubüßen.

R. Blaich (Geilweilerhof)

TROMP, A., MARAIS, P. G.: **Triadimefon, a systemic fungicide against *Uncinula necator* (oidium) on wine grapes: disease control, residues and effect on fermentation and wine quality** · Triadimefon, ein systemisches Fungizid gegen *Uncinula necator* (Oidium) der Reben: Bekämpfung, Rückstände und Wirkung auf Gärung und Weinqualität

S. Afr. J. Enol. Viticult. **2**, 25—28 (1981)

Oenol. Viticult. Res. Inst., Stellenbosch, RSA

In the last 13 years, a steadily increasing incidence of oidium has been noticed in the vineyards of South Africa. This has been attributed mainly to the lack of a fungicide which can be applied till shortly before harvest without affecting fermentation. 1978/79, in 2 field trials, the new systemic fungicide triadimefon (1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazol-1-yl)-2-butanon was tested against oidium on 2 grape varieties. At an infection level of 86.2 %, triadimefon gave very good results (10.5 % infection) while the control by sulphur was inadequate (65 % infection). The residues recovered from grapes immediately after the last application were low and should be under the tolerance level at harvest time, which means that the safety period can be kept very short. The addition of triadimefon to untreated must did not affect fermentation, and must from treated grapes showed normal fermentation. The quality of wine made from treated grapes was significantly higher than that made from untreated grapes.

E. Bosshard-Heer (Wädenswil)

URETA, F., BOIDRON, J. N., BOUARD, J.: **Influence du dessèchement de la rafle sur la qualité des vins** · Effect of stielhähme on wine quality (m. engl., dt., span., ital. Zus.)

Connaiss. Vigne Vin (Talence) **15**, 81—87 (1981)

Inst. Oenol., Univ. Bordeaux II, Talence, Frankreich

When the bunches of a vine are affected they comprise at harvest both normal berries and shrivelled ones. So 4 categories of grapes were collected: (1) normal bunches from normal vines, (2) normal bunches from diseased vines, (3) normal berries from diseased bunches, and (4) diseased berries from diseased bunches. The must of each category was analysed and fermented separately (microvinification of 2,5 l for each sample) for 2 varieties, namely Cabernet Sauvignon and Semillon. The effect of this physiological disease was mostly evident on the main constituents of must and wine — low level of alcohol, high acidity, less amount of higher alcohols and esters — and in the course of fermentation — delayed alcoholic fermentation and no malolactic fermentation at all —. Finally, the wines from diseased vines appeared unbalanced and had a very bad rating when tasted. But the striking fact is that the normal bunches coming from vines which showed more or less severe symptoms of withering always gave bad results: so the effect of the disease is not restricted to the visually damaged berries, but on the contrary, extends to the whole yield of each affected vine.

J. P. Doazan (Bordeaux)

## J. TECHNIK

AMATI, A.: **Stainless steel in oenology. Characteristics and application** · Rostfreier Stahl in der Önologie. Eigenschaften und Anwendung (ital.)

Vignevisini **8** (9), 11—18 (1981)

The composition and the structure of stainless steels according AISI are discussed and the most suitable ones for the oenology are recommended. The 2 qualities AISI 304 and 316 are mostly used; the Mo containing 316 is from the corrosion point of view — in spite of the higher price — the better solution for tanks and machines in wineries.  
*H. Eschnauer (Ingelheim)*

**COLAGRANDE, O.: Utilisation d'un vinificateur à remontage automatique pour l'élaboration des vins rouges (m. engl., dt., span., ital. Zus.)** · Application of an automatic pumping-over device for vinification of red grapes

Connaiss. Vigne Vin (Talence) 15, 125—141 (1981)

Ist. Enol., Fac. Agrar., Univ. Catt. S. Cuore, Piacenza, Italien

Author reviews various factors influencing the extraction of phenolic compounds during maceration of red grapes. In this study, 2 processes of red vinification were compared using different grape varieties: the traditional Italian method (TIM) and a new technique involving an automatic pumping-over device (APO). A detailed description of the equipment is presented. Application of APO reduced the duration of maceration. Wines obtained by this method were as much colored as those obtained by TIM and contained less tannins. Frequency of pumping and amount of must pumped over could be manipulated to obtain the desired final product.  
*C. Buteau (Guelph)*

**STUMM, G., JAKOB, L., FETTER, K.: Rotweinbereitung unter Verwendung eines Vinifikators** · Red wine production using a vinificator

Weinwirtsch. (Neustadt/Weinstr.) 117, 1160—1166 (1981)

LLVA f. Wein- Gartenbau Landwirtschaft., Bad Neuenahr-Ahrweiler

In der Kellerei haben sich die Gärbehälter Vinifikator bei Vergleichsversuchen bewährt. Bei diesem Behälter handelt es sich um einen stehenden zylindrischen Tank aus Cr-Ni-Stahl, dessen Boden trichterförmig gestaltet ist. Die Führungsbleche im Innern des Tanks und ein großes Rührwerk, das gleichzeitig als Heizschlange benutzt werden kann, bewirken eine gute Durchmischung. Gegenüber der Gärführung in offenen Behältern bringt der Vinifikator beachtliche Arbeitserleichterung und durch das geschlossene Gärsystem weniger Alkoholverlust, was nicht selten eine bessere Qualitätseinstufung zur Folge hat. Bei Kostenvergleichen gegenüber der offenen Gärung schneidet der Vinifikator ebenfalls gut ab. Hinzu kommt, daß der Behälter noch vielseitig auch zur Weinlagerung etc. verwendet werden kann.  
*Th. Becker (Deidesheim)*

## K. BETRIEBSWIRTSCHAFT

**JACQUET, P.: Aspects économiques de la stabilisation tartrique des vins par le froid** · Ökonomische Gesichtspunkte bei der Weinsteinstabilisierung durch die Anwendung von Kühlverfahren (m. engl., dt., span., ital. Zus.)

Connaiss. Vigne Vin (Talence) 15, 193—228 (1981)

Inst. Natl. Gestion Econ. Rurale, Paris, Frankreich

Verf. behandelt Kosten, die bei der Weinsteinstabilisierung durch Anwendung von Kühlverfahren entstehen. In 14 Modellrechnungen werden die Aufwendungen ermittelt. Neben den verschiedenen festen und veränderlichen Kosten werden insbesondere die Handarbeitskosten herausgestellt. Weitere Unterstellungen bei den Rechenbeispielen sind unterschiedliche Verfahrensdauer, Gebindezahl und -größe sowie die Tagesleistung.  
*F. Schnekenburger (Freiburg)*

## L. ÖNOLOGIE

**AMATI, A., GALASSI, S., SPINABELLI, U.: On the physical treatments of stabilization in the wine bottling: the infra-red radiations** · Physikalische Behandlungen zur Stabilisierung des Weines bei der Flaschenfüllung: Infrarotbestrahlung (ital. m. engl. Zus.)

Vignevini 8 (10), 41—47 (1981)

Cent. Ric. Vitic. Enol., Univ. Stud., Bologna, Italien

A sweet white wine and a dry red wine were bottled by pasteurization, IR irradiation and sterilizing filtration. The applied methods of stabilization influenced the wine composition. The main differences concern the colour, the aroma, the flavour and the phenolic fractions. The hot filling improves polyphenolic condensation reaction and colour browning. The IR irradiation combined with cold filling preserves wine qualities best. Sterilizing filtration leads to lower results, if the wine contains oxidizing enzymes.

*E. Lück* (Frankfurt)

ANDRÉ, P., BÉNARD, P., BOURZEIX, M., FLANZY, C., HEREDIA, N., LARDIN, J., PERRY, P., RIGAL, P., SABATIER, M., SOLANO, A.: **Vinification par macération carbonique. IX. Élaboration des vins rosés** · Vinification by carbonic maceration. IX. Production of rosé wines. (m. engl. Zus.)

Ann. Technol. Agric. (Paris) 29, 497—508 (1980)

Sta. Technol. Prod. Vég. (INRA), Montfavet, Frankreich

Using Carignan grapes, 3 processes for the production of rosé wines were compared: (P) immediate pressing of the grapes, (S) short maceration (6—12 h) of crushed-sulfited grapes and (CM) carbonic maceration at different temperatures (22, 25 and 35 °C) and durations of anaerobiosis (12—72 h). Wines obtained by CM compared well organoleptically with those obtained by S; P wines were judged inferior. The phenolic content of CM wines was, however, too high for them to be classified as rosés. Optimal time-temperature relationship for Carignan grapes would be 36 h at 35 °C in order to obtain sufficient extraction of aromatic substances without the excessive extraction of phenolic compounds. The most favorable time-temperature combination of CM would have to be determined for other varieties.

*C. Buteau* (Guelph)

ANONYM: **Spirituosen-Jahrbuch 1982** · Yearbook of alcoholic liquors 1982

VLA f. Spiritusfabrikation u. Fermentationstechnol., Berlin, 512 S. (1981)

Das in Inhalt und Aufmachung altbewährte Jahrbuch hat auch in seinem 33. Jahrgang im wesentlichen seine bisherige Gliederung. Das „Spirituosen-ABC“ erhielt weitere Ergänzungen und Erläuterungen; unter „Wissenswertes für den Fachmann“ sind wieder wichtige aktuelle Themen behandelt, z. B. die Frage der Lebensmittelaufsicht; die Wettbewerbsregeln des Bundesverbandes der Deutschen Spirituosen-Industrie e. V. sind wieder aufgenommen; in dem Abschnitt über „Das Branntweinmonopol im Betriebsjahr 1980/81“ sind vor allem die im o. a. Zeitraum in Kraft getretenen Änderungen des Branntweinmonopolgesetzes zusammengestellt; auch die einschlägigen Studiengänge und Institute fehlen ebensowenig wie die Anschriften von Behörden und Fachverbänden.

*H. Berndt* (Geilweilerhof)

ÁSVÁNY, A., SÁRKÁNY, P.: **Neue Verfahren zur Bereitung von Rotwein** · New methods for preparing red wine (ungar.)

Borgazdaság (Budapest) 29, 92—95 (1981)

Orsz. Borminösítő Int., Budapest, Ungarn

Verff. stellen Prinzipien neuer französischer Rotweinbereitungsverfahren vor: 1) den Mazerationsvorgang nach ECAL-SERRES, 2) den kontinuierlichen Traubenmazerator nach VILLENEUVE, 3) das rototankähnliche Verfahren nach EGRETIER. Der Einfluß verschiedener Bereitungsverfahren auf die Zusammensetzung und Qualität der Rotweine bzw. deren Vor- und Nachteile werden ausführlich dargelegt.

*E. Minárik* (Bratislava)

CASTINO, M., BELLA, P.: **Pectolytic enzymes for making red wines** · Pektolytische Enzyme zur Rotweinerstellung (ital. m. engl. Zus.)

Riv. Viticolt. Enol. (Conegliano) 34, 179—197 (1981)

Ist. Sper. Enol., Asti, Italien

Anthocyanin extraction, polyphenol behavior, uronic acid and methanol concentrations were studied as functions of Ultrazym treatment (commercial Ultrazym + 4 gel-filtration separated fractions) in vinification of Barbera, Dolcetto, Merlot, Nebbiolo, Freisa and Grignolino in 1978. Juice-skin contact was 48 h. Uronic acids and methanol concentrations were higher in treated wines than in controls (452—747 vs. 340 mg/l, and 131—211 vs. 114 mg/l, respectively). Significantly larger extractions

of anthocyanins (cyanidin and peonidin) were found for Nebbiolo and Freisa where these pigments predominate, but not for cultivars in which tri-hydroxy anthocyanins predominate. Color was still significantly greater in wines from treated musts 3—12 months after crushing. Color was also greater in Barbera wine, which can not be clearly explained by the present data. *A. D. Webb (Davis)*

**CASTINO, M., UBIGLI, M.: The use of pectolytic preparations and of kieselsool as aid products in the settling of the musts · Anwendung von Pektolyten und Kieselsool als Hilfsmittel bei der Vorklärung von Mosten (ital. m. engl. Zus.)**

Vignevis (Bologna) 8 (7—8), 29—38 (1981)

Ist. Sper. Enol., Asti, Italien

Musts from white Riesling, Muscat blanc, Cortese and a mixture of several varieties, either pressed directly (Vaslin horizontal) or crushed and then pressed were treated with 50 ml/hl Baykisol + 2.5 g gelatine/hl, 3 g Ultrazym 100/hl or a mixture of the three. Each must (containing 100 mg SO<sub>2</sub>/l) was settled in a 2-l glass cylinder, with photos at intervals from 3—20 h. For pressed only grapes the combined treatment gave excellent clearing in a few h; all treatments were better than control at 20 h. Crushed and pressed grapes gave better clearing with combined treatment at 3 h, but at 20 h all (inc. control) cleared fairly well. Baykisol treatment gave lighter colored wines.

*A. D. Webb (Davis)*

**DARASELIYA, G. Ya., TSILOSANI, C. A., BOCHORIDZE, L. D.: The effect of quercetin and rutin on the intensity of alcohol fermentation · Wirkung von Quercetin und Rutin auf die alkoholische Gärung (russ. m. grus., engl. Zus.)**

Soobshch. Akad. Nauk Gruzinsk. SSR (Tbilisi) 102, 465—467 (1981)

Inst. Biokhim. Rast., Akad. Nauk Gruzinsk. SSR, Tbilisi, UdSSR

The effect of 2 polyphenols on the intensity of alcohol fermentation of 2 yeast species was studied. It was observed that quercetin and rutin stimulated the intensity of alcohol fermentation by *Saccharomyces chodatii* and *S. vini*. The stimulation rate depends on the concentration of the studied polyphenols, culture media content, and specificity of the 2 studied yeast species.

*S. A. Abou-Donia (Alexandria)*

**DUBOURDIEU, D., VILLETIZ, J. C., DESPLANQUES, C. M., RIBÉREAU-GAYON, P.: Dégradation enzymatique du glucane de *Botrytis cinerea*. Application à l'amélioration de la clarification des vins issus de raisins pourris · Enzymatic degradation of glucane from *Botrytis cinerea*. Application to improve the clarification of wines made from rotten grapes (m. engl., dt., span., ital. Zus.)**

Connaiss. Vigne Vin (Talence) 15, 161—177 (1981)

Inst. Oenol., Univ. Bordeaux II, Talence, Frankreich

The paper describes the separation and purification of the polysaccharide β-glucane produced by *Botrytis cinerea* cultured up to 10 d in a modified grape juice substrate. A new commercial glucanase preparation from *Trichoderma* is then tested on the polysaccharide extract. At wine pH the enzyme activity is 50 to 80 % of its maximum at pH 4.4 to 4.8. Its temperature optimum is 40 °C, at 20 °C the activity is reduced to 50 %. At pH 3.5 400 mg SO<sub>2</sub> reduce the enzyme activity to 30 %. Alcohol concentrations of 10 to 15 % decrease its activity to 50 and 40 %. Under practical conditions natural clarification of the young wine was greatly improved if the glucanase was added during fermentation. Fining with bentonite or kiesegel was substantially facilitated after enzyme treatment, so was the filtrability.

*R. Eschenbruch (Hamilton)*

**ERDÖSS, T., TARJÁN, B., URBÁN, A.: Anwendung von pektolytischen Enzymen bei der Bereitung von Rotweinen mit Wärmebehandlung · Application of pectolytic enzymes when preparing red wines using heat treatment (ungar.)**

Borgazdaság (Budapest) 29, 96—104 (1981)

Bei Wärmebehandlung konnten die besten Ergebnisse mit Enzympräparaten, die der Maische zugefügt wurden, erzielt werden. Ultrazym 100 und Pectinol VR ergaben die günstigste Farbintensität der Rotweine. Der höchste Leucoanthocyan-Gehalt wurde nach Dosierung der Enzympräparate in die Maische vor der Gärung gefunden. Die Selbstklärung der aus wärmebehandelter Maische

hergestellten Rotweine erfolgte besonders bei Pectinol VR bedeutend rascher. Auch die Filtrierbarkeit der Weine wurde durch das Präparat erhöht und der Kieselgurbedarf herabgesetzt. Enzymbehandelte Rotweine ergaben nach der Filtration um 15–20 % niedrigere nephelometrische Werte verglichen mit unbehandelten Kontrollweinen.  
*E. Minárik (Bratislava)*

**FLAK, W.: Die quantitative Bestimmung von Sacchariden und Zuckeralkoholen in Wein mittels der Hochdruckflüssigkeitschromatographie (HPLC)** · Quantitative determination of saccharides and sugar alcohols in wine by high-pressure-liquid-chromatography (HPLC) (m. engl., franz. Zus.)  
Mitt. Klosterneuburg **31**, 204–208 (1981)  
Landwirtsch.-Chem. BVA, Wien, Österreich

Using a  $\text{NH}_2$  precolumn (50 mm) and a  $\mu$  Bondapak-Carbohydrate analytical column in a HPLC system with refractometric detection, the method described allows the quantitative determination of glycerol, arabinose, fructose, glucose, sucrose, inositol and trehalose in wines. Data from 9 white and 2 red wines are given. Inositol and trehalose may become important when determining the wine quality. The organic acids are eliminated on a basic ion exchange pile before running the analysis. Sample preparation and chromatography take only 35 min.  
*O. Endres (Speyer)*

**GIGLIOTTI, A.: Phenolic components in wines a function of maceration time. I. Note** · Phenolverbindungen in Wein in Beziehung zur Mazerationszeit. I. Mitteilung (ital. m. engl., franz. Zus.)  
Riv. Viticolt. Enol. (Conegliano) **34**, 237–253 (1981)  
Ist. Sper. Enol., Gaiole, Chianti, Italien

Concentrations generally increase non-linearly in color, anthocyanins, and phenolics as a function of maceration time for 2 types of rotating fermentors (Garolla serbatoio vinificatore rotante, 10 min each 2 h, and Da Dalt rotante-basculante climatizzato) of wines made in 1978 and 1979 in Chianti Classico of blends of 60 % Sangiovese, 10 % Canaiolo, 20 % Trebbiano, 5 % Malvasia and 5 % Colorino grapes.  $\text{OD}_{420} + \text{OD}_{520}$  increases from 0.230 to 0.644, anthocyanins from 60 to 189 mg/l, phenolics from 880 to 2150 mg/l, and  $\text{K}^+$  from 830 to 970 mg/l in 51 h (1000 rotations) of the Garolla with the Da Dalt machine in 1979, 67 h (600 rotations) caused  $\text{OD}_{420} + \text{D}_{520}$  to go from 0.184 to 0.527, anthocyanins from 68 to 145 mg/l, and phenolics from 480 to 840 mg/l. 1979 was a year of lighter-colored grapes. Color and phenolics were still increasing at the time the partially fermented must (ca. 6 % sugar) were removed from the rotating fermentors.  
*A. D. Webb (Davis)*

**GÖRTGES, S.: Störfaktoren bei der Polyphenolbestimmung mit Folin-Ciocalteu-Reagenz (FCR)** · Substances interfering in the determination of polyphenols with the Folin-Ciocalteu reagent (FCR)  
Dt. Weinbau **36**, 1278–1279 (1981)

Sulphur dioxide and ascorbic acid act as interfering substances in the determination of polyphenols with the Folin-Ciocalteu reagents (FCR). A study of these 2 factors in model systems, wine, and apple juice indicated that an increase in sulphur dioxide and/or ascorbic acid would result in an increase in the polyphenols when determined by FCR.  
*L. Mattick (Geneva)*

**HOFFMANN, P., BACH, H.-P.: Einfluß des 1. Abstichzeitpunktes. Untersuchungen in bezug auf Sensorik und Zusammensetzung der Weine** · Influence of first racking time on composition and sensorial quality of wine  
Weinwirtsch. (Neustadt/Weinstr.) **117**, 1154–1159 (1981)  
LLVA f. Wein- Gartenbau Landwirtschaft., Trier

Riesling wine was racked from the yeasts immediately or 2 months after the completed fermentation. Other experimental variables were grape quality, addition of  $\text{SO}_2$  at racking time and 4 vintages. Compositional and sensorial parameters of the final wine were measured and are discussed.  
*P. Dürr (Wädenswil)*

**KLOFUTAR, C., ŠMALC, A., HROBAT, B.: Determination of carbon dioxide in dry wines**  
Bestimmung von Kohlendioxid in trockenen Weinen (serbokroat. m. engl. Zus.)

Zb. Bioteh. Fak. (Ljubljana) **36**, 175—191 (1980)

The combined use of analyses and calculations has shown that in wines, containing  $\leq 5$  g sugar/l, the solubility of  $\text{CO}_2$  depends on  $\text{CO}_2$  pressure,  $\text{H}^+$  concentration, temperature and other substances in wine. These, however, are correlated with other chemical responses: Balance reactions of carbonates and hydrocarbonates as well as separation of  $\text{CO}_2$  as liquid or gas. In case of a 1 bar partial pressure of  $\text{CO}_2$ , a 20 °C temperature and a 0.0—5.75 pH value, the solubility of  $\text{CO}_2$  amounted to 0.0342 mol/l.  
M. Milosavljević (Belgrad)

MALÍK, F., DRÁK, M., CRHOVÁ, K.: **5-Hydroxymethylfurfural in Produkten der Weinerzeugung** · 5-Hydroxymethylfurfural (5-HMF) contents in products of wine production  
Wein-Wiss. **36**, 360—365 (1981)

Kated. Tech. Mikrobiol. Biochem., Chemickotechnol. Fak., Bratislava, CSSR

Determination of 5-hydroxymethylfurfural was carried out with 23 thickened grape juices and sirups and 14 wines of Czechoslovakian and foreign origin. Analysis showed that formation of 5-HMF in wines and musts is influenced by heat and duration of storage. The concentration of thickened grape juices increased during a storage of 10 weeks at a temperature of 28 °C. The highest 5-HMF content of 83.52 mg/l was found in a Slovakian Tokayer, which is of no negative consequences for human organism (2 mg/kg of weight).  
W. Flak (Wien)

MARTIN, G. E., NOAKES, J. E., ALFONSO, F. C., FIGERT, D. M.: **Liquid scintillation counting of  $^{14}\text{C}$  for differentiation of synthetic ethanol from ethanol of fermentation** · Flüssigszintillation von  $^{14}\text{C}$  zur Unterscheidung des synthetischen Äthanol vom Gärungsäthanol

J. Assoc. Offic. Analyt. Chem. (Washington) **64**, 1142—1144 (1981)

U. S. Dept. Treas., Bureau Alc. Tobacco Firearms, Rockville, Md., USA

Samples containing synthetic ethanol (petroleum base) and natural ethanol derived from various plant sources, i. e. fruit and nonfruit material, were analyzed for  $^{14}\text{C}$  content. With this method the ethanol was concentrated to  $> 93\%$  by distillation and the  $^{14}\text{C}$  was determined using a low level liquid scintillation counting technique. Synthetic ethanol yielded a mean value of  $^{14}\text{C}$  isotope of  $0.167 \pm 0.066$  dpm/g carbon. Natural ethanol resulted in a mean value of  $15.51 \pm 0.59$  and  $16.63 \pm 1.76$  for fruit and nonfruit sources, respectively. The method allows to differentiate synthetic from natural alcohols.  
B. Bravdo (Rehovot)

OUGH, C. S., DAUDT, C. E.: **Quantitative determination of volatile amines in grapes and wines. I. Effect of fermentation and storage temperature on amine concentrations** · Quantitative Bestimmung von flüchtigen Aminen in Trauben und Weinen. I. Einfluß der Gär- und Lagertemperatur auf die Aminkonzentrationen

Amer. J. Enol. Viticult. **32**, 185—188 (1981)

Dept. Viticult. Enol., Univ. California, Davis, Calif., USA

A method is described for determining volatile amines (diethyl, dimethyl, ethyl, methyl, n-propyl, active amyl, iso-amyl and 2-phenethyl) at low concentrations in grapes and wine (Pinot noir and white Riesling). Fermentation at medium temperatures (21 °C) of those tested gave lowest amine contents. It appeared that the volatile amines were metabolised by yeast during early stages of growth. Some were then released at the end of fermentation or formed by some means during storage.  
C. F. Timberlake (Long Ashton)

SCHMITT, A., KÖHLER, H., MILTENBERGER, R., CURSCHMANN, K.: **Über Maßnahmen zum Schaumverhalten und zur Filtrierbarkeit des Weines nach einer Mosterhitzung** · Measures to control foaming and to improve filtrability of wines from heated musts  
Dt. Weinbau **36**, 1228—1238 (1981)

Bayer. LA f. Weinbau Gartenbau, Würzburg-Veitshöchheim

Heating musts for 90 s to 85—87 °C (ultra high temperature for short time — UHTST) causes very strong foam formation right through fermentation. Without special fining measures filtrability of the resulting wine is equally difficult. It is attempted to discuss and understand the type of foam,



which during the first half of the fermentation is coarse, lumpy and dirty-brown. In the second half it becomes white and fine, but is still very stable and persistent. Compounds involved seem to be pectins, polyphenols and nitrogenous components like amino acids, peptides and proteins. Additions of bentonite, pectinases, proteases, cellulases and combinations of these enzymes immediately after the heating process or after fermentation are only partially successful. Although none of the treatments achieved results similar to unheated controls, the protease additions are most promising and warrant further investigations.  
R. Eschenbruch (Hamilton)

TROMP, A., AGENBACH, W. A.: **Sorbic acid as a wine preservative — its efficacy and organoleptic threshold** · Sorbinsäure als Weinkonservierungsmittel — ihre Wirksamkeit und Geschmacksschwelle

S. Afr. J. Enol. Viticult. 2, 1—5 (1981)

Oenol. Viticult. Res. Inst., Stellenbosch, RSA

Sorbic acid is an effective inhibitor of yeast growth in semi-sweet wines when used in a concentration of 200 mg/l together with about 100 mg SO<sub>2</sub>/l. It is imperative to lower the yeast count of wine beforehand by sterile filtration. — The flavour threshold of sorbic acid in wine is between 300 and 400 mg/l. This is virtually double the amount recommended for the stabilization of wine. — Under practical conditions the inhibitory effect of sorbic acid against *Saccharomyces bayanus*, *S. cerevisiae* and *S. beticus* was tested up to cell concentrations of  $3 \times 10^4$ . *S. bayanus* is the yeast most resistant to sorbic acid, but can be controlled by 200 mg sorbic acid/l together with 100 mg SO<sub>2</sub>/l.

E. Lück (Frankfurt)

TROOST, G.: **Handbuch der Getränketechnologie. Technologie des Weines** · Handbook of beverage technology. Technology of wine

Verlag Eugen Ulmer, Stuttgart, 5. neubearb., erw. Aufl., 1057 S. (1980)

Der „TROOST“ ist in der 5. Aufl. von 931 auf 1057 S. angewachsen. Dieser Zuwachs spiegelt die Entwicklung auf dem Gebiete der Technik wider: Traubenannahme (Rührwerk tanks, Maischewagen). Abbeermaschinen, Maischepumpen, Tankpressen, Drehbürstensieb, Rotweingärung z. B. in rotierenden Tanks, Maischeerhitzung, Hochleistungsseparatoren, Membranfilter etc. Der Troost enthält traditionell önologische Erkenntnisse, die nicht direkt zur Technik, sondern eher zur Weinchemie gehören. Neu bearbeitete Kapitel sind: Acetaldehydbildung, Abnahme des Farbstoffes bei der Gärung, biologischer Säureabbau und Weinhaltstoffe, Redoxwert, SO<sub>2</sub>-Bindung, Eignung von Ascorbinsäure, Abwasserbelastung etc. — Erstaunlich ist immer wieder die Perfektion des Verf., der sogar Fließschemata neu überarbeitet, falls es darum geht, die Details deutlicher zu machen. Ferner wurden geringfügige Textfehler (früher: Das Bentonit; heute: Der Bentonit) berichtigt. — Zu überlegen wäre, ob der Hinweis auf Faßbehandlungsmittel in Kombination mit Raco nicht besser unterbleiben sollte, ebenso wäre die Notwendigkeit der 2fachen Ausspülung von naßkonservierten Holzfässern zu überdenken. Geblieben sind auch einige Sonderheiten in der Gliederung: Ein Literaturverzeichnis nach Kapiteln geordnet, aber am Schluß des Buches. Zweckmäßig wäre die Anordnung am Ende jedes Kapitels. — Diese geringfügigen Einwände sollen die großartige und einmalige Leistung des Autors nicht einschränken. Es ist sicher, daß das Werk in seiner Qualität nicht zu übertreffen ist. Sowohl in seiner praxisbezogenen Gliederung und Darstellung wie in seinem Gehalt an Erfahrungen und Informationen läßt der Troost keine Wünsche offen; die perfekte Aufmachung liefert das i-Tüpfelchen zu einem gelungenen Wurf.  
L. Jakob (Neustadt)

## M. MIKROBIOLOGIE

CUINIER, C., BOULX, M., LEVEAU, J.—Y.: **Méthode d'étude de l'origine des levures en oenologie. Identification des espèces et différenciation des clones** · Method for study of the source of yeasts in enology. Identification of species and differentiation of clones

Vignes et Vins (Paris) (302), 3—7 (1981)

Cent. Tech. Exp. Viticult., Inst. Tech. Vin, Tours, Frankreich

Yeasts isolated from grapes, must, and wine as well as those found at points of contamination in the vineyard and the wine cellar were collected. Using gel electrophoresis of the extracellular excre-

tions, 326 yeast strains were differentiated and identified. Among these, 110 were classified as *Saccharomyces cerevisiae*. A total of 25 different species were encountered. Authors conclude that, in this case, the yeast responsible for alcoholic fermentation originated in the vineyard and their population increased steadily during the wine making process. The method is recommended for general use in this type of study.  
R. R. Nelson (Winona)

**DIVIES, CH.: Les possibilités d'emploi des germes fixés en œnologie · The possible uses of immobilized organisms in enology**  
Bull. OIV 54, 843—858 (1981)

Dépt. Technol. Prod. Vég. (INRA), Dijon, Frankreich

Methods of immobilization of enzymes and of entire cells are discussed. Of the 3 methods, adsorption, inclusion and chemical fixation, adsorption appears to be the most successful for yeast immobilization while inclusion is recommended for lactic acid bacteria. The importance of selecting the proper support is considered. Immobilized yeast produced ethanol in a white grape juice fermentation at a rate 10 × faster than that produced by a free cell control. It is theorized that immobilization protects the cells from ethanol toxicity. Author concludes that performance, productivity, and predictability recommend this technique to industrial application.  
R. R. Nelson (Winona)

**GAIA, P.: Fermentation tests using two yeasts together, *Saccharomyces cerevisiae* and *Kloeckera apiculata* · Gärversuche mit zwei gleichzeitig verwendeten Hefen, *Saccharomyces cerevisiae* und *Kloeckera apiculata* (ital. m. engl. Zus.)**

Vignevini 8 (10), 55—62 (1981)

Ist. Sper. Enol., Asti, Italien

2 yeasts have been investigated together in fermentation tests with the following results: *Saccharomyces cerevisiae* gives better fermentation than *Kloeckera apiculata*; the negative effect is increasing with the amount of *K. apiculata* in the mixture; the 2 yeasts together develop less than used separately.  
H. Eschnauer (Ingelheim)

**LAFON-LAFOURCADE, S., JOYEUX, A.: Les bactéries acétiques du vin · Acetic acid bacteria in wine**

Bull. OIV. 54, 803—829 (1981)

Inst. Oenol., Univ. Bordeaux II, Talence, Frankreich

Authors first reviewed the literature related to acetic acid bacteria: habitat, morphology, classification, physiological properties, metabolism of ethanol, sugars and lactate. Secondly, their study of acetic acid bacteria in wine revealed the following: permanent occurrence of these bacteria during the vinification process; they outnumber lactic acid bacteria on the grapes; besides acetic acid, certain strains of *Gluconobacter* produce anti-yeast substances which could retard the onset of fermentation; addition of SO<sub>2</sub> to the must barely affects the acetic flora — only the alcoholic fermentation does. Succession of species during vinification occurs in this order: *Gluconobacter*, *Acetobacter pasteurianus*, *Acetobacter aceti*, with the last two predominating.  
C. Buteau (Guelph)

**SPONHOLZ, W.-R., DITTRICH, H. D., HAAS, F., WÜNSCH, B.: Die Bildung von flüchtigen Fettsäuren durch *Saccharomyces*-Hefen während der Vergärung von Traubenmost · The formation of volatile acids by *Saccharomyces* during the fermentation of grape juice (m. engl. Zus.)**

Z. Lebensm.-Untersuch. u. -Forsch. 173, 297—300 (1981)

Inst. Mikrobiol. Biochem., FA f. Weinbau Gartenbau Getränketechnol. Landespflege, Geisenheim

An investigation into the influence of yeast strain on the composition of volatile fatty acids, formed during the fermentation of a must, was carried out using gas chromatographic procedures, together with traditional steam distillation and enzymatic assays for volatile acidity. Acetic acid formed up to 90 % of the volatile acidity, the remainder being made up of must-derived formic acid with traces of higher fatty acids, especially caproic acid. Yeast strain, in 14 out of 16 cases, had no influence on the contribution of volatile fatty acids to volatile acidity, in the remaining 2 cases, the fatty acids made up 83—84 % of volatile acidity.  
D. J. Spedding (Auckland)