"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN B. A.

Daily dynamics of content of carbon dioxide and oxygen in leaves of the sugar beet. B. A. Rubin and N. P. Panasenko (A. N. Bakh Biochem. Inst., Moscow). *Izvest. Akad. Nauk S.S.S.R., Ser. Biol.* 1956, No. 1, 55-62.—The content of CO_2 in sugar-beet leaf is directly dependent on the rate of respiration and is responsive to factors which affect the latter. The content of O_2 is low during the day when respiration is most intense, and is relatively high at night. The content of O_2 in the environment also has a considerable effect on the O_2 content of the leaf mass. Under normal conditions the process of photosynthesis has little or no effect on the content of either CO_2 or O_2 in the leaf mass.

G. M. Kosolapoff

MD

1

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

I-2

USSR/Physiology of Plants. Photosynthesis.

Abs Jour: Ref. Zhur-Biologiya, No 1, 1958, 1134.

Author : Chernavina, I.A. and Rubin, B.A.
Inst : Moscow University
Title : The Formation of Photosynthesis Apparati in Various Groups of Plants in Connection with the Conditions of Their Existence. (second installment)

Orig Pub: Vestn. Mosk. un-ta, ser. biol., pochvoved., geol., geogr., 1956, No 2, 11-18.

Abstract: Sprouts of winter and spring wheat were grown under red and blue light filters under even light intensity, varying in individual experiments from 7.6×10^3 to 1.10^3 erg/cm^2 / second. Light from the blue-violet part of the spectrum, in contrast to the red-orange part, increased the respiration and peroxidase activity of the five-day shoots. The etiolated leaves exposed to three hours of blue light indicated heightening in the cyto-

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chromoxidase activity; later the difference between the variants evened out. In the variant exposed to blue light the content of general free ascorbic acid and dehydroascorbic acid increased, [illegible] and the monosaccharides increased, while the content of organic acids decreased. After ten days growth the differences in the content of monosaccharides evened out. The blue light permitted an increase in the chlorophyll a content and also an increase in the proportion between chlorophyll a and chlorophyll b. In the ten-day shoots of spring wheat the content of chlorophyll remained greatest in the blue light. In the 10-day shoots of winter wheat the chlorophyll content was higher among those exposed to red light than among those under blue light. There is a bibliography of eleven titles.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

Rubin, B.A.

USSR/Forestry. Forestry and Forest Cultivation. J-3

Abs Jour: Referat Zh-Biol., No 6, 1957, 22579

Author : Rubin, B.A., Andreeva, R.A.
Inst : 0
Title : The Effect of Ripening Conditions on Seeding Qualities of Oak acorns (Quercus robur).

Orig Pub: Vestn. Mosk. un-ta, 1956, No 2, 95-102

Abstract: The observations in the main botanical garden, Academy of Sciences USSR, (1951-1952) established that the character of acorn ripening within the limits of the oak plantation differs in relation to variations of ecologic oak forms and the peculiarities of acorn development within the crown of each individual tree. The sprouted acorns in the early-blooming oak have a greater weight and consequently a larger amount of reserve nutrient substances; they appear earlier and produce much stronger seedlings. A considerable influence on the speed of acorn

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

USSR/Forestry. Forestry and Forest Cultivation. J-3

Abs Jour: Referat Zh-Biol., No 6, 1957, 22579

germination is exerted by its envelope. A large percentage of fallen acorns lean over at the time of gathering. The seed rootlet of acorns fallen earlier and having a less compact, non-woody envelope, germinates faster. Thus the acorns are stored before sowing in different physiological conditions, which also leads to different timing of sprout appearance.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

Answer to S.D.L'vov's article "Discussion of Prof. B.A.Rubin's textbook of plant physiology." Izv.AN SSSR. Ser.biol. no.2:132-136 Mr-Ap '56. (MLRA 9:7)
(BOTANY--PHYSIOLOGY) (RUBIN, B.A.)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A., Professor

"On the Concluding State of the Respiration of Vegetation and its Adaptability Value," Lomonsov Lectures in 1956, Vest. Mosk. U., Physico Math and Natural Sciences Series, No. 6, pp 147-160, 1956, Biological - Soil Faculty,

Translation U-3,054,363

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.; ANDREYEVA, R.A.

Effect of the conditions of ripening on the seeding properties of oak acorns (Quercus robus). Vest.Mosk.un.11 no.2:95-102 F '56. (MLRA 9:8)

1 Kafedra fiziologii rasteniy.
(Acorns)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, BA

USSR/Plant Physiology Respiration and Metabolism H-2

Abs Jour : Referat. Zh - Biol., No 6, 25 March 1957, 22357

Author : Rubin, B.A., Ladygina, M.E.
Inst : Not given
Title : Data on the characteristics of plant cytochromoxidase.

Orig Pub : Biokhimiya, 1956, 21, No 3, 347-355

Abstract : The localization of cytochromoxidase (I) in apples, sugar beet roots, in roots and leaves of barley sprouts, in potato bulb and in cabbage leaves was investigated. I was determined in cuttings, in cell structures and in the juice after centrifugation. In apples and potato tubers the activity of I was centered only in the cell structures; in sugar beets, cabbage and barley in cell structural elements and in the juice. In the process of development, correlation of activity of I in plastids and in juice changes considerably. Thus, if in 8 day-old barley sprouts the activity of I in leaves constituted 7.8% of the total activity, in 22 day-old sprouts

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

Abs Jour : Referat. Zh - Biol., No 6, 25 March 1957, 22357

the corresponding figure was 44.2%. In roots, on the other hand, a total disappearance of activity of I in the juice in the process of development was observed. In cuttings of sugar beet roots the authors did not discover I despite the considerable enzymatic activity in cell structures and in the juice. The activity of I in the items examined depended on O_2 concentration in the surrounding medium. This dependence manifested a different character in different plants. Localization of I also exerted an influence on the relationship of I to O_2, which the authors explain by different forms of the enzyme. The study was carried out in the Institute of Biochemistry, Academy of Sciences USSR. Bibl. 42 refs.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

USSR/Plant Physiology Photosynthesis H-4

Abs Jour : Referat. Zh - Biol., No 6, 25 March 1957, 22393

Author : Rubin, B.A., Germanova, V.F.
Inst : Not given
Title : The effect of root systems on formation of the photosynthetic apparatus.

Orig Pub : Dokl. AN SSSR, 1956, 107, No 5, 757-760

Abstract : The effect was studied of the activity of the stock root system on formation and performance of the scion photosynthetic apparatus. Nasturtium (Tropaeolum majus) was cultivated on broad bean (Vicia Faba) roots and on its own roots (control) in sandy cultures in the vegetable house of the MGU botanical garden. Determinations were made of the content of chlorophyll, carotene and xanthophyll (by the Godnev method, Tr. Institute of plant physiology, 1950, 7, No 1); their ratio, catalase activity (by gasometric method) and cytochromoxidase (by spectrophotometric method). The pigment content was higher in the leaves of broad beans and sunflower than in nasturtium; a high catalase activity was noted in broad beans, and high cytochromoxidase in sunflower. In hybrids an increase

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

USSR/Plant Physiology Photosynthesis H-4

Abs Jour : Referat. Zh - Biol., No 6, 25 March 1957, 22393

of pigment content was observed, also an increase of enzyme activity 1.5-2.5 times by comparison with the control. The changes in the leaf pigment apparatus depend on the influence of the stock root system, which is related to the change of direction of total metabolism in nasturtium after grafting. Bibl. 19 refs.

Card 2/2

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

Some peculiarities of plant cytochrome oxidase. B. A. Rubin and M. E. Ladygina. *Doklady Akad. Nauk S.S.S.R.* 109, 361-4 (1956). — Cytochrome oxidase activity was studied in slices, cell structures and juice of sugar beets and leaves and roots of barley sprouts. In the barley sprout the enzyme in the leaves is at first concd. in the plastids, but the cytoplasm acquires a greater and greater share with development of the plastids, resulting in the total increase of activity with age. It appears that one form of the enzyme is definitely bound to the plastids, while another form is connected with the cytoplasm. The latter enzyme appears to have a greater affinity for O. The enzyme from sugar beet is characterized by linear dependence of activity on partial pressure of O; this is true of the enzyme derived from the tissue cell structures; the enzyme contained in the juice is most active at 10% O concn. This again indicates 2 forms of the enzyme. C. M. Kopadze

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

Some peculiarities of metabolism of potato attacked by

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

KUBIN, B.N.

Effect of conditions of preillumination on stability of chlorophyll in respect to dark destruction. I. A. Chernu

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

"Comparative Characteristic of Oxidation Systems of Different Group of Organisms in Relation to Evolution," a paper presented at the International Symposium on the Origin of Life, Moscow, 19-24 Aug 1957.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

1082. THE USE OF GAMMA-RADIATION FOR EXTENDING THE STORAGE TIME FOR POTATOES (Russian text) - Metelitskii L. V., Rubin B. A. and Khrushchov V. G. Bakh Inst. of Biochem., Moscow - TEZ. DOKL. VSES. KONF. PO PRIM. RADIOAKTIV. I STABIL. IZOTOP. I IZLUCH. V NAROD. KHOZ. I NAUK.(Moskva) 1957 (186-187)

The delay of sprouting in potatoes caused by gamma-rays is explained by a number of factors: change in the state of cellular colloids, rendering of cytoplasm somewhat alkaline by suppression of nucleic acid synthesis and of oxidative enzyme activity, and slowing of respiratory gas exchanges in the tissues. Some increase in the susceptibility of irradiated potatoes to micro-organisms has been noted which accounts for the recommendation that potatoes be irradiated with the least possible and strictly regulated doses. It has been found that the magnitude of the dose depends on the kind of potato: the 'Lorkh' variety requires a dose of 10,000 r., other sorts need not above 8,000 r. When potatoes are irradiated in the autumn, the dose must be higher than that used in irradiating at the end of winter. Storage of the 'Lorkh' variety for a year after irradiation with a dose of 10,000 r. in the autumn resulted in a total loss and wastage of 10%. A method has been developed for irradiation of potatoes under industrial conditions based on a combination of a stationary irradiator and a mobile installation for charging it with radioactive preparations. Irradiation is performed along a continuous stream principle. This ensures a high coefficient of radiation utilization and reliable protection of attending personnel from radioactive radiation. Arkaev - Moscow (S)

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

COUNTRY : USSR
CATEGORY :

ABS. JOUR. : RZhBiol., No. 3 1959, No. 10090

AUTHOR : Rubin, B. A., Ladygina, M. Ye.
INST. : Academy of Sciences USSR
TITLE : The Nature of the Effect of Streptomycin on the Development of Barley Sprouts

ORIG. PUB. : Izv. AN SSSR. Ser. biol., 1957, No 3, 352-356

ABSTRACT : Streptomycin does not destroy the formation of the plastid apparatus of the cell in barley; the leukoplasts of the leaves and roots of the plants treated with streptomycin are no different in size or shape from the controls; under its influence the diameter of the nuclei in the leaves decreases by 5-10% compared with the controls, and in the root cells, by 25-35%; in the cells of the coleophyl. The nucleolus under the influence of streptomycin, and later the whole nucleus also, become black, and on the 15th day of development the sprouts are

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

COUNTRY :
CATEGORY :

ABS. JOUR. : RZhBiol., No. 1959, No. 10090

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : completely destroyed. -- A. G. Kuchayeva

Card: 2/2

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

Features in the biochemical variability of plants as related to the problem of acclimatization. Trudy Bot.inst.Ser. 6 no.5:50-58 '57. (MIRA 10:10)

1.Kafedra fiziologii Moskovskogo gosudarstvennogo universiteta.
(Acclimatization (Plants))
(Physiological chemistry)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11A

Participation of cytochrome oxidase in respiration of cabbage tissues. B. A. Rubin and E. P. Chetverikova. *Doklady Akad. Nauk S.S.S.R.* 77, 669-72(1951).—Over the entire ontogenesis of a cabbage plant planted in early summer the cytochrome oxidase activity is consistently higher than in the same plant planted in early spring (av. difference 174%); a similarly higher resistance to microorganisms is also exhibited. In all instances the enzyme activity rises steadily with growth and declines sharply only in the fall months. G. M. Kosolapoff

1957

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11D

The role of tannins in the phenomena of resistance of cotton plant to wilt. B. A. Rubin and L. M. Perevyazkina (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 79, 301-6(1951). Infection by *Verticillium albo-atrum* causes a rise of total tannins in the cotton plant, the sol. fraction of polyphenols also rises. The rise of tannin is especially noticeable in varieties of cotton that are wilt-resistant and especially considerable rise occurs in the sol. polyphenol fraction. This increase may be twice that suffered by the nonresistant varieties of the plant. The above data are generally true for the roots and stems, but in the leaves the resistant varieties show a sharp drop of tannins after infection, while the nonresistant specimens either show no change or a slight rise. No general correlation between wilt resistance and the relative proportion of sol. polyphenol fraction was found, in the healthy plants. After infection, however, the resistant plants show a much higher proportion of the polyphenols in the roots and a decline in the leaves. The nonresistant specimens show a small rise in the roots and stems only in the early stages.

G. M. Kosolapoff

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

GTRSPL No 45

Rubin, B.A. and Volobueva, N.P. (M.V. Lomonosov Moscow State University). The activity of polyphenoloxidase of tissues of the cotton plant in connection with the plant's resistance to the fungus *Verticillium albo-atrum*, 637-8

Akademiya Nauk S S.S.R., Dokłady Vol. 79 No.4 1951

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.; PEREVYAZKINA, L.M.; VOLOBUYEVA, N.P.

Oxidizing transformation of tanning agents and their relation to the resistance of the cotton plant to wilting. Vest.Mosk.un. 7 no.12:63-75 D '52. (MLRA 7:9)

1. Kafedra fiziologii rasteniy.
(Cotton) (Plants, Effect of tanning agents on)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A. SOKOLOVA, V. Ye.: ARTSIKHOVSKAYA, Ye. V.

—

Apple

Adaptation of respiratorial gas exchange of apples to conditions of the environment. Dokl. AN SSSR 85 No. 4, 1952

Monthly List of Russian Accessions, Library of Congress November 1952 Unclassified.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A., ARTSIKHOVSKAYA, YE. V., SOKOLOVA, V. YE., IVANOVA, T. M.

Apple

Role of spearate oxidases in the respiration of apples. Dokl. AN SSSR 85, no. 5, 1952.

2

9. Monthly List of Russian Accessions, Library of Congress, December 1952 Unclassified.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

1. RUBIN, B. A.; SOKOLOVA, V. Ye.; ARTSIKHOVSKAYA, Ye. V.

2. USSR (600)

4. Apple

7. Adjustment of the respiration of apples to temperature, Dokl. AN SSSR, 86, No. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN B. A.

[illegible]

[illegible] and Artsikhovskaya, E. V. Biochemische [illegible] Pflanzen

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

1. B. A. RUBIN, Prof.

2. USSR (600)

4. Botany - Physiology

7. Principles and tasks concerning plant physiology. Sel. i sem. 20 no. 1. 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953; Uncl.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A. (Moscow).

Certain problems in the theory of the acclimatization of plants. Usp.sovr. biol. 36 no.1:25-42 Jl-Ag '53. (MLRA 6:7)

(Acclimatization (Plants))

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

1. RUBIN, B. A., POTAPOV, N.G., GERMANOVA, V.F.

2. USSA(600)

4. Grafting

7. Interaction of components of inter-family grafts, Dokl. AN SSSR 88 No. 6, 1953

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.; GUDALINA, Ye.G.; OPARIN, A.I., akademik.

Dehydrogenation activity of apple tissues in the process of fruit development. Dokl.AN SSSR 93 no.1:127-130 N '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Oparin). (Apple) (Dehydrogenation)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A., professor; OPARIN, A.I., akademik, redaktor; SOKOLOVA, V.Ye., redaktor; GUBER, A., tekhnicheskiy redaktor.

[Plant physiology] Fiziologiia rastenii. Pt. 1. Pod red. A.I.Oparina. Moskva, Gos. izd-vo "Sovetskaia nauka." 1954. 355 p. (MLRA 7:11)
(Botany--Physiology)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.; SOKOLOVA, V.Ye.

Characteristic respiratory reaction of winter and spring wheat to temperature. Izv.AN SSSR Ser.biol. no.1:20-31 Ja-F '54. (MLRA 7:1)

1. Institut biokhimii im. A.N.Bakha Akademii nauk SSSR.
(Wheat) (Plants--Respiration)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

USSR/ Biology

Card 1/1 Pub. 86 - 40/40

Authors : Rubin, B. A. Professor

Title : Adaptation of the plant organism to the medium

Periodical : Priroda 3, page 128, Mar 1954

Abstract : Data are presented, regarding the adaptation of plants to various atmospheric conditions (plants grown on hilly terrain, in valleys and plants growing in enclosures).

Institution : .....

Submitted : .....

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

USSR/Chemistry - Food preservatives

Card 1/1 Pub. 124 - 10/26

Authors : Rubin, B. A., Professor

Title : Biochemical principles of preserving vegetables and fruit

Periodical : Vest. AN SSSR 10, 48-56, Oct 1954

Abstract : The results obtained by Soviet biochemists in their search for means of preserving fruit and vegetables are listed. The material obtained is being used as a theoretical basis for the development of practical food and vegetable preservation systems suitable for industrial application. Tables.

Institution : .....

Submitted : .....

ARTSIKHOVSKAYA, Ye.V. (Moscow); RUBIN, B.A. (Moscow).

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

Plant respiration as an adaptation function. Uspekhi-biol. 37 no.2: 136-157 Mr-Ap '54. (MLRA 7:5)
(Plants--Respiration)

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

USSR/Biology - Biochemistry

Card 1/1 : Pub. 86 - 8/38

Authors : Rubin, B. A., Prof.

Title : The biochemistry of the preservation of fruits and vegetables

Periodical : Priroda 43/12, 62-66, Dec. 1954

Abstract : The problem of preserving fruits and vegetables is approached through a study of the life cycle of the plant. In vegetables, such as onions or potatoes, it is found that the losses through spoiling are proportional to the loss of water. Oxygen is also a cause of deterioration and microorganisms cause fermentation, which can be combatted through the temperature factor. To this is added the determination of the proper degree of ripeness for picking. Illustrations.

Institution : .....

Submitted : .....

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A., professor.

Biochemistry of the preservation of fruits and vegetables. Priroda 43 no.12:67-70 D '54. (MLRA 8:1)
(Canning and preserving)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

Enzyme systems of mycorrhiza fungi. B. A. Rubin and N. V. Obrucheva (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 95, 337-40(1954).—Biochem. differences in the enzyme systems of various species of fungi greatly exceed the differences found in the higher plants (cf. *C.A.* 46, 2632*e*, 8199*c*). Thus the β-amylase activity in *Boletus luteus* ranges from 380 (mg. maltose per day) in the mycelium to 137 in the body; in *B. edulis* the range is 630 in mycelium and 9.8 in the body; in *B. subtomentosus* it is 43.7 in the body. Invertase activity (mg. glucose per day) is 18.7 in *B. luteus* body and 150 in mycelium while it is absent in *B. edulis* mycelium and is low in the body (10.4) and is absent in *B. subtomentosus*. Proteases are absent in all species. Cellulase appears only in *B. luteus* mycelium. *B. luteus* mycelium shows high respiration rate; its body a relatively low rate, the other species showing a similar trend. Ascorbic acid oxidase is present only in the body of *B. edulis*, while pyrogallol oxidase and catechol oxidase are found very active only in *B. edulis* mycelium and in *B. subtomentosus*; hydroquinone oxidase is absent in all 3 species. Residual respiration is 100% in *B. luteus* body, 0% in its mycelium; it is 42% in the body of *B. edulis* and 79% in its mycelium; it is 62.5% in *B. subtomentosus*. Peroxidase activity was found only in the latter. Catalase is active in all 3 species, being highest in mycelium, particularly of *B. luteus*. Ascorbic acid ranges from 73.8 mg. % in the body of *B. luteus* to 515 in its mycelium, 500 in the body of *B. edulis* and 357 in its mycelium, and 160 in *B. subtomentosus*. G. M. Kosolapoff

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Rubin, B.A.

BASLAVSKAYA,S.S.; GUNAR,I.I.; TRUBETSKOVA,O.M.

"Plant physiology." B.A.Rubin. Reviewed by S.S.Baslavskaia, I.I.Gunar, O.M.Trubetskova. Fiziol.rast.2 no.3:307-310 My-Je '55. (MLRA 8:11)
(Botany--Physiology) (Rubin,B.A.)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

MD

V. Oxidative processes and their role in the biology of various organs of plants. V. The significance of the oxidative system in adaptation of the generative organs of storage to environmental conditions. E. V. Artsikhovskaya and B. A. Rubin. *Biokhim. Plodov i Ovoshchei, Akad. Nauk S.S.S.R., Inst. Biokhim. Sbornik* 3, 5-12(1955); cf. *Izvest. Akad. Nauk U.S.S.R., Ser. Biol.* 1954, No. 1, 20; *C.A.* 46, 8199c.—Studies on apples showed that the dependence of respiration on O_2 concn. differs for various tissues; the results, shown graphically, indicate the dependence of O_2 respiratory max. on adaptability of the tissue to the environmental conditions. Thus, fruit development is accompanied by alteration of temp. optimum of respiration in accord with normal temp. variations without and the fruit maintains its respiration by the variation of its dependence on one or another oxidative enzyme, of which a selection is present in the apple matter. Anaerobic process is a part of the respiration of the juicy parenchyme and the processes of assimilation of O_2 and elimination of CO_2 show variability in dependence on external conditions. Thus, O_2 assimilation depends on temp. adaptability and O_2 concn. Thus, unfavorable external conditions tend to increase the role of anaerobic processes with increase of the respiratory coeff. With change of comptn. of the gases in the fruit during the ripening process there takes place a gradual displacement of the O_2 optima for tissue respiration in the various tissues. Generally the skin tissues have a higher O_2 optimum, than do the internal parts. G. M. Kisolopoff

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

The role of oxidative processes in the resistance of cabbage to Botrytis cinerea. B. A. Rubin and E. P. Chetverikova. *Biokhim. Plodov i Ovoshchei, Akad. Nauk S.S.S.R., Inst. Biokhim., Sbornik* 3, 143-78(1955).—Infection with *Botrytis* or of its toxin into cabbage causes a severe disturbance of the oxidative app. of cabbage. The toxin causes a complete inactivation of cytochrome oxidase and a partial one of ascorbic oxidase. Peroxidase and residual respiration enzymes are resistant to the toxin and are in fact somewhat activated by it. *Botrytis* and its toxin produce an analogous action by activation of residual and total respiration and inactivation of ascorbic oxidase of the cabbage tissue. The inactivation may be caused by proteolytic enzymes of *Botrytis* acting on the oxidases. A *Botrytis*-resistant strain of cabbage (Amager) has unusually high activity of the oxidases which are not attacked by *Botrytis*. Various cabbage strains were exaind. G. M. Kosolapoff

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Inst. Biochem. im. Bakh

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

The adaptive character of respiration of plants. B. A. Rubin (A. N. Bakh Biochim. Inst., Moscow). *Izvest. Akad. Nauk S.S.S.R., Ser. Biol.* 1955, No. 5, 63-71; cf. *C.A.* 47, 695d.—During ripening of apples the activity of polyphenol oxidase rises; cytochrome oxidase which participates in fruit respiration during ripening is rapidly inactivated at the completion of ripening and is totally absent in ripe fruit. At low temp. (5-15°) ripe tangerines show more intense respiration than do the green specimens, but at 30° the ripe specimens show only a small increment in respiration while the green ones increase their respiration to a level above that of the ripe fruit. The lower the temp. is at which the given fruit had passed its late stages of connection to the parent plant, the more resistant the fruit is to low-temp. storage after harvest. In citrus fruit the skin tissues respire largely through the activity of cytochrome oxidase and a decline in temp. lowers the activity of this enzyme very greatly; the oxidases involved in residual respiration are affected much less; thus, at low temp. the respiration is carried out largely by enzymes which are immune to respiratory poisons. Thus, the adaptation of the fruit to low temp. during the ripening stage results from transfer of the activation of gaseous O_2 from cytochrome oxidase to oxidases which are relatively stable in respect to low temp. activity. Apple oxidases show a behavior similar to the citrus fruit. Analysis of the flesh of citrus fruit and apples at various stages shows the absence of inverse correlation between the concn. of O_2 and respiratory coeff.; thus, in green citrus there is a low respiratory coeff. along with low O_2 concn.; in ripe fruit both factors are at a high level. The reason for increased level of anaerobic processes in ripening fruit thus is not caused by restricted O supply. It lies in the varying resistance of plant tissues to origination of anaerobic metabolism, while in ripe fruit the crit. concn. of O_2 needed to produce enhanced anaerobic metabolism is 13%; this is but 0.5% at the time of removal of the fruit from the tree. The fruit tissues near the periphery of the fruit are always more abundantly aerated and therefore the internal part of the fruit is equipped with oxidases capable of coping with relatively low O_2 supply levels. Thus, the O_2 concn. optimum for flavedo of a tangerine is 21%, the albedo has the max. at but 10% O_2, and is but 5% for the flesh of the fruit proper. Exposure to O_2 concns. which are abnormal for the particular fruit tissue results in abnormal respiration; thus, enhanced O_2 supply causes the internal tissues to increase their anaerobic metabolism, while lowering of O_2 concn. leads to increased rate of its assimilation. Similar results were obtained with apples. In the apple, cytochrome oxidase is more active in the flesh of the fruit and polyphenol oxidase in the skin.

G. M. Kosolapoff

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L-6999. **Photosynthetic equipment in various groups of plants in relation to their environments.** B. A. Rubin and I. A. Cheravina *Vestn. Mosk. Univ.*, 1955, No. 8, 101—107; *Referat. Zh. biol. Khim.*, 1956, Abstr. No. 15565.—In daylight the total content of pigments in 10-day seedlings of winter wheat was higher than in those of spring wheat. The content of carotenoids in winter wheat was 0·266 mg/g. of moist leaves; in spring wheat 0·237 mg./g. The proportion of green pigments to yellow was appreciably higher in winter (5·4) than in spring (4·2) wheat. Exposure of the spring wheat plants to blue light led to increase of oxygen absorption and raising of the ratio xanthophyll . carotene. In winter wheat plants this was not shown. (Russian) T. R. PARSONS

Plant Agric

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RUBIN, B.A.

OKANENKO, A.S.

"Plant physiology." Part 1, B.A. Rubin. Reviewed by A.S. Okanenko. Biokhimiia 20 no.2:259-261 Mr-Ap '55. (MLRA 8:8)
(Botany-- Physiology) (Rubin, B.A.)

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RUBIN, B. A.

PA 66/49T3

USSR/Agriculture - Sugar Beets Aug 49
Synthesis

"Features of the Hydrocarbon Exchange in Beta Vulgaris and Its Relation to Temperature," B. A. Rubin, V. Ye. Sokolova, O. N. Savel'yeva, Inst of Biochem imeni A. N. Bakh, Acad Sci USSR, 3½ pp

"Dok Ak Nauk" Vol LXVII, No 5

Tabulates data on the synthesis and reduction of sugar in the leaves of garden beets and on the synthesis of sugar in their roots at night and during the day. Data obtained under following conditions: (1) with respect to

66/49T3

USSR/Agriculture - Sugar Beets Aug 49
(Contd)

temperatures of 10, 20, 30, and 40° C, (2) according to the dates of the three sets of experiments (9 Jun, 1 Jul, and 17 Aug). Shows relationship of the rates of night-time and daytime processes. Submitted 4 Jun 49

66/49T3

RUBIN, B. A.

Aug 49

USSR/Chem~~APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"~~
Biochemistry
Oxidases

"The Physiological Role of Individual Groups of Plant Oxidases," Ye. V. Artsikhovskaya, B. A. Rubin, T. M. Ivanova, Inst of Biochem imeni A. N. Bakh, Acad of Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXVII, No 6

Gives results of tests on the varying degree of participation of respiratory ferments in the breathing of the skins of lemons, king oranges, and sweet oranges from Sep through Mar. Employed "residual breathing" ferments and oxidases containing heavy metals in varying concentrations in varying atmospheres of O_2, CO_2, and N_2 for varying time intervals. Submitted by Acad A. I. Oparin 6 Jun 49.

PA 1/50T15

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RUBIN, B. A.

27024 ZH BOTANIKA, ARTSIKHOVSKAYA, YE. V, RUBIN, B. A. , TVANOVA, T. V. - o fisiologicheskoy roli otdel'nykh grupp rastitel'nykh oksidaz. Doklady akad. Nauk SSSR, Novaya sefiya, T. LXVIII, No. 6, 1949, S. 1061-64

SO: Letopis' Zhurnal'nykh Statey, Vol. 36, 1949

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

(1)

The role of metabolism in the reciprocal effects between organism and surrounding medium. B. A. Rubin. *Izvest. Akad. Nauk S.S.S.R., Ser. Biol.* 1950, No. 6, 61-76; *Chem. Zentr.* 1951, II, 394.—A study was made of the temp. curves of the enzymic synthesis and the distintegration of starch in the potato at various stages of its development. The dependence of the enzyme activity on the external temp. changes during the life cycle of the plant. The processes of starch formation in the leaves of chicory plants showed similar regularities. Rhythmic displacements of the temp. curves were also found for the enzymes which control the synthesis and decompn. of sucrose in the leaves of various plants. The daily rhythm in the synthesis and decompn. of sucrose in the leaves of the sugar beet is adapted to definite temp. conditions. During the vegetative phase the processes of decompn. depend to a much greater degree upon a definite temp. than does the process of synthesis. A fundamental difference between the processes taking place in the sugar beet and those in the potato is that in the former the excess assimilated product is stored in the form of sucrose and not as the inactive starch. Further evidence of the close relation between the chemism of a plant and the adaptation of its ontogenesis to definite environmental conditions was developed from comparative investigations of comparable functions in the winter and summer forms of the same plants. The basis of the adaptation of the respiratory activity of plants to the environmental influences is the qual. reconstitution of the enzyme system catalyzing this function. The specific peculiarities of the metabolic processes of plants repeat, in the same manner as the morphological characteristics, the phylogenetic course followed by the particular plant. M. G. Moore

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The adaptation significance of the respirative metabolism in citrus. E. V. Artsikhovskaya and ~~B. A. Rubin.~~ *Doklady Akad. Nauk S.S.S.R.* 71, 517-19(1950); cf. *C.A.* 43, 3288; 44, 675d.—Since the level of fruit (lemon, orange) respiration is adapted to the temp. regime of the surrounding medium (*loc. cit.*), the variation must be connected with temp. coeffs. of the activity of the enzyme systems. This is well demonstrated by detn. of the activity of uninhibited and NaN_3-inhibited specimens (orange, lemon). Thus, lemon at 1° shows 61% uninhibitable respiration, while at 30° this is but 50%; in an orange these are 60% and 32%, resp. In raising the temp. from 0° to 30° the labile (to NaN_3) respiration is activated much more than the residual (uninhibitable) respiration; the increase of 30° results in a 18.4-fold rise of labile respiration, while the stable respiration rises only by 4.2 fold, in expts. with oranges; in lemons these are 11.6 and 8.9, resp. In lemons the sharpest effect occurs in 20-30° range. G. M. Kissilapoff

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12

Participation of various oxidase groups in protective reactions of citrus. B. A. Rubin, R. V. Artsikhovskaya, and T. M. Ivanova. *Doklady Akad. Nauk S.S.S.R.* 72, 90-92(1950).—Study of storage-stable and storage-unstable varieties of lemons by the Warburg technique, with flavedo and albedo tissue specimens showed that the reaction to skin injury (aeration) varies with time. From September on with increased total respiration the cut response is weak until the time of total ripeness is reached when the response rises sharply. The respiration increase in this late stage of growth is largely due to the CN-insensitive factor. Only in November-December (total ripening) does the CN-sensitive system indicate a sharp temporary rise. The less stable lemon variety displays a lower respiration rate than the stable one. Infiltration with the toxin from *Penicillium italicum* leads to activation of CN-stable respiration and decline of CN-unstable form in the storage-stable variety; with the other variety there is but a slight effect. G. M. Kosolapoff

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11D

Biochemical characteristics of genetically different potato tissues. B. A. Rubin, I. B. Glushchenko, and O. N. Savel'eva (A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 72, 733-5 (1950).—The modified White Zarnitsa potato obtained from adventive buds from the parenchyma of the normal Colored Zarnitsa potato (*Agrobiologiya* 1946, No. 1) and bred true for 8 generations shows a much more intensive starch synthesis (measured over the warm months) than the normal plant; the differences range up to 200% in the leaves and 800% in the tubers, with a more even course through the summer months than is observed in the normal plant. Most of the difference lies in better utilization of monosaccharides; the utilization of sucrose was about the same. The results are said to confirm Lysenko's views on chem. differentiation of organ tissues being connected with a genetic factor. G. M. K.

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CA

Organic peroxides as a possible source of oxygen in respiration of some plant tissues. E. V. Artsikhovskaya and B. A. Rubin. *Doklady Akad. Nauk S.S.S.R.* 74, 99-102(1950).—Detn. of org. peroxides in tissues of citrus fruit in various stages of development showed that in the skin the peroxides appear only near ripening period, while in the flesh of the fruit the min. amt. is found in green fruit; in all tissues max. peroxide level is reached later than the full ripening; highest levels are found in the skin albedo layer and in the tissues of the flesh of the fruit. The amt. of peroxides far exceeds that of free O (10-15 times), both showing parallel variations, affected similarly by enclosure in O-rich atm. The peroxides form in flavedo cells and are gradually transported to the inner portions of the fruit. Only flavedo and albedo cells are capable of synthesizing org. peroxides; the inner tissues are incapable of this synthesis. G. M. Kosolapoff

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

Science

Plant life and environment, Moskva (Znanie) 1951.

Monthly List of Russian Accessions, Library of Congress, March 1952. UNCLASSIFIED.

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11-F

Oxidation processes and their role in the biology of various plant organs. III. The role of peroxide compounds in the supply of tissues of citrus fruit with oxygen. F. V. Artsikhovskaya, B. A. Rubin, and T. M. Ivanova (A. N. Bakh Biochem. Inst., Moscow). *Biokhimiya Plodov i Ovoshchei, Sbornik 2*, 8-28(1951); cf. *C.A.* 46, 2632*e*.—The outer coatings of lemon, tangerine, and orange are impermeable to O_2; since O consumption by the interior tissues proceeds constantly, the supply must be by indirect paths, most probably by the way of org. peroxides. The concn. of the latter rises in passing from the outer to the inner parts of the fruit, and is much higher than concn. of O_2 in given tissues. The tissues of the meat of the fruit which are high in peroxides do not normally synthesize the peroxides; these are formed in the outer coverings, particularly in the flavedo. However, fruit kept 24 hrs. in pure O_2 show a 5% increase of the O content in their internal gas compn. with a similar rise of CO_2; after a 48-hr. exposure the O content declines again to near-normal level but CO_2 is doubled, indicating a state of O-starvation. Vacuum infiltration of O-rich atm. results at first in a sharp rise of O content and a drop in CO_2; after 24–48 hrs., however, O concn. shows a steady drop while CO_2 rises after 24 hrs. Tests with aq. methyl orange show that the connection with the surrounding atm. is maintained only via the region at the site of the fruit stem and the indicator soln. was distributed from it only by the skin vessels; paths for distribution of gases, however, do not involve the stem-site, since coating of this with impermeable plastics failed to alter the gas exchanges described above. The peroxide content is not time-const., but shows a sharp max. (in lemon) in April in the skin and a more diffuse max. in March in the fruit meat. Skin of green fruit is devoid of peroxides, but their meat contains small amts. of them. In O-rich atm. (pure O_2) the fruit skin increases its peroxide content within 24 hrs., especially in the flavedo, after which a steady decline sets in; the inner parts of the fruit show increased peroxide concn. only some 24 hrs. later, followed again by a moderate decline. The albedo shows a rise of the peroxides after some 48 hrs., after which there is a severe drop to 30% of normal level. Kept in anaerobic conditions the fruit specimens show a rise of peroxides in the flavedo after a 20-hr. exposure, explained by rapid absorption of O upon exposure to normal atm. necessary for the analyses; a 48-hr. anaerobic exposure, however, causes such depletion that the analytical exposure is not sufficient to restore the O content

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and the peroxide level is subnormal. The albedo shows subnormal peroxide level after any anaerobic exposure; the meat of the fruit shows this only after 48-hr. exposure. A CO_2-rich atm. does not alter the peroxide content in fruit meat, in 40-hr. expt. Tissue damage by cutting causes a steady, rise of peroxides in the flavedo, very much so in the albedo, and very little change in the internal meat of the fruit. If the tissue damage is done in conjunction with 0.002 *M* KCN used as a covering for the minced tissue, the content of peroxides was the same as found in mincing without KCN. IV. Characterization of the respiratory metabolism of citrus during ripening period. *Ibid.* 21-52.—In the course of ripening of citrus fruit (lemon, tangerine, orange) the O supply to the tissues is restricted and an increasing role is played by oxidases that do not contain heavy metals, while the activity of Fe and Cu proteins is repressed. The effect of increase in temp. on intensity of respiration is to raise the latter if it is catalyzed by metal-bearing oxidases, while the residual respiration is essentially unaltered. Hence the shift in the oxidative system during ripening is an example of adaptation of the fruit to surroundings, making possible a maintenance of a vital function under low-temp. conditions. During ripening the protective systems also change. In the ripening fruit the action of pathogenic germs or mechanical tissue destruction brings into play the metal-bearing oxidases, while before ripening and in storage of ripe fruit, the residual oxidases are operative. A brief treatment of ripe fruit with high temp. (30-5°) serves to aid their storability; an exposure to high CO_2 content serves a similar purpose. Both treatments stimulate the activity of the residual oxidases which are more stable under unfavorable conditions. — G. M. K.

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Peculiarities of carbohydrate metabolism as an expression of differences of leaves in sugar beet. B. A. Rubin and I. V. Gulidova (A. N. Bakh Biochem. Inst., Moscow). *Biodhimiya Plodov i Ovoshchei, Sbornik* 2, 84-106(1951).—Variation of compn. of various leaf tiers in plants is reviewed (32 references). Examn. of leaves formed at various stages of growth in sugar-beet specimens reveals the previously noted (for other plants) rise of dry matter toward the upper parts of the plant. This is not merely a consequence of water supply, since the plant of the 1st year of vegetation has its leaves in a rosette with equal water supply for all leaves. As the leaf ages the percentage of dry matter in the assimilating tissue declines; this is observed in lower and middle tiers of leaves. The variation is greater in the leaf proper than in the leaf stems; possibly this decline is caused by destruction of protoplasm protein matter. Lower-tier leaves increase their H_2O store with age, while leaves of upper tiers show a decrease (in one slow-growing season the reverse was observed). Hence the decrease of water content is not necessarily a sign of age. However, the amt. of bound water decreases with age and the amt. of free water rises. This is probably caused by alterations in the parenchyma. In the short-lived leaves of lower tiers the general tendency of assimilation-dissimilation can be readily shifted toward the latter since these leaves grow under conditions of wide variations of temp. and moisture supply. The middle tier grows under more stable conditions and plays the most significant role in plant growth, shown by their highly active enzyme systems, high contents of org. matter and water. The upper leaves are characterized by rapid development simulating rapid maturation and are characterized by high concn. of carbohydrates needed by the reproductive system. The results are discussed as a means of adaptation.

G. M. Kosolapoff

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Oxidative enzymes of white head cabbage. B. A. Rubin and E. P. Chetverikova (A. N. Bakh Biochem. Inst., Moscow). *Izvest. Akad. Nauk S.S.S.R., Ser. Biol.* 1951, No. 4, 120-31.—In cabbage tissues ascorbic acid acts as H transfer agent of the respiratory substrate and is oxidized by ascorbic acid oxidase, peroxidase, and cytochrome oxidase. The curves of ascorbic acid content and those of activity of metal-contg. enzymes are similar in the course of plant development. High CO_2 atm. which represses oxidative processes leads to a sharp drop of ascorbic acid. A ripe cabbage respires exclusively via its metal-contg. enzyme systems. In storage the residual respiration fraction increases sharply; cytochrome oxidase declines. The importance of peroxidase in plant oxidation processes is greatly stressed. Several strains of cabbage are compared and enzymic activity is described in graphical form.

G. M. Kosolapoff

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RUBIN, B. A.

"The Mineral Alimentation of Plants and the Absorption Quality of the Soil." (p. 125) by Rubin, B. A. and Ratner, E. I.

SO: Achievements of Modern Biology (Uskpekhi Sovremennoy Biologii) Vol. XXXII, No.1 (4) Moscow-Leningrad, July-August, 1951.

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1ST AND 2ND ORDERS — 3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

CA

Shifts in the respiratory activity of fruit (citrus) in the course of development. E. V. Artsikhovskaya and B. A. Rubin. *Doklady Akad. Nauk S.S.S.R.* 64, 215-17 (1949).—Studies on tangerines and lemons, involving the measurement of both oxidase types by the effect of KCN on tissue respiration, showed that the activity changes in the course of development. In the skin of the tangerine the CN-repressed activity is max. at ripening and comprises 72-4% of total respiration, after which point this phase of activity declines sharply, while the activity unaffected by KCN rises and, at the time of decline of the 1st form, comprises 64-71% of total respiration. In the lemon the results are analogous, but the decline of the 1st form begins somewhat earlier. Both enzymes are most active in the green-yellow stage of the lemon. Particularly a great drop of CN-sensitive respiration is observed in the mass of the lemon after the yellow stage is reached.

G. M. Kosolapoff

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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11D

The role of the enzyme apparatus in adaptability reactions of plants in respect to environment. B. A. Rubin and V. E. Sokolova. *Doklady Akad. Nauk S.S.S.R.* 64, 377-80(1949).—The process of starch formation in potato leaf does not have a const. temp. max.; the max. shifts with growth in the course of the year and rises to a max. of 47.5° in August. Similar shift of temp. max. in starch synthesis in the tubers is observed, but it occurs in reverse direction, showing a steady decline over the year, starting with 40° at the end of July. G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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CA

The temperature factor in coördination of various links of plant metabolism. V. E. Sokolova and B. A. Ruhin (A. N. Bakh Biochem. Inst., Acad. Sci. U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 65, 727-9(1949).—Expts. *in vivo* with potato plants showed that there takes place a narrowing of the temp. zone of starch synthesis with displacement of the optimum temp. for the plant development, as evidenced by the study of starch synthesis at various times of year. Synthesis begins at higher temps. as the season progresses. Potato tubers showed a similar result. The results are interpreted as an adaptation of the enzyme systems to the imposed environmental changes. G. M. Kosolapoff

No 5

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B.A.

The Michurin theory and some questions of the biochemistry of plant raw materials. Izvest. Akad. Nauk S.S.S.R., Ser. Biol. '49, 677-701. (CA 47 no.15:7605 '53) (MLRA 3:6)

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11D

Oxidative processes and their role in the biology of various plant organs. I. Role of oxidative processes in phenomena of stability of fruit of citrus type during storage. B. A. Rubin, E. V. Artsikhovskaya, and T. M. Ivanova. *Biokhimiya Plodov i Ovoshchei, Sbornik* No. 1, 5-29(1949). See C.A. 43, 3286. **II. Respiratory gas exchange in citrus fruit in connection with the progress of fruit ripening.** *Ibid.* 30-44. During the ripening of fruit (tangerines; lemons), almost up to harvesting, the main role in activation of O falls to an oxidase whose prosthetic group contains proteins with Fe or Cu. In the following stage characterized by aging, the respiration is carried largely by oxidases stable to CN^-. The change of the oxidase system shows up also in the temp. effects. Thus raising the temp. of green fruit lowers the respiratory coeff. which reaches its min. at 30°, while in ripe fruit a lowering of temp. causes a decline of the respiratory coeff., although the level of respiration remains much more stable than is the case for the green fruit. G. M. K.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CH

HD

Enzyme systems of Michurin varieties of apple trees. B. A. Rubin and N. M. Sisakyan (A. N. Bakh Biochem. Inst., Moscow). *Problemy Biokhim. v Michurinskoi Biol., Akad. Nauk S.S.S.R., Sbornik*, No. 1, 49-80(1949).—Early-summer ripening varieties of apple have very low leaf-peroxidase activity, while the late-summer varieties have rather high activity increasing the later the season. The highest leaf tiers show the highest peroxidase activity, while polyphenoloxidase shows the reverse trend. Enzymes regulating hydrolysis of saccharides to monosaccharides increase this activity as the plant ages; the effect is strongest in the early varieties of the plant. The non-frost-resistant varieties show rapid inactivation of enzymic polysaccharide synthesis at 0°, while the resistant forms lose the activity only at −10°. Proteases also lose their synthetic ability more readily in nonresistant forms than in resistant forms, with concurrent increase of the hydrolytic reactions. Grafting of functionally young mentor plants (according to Michurin technique) can serve to improve the plant quality by the influence on the above-cited enzyme systems. Preliminary pos. results are given in tabular form. G. M. K.

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11D

The problem of increasing the content of dry matter in tomato. B. A. Rubin and L. V. Metlitskii. *Biokhimiya Plodov i Ovoshchei, Sbornik* No. 1, 85-112(1949).—The increase of the dry-matter content of the tomato has not been solved as yet by purely biol. methods of selection, but some intermediate degree of progress is reported. The plants respond very well in this respect to adequate N, P, and K fertilization and increases of almost 100% have been achieved by high order of fertilization during planting and again during flowering. Direct seeding of the open exptl. field gives products with higher solid content than does the transplantation method of the plants grown in small cultures, in the early stages. Use of plant growth regulators like 2,4-dichlorophenoxyacetic acid also aids the increase of dry matter, with changes up to 20% being found in some cases.

G. M. Kosolapoff

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

Role of enzymic processes in relation of plants to environment. B. A. Rubin (A. N. Bakh Biochem. Inst., Moscow). *Problemy Biokhim. v Michurinskoi Biol., Akad. Nauk. S.S.S.R., Sbornik*, No. 1, 113-59(1949).—Expts. are cited in which the activity of enzymic systems controlling the sucrose level in beets corresponds to the light-dark periods of day, showing adaptation of plant to environmental conditions. A similar picture is found in starch synthesis in the potato and in the temp. effects on enzymic control of sucrose in sugar-beet leaf, as well as in respiration characteristics of lemons at various stages of ripening.

G. M. Kosolapoff

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A. PA 2/50T21

USSR/Biology - Plant Respiration Mar/Apr 49
Metabolism

"Metabolism in the Plant and the External Medium," B. A. Rubin, Inst of Biochem, Acad Sci USSR, 13 pp

"Agrobiol" No 2

Changes in hydrocarbons and respiration in tissue and leaves of wheat and similar data are tabulated according to temperature. From collected data it is evident that metabolism not only reflects biological peculiarities of organism but contributes to its formation and living conditions. Working out connected problems is a new step in biochemistry.

[redacted] 2/50T21

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

USSR/Medicine - Plant Immunity Apr 49
Medicine - Microorganisms

"Review of B. A. Rubin's and Ye. V. Artsikhovskaya's Book 'Biochemical Characteristics of Plants' Resistance to Microorganisms,'" N. A. Krasil'nikov, 1 p

"Priroda" No 4

Book (88 pp) is devoted to the problem of immunity or resistance of higher plants to phytopathogenetic microorganisms. Discusses mainly the substances formed during plant growth -- hormones, enzymes, antibacterial substances, etc. Book does not

[redacted]

57/49T84

USSR/Medicine - Plant Immunity Apr 49
(Contd)

stress effects of external factors, and does not evaluate adaptability of microbes to new conditions. However, it is of definite value in understanding plant immunity.

[redacted]

57/49T84

RUBIN, B. A.

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

11D

The periodicity of the activity of enzymes in the plant. B. A. Rubin, E. V. Artsikhovskaya, N. S. Spiridonova, and O. T. Lutikova. *Doklady Vsesoyuz. Soevetkhaniya Fiziol. Rastenii*, 1; *Trudy Inst. Fiziol. Rastenii im. K. A. Timiryazeva* 4, No. 1, 217-27(1946); cf. *C.A.* 39, 3560[9].—A review and crit. discussion of papers published by some of the authors and a few others on the biochem. transformation taking place in the course of the growth of the cereal plants, as well as original expts. of their own. These expts. cover a study on the biol. role of enzymes in plants. It is an attempt to bridge the enzymology and physiology of plants. The investigations comprise studies on the relation of invertase of the leaves to the sugar accumulation capacity of the plants. These expts. were conducted with sugar beets, onions, watermelons, cabbage, and tobacco. The results show that the total sugars in the plant cells increase parallel with the abs. and relative proportion of sucrose. The qual. compn. of the sugars, especially the ratio of monose to biose in bulbs, tubers, and fruits of melons reflects the relation between the hydrolyzing and synthesizing capacity of the invertase. Great variations in the relation mentioned have been found within the same plant species at different age periods and under different photoperiodicity environments. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11 D

The role of ascorbic acid in the hedge rose. B. A. Rubin, E. V. Artsikhovskaya, and T. A. Proskurnikova (Acad. Sci., Moscow). *Biokhimiya* 11, 349-58(1946).—The ascorbic acid content of plants is related to the oxidative activity, especially to the intensity of respiration. An exception is the hedge rose, which contains large amts. of vitamin C, but not the oxidative enzymes, peroxidase and ascorbic acid oxidase. The ascorbic acid synthesized by the pericarp tissues of the hedge rose is inactive, and does not participate in the respiratory processes. H. P.

Inst. of Biochemistry im. A.N. BAKH

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

11-D

Thermal curves of starch synthesis in potatoes during development of the plant. B. A. Rubin and V. E. Sokolova. *Compt. rend. acad. sci. U.R.S.S.* 54, 333-6(1946) (in French). Studies were made *in vivo* on the influence of different temps. on the hydrolytic and synthetic activities of sucrase as well as the intensity of starch synthesis without differentiating the action of various enzymes. The optimum temp. for starch formation in the leaves varies with the age of the plant. In late July and early Aug. it is 30°; in late Aug. it is 40-50°. The synthesis of starch and sucrose in the leaves is not stopped even at 50° at the end of the growing season (cf. Green and Stumpf, C.A. 36, 2270⁸). Tests on potato tubers in Sept. and Dec. showed that sucrase maintained a high thermal optimum but that the optimum for starch synthesis was 37° in Sept. and synthesis stopped at 15°. In Dec. it stopped at 10°.

Mildred P. Putnam

ASB VLA AGRICULTURAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

"Materials on the Study of Parasitism in Plants," Agrobiologiia, no. 4, 1947, pp. 128-142. 20 Ag822

So: Sira S1-90-53, 15 Dec. 1953

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11-B

Oxidative changes of phenols and their relation to the resistance of potatoes against Phytophthora infestans. B. A. Rubin, E. V. Artsikhovskaya, and T. A. Proskurnikova (Bach Biochem. Inst., Moscow). *Biokhimiya* 12, 141-52(1947); cf. *C.A.* 40, 6129.—A variety of potato with resistance to *Phytophthora infestans* ("No. 12931") possesses a higher respiration rate and peroxidase activity than the potato type ("Courier") which is characterized by susceptibility to infection. No marked changes in respiration rate and peroxidase activity of the leaves occur during infection; but an increase takes place in the oxidizing transformations in the system polyphenol-polyphenoloxidase. H. Priestley

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11-D

Biochemical characteristics of different types of peas. B. A. Rubin, E. V. Artsikhovskaya, and O. T. Lutikova (Bach Biochem. Inst., Moscow). *Biokhimiya* 12, 524-38 (1947).—The biochem. processes in the sprouting and ripening of smooth and wrinkled peas were studied. In the sprouting of wrinkled pea, there is an intense decompn. of the substances stored in the cotyledon. The material stored in the cotyledon of the smooth pea is depolymerized very slowly. A low level of synthetic activity of polymerized substances is maintained in the sprouts of the smooth pea. 48 references. H. Priestley

No 6

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

CA

11D

The part played by phosphorus in the transition of starch in living plants. B. A. Rubin and V. B. Sokolova. *Doklady Akad. Nauk S.S.S.R.* 58, 1003-6(1947); *Chem. Zentr.* 1948, I, 1261.—It has so far not been possible to demonstrate *in vitro* that P plays a part in the disintegration of starch. This is assumed, since the transition of the starch must take place with glucose-1-phosphate being formed as an intermediate step. An attempt was made to solve the problem *in vivo*. By use of a vacuum infiltration process, the authors infiltrated potatoes with a mixt. of glucose and inorg. phosphate (NaH_2PO_4). Thereafter, samples were taken every 30 min. and analyzed for starch and inorg. phosphate. A striking parallel in the starch-PO_4^{---} content was found after 30 min. and 1 hr. In expts. on potato leaves this parallel was shown even after 1.5 and 2 hrs. After 2 and 3 hrs. the starch and PO_4^{---} contents of the tubers showed an inverse ratio. This was due to another process taking place simultaneously.

M. G. Moore

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.,

and ARTSIKHOVSKAYA, E. V. Biochemical Analysis of Plant Resistance to Micro-organisms, Publishing House of the Academy of Science, USSR, Moscow, 1948, 86 pp. 464.41 R82

So: Sira S1-90-53, 15 Dec. 1953

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

Review of S. N. Prokoshev's Biochemistry of the Potato, Biokhimiya, 13: 6, 1948.

BNL Guide, 2: 4, 1949

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

PA 41T61

USSR/Medicine - Plants, Parasites Jan/Feb 1948
Medicine - Microorganisms

"Biochemical Resistance of Plants to Microorganisms," B. A. Rubin, Ye. V. Artsikhovskaya, Moscow, 21¼ pp

"Uspekh Sovremen Biol" Vol XXV, No 1-p-27-48

Brief collection of data describes the resistance of plants from the standpoint of internal and biochemical dependence on various substances, and is based on an analysis of the relation of the plant host to the parasite. Discusses various factors showing the biochemical resistance of plants to microorganisms.

LC

41T61

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

11-D

Metabolism of smooth and wrinkled peas in the period of germination. B. A. Rubin, E. V. Artsikhovskaya, and O. T. Lutikova. *Doklady Akad. Nauk S.S.S.R.* 59, 103-6(1948); cf. preceding abstr.—The 2 varieties of peas were grown on moistened filter paper in the dark, and the chem. compns. of the sprout and the seed residuum were detd. during 15 days. The smooth variety has a consistently higher ratio sucrose/monoses, a lower ratio starch/sugar, and essentially the same protein N/non-protein N ratio, as found in the wrinkled variety. In the smooth variety the major part of the carbohydrate stored in the seed is starch, while in the wrinkled variety it is sucrose. The sucrose/monose ratio gradually drops as growth proceeds in the smooth variety, and rises in the wrinkled variety. The intensity of movement of the seed material into the sprout is greater in the wrinkled pea; in the smooth pea the migration of carbohydrates in early growth lags behind N migration, while in the wrinkled pea the opposite is true. Active breakdown of proteins in the wrinkled pea may be caused by their utilization as respiratory substrate; in the smooth pea the proteolytic processes are feeble. G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

PA47T96

USSR/Medicine - Citrus
Medicine - Oxidation

Mar 1948

"Species Peculiarities of the Oxidizing System in Citrus," B. A. Rubin, Ye. V. Artsikhovskaya, T. M. Ivanova, Biochem Inst imeni A. N. Bakh, Acad Sci USSR, 3 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LIX, No 8

Gives results of experiments designed to obtain average data on the level of respiratory gas exchange in various tissues of following types of citrus fruit: mandarin (Citrus reticulata), orange (Citrus sinensis) and lemon (Citrus limon). Submitted by Academician A. I. Oparinyy, 10 Jan 1948.

[redacted]

47T96

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

PA 77T58

USSR/Medicine - Plants
Medicine - Physiology

Apr 1948

"Respiratory Gas Exchange in Citrus Fruits, and Its Role in the Resistance Phenomenon of the Fruits," B. A Rubin, Ye. V. Artsikhovskaya and T. M. Ivanova, Inst Biochem imeni A. N. Bakh, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LX, No 3 - p. 425-7

States that resistance factor must be studied as active physiological process, and that in this connection respiratory gas exchange plays a leading role. Studies conducted on subject phenomenon in lemons, mandarins and oranges. Submitted by Acad A. I. Oparin 10 Jan 1948.

[redacted]

77T58

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2"

"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

PA 77T50

USSR/Medicine - Plants
Medicine - Metabolism, Effects of Light on

May 1948

"On Peculiarities of Day and Night Metabolism in Plants," B. Rubin, Ye. Artsikhovskaya, V. Sokolova, Inst Biochem imeni A. N. Bakh, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LX, No 4 p. 627-9

Optimum operating temperature of ferments which control hydrocarbon changes in plants is not constant. Optimums alter in course of growth of organism, direction of these alterations reflecting degree of adaptability of plant to one of most important factors of external medium, such as temperature.

[redacted]

77T50

USSR/Medicine - Plants (Contd)

May 1948

Experiments are described and graphs are plotted showing synthesis and decomposition of sucrose against temperature (day and night). Submitted 31 Dec 1947.

[redacted]

77T50

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A.

PA 68T78

USSR/Medicine - Sucrose May 1948
Medicine - Carbohydrates, Metabolism

"The Role of Sucrose in the Exchange of Plant Carbohydrates," B. A. Rubin, Ye. V. Artsikhovskaya, Inst Biochem imeni A. N. Bakh, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LX, No 5 - p. 801-4

Previous observations showed that plant starch content is related to sucrose content. Describes experiments confirming that amount of sucrose utilized is dependent on amount of fixed fructose contained. Submitted by Academician A. N. Oparin 6 Mar 1948.

[redacted]

68T78

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

PROCESSES AND PROPERTIES INDEX

C1

12

Oxidative processes in stability of citrus products. B. A. Rubin, B. V. Artsikhovskaya, and T. M. Ivanova. *Doklady Akad. Nauk S.S.S.R.* 60, 1009-12(1948).—A higher stability of citrus fruit on storage is connected with a high order of resistance to the initiation of anaerobic metabolism. Respiration studies on tangerines in 3 stages of ripening showed that the most intensive respiration at 20° occurs in green-yellow specimens; green specimens give the highest value at 30° and lowering of temp. below 20° lowers the respiratory activity and increases the share of anaerobic processes; ripe fruit have lower respiration and yield a considerably higher level of anaerobic processes on warming to 30°. The green-yellow specimens retain the normal respiration in a most stable manner even under unfavorable conditions; they also have the highest resistance to mold growth. In lemons the resistance to anaerobic processes grows until the light-yellow stage is reached. Analysis of the gases sepd. from the tangerines or the lemons showed that inner portions of the fruit are almost devoid of O, and are rich in CO_2, which characterizes conditions corresponding to anaerobic reactions. The O/CO_2 ratio rises as the fruit ripens—from 1.02 to 1.53 in tangerines, and from 0.53 to 1.35 in lemons. The low value in green lemons corresponds also to the high level of citric acid—a typical product of anaerobic metabolism. The poor permeability of the skins leads to the possibility of such difference in gas compn. from the surrounding atm. and must result in the existence of oxidative enzyme systems adapted to functioning in deficient conditions in respect to O. G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

RUBIN, B. A., Institute of Biochemistry imeni A. N. Bakh, Acad Sci USSR

RUBIN, B. A., and PUSHKINSKAYA, O. P. "Microbe Complex Responsible for Rot of Sugar Beets Stored Under Conditions of Kirghiz," Comptes Rendus (Doklady) de l'Academie des Sciences de l'URSS, vol. 40, 1943, pp. 365-368. 511 P444

SO: SIRA SI 90-53, 15 Dec. 1953

Dok AN, Vol 40, No 9, 1943

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

CA

11D

Amylase and the synthesis of starch in potato tubers. B. A. Rubin and E. V. Artsikhovskaya. *Biokhimiya* 9, 362-72(1944). Potatoes which had been kept at 0° and then transported to 10-35° showed an increase in the starch content. At 0° the synthetic activity of amylase is repressed but becomes active at 10-35°. H. Priestley

INST. OF BIOCHEM. IM. A.N. BAKH ACADEMY OF SCIENCES, USSR, MOSCOW

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

11D

Inactivation of peroxidase with age in apple tree leaves. N. M. Sisakyan and B. A. Rubin. *Biokhimiya* 9, 307-11 (1944).—The aging of apple leaves is accompanied by a decreased activity of peroxidase and an increased activity of polyphenolase. Tannins may be responsible for the inactivation of peroxidase. H. Priestley

Inst. of Biochem. im. A.N. BAKH of the acad. of sciences, USSR, Moscow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

A-4

[illegible] responsible for rot of sugar-beet roots under conditions of [illegible]. B. A. Rubin and O. P. Puchkinskaja (*Compt. rend. Acad. Sci. U.R.S.S.*, 1946, 53, 345—348).—Rotting of sugar-beet in Kirghizia during long storage starts with the growth of fungi, followed by that of bacteria when the resistance of the roots has been weakened by withering and sharp temp. changes. Some unidentified bacteria symbiotic with yeasts were found.

R. L. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

C1

12

Dynamics of potato carbohydrates at different temperatures. B. A. Rubin and E. V. Artsikhovskaya. *Pishchevaya Prom.* 1945, No. 2, 47-51.—Starch hydrolysis by amylase is reversible near 0°. Total carbohydrates are best preserved by storage at 1.5°, followed by 10 days at 15° before use. Amylase gradually loses its power to synthesize hydrolyzed starch; the loss is total in about 150 days at 4° or at 1.5°, or 55 days at −1.5°. Warming to 15° after cold storage destroys the starch-synthesizing power of amylase far faster after storage at 1.5° than after storage at −1.5°. These expts. offer a basis for optimum storage of potatoes for making sirup. Julian F. Smith

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R001445810015-2

PROCESSES AND PROPERTIES INDEX

Ca

Periodicity of certain processes in plants. B. A. Rubin, E. V. Artsikhovskaya, N. S. Spiridonova, and O. T. Lutikova. *Biokhimiya* 10, 54-67(1945).—During the day there is an increase in the synthesis activity of invertase of leaves, and a decrease in the hydrolytic activity, as compared to the night period. This is not due to illumination, for if the leaves are illuminated during the night and kept dark during the day, the plant retains its rhythmic impulse formed in the early stages of its life.
H. Priestley

11 D

INST. OF BIOCHEM. IM. A.N. BAKH OF THE ACAD. OF SCIENCES OF THE USSR, MOSCOW

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

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CA

11·D

No 5-6

Influence of altitude on the enzymic activity of plants. B. A. Rubin, O. I. Pushkinskaya, and V. E. Sokolova (Bach Biochem. Inst., Moscow). *Biokhimiya* 10, 365-72 (1945)(English summary).—Sugar beets grown at an altitude of 2500 m., in Alma-Ata, Kazakstan, contain 38.4% sucrose and only 1.0% monosaccharides. The small percentage of simple sugars is indicative of a high synthesizing activity of the enzymes. There is also an increase in respiration and in the amt. of peroxidase and catalase. Beets grown at a high altitude are extremely resistant to microbial infection, due to the activation of the processes of cutinization. H. Priestley

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RUBIN, B. A.

Biochemical characteristics of the resistance of plants to microörganisms. B. A. Rubin, O. I. Pushkinskaya and V. E. Sokolova. *Compt. rend. acad. sci. U.R.S.S.* 49, 665-8(1945).—Observations showed that the Central Asia beet resisted infection by a no. of organisms. In the present study the effect upon this active resistance of the altitude of the locality in which the beets were grown was studied. Results showed that corresponding to increasing altitude the protective functions of the beet root grew while its susceptibility to the organisms *Fusarium* spp., yeast (*Saccharomyces*), and *Myrobacterium* spp. decreased. At high elevations (1800-2500 m. above sea level) the process of cutinization (formation of new protective tissue) is also comparatively greater. With increased elevation there occurred a regular increase in peroxidase and catalase activity, and in respiration intensity. It seems probable that the varying resistance of various types of beets is due to the difference in the altitude of cultivation and to the modifications in the internal chem. processes (oxidation-reduction potentials, vitamin C content, catalase activity) due to it.

Bernard Wolnak

Dok. AN, 49, No 9, 1945

Inst of Biochemistry imeni A. N. Bakh, Acad Sci USSR

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RUBIN, B.A.

Storage of sugar beets. Moskva, Pishchepromizdat, 1946. 267 p.

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RUBIN, B. A.

RUBIN, B. A. "On the Role of Oxidizing Processes in the Phenomena of Plant Resistance," in Works of the Conference, Dedicated tothe 50th year of the Peroxide Theory of Slow Oxidation and to the Role of A. N. Bakh in the Development of Native Biochemistry, Publishing House of the Academy of Science USSR, Moscow, 1946, pp. 75-83. 386.2 Or1

SO: SIRA SI 90-53, 15 Dec. 1953

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3RD AND 4TH ORDERS

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Conditions for the formation of vitamin C and carotene and their role in the plant. B. A. Rubin. *Trudy Moskov. Doma Uchenykh i Inst. Biokhim. Akad. Nauk S. S. S. R.* 1940, No. 4, 135-52; *Khim. Referat. Zhur.* 4, No. 9, 70-1 (1941); cf. *C. A.* 35, 1457[8].—Vitamin C and carotene are formed in the green assimilating parts of the plant. Their biol. role is connected with the oxidation-reduction processes of the cell. Vitamin C on being transformed into the dehydro form activates invertase for synthetic processes. This function has an effect on the accumulation of reserve carbohydrates.

W. R. Henn

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Vitamin C and the oxidation capacity of plant tissues. B. A. Rubin and N. S. Spiridonova. *Biokhimiya* 5, 208-18(1940); cf. C. A. 34, 1711[illegible].—In those vegetable tissues where a correlation exists between the vitamin C content and the ascorbinase and peroxidase activity, the synthesis of vitamin C is the result of a specifically directed oxidation process taking place in the vegetable cell. Where no correlation exists, as in the tissues of fruits, ascorbic acid is a product of storage, and has been synthesized by other tissues. H. Priestley

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11b

Synthetic action of amylase in living plant tissue. B. A. Rubin, E. V. Artsikhovskaya, N. S. Spiridonova and O. T. Lutikova. *Biokhimiya* 5, 687-96(1940).—In 3-hr. vac. infiltration expts. more starch is formed from sucrose than from a mixt. of glucose and fructose; none is formed from maltose. Starch formation is very rapid and starch takes an active part in leaf carbohydrate metabolism. Formation of sucrose followed by its hydrolysis to active furanose units is probably an intermediate stage in starch synthesis in the plant. B. C. P. A.

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Chalking of titanium dioxide. B. A. Rubin. *Org. Chem. Ind.* (U. S. S. R.) 7, 223-5(1940).—Preliminary suggestions for eliminating the chalking of TiO_2 are: (1) covering the Ti-contg. linseed oil film with another film not contg. TiO_2, (2) covering the surface of the TiO_2 itself with another film such as ZnO, (3) "numbing" the TiO_2 possibly by calcining under special conditions. Investigations along these lines are being carried on. B. Z. Kamich

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Enzymic action in peas in relation to development and productivity. B. A. Rubin and O. T. Lutikova. *Compt. rend. acad. sci. U. R. S. S.* 27, 26-8, 33-6(1940).—Synthetic and hydrolytic activities of invertase and of proteinase were measured in early and late varieties of garden and of field peas at various stages of growth. During the fruiting period the ratio synthesis/hydrolysis in the leaves increased markedly in the "sugar" peas but remained more or less const. in the field peas. Synthetic proteinase activity in the leaves increased in all varieties. In the pods at the stage of milky ripeness synthetic invertase was entirely absent in the sugar varieties, and hydrolytic invertase was entirely absent in the seeds. J. J. W.

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11 D

Role of oxidation-reduction processes in directing the action of invertase in a vegetable cell. B. A. Rubin and E. V. Artsikhovskaya. *Compt. rend. acad. sci. U. R. S. S.* 27, 63-7(1940)(in English).—Ascorbic acid and glutathione, in reduced and oxidized form, were infiltrated into cabbage leaves. Within a few hrs. the ratio sucrose/reducing sugars increased appreciably with all substances. Conclusion: The oxidation-reduction potential of the tissues dets. the degree of synthetic action of invertase.

I. I. Willaman

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1ST AND 2ND ORDERS

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BC

[illegible] (Compt. rend. Acad. Sci., U.R.S.S., [illegible] activity of ascorbinase is approx. the same [illegible] and of [illegible] in activity [illegible] ascorbic acid [illegible] ascorbic acid [illegible] the fruit [illegible] appears to be absent [illegible] in the fruit have [illegible] of Cucurbitaceae show very [illegible] biological activity. The [illegible] unable to synthesize ascorbic acid, and it is [illegible] from the leaves. The amount of ascorbic [illegible] fruit is much greater than in that of the [illegible] in the [illegible] state, the cabbage is [illegible] ascorbic acid from [illegible] in the tissues, but in the [illegible] ascorbic acid occurs. It is concluded that [illegible] condition for synthesis of ascorbic acid in [illegible] must also be sufficiently active because the [illegible] ascorbic acid by [illegible] J. N. A.

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