Volume 2, Issue 5, May - 2024
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

SAFEGUARDING VINEYARDS: A COMPREHENSIVE ANALYSIS OF PESTICIDE USAGE AND CARBOHYDRATE COMPOSITION IN GRAPEFRUITS

Muqimjon Usmonovich Hakimov
Candidate of Agricultural Sciences, Associate Professor, Department of Food Technology, Fergana Polytechnic Institute, Fergana, Uzbekistan

Abstract
This article offers a comprehensive exploration of pesticide utilization in vineyards and the quantitative assessment of carbohydrate levels in grapes. Emphasizing strategies to mitigate grape pests and diseases, it delves into the correlation between pest management practices and sugar content in grapefruits. By scrutinizing these intertwined aspects, this study aims to elucidate the intricate dynamics shaping vineyard management strategies and the nutritional composition of grapes. Through an amalgamation of scientific insights and practical considerations, this research contributes to the ongoing discourse surrounding sustainable viticultural practices and the promotion of grapefruit quality.

Keywords: Pesticides, grapefruits, grape varieties, biological effectiveness, carbohydrates, vitamins, refractometer.

Introduction

In the intricate tapestry of agriculture, vineyards stand as timeless symbols of cultivation, providing the foundation for one of the world's most cherished beverages: wine. Yet, behind the elegance of a glass of wine lies a complex web of agricultural practices, including the strategic use of pesticides and the intricate chemistry of grape composition. As concerns regarding environmental impact and consumer health continue to evolve, a critical examination of pesticide application practices and the nutritional quality of grapefruits emerges as a pivotal discourse in viticulture.

This article delves into the multifaceted realm of vineyard management, juxtaposing the necessity of pesticides in pest and disease control against the imperative to preserve ecological balance and ensure consumer safety. Additionally, it embarks on an exploration of the carbohydrate composition within grapefruits, unravelling the nutritional intricacies that underpin their flavour profile and health attributes.

By weaving together insights from agricultural science, environmental sustainability, and nutritional analysis, this study aims to shed light on the nuanced interplay between human intervention, natural processes, and the ultimate product of the vineyard—the grape itself. Through meticulous analysis and informed discourse, we endeavour to contribute to the ongoing dialogue surrounding responsible vineyard management practices and the promotion of grapefruit quality, paving the way for a sustainable and health-conscious future in viticulture.

Volume 2, Issue 5, May - 2024
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

The Main Part

It is known to everyone that farming in Uzbekistan began in the distant past and developed in accordance with the evolutionary changes in its development. Farming and its productivity have been linked to the success of protecting plants from various harmful organisms, such as pests, diseases and weeds. From this point of view, the problem of pesticide use is still being studied [2].

A number of pests and diseases can damage vines and grapes. Mealybugs of grape and cankerworms, grape mites, grape vinegar, shingle worm, acacia false shield drugs, vine leaf borer, powdery mildew, false powdery mildew, mildew, etc. [3].

At the same time, we focused our research on the study of the agro toxicology of grape growing technology, as well as the study of the amount of carbohydrates in the cultivation of grapes and their chemical composition [5]

Two types of grapes are grown in Uzbekistan. Currently, Uzbekistan exports grapes to foreign countries. We know that depending on the use of grapes, they are divided into three main groups: wine and food varieties. Of course, from the point of view of food safety, we studied the effect of pesticides on grapes and changes in their chemical composition of carbohydrates.

According to the analysis of the literature, the main varieties of wine in Uzbekistan are Aleatiko, Alegoti, Bayan Shire, Bishti, Buvaki, Nor Buvaki, and Soyaki. Musallas, strong wines, aromatic wines, and dessert wines are made from this variety.

Grape wine is a drink obtained after the fermentation of grape juice. Wine contains organic acids, mineral salts, vitamins, and sugar. Raisin varieties: white raisin, sultana, black raisin. These are early ripe, juicy, and eaten fresh, raisins are added, they contain up to 80% sugar.

Varieties of khoraki: khusayni, bride finger khusayni, bigizi, morchamiyan khusayni, red khusayni, there are varieties of the category. As these varieties are stored, the sugar content increases. Also, the khoraki varieties include chillaki, daroyi, echkiemar, kattakurgon, rizamat, and beautiful black varieties.

Based on the above, we carried out our research in the vineyards of the Koshtepa district of the Fergana region. The use of pesticides and the changes in carbohydrates in the fruit was studied in "Husayni", "Kyzil Khusayni" and "Gozal Kara" grape varieties.

We have used chemical methods in integrated protection systems to control vine pests and diseases.

In this, of course, the methods and conditions of conducting research on the use of pesticides in agriculture are fully followed. The combined use of insect acaricides and fungicides against pests and diseases has been achieved, and high biological efficiency has been achieved. The efficiency is 85-90%. In order to achieve such efficiency, the main attention is paid to the following. Because in the practice of plant protection, the fight against various harmful organisms often coincides with each other. Therefore, there is an opportunity to combine two or three types of penicillins. Taking into account the above, pesticides were used at the following rates:

Nurell-D, 55% ke,

ciperfos 1l/ha + folikur 0.3l/ha;

karate, 5% em.k 0.5 l/ha + topaz 0.3 1/ha;

karate, 5% em.k 0.5l/ha+entolikur.

The experiments were carried out according to the rules for the use of pesticides. During the entire growing season, insecticides and fungicides were used three times at the prescribed rates. The

Volume 2, Issue 5, May - 2024
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

biological efficiency was 85-95% [7].

Based on the analysis of the literature, we know that grapes contain 10% to 30% sugar, 0.5 to 1.5% organic acids, 3mg% vitamins, as well as vitamins B1, B2, carotene and mineral salts.

The fruit is eaten fresh, dried (raisins are added), grape juice, jam, coupon, and various wines are made. According to the main group, depending on the use, grapes are divided into raisin and grape varieties [5].

Vegetables are one of the most necessary organic substances for human life. It makes up about 70% of the food consumed by humans. Carbohydrates are widely distributed in the world of plants, they make up 80-90% of their composition. Carbohydrates are produced by the process of photosynthesis. The total amount of carbohydrates in grapefruit is 8-20% [5, 7].

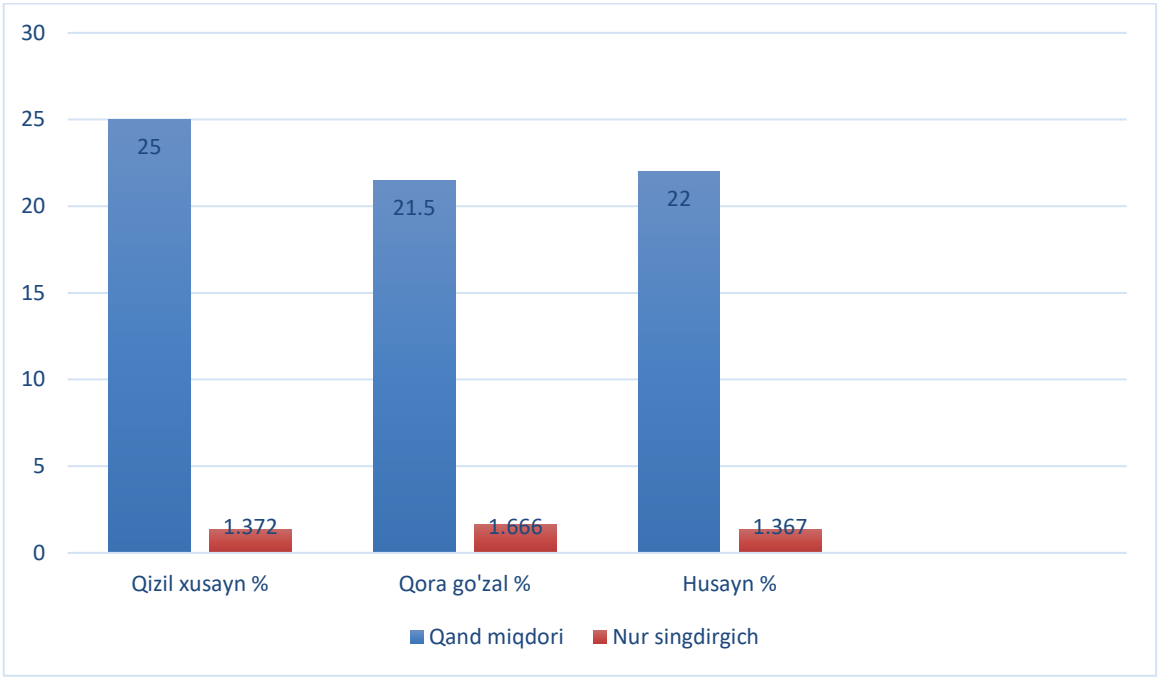

Figure 1. Grape variety sugar content indicators.

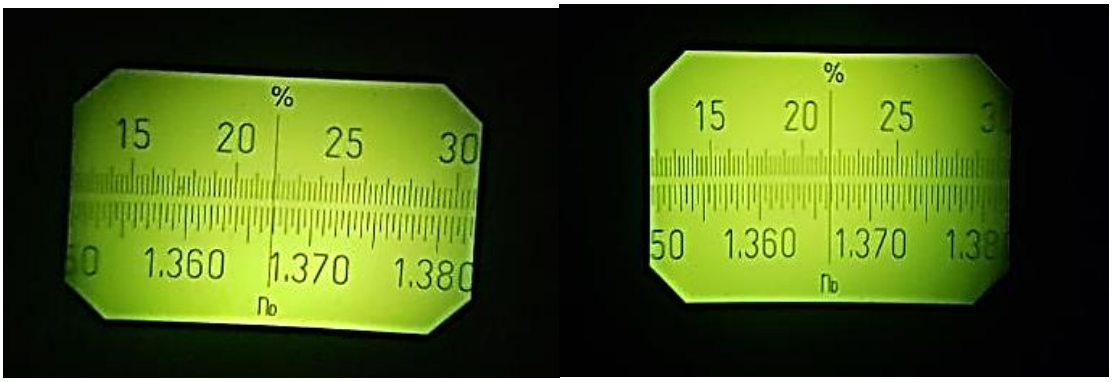

Figure 2. Light absorption indicators based on different varieties of grapes.

Taking into account the above, we studied the chemical composition of grape varieties treated with pesticides. The experiments were conducted in the department-laboratory of Far PI "OOT". In this case, the amount of carbohydrates in the varieties "Kyzil Khusayni", "Kora Gozal", and "Husayni"

Volume 2, Issue 5, May - 2024
ISSN (E): 2938-3781

is determined and the obtained data is presented in the form of a diagram.

Since the treatment of grapes was stopped 40 days before the ripening of the grapes, the decomposition (degradation) of the drugs was accelerated.

Conclusions

In summary, the amount of sugar in grapes is 1.372 with a 25% refractive index in the variety "Qizil khusayni"; 21.5% in the variety "Kora Gozal"; 1.666% sugar content in "Husayni" variety, 1.367% sugar content. It became clear from these indicators that it is appropriate to medicate grapes on time, according to the major criteria and established norms.

References

1. Olimjonov Entomologiya 25-bet. Toshkent. “ O‘qituvchi ”1977
2. Yaxontov V. V. O‘rta Osiyo qishloq xo‘jaligi zararkunandalari 150-bet. “O‘rta va oliy maktab” 1962
3. Sh.T.Xo‘jayev “O‘simliklarni uyg‘unlashgan himoya tizimi va uning tarkibidagi biologik usulning tuzilishi va mohiyati” 35-36, 50,73- betlar. Toshkent. “ Fan”. 2013
4. M.Xakimov, M.Mamatkulov “Tabiiy sharbat olish uchun meva va sabzavotlarni qayta ishlaydigan ShQM-18 qurilmaning amaldagi namunasini ishlab chiqish”. Far DU Ilmiy Xabarlar 6-2019 29-30 betlar.
5. M.Xakimov, A.Marufjonov “O‘zbekistonda anor yetishtirishni rivojlantirish bo‘yicha olib borilayotgan keng ko‘lamli ishlar”. Far DU Ilmiy Xabarlar 6-2020 119,120,121- betlar.
6. Sh.T.Xo‘jayev “Umumiy va qishloq xo‘jalik entomologiyasi xamda uyg‘unlashgan ximoya qilish tizimining asoslari”. Toshkent. 2019.
7. Хакимов М. У., Абдусаматова Д. Д “Эффективность комбинированного применения инсектицидов и фунгицидов в борьбе с вредителями и болезнями винограда” International Journal of Formal Education.

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8