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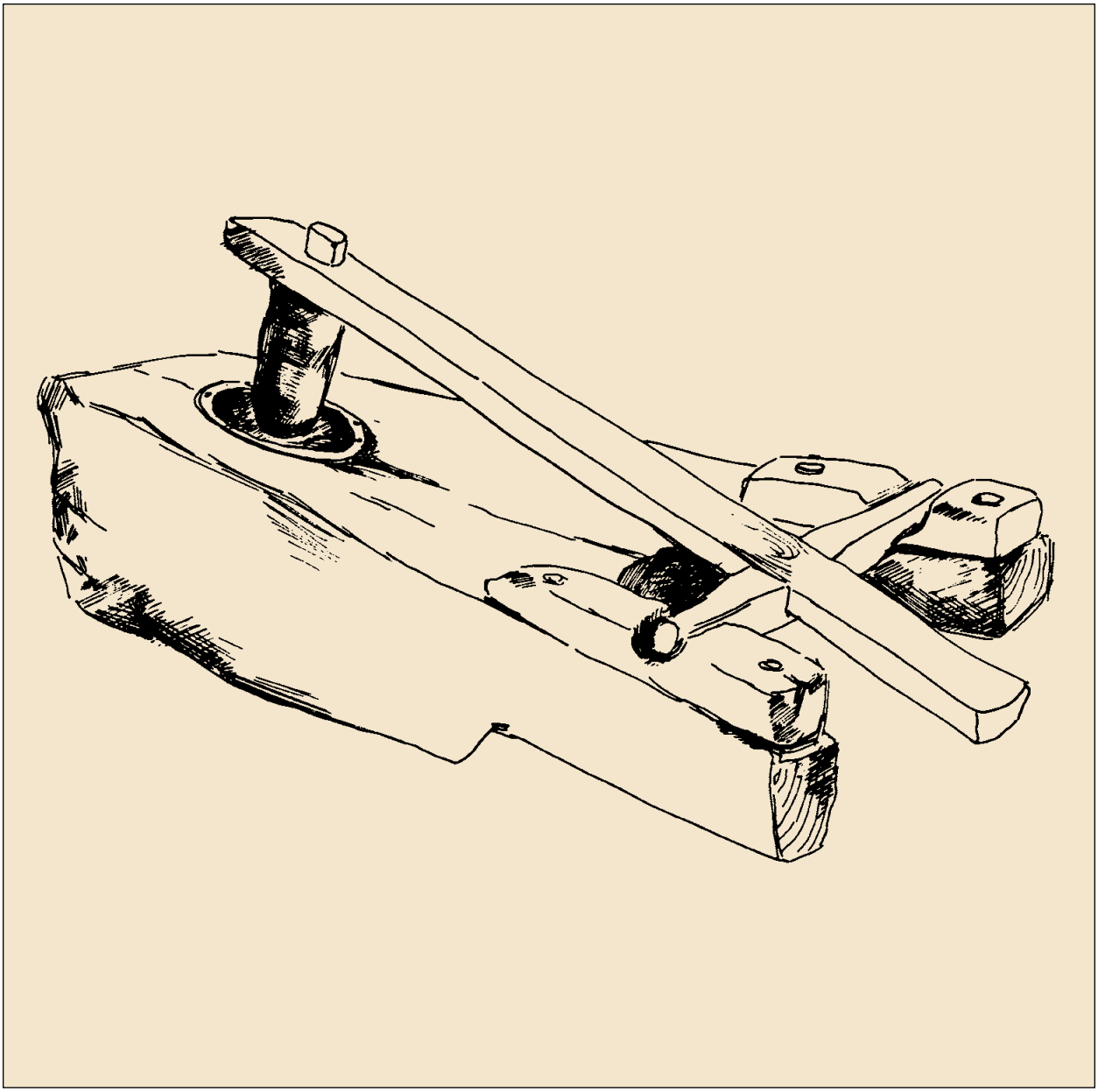

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Front page photo: Buckwheat hulling device – stope (Pomurje Museum, Murska Sobota, Slovenia, see Fig. 1 in paper of Pšajd in this issue, page 28).

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Research Paper

The Effect of Location, Cultivar, and Sowing Time on the Growth and Productivity of Buckwheat in Egypt

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Keywords: Buckwheat, *Fagopyrum tataricum*, *Fagopyrum esculentum*, Egypt, Location effect, Cultivar effect, Sowing time, Growth attributes, Productivity, NUS.

ABSTRACT

The present study was conducted in Egypt at two different locations Bilbeis City Site (BCS) and Sadat City Site (SCS) during two successive seasons (2018/2019 - 2019/2020) planting cultivars Tartary buckwheat (FT) and common buckwheat (FE) in three planting times (mid-Nov., mid-Jan., and mid-March) to investigating the effect of location, cultivar, and sowing time on the growth and productivity under the Egyptian environmental conditions. The study followed a randomized complete block design (RCBD) and compared two buckwheat cultivars, FT and FE to separate locations and different planting times in Egypt. Our results showed that planting buckwheat in BCS consistently outperformed those in SCS in terms of growth and productivity attributes. Species FT showed superior growth metrics and productivity over FE in both sites and seasons. In terms of sowing times, mid-March demonstrated optimal productivity with yields of 596 kg/hectare and 576 kg/hectare across two seasons. The study underscores the combined influence of location, cultivar, and sowing time on the growth and productivity of buckwheat in Egypt, reiterating the need for tailored agricultural practices specific to each region and cultivar for enhanced yield of this promising undertilized and neglected crop in Egypt.

INTRODUCTION

Egypt faces numerous challenges in achieving food and nutritional security, due largely to its unique geography, water stress, and population growth. However, non-traditional crops and pseudo cereals such as buckwheat, quinoa, sorghum, teff, and millet offer promising avenues for sustainable agricultural development and improved nutrition (Hassona, 2023). The growth of buckwheat can be influenced by numerous factors such as location, cultivar, and sowing time. These factors can affect the plant's physiological processes, yield, and the accumulation of certain compounds in the plant. Location plays a significant role in the growth of buckwheat. Studies have shown that buckwheat cultivars from different elevations may have different responses to environmental factors. For example, common buckwheat originating from high elevations was found to be sensitive to enhanced ultraviolet B (UV-B) radiation, which inhibited plant growth, development, and reproduction (Yao et al., 2008). On the other hand, Tartary buckwheat from different elevations showed different responses to selenium treatment, with the effects on biochemical, physiological, and anatomical traits varying depending on the growing location (Golob et al., 2021).

Cultivar selection is another crucial factor that can affect buckwheat growth. Different cultivars may have various levels of allelopathic activity and accumulation of specific compounds. For example, Polish cultivars of buckwheat were found to contain flavonoids (rutin, quercetin, (+)-catechin, and (-)-epicatechin) and phenolic acids (chlorogenic, caffeic, ferulic, and gallic acids), with rutin being the main compound found in the above-ground organs of buckwheat (Golisz et al., 2007). The allelopathic activity of buckwheat was attributed to the presence of rutin, which was found to be the major allelochemical in Polish buckwheat (Golisz et al., 2007). Additionally, the level of catechin, myricetin, quercetin, and isoquercitrin in buckwheat can vary during vegetation, and these compounds have been shown to affect the growth of selected weeds (Kalinova and Vrchotova, 2009).

Sowing time is a critical factor that can influence buckwheat growth and yield. The optimal timing for sowing buckwheat may vary depending on the geographical region. For example, in central New York, the optimal timing for sowing buckwheat was found to be late June to early August, with a minimum accumulation of 700 growing degree days necessary to reach the appropriate growth stage for incorporation (Björkman and Shail, 2013). Sowing time can also affect the accumulation of specific compounds in buckwheat. Late spring sowing was found to result in the highest rutin concentration and yield in the grain of common buckwheat (Mariotti et al., 2020). Additionally, sowing time can affect the synthesis of flavonoids, such as rutin, and their partitioning within the plant, thus affecting the nutraceutical value of buckwheat products (Mariotti et al., 2020).

The effect of location, cultivar, and sowing time on buckwheat grain yield has been extensively studied in various research articles (Morishita et al., 2006; Mariotti et al., 2016; Liang et al. 2016; Вільчинська Л. and Ночвіна, 2020; Wu et al., 2020). Location plays a significant role in buckwheat grain yield as various locations can have different environmental conditions, such as temperature, rainfall, and soil fertility, which can affect the growth and yield of buckwheat. For example, a study conducted in the Kyushu and Kanto areas of Japan found that Tartary buckwheat's morphological and yield characteristics varied between the two regions. Similarly, a study conducted in Mediterranean conditions found that sowing time and irrigation influenced the forage and grain yield of common buckwheat (Mariotti et al., 2016).

Cultivar selection is another critical factor that can affect buckwheat grain yield. Different cultivars may have different genetic traits and characteristics that can influence their yield potential (Liang et al., 2016). For instance, a study comparing the high-yield common buckwheat cultivar 'Fengtian 1' and the Tartary buckwheat cultivar 'Jingqiao' (Liang et al., 2016) found that both cultivars showed higher values of initial growth power, final grain weight, and longer linear increase phase, which contributed to increased buckwheat yield (Liang et al., 2016). Another study compared different buckwheat varieties and found that the variety 'Kalyna' had economic and biological advantages, making it suitable for cultivation in specific regions (Вільчинська Л. and Ночвіна, 2020).

Sowing time is a critical factor that can affect buckwheat grain yield. The optimal sowing time may vary depending on the geographical region and climate conditions (Mariotti et al., 2016). Studies have shown that early spring sowing is generally recommended for grain production, while late spring sowing is more suitable for forage production (Mariotti et al., 2016). Additionally, the response of buckwheat grain yield to sowing time can vary depending on the cultivar. For example, a study found that late summer sowings produced acceptable grain yield in Tartary buckwheat, whereas short days and low temper-

atures limited forage production (Mariotti et al., 2016). Other factors that can influence buckwheat grain yield include tillage methods and the use of microbial inoculants (Wu et al., 2020; Singh et al., 2015). Deep tillage has been found to promote grain filling and increase final yield in Tartary buckwheat. Similarly, microbial inoculants have been shown to increase plant growth, yield, and quality of common buckwheat (Singh et al., 2015).

Buckwheat is known for its nutritional value and functional properties, making it a potential candidate for the development of new products (Ahmed et al., 2013). It is rich in flavonoids, phytosterols, fagopyrins, phenolic compounds, resistant starch, dietary fiber, lignans, vitamins, minerals, and antioxidants (Ahmed et al., 2013). These compounds contribute to the health benefits associated with buckwheat consumption, such as cholesterol-lowering effects and potential anti-inflammatory and antioxidant properties (Ahmed et al., 2013). In terms of cultivation, buckwheat has been grown in various regions around the world, including Europe, Asia, and America (Аверчев et al., 2021). It is adaptable to different growing conditions and can tolerate a range of climates. However, specific information on its suitability for cultivation in Egypt does not exist, as the crop was never planted before this study (Hassona et al., 2023). However, this study aims to investigate the effect of location, cultivar, and sowing time on buckwheat grain yield under Egyptian environmental conditions as a unique attempt for the first time in Egypt (Hassona et al., 2013).

MATERIALS AND METHODS

Locations of cultivation: Bilbeis City Site (BCS) = 30.4196° N, 31.5619° E, Sadat City Site (SCS) = 30.3594° N, 30.5327° E. However, the soil's physical and chemical properties and irrigation water of the experiment area have been analyzed and described as follows:

- Soil: The Bilbeis City Site soil is slightly alkaline with a pH of 7.83 and higher salinity than the Sadat City Site, which has a more alkaline pH of 8.57. Bilbeis have distinct levels of bicarbonate reflecting their pH, while Sadat boasts higher iron content. Nutrient availability varies, but both sites seem adequate for many crops. Mechanically, both soils are sandy; however, Bilbeis have more silt, classifying it as "Clay sandy", whereas Sadat, with more clay, is "Sandy loamy". Bilbeis have a higher limestone presence, indicated by their $CaCO_3$ content. Organic matter, beneficial for soil health, is slightly higher in Sadat.
- Water: Both sites have alkaline irrigation water, with the Sadat City Site (pH 7.98) being more alkaline than the Bilbeis City Site (pH 7.41). The electrical conductivity (EC), which indicates salinity, is almost double at Sadat City (1.26 dS/m) compared to Bilbeis (0.64 dS/m). This suggests that Sadat's water has more dissolved salts. Sadat's water also contains higher Fe, Zn, Mn, and Cu concentrations. While both sites have calcium (Ca++) at negligible levels, the magnesium (Mg++), sodium (Na+), and bicarbonate (HCO3) concentrations are notably higher in Sadat's water. Interestingly, while Bilbeis has a significant potassium (K+) concentration, Sadat's water has a considerably lower value. Total dissolved solids (TDS), represented in ppm, are also much higher in Sadat, indicating a higher mineral content. Concisely, Sadat's irrigation water is more saline and mineral-rich, which may require more strategic management for optimal agricultural use to prevent potential soil salinity issues.

The cultivars: Two cultivars are selected from the two major species of buckwheat; *Fagopyrum esculentum*, the trade name is "Japanese", and *Fagopyrum tataricum*, the trade name of the cultivar is "Madawaska" imported from Sustainable Seeds Company, based in California, USA, accessed through www.trueleafmarket.com

The sowing times: The sowing time for season 1 was the second week of November 2018, the second week of January 2019, and the second week of March. The weather data including temperate, humidity, dew point, precipitation, snow depth, and wind are collected as per table 3. In the second season, the sowing times were the second week of November 2019, the second week of January 2020, and the second week of March 2020 respectively, the weather data including temperate, humidity, dew point, precipitation, snow depth, and wind are collected as below.

Weather: The Sadat City Site over two seasons shows temperatures ranging from 7.97°C to an average of around 23.28°C, peaking at 35.86°C. Precipitation varies from 0mm to an average of about 0.19mm, with a max of 1.12mm. Relative humidity fluctuates between

21.26% and an average of 57.81%, with highs of 89.44%. Wind gusts swing between 9.79 km/h, averaging 24.26 km/h, to a max of 41.82 km/h. Sunshine duration spans from 367.36 to an average of 597.99 minutes, peaking at 788.43 minutes.

Experimental sites preparation: The study, following ARC, Egypt protocols, involved two sites with thorough land preparation, including plowing, composting, and leveling. Plots of 3m x 1.5m had controlled irrigation canals. Seeds, mixed with sand for even distribution, were hand-sown on afeer land. Regular irrigation ensured optimal germination, with watering ceasing two weeks before harvest.

Growth and productivity factors measured: Plant height per plant in centimeters, Number of branches per plant, number of internodes, number of leaves and the fresh weight per plant (grams) were manually measured and weighed using tape and digital scale during various growth stages. However, the Productivity metrics included seed count per plant and weight from dried seeds of plants in square meter. Calculating the productivity rate per hectare involved weighing seeds from a 1-square-meter frame, scaled to the hectare, and then dividing by 1,000. The entirely manual harvest, common in Egypt, employed a consistent group for technique uniformity.

Experimental Design: The study utilized a randomized complete block design (RCBD) to ensure that diverse cultivation conditions were considered and potential biases were minimized.

Statistical Analysis: The data was analyzed using a randomized complete block design, accounting for three factors. Each parameter was replicated three times. The mean values from treatments were compared using the least significant difference (LSD) test, as defined by Snedecor and Cochran (1994). The Assistat software program facilitated the data analysis process.

RESULTS AND DISCUSSIONS

1. The Evaluation of Buckwheat Growth by Location, Cultivar type and Planting time:

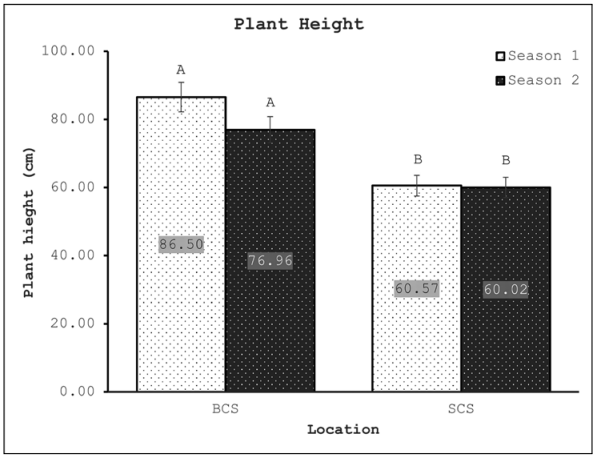
1.1. Effect Of Location On Buckwheat Growth:

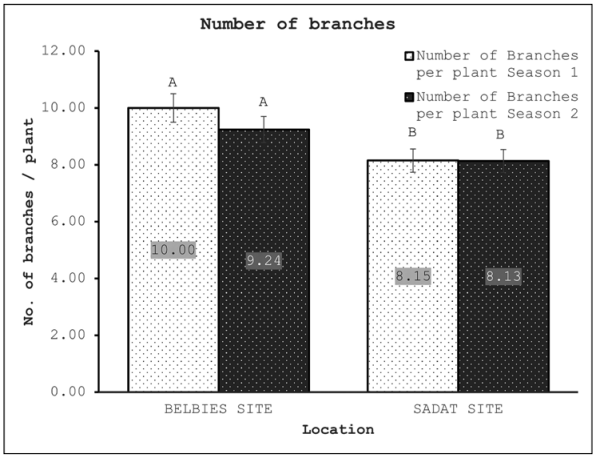
The growth and development of buckwheat, as substantiated by data in Table (1), are intrinsically linked to the conditions of their cultivation location. The plants at the Bilbies City Site (BCS) consistently exhibited superior growth attributes compared to those at the Sadat City Site (SCS) as Figure (1). This trend is supported by scientific literature. Yao et al. (2008) highlighted how buckwheat from different elevations, akin to the differential

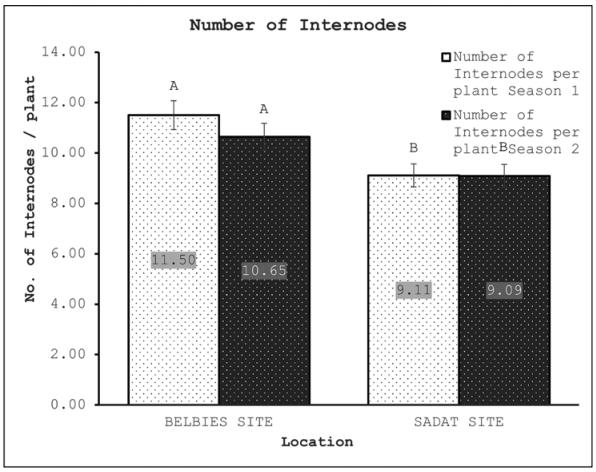
Table (1): *Evaluation of the Effect of Location on the Growth of Buckwheat Cultivars Under Egyptian Environmental Conditions during 2018/2019 and 2019/2020 seasons*

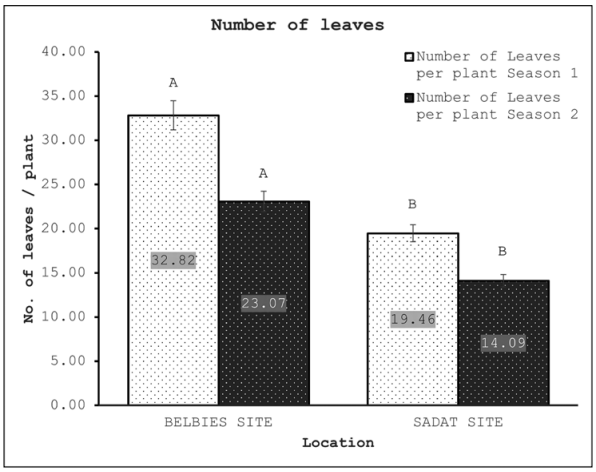
Parameters \ Treatments		*Bilbeis City Site*	*Sadat City Site*	**LSD 0.05**
Plant Height cm per plant	***1st Season***	86.50a	60.57b	**4.680**
	2nd Season	76.96a	60.02b	**2.601**
Number of Branches per plant	***1st Season***	9.10a	8.15b	**0.336**
	2nd Season	9.24a	8.13b	**0.236**
Number of Internodes per plant	***1st Season***	11.50a	9.11b	**0.422**
	2nd Season	10.65a	9.09b	**0.249**
Number of Leaves per plant	***1st Season***	32.82a	19.46b	**1.868**
	2nd Season	23.08a	14.09b	**2.031**
Fresh Weight per plant (gm)	***1st Season***	25.26a	16.18b	**1.141**
	2nd Season	27.68	18.04	**1.330**

Different letters within the same row indicate significant differences (P ≤ 0.05).









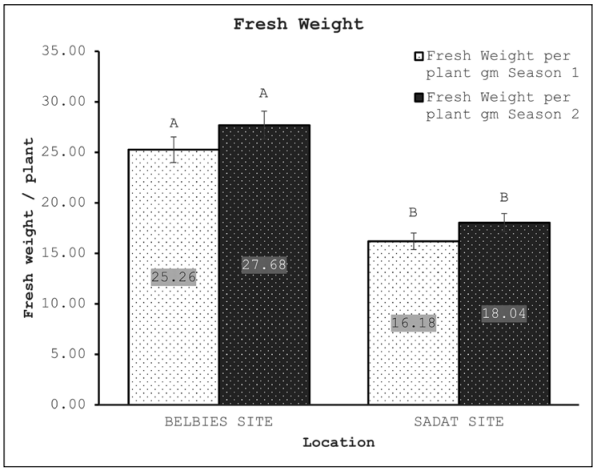


Figure (1): *The charts highlight a significant difference between Bilbeis city (BCS) and Sadat City (SCS). However, Buckwheat growth in Bilbeis site showed a higher values in the measured parameters including the average plant height, the number of branches, the number of internodes, the number of leaves, and the fresh weight of each plant, in both growing seasons. Different letters indicate statistically significant differences (P≤0.05).*

environments of BCS and SCS, responded distinctly to external stimuli like UV-B radiation. For instance, common buckwheat from high elevations displayed heightened sensitivity to UV-B, experiencing hindered growth and development. Similarly, the distinct responses of Tartary buckwheat from different elevations to selenium treatment, as indicated by Golob et al. (2021), mirror the varied growth metrics observed between BCS and SCS. These disparities in height, branch count, internode number, leaf number, and fresh weight emphasize the profound influence of location on buckwheat's physiological performance. In essence, as shown in our data and the aforementioned studies, location-specific conditions play a pivotal role in dictating the growth attributes of buckwheat cultivars.

1.2. The Effect Of Cultivar On Buckwheat Growth:

The choice of cultivar undeniably influences the growth dynamics of buckwheat. Our study, as evidenced by the data in Table (2), substantiates this observation. We compared two distinct species: *Fagopyrum tataricum* (FT) and *Fagopyrum esculentum* (FE). Notably, FT consistently outperformed FE across all evaluated parameters for both seasons as in Figure (2). This trend is in line with the allelopathic attributes attributed to buckwheat cultivars, as reported by Golisz et al. (2007). Specifically, they identified rutin as the major allelochemical present in Polish buckwheat cultivars, contributing to its allelopathic activity. This aligns with our observations where FT, possibly boasting a higher rutin concentration, showcased superior growth characteristics compared to FE. Furthermore, the variability in the accumulation of compounds like catechin, myricetin, quercetin, and isoquercitrin throughout vegetation, as noted by Vrchotova (2009), may further elucidate the growth disparities between the two cultivars. Their findings suggested that these compounds influence the growth of selected weeds, potentially hinting at the enhanced resilience or competitive advantage of one cultivar over the other. In essence, our findings reiterate the vital role of cultivar selection in dictating buckwheat's growth and highlight the intricate biochemical interplay underlying these observed differences when juxtaposed with prior research.

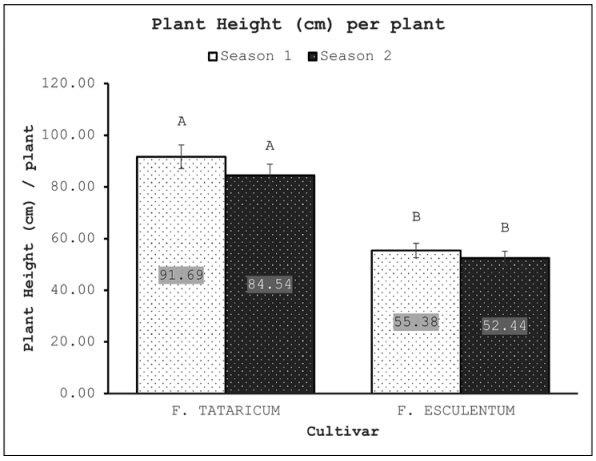
1.3. The Effect Of Sowing time On Buckwheat Growth:

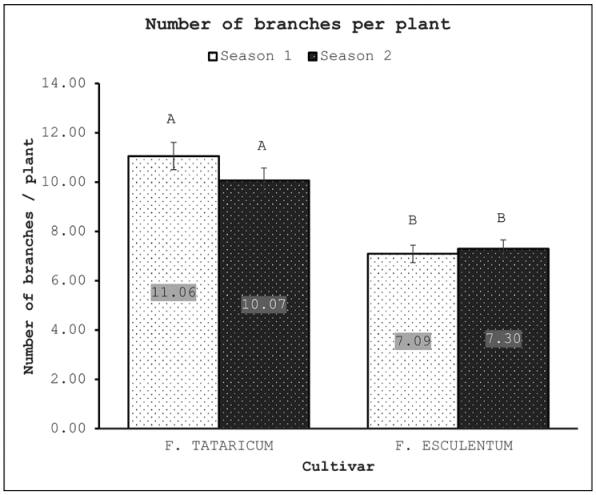
The timing of sowing greatly influences buckwheat's development, yield, and compositional quality. Drawing from the insights in Table (3), it is evident that varying sowing times yield different growth results for buckwheat cultivated under Egyptian environmental conditions as per Figure (3). However, a closer look reveals that plants sown in mid-January demonstrated marginally superior growth metrics in plant height, number of branches, and fresh weight during the first season, compared to those

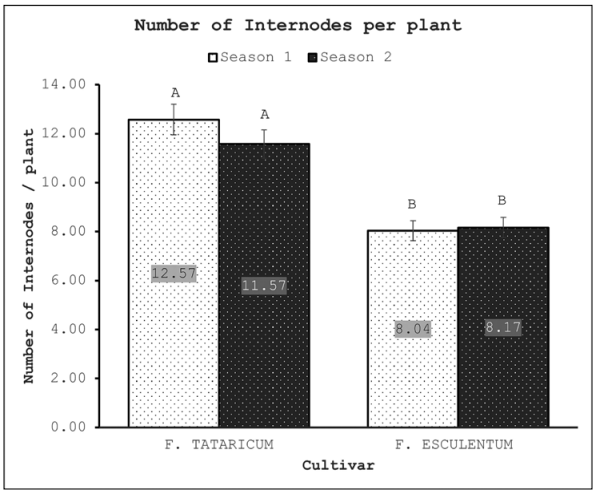
Table (2): *Evaluation of the Effect of Cultivar on the Growth of Buckwheat Cultivars Under Egyptian Environmental Conditions during 2018/2019 and 2019/2020 seasons*

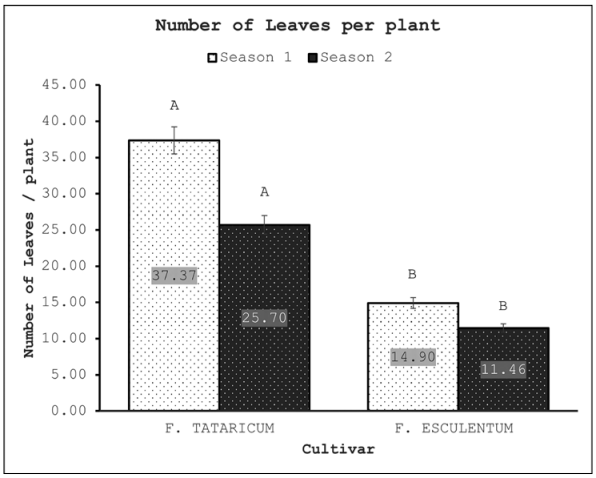
Parameters \ Treatments		*Fagopyrum tataricum*	*Fagopyrum esculentum*	**LSD 0.05**
Plant Height cm per plant	***1st Season***	91.69a	55.38b	**4.68**
	2nd Season	84.54a	52.44b	**2.601**
Number of Branches per plant	***1st Season***	11.06a	7.09b	**0.337**
	2nd Season	10.07a	7.29b	**0.236**
Number of Internodes per plant	***1st Season***	12.57a	08.03b	**0.422**
	2nd Season	11.57a	8.17b	**0.249**
Number of Leaves per plant	***1st Season***	37.37a	14.90b	**1.869**
	2nd Season	25.70a	11.46b	**2.031**
Fresh Weight per plant (gm)	***1st Season***	29.19a	12.25b	**1.141**
	2nd Season	32.06a	13.66b	**1.33**

Different letters within the same row indicate significant differences (P ≤ 0.05).









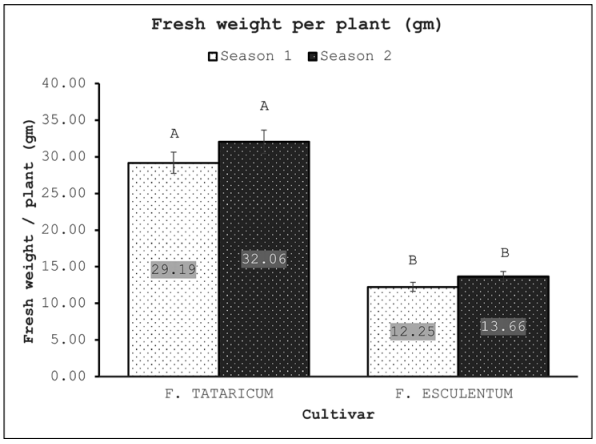


Figure (2): *The charts indicated that there are significant differences between the cultivars. However, Fagopyrum tataricum (FT), is significantly superior to Fagopyrum esculentum (FE), in the growth parameters, including average plant height, number of branches, number of internodes, number of leaves, and fresh weight of each plant, in both growing seasons. Different letters indicate statistically significant differences (P≤0.05).*

sown in mid-November and mid-March. This resonates with the findings from Björkman and Shail (2013), who pinpointed a specific window of growing degree days necessary for optimal buckwheat growth in central New York.

Furthermore, the correlation between sowing time and compound accumulation is accentuated by Mariotti et al. (2020). They observed that late spring sowing culminates in higher rutin concentration in the grain of common buckwheat. This phenological connection is significant as the synthesis and distribution of flavonoids like rutin within the buckwheat plant have implications for its nutraceutical value. In the Egyptian context, sowing in mid-March produced the highest number of leaves in both seasons, which could be a focal point for studies targeting flavonoid distribution and accumulation. To sum up, our results, when analyzed alongside prior research, underline the significance of sowing time in modulating buckwheat cultivation's growth and biochemical outcomes.

2. The Evaluation of Buckwheat Productivity by Location, Cultivar type and Planting time:

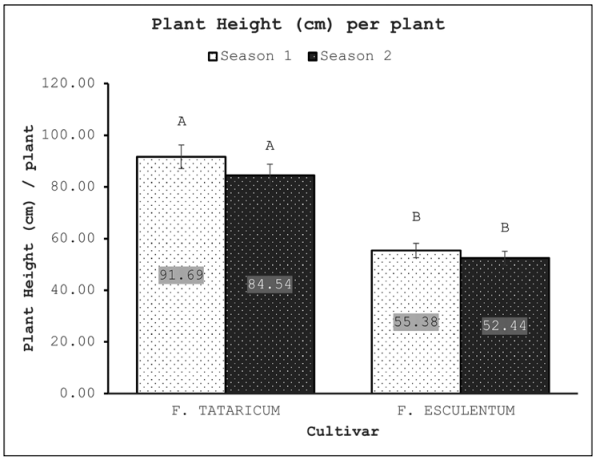
2.1. The Location Effect On Buckwheat Productivity

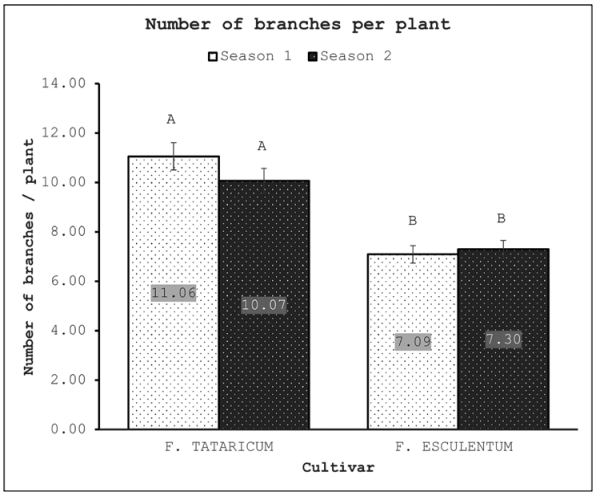
The impact of location on buckwheat productivity is a recurrent theme in our study as in Table (4) and literature. Our research distinctly underscores the superior productivity of buckwheat at the Bilbeis City Site (BCS) over the Sadat City Site (SCS) under Egyptian environmental conditions as highlighted in the taken parameters in Figure (4). Specifically, metrics like the number of seeds per plant, weight of seeds per meter, and overall productivity rates were markedly higher at BCS across two observation seasons. However, This pronounced influence of location on buckwheat yields aligns well with the literature. As highlighted by Morishita et al. (2006), Mariotti et al. (2016), Liang et al. (2016), Вільчинська Л. and Ночвіна (2020), and Wu et al. (2020), location emerges as a critical factor due to varying environmental conditions. Each location, with its unique mix of temperature, rainfall, and soil fertility, shapes the buckwheat's growth and yield. Such a phenomenon was observed in Japan, where the Tartary buckwheat showcased differing morphological and yield attributes between the Kyushu and Kanto regions. further emphasize this by noting how sowing time and irrigation, dictated by location-specific Mediterranean conditions, influenced buckwheat yields. However, drawing parallels, it is plausible that a combination of soil quality, climatic conditions, and other location-specific environmental factors shapes the difference in productivity between BCS and SCS. Just as Japan's Kyushu and Kanto regions displayed variances, so too do BCS and SCS, reflecting the overarching significance

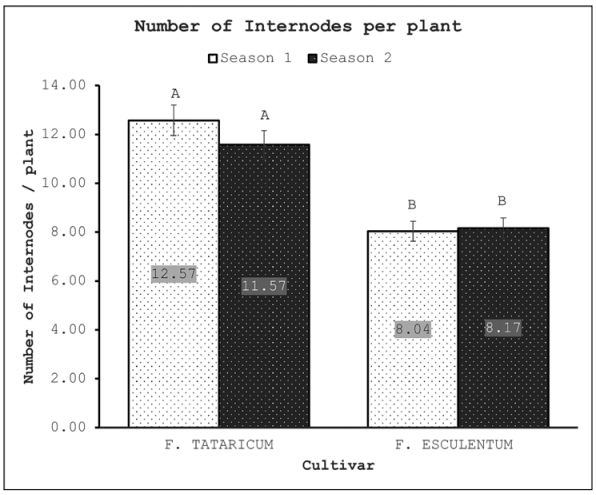
Table (3): *Evaluation of the Effect of Sowing time on the Growth of Buckwheat Cultivars Under Egyptian Environmental Conditions during 2018/2019 and 2019/2020 seasons*

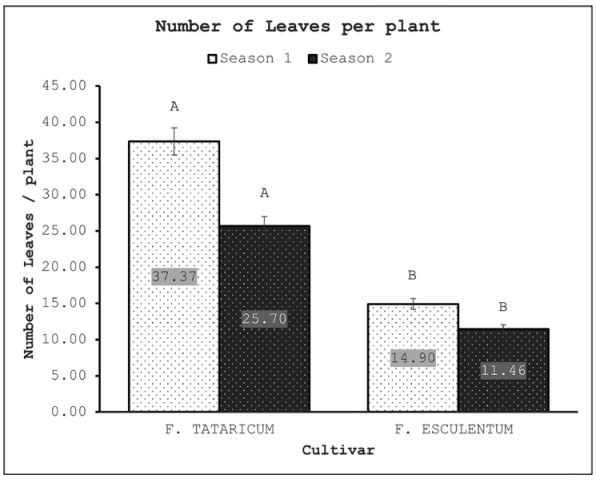
Parameters \ Treatments		Mid-Jan	Mid-Nov	Mid-Mar	LSD 0.05
Plant Height cm per plant	1st Season	75.51a	73.89a	71.20a	5.732
	2nd Season	69.06ab	69.86a	66.56ab	3.185
Number of Branches per plant	1st Season	9.14a	9.03a	9.06a	0.412
	2nd Season	8.67a	8.67a	8.72a	0.289
Number of Internodes per plant	1st Season	10.31a	10.25a	10.36a	0.517
	2nd Season	10.00a	10.00a	9.61b	0.304
Number of Leaves per plant	1st Season	25.11b	24.81b	28.50a	2.289
	2nd Season	17.86a	18.19a	19.69a	2.487
Fresh Weight per plant (gm)	1st Season	20.13b	19.81b	22.22a	1.398
	2nd Season	21.41b	22.29b	24.89a	1.629

Different letters within the same row indicate significant differences (P ≤ 0.05).









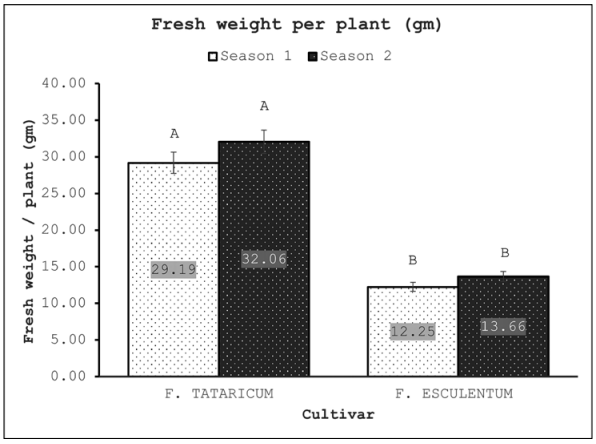


Figure (3): *The charts indicated non-significant differences between the planting times pduring the two planting seasons. While buckwheat cultivars planted in mid-January in both locations recorded the highest plant height and number of branches and leaves, while the mid-March planting time recorded the highest fresh weight, with no significant differences between the three times. Different letters indicate statistically significant differences (P≤0.05).*

of location in determining buckwheat productivity. Thus, our results mirror the broader scientific consensus, reiterating the crucial role of location in modulating buckwheat yields.

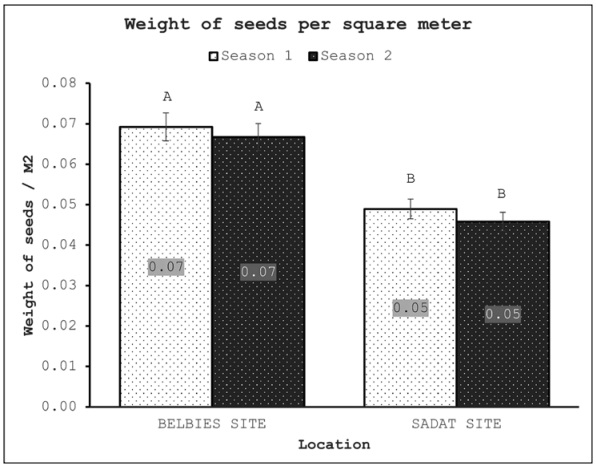
2.2. The Cultivar Effect On Buckwheat Productivity

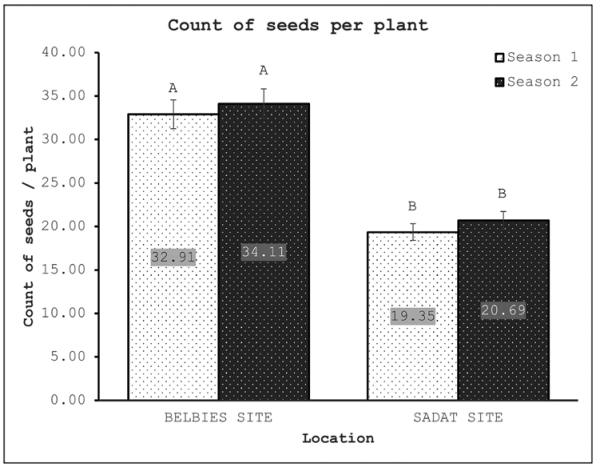
The critical role of cultivar selection in determining buckwheat grain yield is evident in our study and existing literature as showed in Table (5). Our results consist-

Table (4): *Evaluation of the Effect of Location on the productivity of Buckwheat Under Egyptian Environmental Conditions during 2018/2019 and 2019/2020 seasons*

Parameters / Treatment	Number of seeds per plant		Weight of seeds in plants of 1 meter^2		Productivity rate kg/hectare	
	1st Season	*2nd Season*	*1st Season*	*2nd Season*	*1st Season*	*2nd Season*
Bilbeis City Site	32.91a	34.11a	0.0692a	0.0667aa	678.70a	650.00 a
Sadat City Site	19.35b	20.69b	0.0489b	0.0458b	488.87b	456.78b
LSD 0.05	**2.4091**	**2.1965**	**2.72E-03**	**4.12E-03**	**28.082**	**42.529**

Different letters in same column are indicate statistically significant differences (P≤0.05).





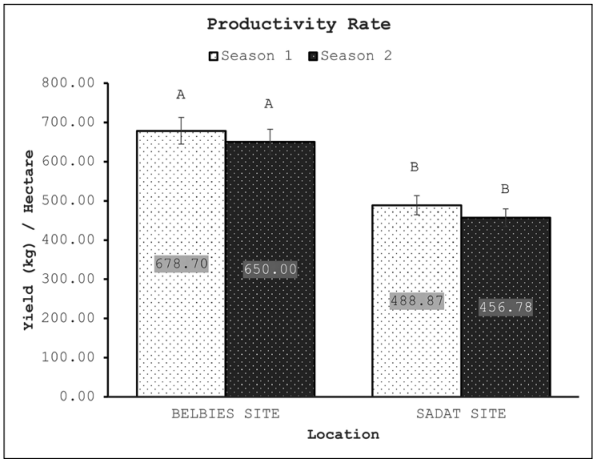


Figure (4): *The charts indicating a significant difference in the Location. However, planting buckwheat in Bilbeis city site resulted the highest number of seeds per plant, the highest seed weight per plant, and the total productivity rate per hectare compared to Sadat City, in both growing seasons (2018/2019 - 2019/2020). Different letters indicate statistically significant differences (P≤0.05).*

ently indicated that the species *Fagopyrum tataricum* (FT) outperformed *Fagopyrum esculentum* (FE) in all aspects of productivity over two consecutive seasons as in Figure (5). Specifically, FT showed higher seed counts, greater seed weight per meter, and overall higher yields. This finding aligns well with the literature, which emphasizes the inherent genetic differences among cultivars and their influence on yield. Liang et al. (2016) compared the

Table (5): *Evaluation of the Effect of Cultivar on the Growth of Buckwheat Under Egyptian Environmental Conditions during 2018/2019 and 2019/2020 seasons*

Parameters / Treatment	Number of seeds per plant		Weight of seeds in plants of 1 meter		Productivity rate kg/hectare	
	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Fagopyrum tataricum	36.56a	38.19a	0.0774a	0.0731a	760.40a	713.35a
Fagopyrum esculentum	15.70b	16.61b	0.0407b	0.0393b	407.17b	393.42b
LSD 0.05	**2.4091**	**2.1965**	**2.72E-03**	**4.12E-03**	**28.082**	**42.529**

Different letters in same column are indicate statistically significant differences (P≤0.05).

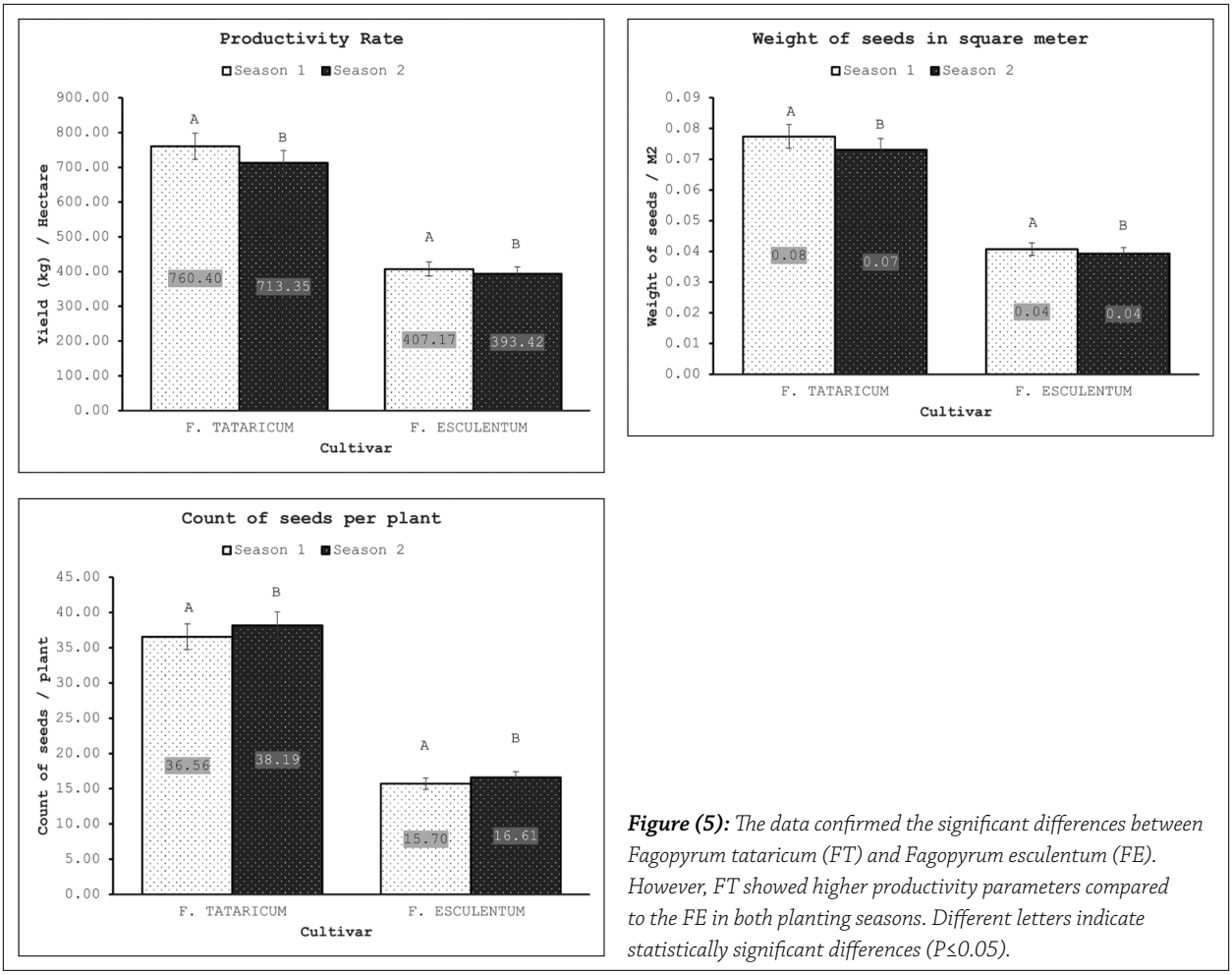


Figure (5): *The data confirmed the significant differences between Fagopyrum tataricum (FT) and Fagopyrum esculentum (FE). However, FT showed higher productivity parameters compared to the FE in both planting seasons. Different letters indicate statistically significant differences (P≤0.05).*

high-yield common buckwheat cultivar 'Fengtian 1' and the Tartary buckwheat cultivar 'Jingqiao' and found both cultivars to have favorable growth attributes contributing to enhanced yield. Similarly, another study underscored the suitability of the 'Kalyna' variety due to its biological and economic advantages in certain regions (Вільчинська and Ночвіна, 2020). Thus, our results and literature underline the paramount importance of careful cultivar selection to optimize buckwheat grain yield.

2.3. The Sowing Time Effect On Buckwheat Productivity

Our results in Table (6) indicated that the effect of sowing time on buckwheat productivity was apparent across two seasons. However, Mid-March emerged as the optimal sowing time, producing the highest yields of 596.77 kg/hectare and 576.38 kg/hectare, followed by mid-November and Mid-January (Figure 6). These findings align with existing research, emphasizing that the optimal sowing time varies depending on geographical region and climate (Mariotti et al., 2016). Early spring sowing is generally recommended for grain production, whereas late spring sowing suits forage production. The response of buckwheat to sowing time also depends on the cultivar. For instance, late summer sowings can yield satisfactory grain output in Tartary buckwheat, while short days and cold temperatures limit forage yield (Mariotti et al., 2016). Other influential factors on buckwheat yield include tillage methods and microbial inoculants. Deep tillage promotes grain filling, enhancing final yield in Tartary buckwheat (Wu et al., 2020), while microbial inoculants can boost common buckwheat growth, yield, and quality (Singh et al., 2015).

CONCLUSION

In this research, we addressed the critical problem of optimizing buckwheat growth and productivity in Egypt. Our comprehensive study examined the effects of location, cultivar, and sowing time on buckwheat cultivation, revealing significant insights. We found that the growth and productivity of buckwheat are highly influenced by these factors. Specifically, buckwheat plants at the Bilbeis City Site consistently outperformed those at the Sadat City Site in both growth and yield. Among the cultivars, Fagopyrum tataricum showed superior performance compared to Fagopyrum esculentum. In terms of sowing time, mid-March emerged as the most favorable for optimal yield.

These findings underscore the importance of selecting appropriate cultivars and sowing times and recognizing the unique environmental conditions of each location for successful buckwheat cultivation in Egypt. The key takeaway is the potential for enhanced buckwheat production through tailored agricultural practices, a significant step towards agricultural sustainability and food security in the region. This study narrows down to the broader relevance of local environmental adaptability in crop cultivation, highlighting its critical role in optimizing agricultural outputs.

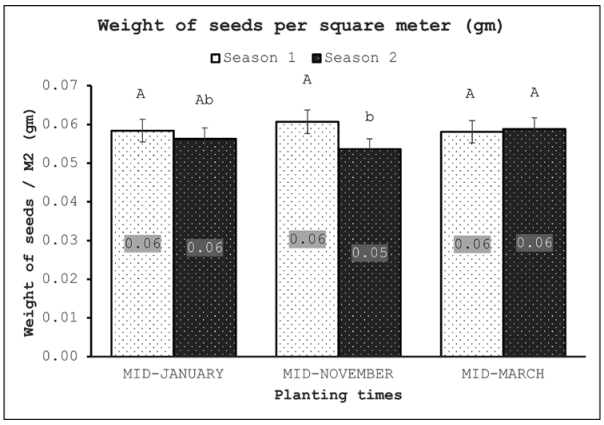
RECOMMENDATION

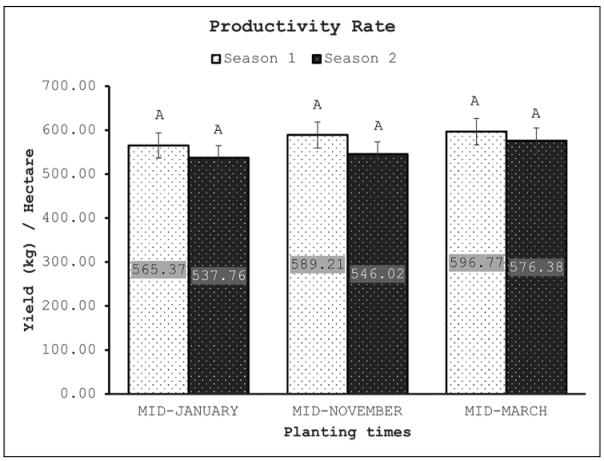
The study conclusively shows that buckwheat growth and productivity in Egypt are significantly influenced by location, cultivar, and sowing time. Optimal yields are achieved when combining the right cultivar, such as *Fa-*

Table (6): *Evaluation of the Effect of Sowing time on the Growth of Buckwheat Under Egyptian Environmental Conditions during 2018/2019 and 2019/2020 seasons*

Parameters / Treatment	Number of seeds per plant		Weight of seeds in plants of 1 meter		Productivity rate kg/hectare	
	1st Season	2nd Season	1st Season	2nd Season	1st Season	2nd Season
Mid-Jan	23.69b	26.19b	0.0584a	0.0563ab	565.37a	537.76a
Mid-Nov	24.97b	25.47b	0.0607a	0.0536b	589.21a	546.02a
Mid-Mar	29.72a	30.53a	0.0581a	0.0588a	596.77a	576.38a
LSD 0.05	**2.9505**	**2.6902**	**3.33E-03**	**5.04E-03**	**34.393**	**52.087**

Different letters in same column are indicating significant differences (P≤0.05).





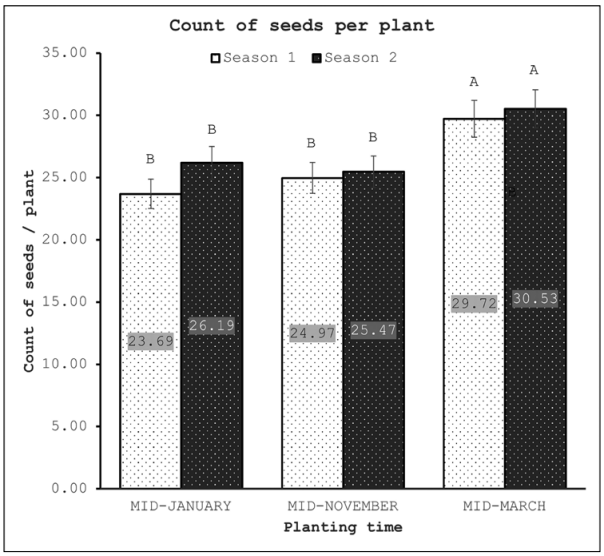


Figure (6): *The charts indicate significant differences in some productivity parameters, as the number of seeds per plant and the weight of seeds per plant per plant. While the results did not indicate significant differences in the productivity rate between the planting dates in both planting seasons. Different letters indicate statistically significant differences (P≤0.05).*

gopyrum tataricum, with suitable sowing periods and locations, highlighting the importance of tailored agricultural practices for maximum efficiency.

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IZVLEČEK

Vpliv lokacije, kultivarja in časa setve na rast in produktivnost ajde v Egiptu

Raziskava je bila izvedena v Egiptu na dveh različnih lokacijah Bilbeis City Site (BCS) in Sadat City Site (SCS) v dveh zaporednih sezonah (2018/2019 - 2019/2020), s setvijo kultivarja tatarske ajde (FT) in navadne ajde (FE) v treh rokih setve (sredi novembra, sredi januarja in sredi marca), da bi raziskali učinek lokacije, kultivarja in časa setve na rast ter produktivnost ajde v egiptovskih okoljskih razmerah. Študija je bila izvedena v randomizirani zasnovi celotnega bloka (RCBD), primerjana sta bila dva vzorca ajde, FT in FE, z ločenima lokacijama in različnimi časi setve. Rezultati so pokazali, da je setev ajde na BCS dosledno presegla setev v SCS glede na lastnosti rasti in produktivnosti. Vrsta FT je pokazala vrhunske lastnosti rasti in produktivnost v primerjavi z FE tako na lokacijah kot v letnih časih. Kar zadeva čas setve, je posevek s setvijo v sredini marca pokazal optimalno produktivnost z donosom 596 kg/hektar in 576 kg/hektar v povprečju dveh sezon. Rezultati raziskave poudarjajo skupni vpliv lokacije, kultivarja in časa setve na rast in produktivnost ajde v Egiptu, pri čemer je poudarjena potreba po prilagojenih kmetijskih praksah, značilnih za vsako regijo in kultivar za dosego večjega pridelka.

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Research Paper

Adaptability of Buckwheat *in vitro*

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Key words: common buckwheat; in vitro; heavy metals; selective media; survival

ABSTRACT

The research goal was to study the morphogenesis of common buckwheat plantlets obtained using different stressors *in vitro*. The research object was common buckwheat variety Izumrud – single-node cuttings (1.0-1.5 cm in length; two-three lowest internodes) of the plantlets that were obtained by subculturing on a hormone-free MS medium and of the lines that showed tolerance to $CuSO_4 \times 5H_2O$ (161 and 184 mg/l) at the Laboratory of Agricultural Biotechnology. Selective media were prepared based on the Murashige and Skoog medium supplemented with a zinc salt ($ZnSO_4 \times 7H_2O$) at concentrations of 808, 909, 1010, 1111, 1212, and 1313 mg/l. To evaluate the morphological characteristics of the studied genotypes, their parameter values were calculated relative to the control and expressed as percentage. The genotypes were compared in the following groups depending on the exposure to a certain stressor: group 1 – the genotypes obtained without exposure to copper, group 2 – the genotypes obtained on the media containing the copper salt at a concentration of 161 mg/l, and group 3 – the genotypes obtained on the media containing the copper salt at a concentration of 184 mg/l. Plants from different groups demonstrated dissimilar growth rates under the toxic conditions caused by the studied concentrations of zinc. The morphological parameter values of the copper-tolerant plants (groups 2 and 3) were significantly higher than those of the plantlets obtained without exposure to copper. The plantlets tolerant to $CuSO_4 \times 5H_2O$ (161 and 184 mg/l) showed a heightened resistance to the selective factor (Zn) as evidenced by their high regeneration and survival rates (95.7-100%).

INTRODUCTION

Adaptability is the most important characteristic that enables plants to adjust to heterogeneous environments. It is well known that a response to stress is an active process aiming to achieve homeostasis under the suboptimal conditions of a given environment (Koyro et al., 2018). The adaptation of plants to numerous stresses, which occur successively or simultaneously, might induce reprogramming at the molecular, biochemical, cellular, and physiological levels (Zhang et al., 2020). Research in this area has been generating considerable interest in breeders. Innovations in the biotechnologies and biological control aimed at improving plant resistance to heavy metals have been gaining in popularity as well. These advances might become an effective method for increasing the yield and quality of agricultural crops.

Common buckwheat (*Fagopyrum esculentum* Moench) is a diploid annual plant species characterized by a broad range of stress resistance and plasticity and widely spread in Russia and other countries in Asia, Europe, and the Americas (Kreft, 2007; Chrungoo et al., 2016; Germ et al., 2016). Common buckwheat is an important food crop in the mountainous regions of India and China due to its short growing period, ability to grow at high altitudes, and high-quality protein in grain.

There is a lack of sufficient research on the adaptive responses of common buckwheat plants to metal stress coordinating their growth and development *in vitro*. E.N. Barsukova et al. have conducted a large number of experiments to study how heavy metals influence the tissue culture of *F. esculentum* (Barsukova, 1997, 2003, 2008; Barsukova et al., 2019, 2020; Klykov et al., 2019). They have discovered that buckwheat is highly tolerant to copper and zinc salts *in vitro* (Barsukova, 2003). The researchers have noted the varietal specificity of the studied plants in the resistance of their seeds germinated in Petri dishes to lethal and sublethal doses of copper and zinc. It has been found out that zinc ions produce a more adverse effect and aftereffect on the growth and development of callus cells and microshoots compared to copper ions (Barsukova et al., 2011). Additionally, the tolerance of cellular structures to ion stress is determined by their genotypes. As a result of the conducted research, promising buckwheat variety Ussurochka was created using the methods of tissue culture and hybridization. This variety is characterized by increased yield and rutin content (Klykov et al., 2017). Thus, more information on the biological processes that allow plants to survive under stress conditions is required to create productive and stress resistant varieties with the highest quality of produce.

Our research goal was to study the *in vitro* morphogenesis of the common buckwheat microclones that were obtained using various stressors.

MATERIALS AND METHODS

Common buckwheat variety Izumrud (created in FSBSI "FSC of Agricultural Biotechnology of the Far East named after A.K. Chaiki") was used as the research object, namely single-node cuttings (1.0-1.5 cm in length; two-three lowest internodes) of the plantlets that were obtained by subculturing on a hormone-free MS medium and of the lines that showed tolerance to $CuSO_4 \times 5H_2O$ (161 and 184 mg/l) at the Laboratory of Agricultural Biotechnology.

To create selective conditions, the MS medium was supplemented with a zinc salt ($ZnSO_4 \times 7H_2O$) at the following experimental concentrations (variants): 808, 909, 1010, 1111, 1212, and 1313 mg/l. The aseptic single-node cuttings were grown on the MS medium with the standard amount (8.6 mg/l) of zinc sulfate (the control) and the experimental selective media with zinc for thirty-three days. Twenty test tubes were used in each experimental variant with three repetitions. The survived genotypes were subcultured (two passages) on the nutrient MS media. The duration of each passage was thirty-three days.

To study the adaptability of the *F. esculentum* plants obtained using various stressors *in vitro*, we carried out the comparative evaluation of their responses to the stress caused by cultivation on the selective media with zinc (808-1313 mg/l of $ZnSO_4 \times 7H_2O$). The following parameters were evaluated: relative plant height of the studied specimens (calculated relative to the control (%)) and the presence of rhizogenesis (% in each variant). The survival rate of the microclones was calculated in each variant as the ratio of the survived specimens to the total number of the microclones cultured on the MS and expressed as percentage. The studied parameters were compared in the following groups of stressors: group 1 – the genotypes obtained without exposure to copper, group 2 – the genotypes obtained on the media containing 161 mg/l of $CuSO_4 \times 5H_2O$, and group 3 – the genotypes obtained on the media containing 184 mg/l of $CuSO_4 \times 5H_2O$.

Microsoft Excel 2010 and PAST4.03 were employed for the input, processing, and statistical analysis of the research data.

RESULTS AND DISCUSSION

F. esculentum plants from different groups of stressors demonstrated dissimilar regeneration rates at the studied toxic levels of zinc (808-1313 mg/l $ZnSO_4 \times 7H_2O$). The relative parameter "plant height" in the first group, where the regenerants were not exposed to copper, varied within 2.7-14.4% among the experimental variants and was by 6.9-37.0 times lower than the control (Figure 1).

The specimens obtained on the selective media with copper showed more intense growth. The height of the plants from the second group (161 mg/l of the copper salt) was 6.1-28.6%, which was by 3.5-16.4 times lower than the control. The height of the plants from the third group (184 mg/l of the copper salt) was 5.7-17.8% (lower by 5.6-17.5 times). The lowest plant height in all the groups was observed on the selective media at zinc salt concentrations of 1111-1313 mg/l. It should be noted that the height of the plants tolerant to copper (the second and third group) exceeded the values of the specimens obtained without exposure to copper by 1.2-2.7 times. The most significant difference (by 2.4-2.7 times) was observed among the variants with copper salt concentrations of 1111-1212 mg/l.

During the first subculturing of the mircoplants under the non-selective conditions, the discovered tenden-

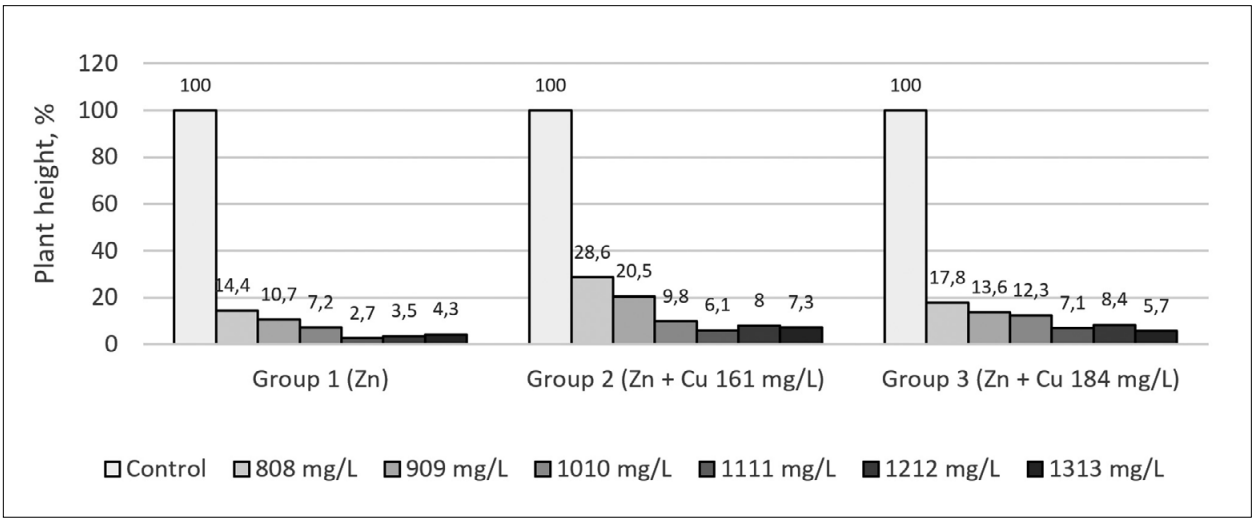

Figure 1. *Height of plants from different groups of stressors on the 21st day of cultivation on the media with zinc (% relative to the control)*

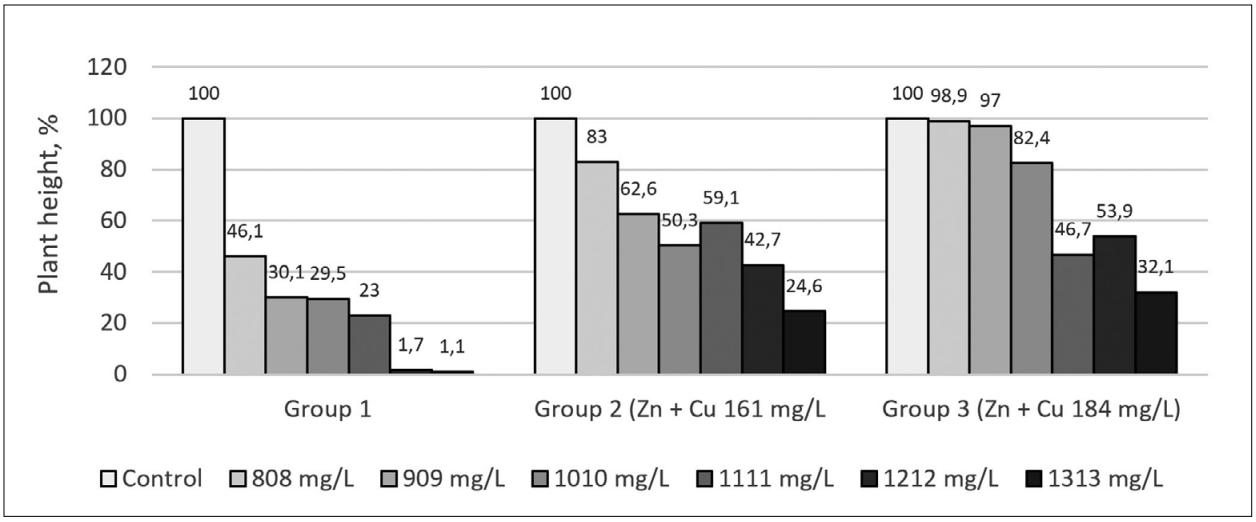

Figure 2. *Height of plants from different groups of stressors, the first subculturing on the MS (% relative to the control)*

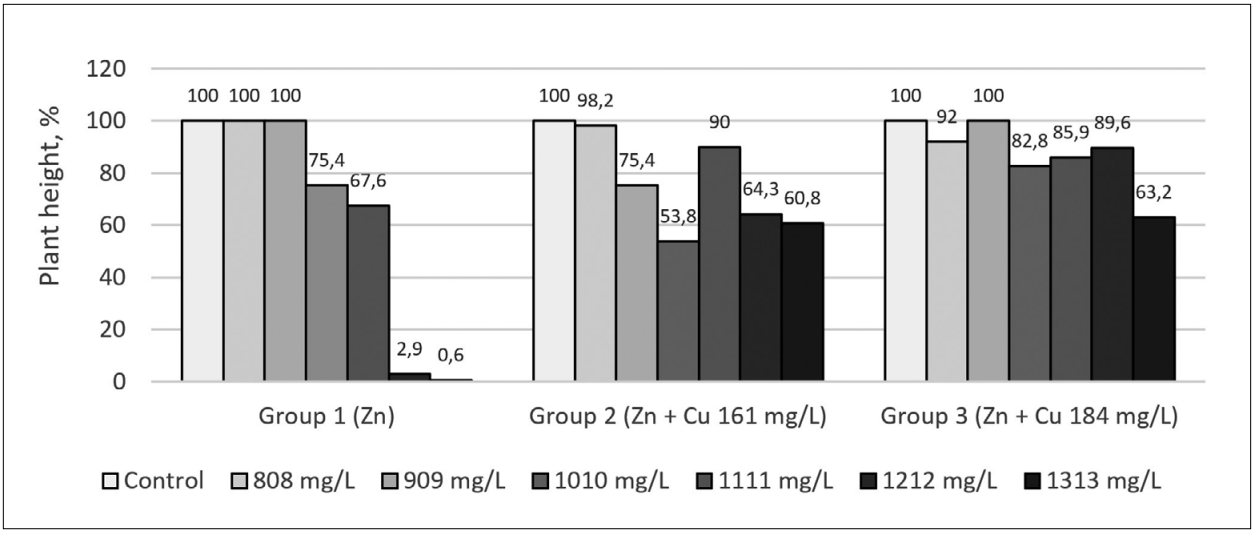

Figure 3. *Height of plants from different groups of stressors, the second subculturing on the MS (% relative to the control)*

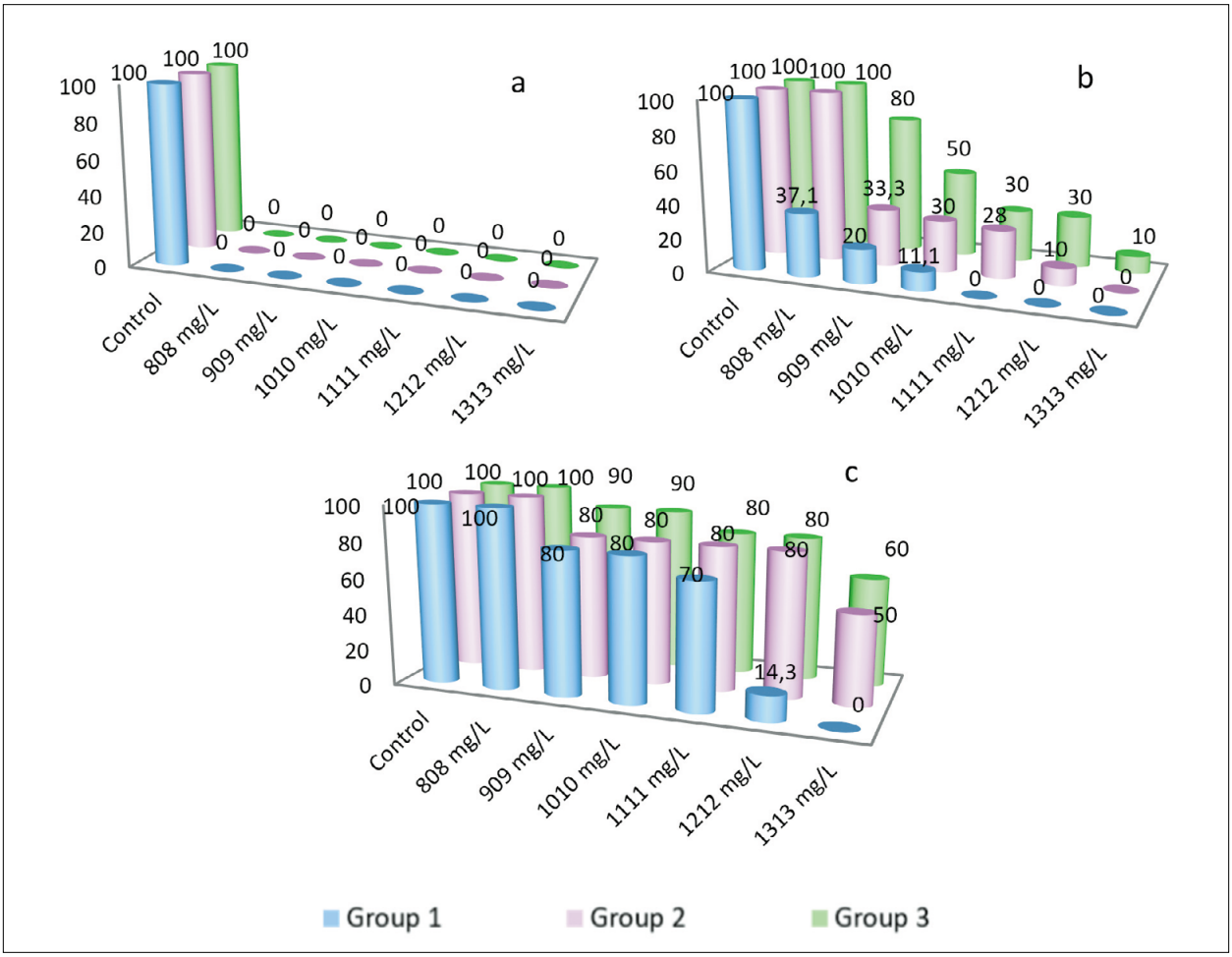

Figure 4. *Characteristics of the rhizogenesis in plants from different groups of stressors (a – on the 21st day of cultivation on the medium with zinc, b – the first subculturing on the MS, c – the second subculturing on the MS)*

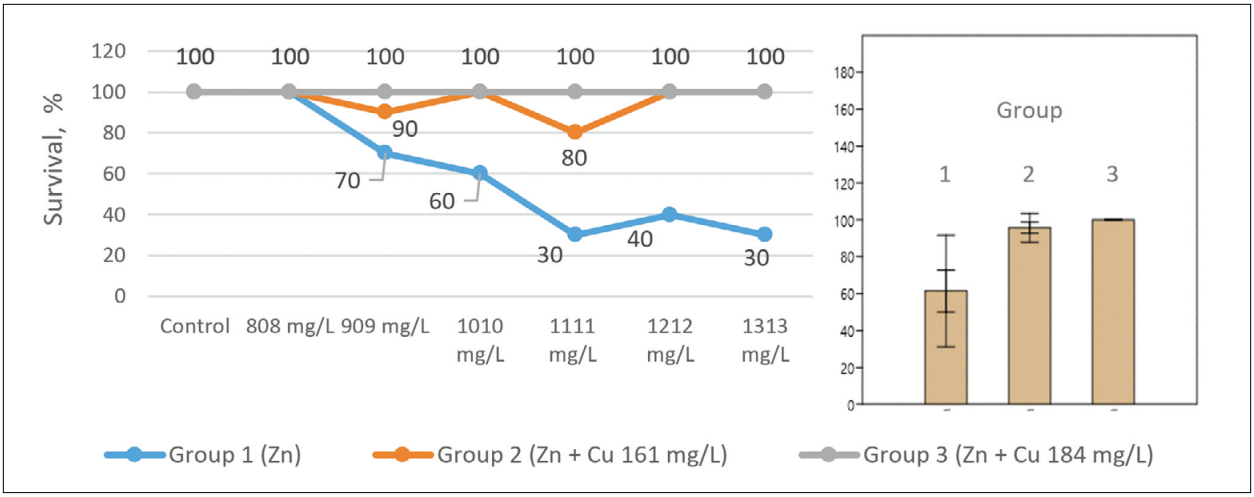

Figure 5. *Survival rate of plants from different groups of stressors on the selective media with zinc*

cies remained. However, differences between the relative height of the plants from the first and second-third groups increased significantly, especially in the variants with 1212-1313 mg/l (by 22.3-31.7 times) (Figure 2).

During the second subculturing on the MS, the plants from the second and third group had an increased regeneration rate. Their height reached 53.8-100.0% of the control in all the experimental variants. The microclones from the first group had substantial height after 808-1111 mg/l of the zinc salt (67.6-100%) but suffered considerably after 1212-1313 mg/l (0.6-2.9%) (Figure 3).

The high toxicity effected root formation – rhizogenesis was absent in the three groups in all variants with zinc on the 21st day of cultivation (Figure 4a).

During the first subculturing on the MS without the toxicant (Figure 4b), roots developed in 11.1-37.1% of the plants from the first group in the variants with zinc salt concentrations of 808-1010 mg/l (depending on the dose of zinc), in 10-100% of the plants from the second group in the variants with zinc salt concentrations of 808-1212 mg/l, and in 10-100% of the plants from the third group in all the experimental variants. During the repeated subculturing, roots developed in the second and third group in all the studied variants. No roots formed in the first group in the variant with a zinc salt concentration of 1313 mg/l (Figure 4c).

The survival rate of the plants obtained as the result of the complex effect of copper and zinc (the second and third group) (80-100% in the variants) exceeded significantly the survival rate of the plants from the first group (30-100%), which was not exposed to the toxicity of copper ions (Figure 5). The regenerants obtained using the selective factors were characterized by high values of the morphological parameters and survival rate (95.7-100% in general). Manifestations of the toxic stress were considerably lower during the second subculturing.

It is well known that an increase in resistance to one stressor might lead to an increase in tolerance to another [Swaaiy et al., 1986; Zinchenko et al., 2013). This was confirmed by our experiment. The genotypes exposed to the severe ion stress (184 mg/l of copper) demonstrated the highest survivability under the toxic conditions. The difference in the responses of the studied specimens to the selective factor (zinc) might be due to genomic mutations, which could occur under the influence of heavy metals in the selected groups of buckwheat because the level of stress resistance is a genetically controlled and heritable trait (Barsukova, 2017).

CONCLUSION

Common buckwheat is highly adaptable to high doses of zinc (808-1313 mg/l of $ZnSO_4 \times 7H_2O$) in a nutrient medium *in vitro* (survival rate of 30-100%). The genotypes obtained by subsequently using the selective factors (copper and zinc) were characterized by high values of the studied morphological parameters and an increased survival rate. The highest rate of post-stress regeneration was noted in the buckwheat regenerants tolerant to the complex effect of the heavy metals. Manifestations of zinc toxicity considerably decreased during the second-third subculturing.

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IZVLEČEK

Prilagodljivost rastlin ajde *in vitro*

Cilj raziskave je bil preučiti morfogenezo rastlin navadne ajde, pridobljenih *in vitro* z uporabo različnih stresnih dejavnikov. Raziskovali so rastline navadne ajde, sorta Izumrud – potaknjence z enim nodijem (od dveh ali treh najnižjih nodijev), dolžine 1,0-1,5 cm, pridobljenih s subkultiviranjem na mediju MS brez hormonov. Uporabljene so bile linije, ki so pokazale toleranco na $CuSO_4 \times 5H_2O$ (161 in 184 mg/l), v Laboratoriju za kmetijsko biotehnologijo.

Selektivno gojišče je bilo pripravljeno na osnovi gojišča Murashige in Skoog, dopolnjenega s cinkovo soljo ($ZnSO_4 \times 7H_2O$) v koncentracijah 808, 909, 1010, 1111, 1212 in 1313 mg/l. Za oceno morfoloških značilnosti preučevanih genotipov so bile njihove vrednosti parametrov izračunane v primerjavi s kontrolo in izražene v odstotkih. Genotipe so primerjali po skupinah, odvisno od izpostavljenosti določenemu stresorju: skupina 1 - genotipi, pridobljeni brez izpostavljenosti bakru, skupina 2 – genotipi na gojišču, ki je vsebovalo bakrovo sol v koncentraciji 161 mg/l, in skupina 3 – genotipi na gojišču, ki je vsebovalo bakrovo sol v koncentraciji 184 mg/l.

Rastline iz različnih skupin so pokazale različne stopnje rasti v toksičnih razmerah, ki jih povzročajo koncentracije cinka. Morfološke vrednosti parametrov rastlin, odpornih na baker (skupini 2 in 3), so bile bistveno višje od vrednosti pridobljenih brez izpostavljenosti bakru. Rastline, odporne na $CuSO_4 \times 5H_2O$ (161 in 184 mg/l), so pokazale povečano odpornost na selektivni faktor (Zn), kar dokazuje visoke stopnje regeneracije in preživetja (95,7-100%).

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Research Paper

Odranci and buckwheat groats

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ABSTRACT

The village of Odranci (Prekmurje, Slovenia) is still remembered for its production of buckwheat groats. A special feature were the groats sellers, mainly women, who carried buckwheat groats (kasha or *kaša*) on foot or by bicycle from house to house or to fairs in various villages in the surrounding area, and further afield.

INTRODUCTION

It is a popular story: When the Americans first set foot on the Moon in 1969, they found there a man from Odranci selling there groats. It is not known whether they just stared in amazement at the man who had been on the Moon before them, or whether they bought groats. This anecdote or stereotype can be understood to mean that the people of Prekmurje, i.e. the people of Odranci, were open-minded, resourceful and hard-working enough to go almost all over the world on seasonal jobs, including to the moon, to sell their groats.[1] In order to preserve the memory of the groats selling activity that was a characteristic feature of Odranci, the present author has also researched in more detail the production and processing of buckwheat and groats dishes, but in this article I am only highlighting the groats trade. Odranci is a village and a municipality situated in the lowland part of Prekmurje, in the north-eastern part of Slovenia, where the plain allowed the cultivation of fields and arable land. The village is still known for selling groats today, although this activity has long since ceased. Gone are the days when women (less so men), known as *kašarce*, would go outside their village to sell groats. It was in the blood of the villagers to deal, and they were known all over Slovenia as sellers of buckwheat and millet groats. This is why buckwheat was an important plant here.

Odranci has a distinctive feature on the municipal coat of arms, with its foot drived wooden device used to remove the husk of buckwheat (and millet) grains by pounding. On the municipal coat of arms are as well three round yellow grains, which represent buckwheat (or millet) groats, or money earned from selling the groats.

[1] When we talk about the people of Odranci and groats, we really mean either millet or buckwheat groats. However, for the purposes of this article, the author has focused only on buckwheat groats.

Ajda is, besides the Slovenian word for buckwheat plant, also a proper Slovenian personal name for girls, derived from the name ajda, a cultivated plant with fragrant white flowers in dense inflorescences. The name Ajda appeared in Slovenia during the Second World War. After 1969, the popularity of the name began to grow, and more than 100 Ajda girls were born in Slovenia in 2007. The Slovenian name Ajda also corresponds to the eastern dialect form of Ajdina.[2] Thus, at the beginning of the 21st century, the Prekmurje musician Vlado Kreslin gave his daughter the name Ajdina Marija because of its meaning in Prekmurje.

BUCKWHEAT PROCESSING

Before buckwheat groats can be sold, the buckwheat grains must be cooked and hulled. As this was done exclusively at home and in their village, and as I see it as part of the special features inherent in the sale, I will present it.

Grain was dried on canvas tarpaulins; outside in the courtyard if the weather was warm, in the attic otherwise. At the beginning of winter, when there was no outside work, buckwheat was cooked at home in large kettles, two or three kettles each. In between, they stirred the groats. Once the grain husk had burst, the groats was ready cooked and had to be dried. Small quantities were dried in the attic for two days. The groats were cooked several times during the season, depending on sales needs and the annual quantity of the crop. The cooked buckwheat was shelled. At the end of the 1940s and 1950s, three people from Odrance, Vencel Kovačič, Štefan Marič and Ivan Kavaš, are recorded as having made groats and cutting straw. According to older local women, buckwheat was hulled and made into groats by at least three farmers in the 1960s. Some of them also sold the groats. They do not appear to have been registered in the register of craftsmen, as they are not listed. *Kašasta*[3] *Treza*, where millet and buckwheat were brought from the village of Gomilica to be hulled, is also well known in

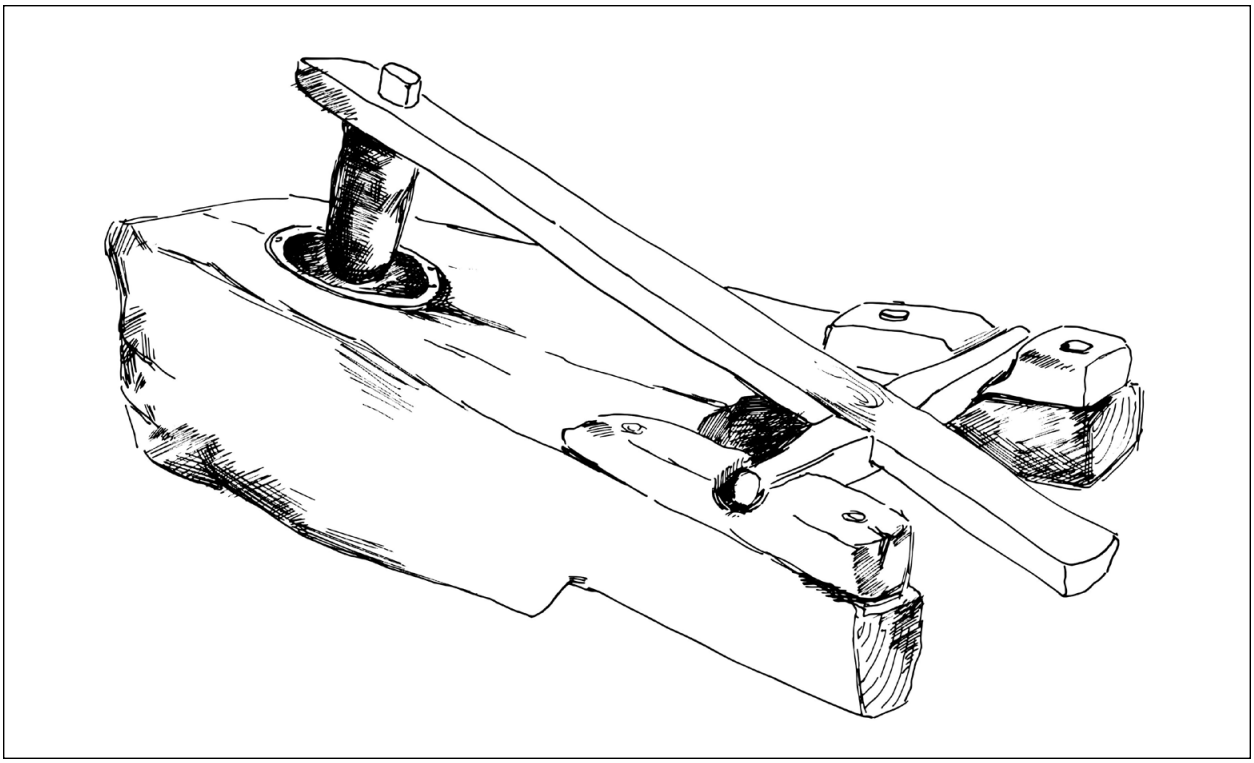

Figure 1. *Buckwheat hulling device – stope (Pomurje Museum, Murska Sobota, Slovenia)*

[2] Other dialectal variants of buckwheat in this north-eastern part of Slovenia include: *ajdina*, *idina*, *edina, hajdi*na, *hidina*.
[3] The local name denotes its activity, which is derived from groats.

Figure 2: *Demonstration of hulling buckwheat or millet on a stope. Oil painting on canvas from 1962 by painter Karel Jakob (Preserved by the Pomurje Museum Murska Sobota).*

people's memories and already had hulling machines. The shelling mill was powered by electricity, whereas before it was powered by hand. The payment to the miller was a measure of the groats. The buckwheat hull was not useful because it was too dry and sharp. The groats were taken home in sacks and kept there until they were sold.

SALE OF BUCKWHEAT GROATS

The most common way for people in Odranci to sell buckwheat groats was from house to house. The women vendors were called *kašarce*.[4] Most of the groats was sold by women. There are several reasons for this, of course, from the fact that men were employed and women were housewives and farmers at home, to the fact that earning money from selling groats allowed them to emancipate their families. The popular explanation is simpler - women were more skilled orators, offering their wares in thick words. In addition to good communication, long-standing sales consistency also played an important role in sales. This is what Elizabeth remembers when she and her neighbour were selling groats at the fair. As the elder-

[4] The dictum denotes their activity, which is derived from groats.

ly neighbour was a long-time seller and was well known to the buyers, she sold her groats very quickly. When an elderly neighbour came to Elizabeth's rescue and easily sold the rest of the groats for her, she openly admitted that Elizabeth's groats was of better quality.

The male vendors liked to stop at taverns on the way, often staying late into the night and (partly) drinking their earnings. As possible sellers of groats, it is also worth mentioning the mixed-goods traders, wholesalers of all types of cereals and produce, who probably also sold groats, although this cannot be explicitly read from the 1941 list of traders and shops.

Most of the older villagers still have direct experience of selling, including Theresa and Elizabeth, who used to sell groats, as well as their close relatives, such as their father or grandmother. It can be said that the selling activity spread after the Second World War, but we do not yet have older archival and oral data.[5] In the 1950s, 1960s and 1970s, sales of groats flourished. In the late 1970s and early 1980s, sales took place only at fairs, no longer door-to-door. The groats was taken on foot or by bicycle, and later by bus, to nearby Prekmurje and distant villages and places in Croatia (now another country, but in the past part of the common Yugoslavia). The saleswomen usually knew which housewives regularly took groats, so they didn't visit houses where they didn't buy. Fairs were also important selling points, where many people gathered and the groats were sold more easily and quickly. The sacks were usually piled on the floor by the women, and there were rarely any stalls, which had to be paid for. The women left home early in the morning and returned late in the evening; the men stayed overnight on the road and slept somewhere. They often left the unsold quantity of groats at a house and returned the next day to resume selling. Most sales took place in November and December. The snow could hamper sales as it was difficult to walk. It was sold in the spring months, but not until major farm work had started. Women who already had a family would go selling twice a month or four times in winter. If there was a large crop of groats, they also went twice a week, and in the summer when there was no major farm work. In the 1950s, Marija Balazič, called *kašarica* used to go to the villages to sell groats by strapping a *prevrit*, a 20-30 kg sack of groats, on her back, tied in half so that the weight was distributed evenly over the whole surface. She put the bag on her head, nape and back so that she didn't have to hold it with her hands. Only she could carry it so skilfully, no one else. In addition to the groats, the obligatory tool of the vendors was a half-litre and a litre measuring cup, which they used to weigh the contents they sold. Most of the buckwheat groats sold was the one with the litre measure; less was millet, which was also cheaper. The women preferred to sell together in pairs, each taking produce to a different house and waiting at the end of the village. On the way, the women talked, prayed and thanked each other for the good sale and the good luck of their return. The earnings from the sale were enough for the housewife to buy household treats or household goods.

CONCLUSION

Today, in 2024, the Kavaš farm in Odranci is still producing and selling buckwheat (and millet) groats. The buckwheat is sown in their own fields, harvested and transported to Murska Sobota for processing. They sell the groats at their home all year round. After the Second World War, Terezija and Ivan Kavaš started to husk and make groats, followed by their son Jožko, and today by their son Darko. Many of the people of Odranci who were involved in groats are virtually gone. The annual Buckwheat Night event on 10 June, where individual processing types are demonstrated and groats (porridge) cooking competitions are held, is a reminder of the buckwheat,, its cultivation and processing.

I end this article with the personal name *Ajda*, which is meaningful. You will not find this in Odranci until 2023, when the village gets its first baby named *Ajda*. This little girl, girl and wife will, if nothing else, use her name to perpetuate the memory of the women who sold groats far from home.

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[5] It should be noted that in the 1930s Odranci were not known for selling buckwheat groats, as there is no mention of this in Leksikon Dravske banovine from the year 1937.

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- *Register članov trgovcev na dan 6. 4. 1941*, Lendava. Source: Pokrajinski arhiv Maribor.

SUMMARY – POVZETEK

Odranska ajdina

UVOD

Ko so Američani leta 1969 prvi stopili na Luno, so tam našli Odrančana, ki je prodajal kašo. Ne ve se, ali so samo začudeno strmeli vanj, ki je bil pred njimi na Luni, ali pa so kašo tudi kupili.[6] To anekdoto ali stereotip lahko razumemo tako, da so bili Prekmurci, torej Odrančani dovolj odprti, iznajdljivi in delavni, da so odhajali skoraj po vsem svetu na sezonska dela, tudi na Luno, prodajat svojo kašo.[7] V prispevku predstavim pridelavo in predelavo ajde. Ker je bilo o jedeh iz ajde, ki so jih pripravljali iz kaše in moke[8], v literaturi že ogromno objavljenega, se s tem ne ukvarjam. Z namenom, da ohranimo spomin na dejavnost prodaje kaše, ki je bila značilnost Odrancev (s pridelavo in predelavo kaše so se namreč ukvarjali tudi drugod po Pomurju), želim izpostaviti trgovanje s kašo. Po prodaji kaše je vas znana še danes, čeprav te dejavnosti že zdavnaj ni več. Vaščanom je bilo prekupčevanje v krvi, zato so bili po vsej Sloveniji znani kot prodajalci ajdove in prosene kaše.[9] Zato je bila ajda tu pomembna rastlina. Odranci so vas in občina, ki leži v nižinskem delu Prekmurja, severovzhodnega dela Slovenije, kjer je ravnina omogočala obdelavo polj in njiv.

Pridelava in predelava (ajdove) kaše se odraža tudi v duhovni dediščini pokrajine skozi različne elemente umetnosti. Ena izmed ljudskih (stanovskih) pesmi govori o mlatcih, ki so poleg pšenice mlatili tudi *hajdino* (pesem je najverjetneje prleškega ali kajkavskega izvora, vendar zapisana v dólinskem delu Prekmurja).[10] Pomurski muzej Murska Sobota v svoji umetnostnozgodovinski zbirki hrani nekaj fotografij motivov o ajdi, umetniškega soboškega fotografa Jožeta Kološa-Kološe in olje na platnu prekmurskega akademskega slikarja Karla Jakoba, ki prikazuje *phanje*, luščenje (ajdovih, prosenih ali ječmenovih) zrn oziroma kaše v stopi.[11] To počneta moški, ki z nogami po batu v ritmu udarja v luknjo, kjer so zrna, ženska oluščena zrna pobira in spravlja v košarico. Etnološka zbirka istega muzeja hrani nekaj terenskih skic z motivi stope, *rourance* (ročni mlin za manjše in sprotne količine luščenja ajdovih zrn) in stope v mlinu v Krogu ter muzejske predmete, to je orodja in pripomočke za pridobivanje kaše, to je lesenega večjega možnarja in *rouranco*.

Odranci danes v občinskem grbu predstavljajo svojo posebnost s ponazoritvijo stope, lesene naprave, kjer se s tolčenjem odstranjuje ovoj zrn ajde (in prosa) ter tri okrogla rumena zrna, ki pomenijo (proseno) ali ajdovo kašo, lahko pa tudi denar, ki se je prislužil s prodajo le-te.[12]

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6 Martin Šteiner, Prekmurje pod rdečo zvezdo, v: Katalog stalne razstave Pokrajinskega muzeja Murska Sobota, 1997, str. 323. Elizabeta Kovačič, rojena leta 1944 v Odrancih. Vir: Ustni pogovor, Odranci, 17. 1. 2024. Terezija Zver, rojena leta 1939 v Odrancih. Vir: Ustni pogovor, Odranci, 17. 1. 2024.

7 Ko govorimo o Odrančanih in kaši, sta v resnici mišljeni prosena in ajdova kaša. Vendar sem se za potrebe tega prispevka osredotočila samo na ajdovo kašo.

8 Naj omenim na kratko rabo ajdove kaše v Odrancih v preteklosti: za krvavice, *süja ajdinska kaša*, *mlejčna kaša*, *ajdinska kaša s krumplami*, *prekajena župa*. Danes je raba ajde, kot kaše in moke, v kulinarične namene bogatejša.

9 Krajevni leksikon Slovenije, DZS 1980, str. 110.

10 Števan Kühar, Vilko Novak, Ljudsko izročilo Prekmurja, Pomurska založba, 1988, str. 107.

11 Galerija Murska Sobota in Galerija-muzej Lendava umetniških del s tovrstno motiviko ne hranita.

12 Diši po ajdi, Društvo žena Odranci, 2011, str. 3.

Ajda pa je tudi osebno lastno slovensko ime, ki izhaja iz imena ajda, to je kulturne rastline z dišečimi belimi cvetovi v gostem socvetju. Sodobna različica imena na Slovenskem je v povezavi z drugim imenom Ajda Brina, Neža Ajda, Ajda Zala, Ajda Zarja in Ajda Živa. Najpogosteje se ime pojavlja na Gorenjskem. Ime Ajda se je pri nas pojavilo med drugo svetovno vojno. Po letu 1969 priljubljenost imena začne naraščati, več kot 100 deklic Ajd se je v Sloveniji rodilo leta 2007. Prva slovenska Ajda (vsaj med leta 2010 živečimi) je bila radijska Ajda Kalan, ko je njena noseča mati za ime navdih dobila, ko je občudovala cvetoča ajdova polja. Slovenskemu imenu Ajda ustreza tudi vzhodno narečna oblika za ajdo *Ajdina*. Tako je prekmurski glasbenik Vlado Kreslin na začetku 21. stoletja svoji hčerki zaradi prekmurskega pomena dal ime Ajdina Marija.[13]

PRIDELAVA IN PREDELAVA AJDE V SEVEROVZHODNEM DELU SLOVENIJE

Ajda se je sejala tudi v ravnini Slovenskih goric, vendar za lastne potrebe. Pomursko narečno poimenovanje ajde je: *ajdina*, *idina*, *edina, hajdin*a, *hidina*.[14] Ajde v Prekmurju niso pridelovali vsi, posebej v goričkem delu Prekmurja ne. Če so kuhali žgance ali pekli zlivanke iz ajdove moke, so jo kupili v majhnih količinah, saj je bila draga. Ajdovo moko so Prekmurci v preteklosti redkeje uporabljali (le-ta se pojavi kasneje), jedi iz kaše so bile pogostejše in bolj značilne za ta prostor.[15]

Za pridelavo ajde so bili pomembni vremenski svetniki, po katerih so se ravnali naši predniki. Prvi je bil Lovrenc (10. 8.), po katerem je *hajdina dobila moč*. Na Goričkem so na Uršo (4. 7.) začeli sejati ajdo in jo morali posejati do 24. julija. Jakobova (25. 7.) ajda je veljala za pozno. V okolici Črenšovcev je bila Vidova (15. 6.) ajda redkokdaj lepa.[16] Sicer pa ponekod na Slovenskem velja tudi pregovor: kolikor dni po kresu kukavica kuka, toliko dni po sv. Jakobu se še ajda seje.[17] Slednje razumemo, da so v slovenskih krajih ajdo sejali ob različnih dnevih. V Odrancih so ajdo sejali po žetvi pšenice, to je konec julija, po Ani (26. 7.) ali v začetku avgusta, do Lovrenca je morala biti že posejana.

Za rodnost njiv in dober pridelek so pomurski kmetje znali poskrbeti. Verjeli so v moč blagoslovljenega. Zato so na cvetno nedeljo v cerkev nesli blagoslavljat zelene vejice, šibje in cvetje, ki so jih ob molitvi zatikali na posejane njive. Ta šega pri pripravi njive za ajdo, ki se je sejala pozno poleti, najbrž ni bila več aktualna; predhodni velikonočni blagoslov pa je imel še dovolj ‚moči' nad njivo. Požeto njivo so tako preorali, povlačili in posejali. Navadno je njivo pripravil gospodar, gospodinja pa je sejala. *Ajdinščica* je bilo doma pridelano zrnje za sejanje. Po setvi je moški še enkrat povlačil njivo z branami, da je potisnil zrna v zemljo. Kmetica je sejala s pomočjo *sejance*, v slamnati košari je imela zrna ajde. Ob vsakem enakomernem koraku je bilo potrebno vreči prgišče zrnja v vrsto, za širino brane. Sejali so sorto navadne ajde, najverjetneje stare slovenske sorte.[18] Ajda je bila redka rastlina, ki je med rastjo ni bilo potrebno pleti, saj plevel in trava med ajdo nista rasla (naj omenim, da so proso morali pleti). Proti koncu oktobra se je začela žetev. Kosili so ročno, s koso: kosec je kosil naprej, *bralja* ženska je s srpom dvakrat potegnila, pobrala snop, položila na *povrejslo* (vezivo iz ajdove slame) in ga zvezala. Za njo je druga delavka snope postavljala pokonci v *rastáve*. Otroci so delali *povrejsla*. Vrh *rastáve* so zavezovali na ozko, da zrnja ni odnesel veter ali dež. Ko je bila ajda suha, so jo z njive odpeljali mlatit. Tudi se je zgodilo, da je na ajdo zapadel sneg. *Tratnjekova Roza*, ki ji je ajdo zasnežilo, je počakala, da se je sneg odtajal in je pokosila ostanek.

Orodja ali pripomočki za luščenje ajde v Pomurju so bili različni: v večjem lesenem možnarju z batom, v *rouranci*, *sijaku*, na domači leseni stopi, na leseni stopi v mlinu ali na industrijskem stroju za luščenje. Na Goričkem so za sprotne potrebe manjšo količino prosene, ajdove kašo *olüpali, pšeli, pali* (phali) v velikem lesenem *moužerju*. To

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13 Simon Lenarčič, Vse o imenih v Sloveniji, Modrijan založba, d. d. Ljubljana 2012, str. 20–21.

14 Jelka Pšajd, Lačni nismo bili, bilo pa je siromaštvo: Prehranska dediščina Pomurja in Porabja, Pomurski muzej Murska Sobota, 2022.

15 Jelka Pšajd, Lačni nismo bili, bilo pa je siromaštvo: Prehranska dediščina Pomurja in Porabja, Pomurski muzej Murska Sobota, 2022, str. 223.

16 Jelka Pšajd, Debeli sneg je düno: Znanje o vremenu v Slovenskih goricah, Prekmurju in Porabju, Pomurski muzej Murska Sobota, 2019, str. 23, 114–115.

17 Vinko Möderndorfer, Slovenska vas na Dolenjskem, 1938, str. 41.

18 Za sugestijo in pomoč se zahvaljujem mag. Boštjanu Ferenčaku, specialistu za poljedelstvo in ekološko kmetovanje na KGZ Murska Sobota.

so počeli navadno kar v kuhinji, in sicer stoje. *Rouranca, rornca* (nižinski del Prekmurja); *sijak* (Dolenci, Čepinci) je pripomoček oziroma domača ročna naprava za luščenje prosenega in ajdovega zrnja za manjše količine, za sproti, da ni bilo treba peljati na mlin. Sestavljena je iz dveh kamnov in lesenega obroča; zgornji kamen je bilo treba *goniti*. Če je bilo zrnja več, so ga v Dankovcih peljali *rourat* v Otovce v mlin. Ajdo so napol skuhali in jo posušili, preden so jo zluščili. V okolici Negove so ajdovo kašo na *rolanco rolali* (luščili); predhodno jo je bilo treba očistiti, tako da so ročno odstranjevali trdo in neuporabno zrnje. Ajdo so v Renkovcih za lastne potrebe *vö pali*, *rourali* (phali, ločili zrnje od ovoja) v *rouranci* (napravi za phanje, luščenje) ali v stopi. Predhodno so jo skuhali, posušili in *zrourali* (phali). V Gradišču so ajdo na pol skuhali v treh vodah, jo posušili in spravili v vreče. Preden so jo dokončno skuhali za jed, so jo z bosimi nogami *meli* (mečkali) v košari, kasneje so jo *rourali* na *rouranci*. Manjše količine so pogosto nesli k bližnjemu vaščanu, da je na *mašin rourau*. V Peskovcih so manjšo količino ajde posušili v topli krušni peči in jo *sphali*. V Čepincih so imeli lesen ročni mlin *sijak*, v katerem so *rourali* ajdo. Ročni mlin je bil sestavljen iz dveh hrastovih panjev: spodnji je bil pritrjen, zgornji se je vrtel okoli osi s pomočjo ročaja. *Rouranco* je imel tudi posameznik v Rakičanu, kamor so vaščani in prebivalci sosednjih vasi nosili *phat* kašo. Stopa je lesena priprava za luščenje ajdove in prosene kaše. Ajdo je bilo treba najprej skuhati. Ker je bat udarjal po zrnih kaše, ki so jo stresli v lijak, so stopi humorno rekli tudi *baba v grabi, ded na babi*; v Lastomercih *babica ležijo, dedek phejo, deca pa se doj slačijo*. V mlinu pri Negovskem jezeru so imeli stopo, kamor so ženske hodile same *phat* proso. Na Dolnji Bistrici so jo *phali* na lastni stopi s pomočjo otrok. Predhodno so kašo skuhali in jo sušili na prostem na ponjavah. *Phali* so tudi na stopi v mlinu. Luske so *mekinje* (Dolnja Bistrica); *mekiniti* je pomenilo ločevati ovojnico, luske od zrnja (od kaše, prosa, ajde). V Gomilici so na stopi phali proso in ajdo. To so počeli otroci, ki so stali na stopi in *plesali*. Proso so phali v majhni stopi, ajdo v veliki, spravljeni v drvarnici. Ko so ajdo ročno zmlatili, so jo skuhali in posušili, preden so jo phali. V Strehovcih so nosili ajdo in proso phat na stopo k sosedovim. Ajdo so predhodno skuhali, prosa ne. Deklica je stala na stopi in *klačila tisto*, mati je *kukla s tistin*. Manjše količine ajde ali prosa so pri Lipi phali na leseni stopi, v vasi pa so bile tudi tri *rourance*, ki so ločevale ovojnico od zrnja. Ostanki oluščene kaše so *mekine*. V Odrancih so stopo uporabljali le za luščenje prosa, ne pa tudi ajde. V Križevcih so proso in ajdo vozili v mlin, *doj olüščit*, *opat*, *pat*. Ajdo so nosili mlet v Slovenskih goricah v mlin. *Mašin* (mlatilnica) za proso je v Renkovcih stal pri gasilskem domu, kamor so posamezniki z vozom pripeljali pridelek. Pri Lipi je mlatilničar v šestdesetih letih 20. stoletja jeseni (oktobra) postavil lokomobilo z mlatilnico sredi vasi in ljudje so pripeljali približno en voz ajde ali/in prosa. Večje količine zrnja so posušili in prodali zadrugi, manjše količine so uporabili doma.[19]

Med letoma 1921 in 1941 je v obrtnem imeniku za območje Lendave vpisan samo eden (!), ki je imel v Odrancih mlatilnico, to je Jožef Zadravec.[20] Najverjetneje so med obema svetovnima vojnama k njemu pridelovalci nosili/vozili mlatit tudi ajdo (in proso). Ajdo in proso so vozili mlatit *k mašini*. V vasi so bili najmanj štirje, med temi se spominjajo npr. Horvata, pa Balažica. Ker je šlo za manjše količine, mlatilnica ni prišla k vsaki hiši, kot je to bilo značilno za mlatenje pšenice, ampak so pridelovalci poln voz pripeljali k mlatilničarju na dvorišče. Potrebno je bilo čakati tudi ves dan, da si prišel na vrsto. Mlatilnice so bile na traktorski pogon. Pri mlatilnici so bili potrebni trije moški; eden je šope (ajdove snope) metal na mlatilnico, drugi je držal vreče, tretji pa odstranjeval slamo. Domači so slamo nalagali na voz. Lastniku mlatilnice so plačali *merico*; od sto kilogramov je vzel osem ali deset kilogramov. V sedemdesetih letih 20. stoletja so prišli kombajni.

Pred prodajo ajdove kaše je bilo potrebno ajdova zrna skuhati in oluščiti. To so Odrančani počeli izključno doma in v svoji vasi. Na platnenih ponjavah so sušili zrnje; če je bilo toplo vreme zunaj na dvorišču, drugače pa na podstrešju. V začetku zime, ko ni bilo več zunanjega dela, so doma v večjih kotlih, po dva ali tri kotle kuhali ajdo. Vmes so kašo mešali. Ko je zrnje počilo, je bila kaša kuhana in jo je bilo potrebno posušiti. Na podstrešju so manjše količine sušili dva dni. Kaša se je kuhala večkrat v sezoni, odvisno od prodajnih potreb in letni količini pridelka.

Kuhano ajdo so nesli *pat*, luščit. Kot obrt *predelovanje kaše in rezanje slame* so konec štiridesetih in petdesetih let 20. stoletja zapisani trije iz Odrancev: Vencel Kovačič,

[19] Jelka Pšajd, Lačni nismo bili, bilo pa je siromaštvo: Prehranska dediščina Pomurja in Porabja, Pomurski muzej Murska Sobota, 2022, str. 93, 95–96, 224–225.

[20] *Splošni članski imenik od 1921 do 1941 Lendava*. Hrani: Pokrajinski arhiv Maribor.

Štefan Marič in Ivan Kavaš.[21] Po pripovedovanju starejših domačink so luščili ajdo ter jo predelovali v kašo najmanj trije kmetje v šestdesetih letih 20. stoletja. Nekateri izmed njih so kašo tudi prodajali. Kot kaže, ti niso bili vpisani v register obrtnikov, saj jih na seznamu ni. V spominu ljudi je znana tudi *Kašasta*[22] *Treza*, kamor so iz vasi Gomilica nosili luščit proso in ajdo in je že imela stroje za luščenje.[23] Mlin za luščenje je gnala elektrika, pred tem se je poganjal ročno. Plačilo mlinarju je bila merica od kaše. Ajdova ovojnica ni bila uporabna, ker je bila presuha in ostra. V vrečah so kašo odpeljali domov, kjer so jo hranili do prodaje.

***Foto 2** (glej sliko 2 na strani 29):* Prikaz luščenja ajde ali prosa na stopi. Avtor oljne slike na platnu iz leta 1962 je slikar Karel Jakob. Hrani Pomurski muzej Murska Sobota.

PRODAJA AJDOVE KAŠE

Odrančani so ajdovo kašo najpogosteje prodajali od hiše do hiše. Ženskam prodajalkam so rekli *kašarce*[24]. Večinoma so namreč kašo prodajale ženske. Za to je seveda več vzrokov; od tega, da so moški bili zaposleni, ženske pa so doma gospodinjile in kmetovale; do tistega, da jim je zaslužek od prodaje kaše omogočal družinsko emancipacijo. Ljudska razlaga je enostavnejša – ženske so bile spretnejše govornice, ki so gostobesedno ponujale svojo robo. Poleg dobre komunikacije je pri prodaji pomembno vlogo imela tudi dolgoletna ustaljenost prodajanja. Tega se spominja Elizabeta, ki je s sosedo na sejmu prodajala kašo. Ker je bila starejša soseda dolgoletna prodajalka in so jo kupovalke dobro poznale, je svojo kašo zelo hitro prodala. Ko je starejša soseda Elizabeti priskočila na pomoč in namesto nje z lahkoto prodala preostanek kaše, je odkrito priznala, da je Elizabetina kaša boljše kvalitete.

Moški prodajalci so se na poti radi ustavljali v gostilnah, kjer so nemalokrat ostajali pozno v noč in zaslužek tudi (delno) zapili. Kot morebitne prodajalce kaše je potrebno omeniti tudi trgovce z mešanim blagom, z vsemi vrstami žita na debelo in deželnimi pridelki, ki so najbrž prodajali tudi kašo, čeprav s seznama trgovcev in trgovin iz leta 1941 tega ni bilo mogoče eksplicitno prebrati.[25]

Večina starejših vaščanov ima še neposredne izkušnje s prodajo, med njimi sta Terezija in Elizabeta[26], ki sta hodili prodajat kašo, prav tako njuni ožji sorodniki, npr. oče ali stara mati. Lahko rečemo, da se je dejavnost prodaje razširila po drugi svetovni vojni, starejših arhivskih in ustnih podatkov zaenkrat še nimamo.[27] V petdesetih, šestdesetih in sedemdesetih letih 20. stoletja je prodaja kaše dobro uspevala. V poznih sedemdesetih in začetku osemdesetih let 20. stoletja se je prodaja odvijala samo še na sejmih, po hišah ne več. Kašo so peš ali s kolesi, kasneje z avtobusom, nosili v bližnje prekmurske in daljne vasi ter kraje na Hrvaško (danes je to druga država, v preteklosti pa je bila del skupne Jugoslavije). To so: Spodnja, Zgornja in Srednja Bistrica, Razkrižje in Štrigova. Prodajalke so navadno vedele, katere gospodinje redno vzamejo kašo, zato hiš, kjer niso kupovali, niso obiskovale. Pomembna prodajna mesta so bili tudi sejmi, kjer se je zbralo veliko ljudi in se je kaša lažje in hitreje prodajala. Pomembna prodajna mesta so bila tudi sejmi v Murski Soboti (6. 12.), Štrigovi (4. 12.), Gornji Radgoni (15. 11.), Čakovcu (1. sreda v mesecu) in na Ptuju (25. 11.). Vreče so ženske navadno zložile kar po tleh, redkokje so bile stojnice, ki pa jih je bilo potrebno plačati. Ženske so zgodaj zjutraj odhajale od doma, pozno zvečer so se vrnile; moški so ostali tudi čez noč na poti in kje prespali. Nemalokrat so neprodano količino kaše pustili pri kakšni hiši in se naslednjič vrnili ter nadaljevali s prodajo. Najpogosteje se je prodaja vršila v novembru in decembru. Previsok sneg je lahko oviral prodajo, saj je bilo težko hoditi. Prodajalo se je v spomladanskih mesecih, vendar do začetka večjih kmečkih del. Ženske, ki so imele že družino, so na pot hodile dvakrat mesečno ali štirikrat

21 *Register proste obrti od leta 1921 do leta 1952*. Hrani Pokrajinski arhiv Maribor.

22 Domače ime označuje njeno dejavnost, ki je izpeljana iz kaše.

23 Jelka Pšajd, Lačni nismo bili, bilo pa je siromaštvo: Prehranska dediščina Pomurja in Porabja, Pomurski muzej Murska Sobota, 2022, str. 224–225.

24 Narečno poimenovanje označuje njihovo dejavnost, ki je izpeljana iz kaše.

25 *Register članov trgovcev na dan 6. 4. 1941,* Lendava. Hrani Pokrajinski arhiv Maribor.

26 Elizabeta Kovačič, rojena leta 1944 v Odrancih. Vir: Ustni pogovor, Odranci, 17. 1. 2024. Terezija Zver, rojena leta 1939 v Odrancih. Vir: Ustni pogovor, Odranci, 17. 1. 2024.

27 Potrebno je zapisati, da Odrančani v tridesetih letih 20. stoletja niso bili znani po prodaji ajdove kaše, saj te omembe ni v Leksikonu Dravske banovine iz leta 1937.

v zimskem času. Če se je pridelalo več kaše, so hodili na pot tudi dvakrat tedensko ter poleti, ko ni bilo večjega kmečkega dela. *Kašarica* Marija Balažič je v petdesetih letih 20. stoletja hodila prodajat kašo po vaseh tako, da si je na hrbet oprtala *prevrit*, to je 20–30 kilogramska vreča kaše, zvezana na polovici tako, da se teža enakomerno porazdeli po celotni površini. Vrečo si je položila na glavo, zatilje in hrbet tako, da ji ni bilo potrebno držati še z rokami. Tako spretno nositi je znala samo ona, nihče drug. Poleg kaše je bil obvezen pripomoček prodajalcev pollitrska in litrska merica, s katero so tehtali prodano vsebino. Največ se je prodalo ajdove kaše z litrsko merico; prosene manj, ki je bila tudi cenejša. Ženske so rajši prodajale po dve skupaj, vsaka je nesla k drugi hiši in na koncu vasi sta se počakali. Po poti sta se ženski pogovarjali, molili v zahvalo za dobro prodajo in srečno vrnitev. Zaslužek od prodaje je gospodinji zadostoval za nakup gospodinjskih priboljškov ali hišnih dobrin.

ZAKLJUČEK

Danes, leta 2024, v Odrancih kmetija Kavaš še prideluje in prodaja ajdovo (in proseno) kašo. Ajdo posejejo na svojih njivah, jo požanjejo in odpeljejo v Mursko Soboto v predelavo. Čez celo leto kašo prodajajo na svojem domu. Z luščenjem in izdelavo kaše sta se po drugi svetovni vojni začela ukvarjati Terezija in Ivan Kavaš[28], obrt je nadaljeval sin Jožko, danes pa to počne sin Darko.[29] Številnih Odrančank in Odrančanov, ki bi se ukvarjali s kašo, tako rekoč ni več. Na nje in na pridelavo ter predelavo ajde spominja vsakoletna prireditev *ajdova noč* 10. junija, kjer prikazujejo posamezne postopke predelave in tekmujejo v kuhanju kaše.

Prispevek zaključujem z osebnim imenom Ajda, ki je pomenljiv. Tega v Odrancih ne boste našli do leta 2023, ko vas prvič dobi dojenčico Ajdo. To dekletce, dekle in žena bo, če ne drugače, s svojim imenom ohranjala spomin na ženske, ki so daleč od doma prodajale kašo.

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[28] Kot zanimivost naj zapišem, da je bil Ivan podpisnik izjave o gradnji nove cerkve, kjer so gospodarji/ kmetje Odrancev tedanjo oblast prosili za gradbeno dovoljenje in odobritev že izdelanih načrtov. Izjava je bila podpisana med letoma 1947–1964. (Vir: Lojze Kozar, neuničljivo upanje, Župnijski urad Odranci, 2003, str. 94).

[29] Zoranu Vidicu iz Murske Sobote se zahvaljujem za podatke.

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