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Introduction and assessment of Quinoa in Algeria: Field trial evaluation of eleven *Chenopodium quinoa* genotypes grown under Mediterranean conditions (ALGERIA).

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Introduction

Algeria is the largest country in Africa, the arable land of about 8.2 million hectares accounts for only 3.4 percent of the total land area.

Algeria's main crops are cereals (mainly wheat and barley), citrus fruit, olives, vegetables, grapes and Fresh dates.

Algerian food shows the historic influences of Berber, Arab, Turkish, and French tastes.

Couscous is a North African dish of small steamed balls of semolina, it is now Algeria's national dish.

Wheat is the nation's primary crop and the highest source of caloric intake for Algerians, No Algerian meal would be complete without bread. According to FAO statistics, Algerians buy and consume a national daily average of over 45 million baguettes.

Pulses are also popular in Algeria, Their use is versatile and they are often added to variations of soups. Fava beans, chickpeas, and lentils are most commonly used in recipes

Introduction

Meat is a major contributor to the protein intake among Algerians. Beef, chicken, sheep and goat meat but for many Algerians, meat is very expensive and not prepared on daily basis that's why Malnutrition has been one of the principal health problems in Algeria in recent years. About 5% of the population of Algeria is classified as undernourished by the World Bank. Furthermore, cereals and pulses are the major protein source for the country since they provide more than 45% of the dietary proteins.

Quinoa is the food crop that can play a crucial role in the fight against hunger and malnutrition in Algeria, but unfortunately Quinoa is unknown in Algerian culture.

Building on FAO's practical experience in the production use and marketing of quinoa and quinoa products, an FAO regional project was implemented in selected North African and Near East countries, including Algeria. The country benefited from FAO's technical expertise in assessing the potential for adoption of this non-traditional crop by producers and its acceptance by consumers.

Based on this approach, the present study was to evaluate 11 genotypes of quinoa and, determining phenological characteristics, yield components.

challenges

Key challenges are:

- Adaptation of Quinoa to Algerian soils and climate to see its potential as new introduced culture in the country.
- Evaluating the performance of Quinoa genotypes for their productivity on a range of soils in Algeria.



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Trial Site



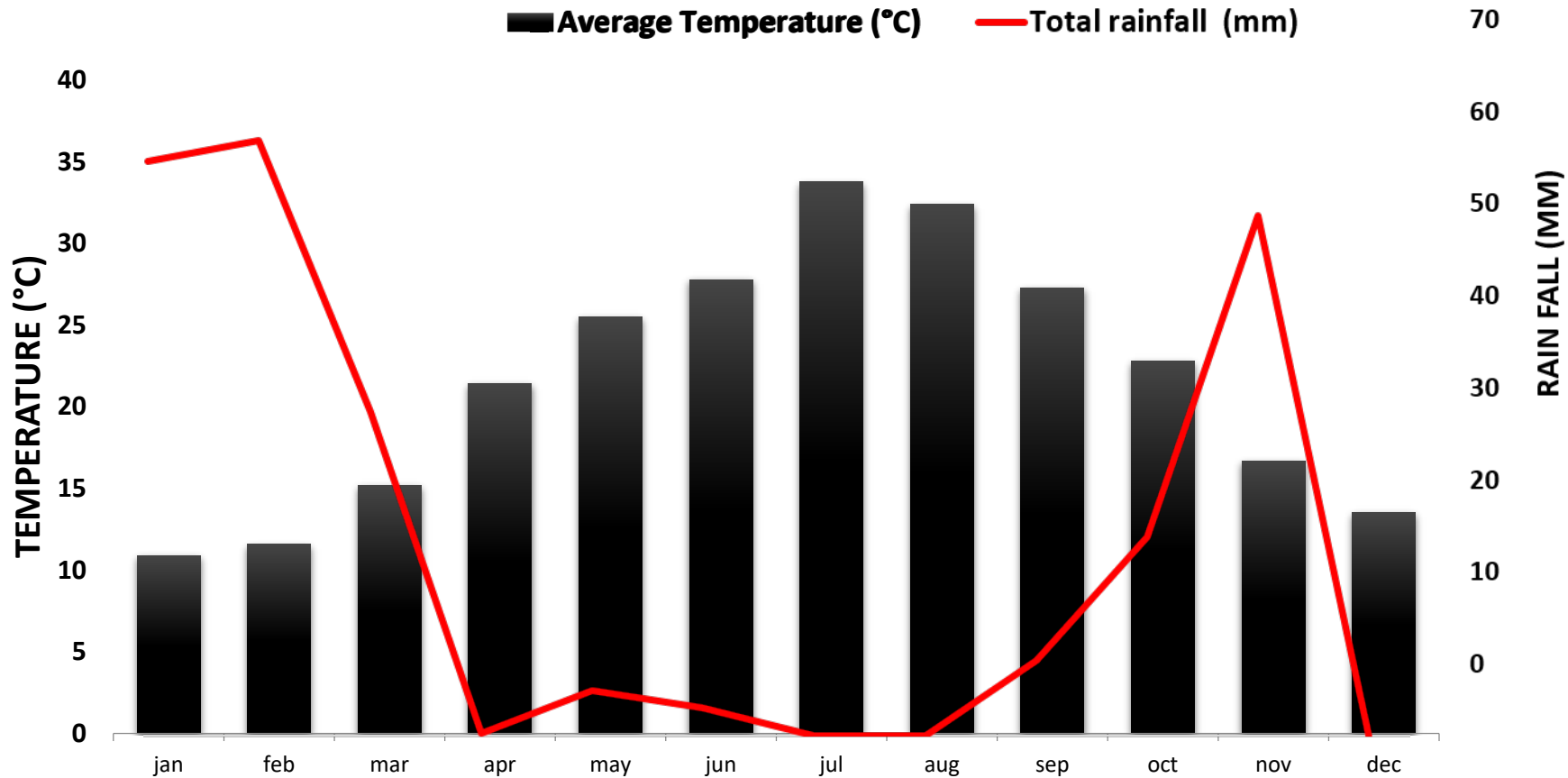
Experimental station of Hmadna (Relizane)



Experimental site



Climatic conditions for the region of Hmadna (Algeria)



Soil and Water at the Experimental Field

Water		SOIL												
CE (DS/ M)	pH	CE (DS/ M)	pH	CT %	Ca	MO %	Na ⁺	K ⁺	Mg ⁺⁺	Ca ⁺⁺	CEC (Meq /100g)	Cl ⁻	SO ₄ ²⁻	P ₂ O ₅ (ppm)
1.32	6.42	3.25	8.1	16.13	4.75	2.11	2.78	1.86	4.36	1.49	9.0	07	25.68	346.47

Clay (%)	Silt (%)	Sand (%)	Bulk Density
45.6	45.3	9.1	1,48

Quinoa Genotypes

Cultivars
Q101
Q102
Q103
Q104
Q105
Q26
Q27
GIZA 01
GIZA 02
Q12
Q18



Soil preparations

The field was ploughed to a depth of 0.40m; final seedbed preparation was carried out just prior to sowing by harrowing twice with a disc and a rotary harrow



Sowing

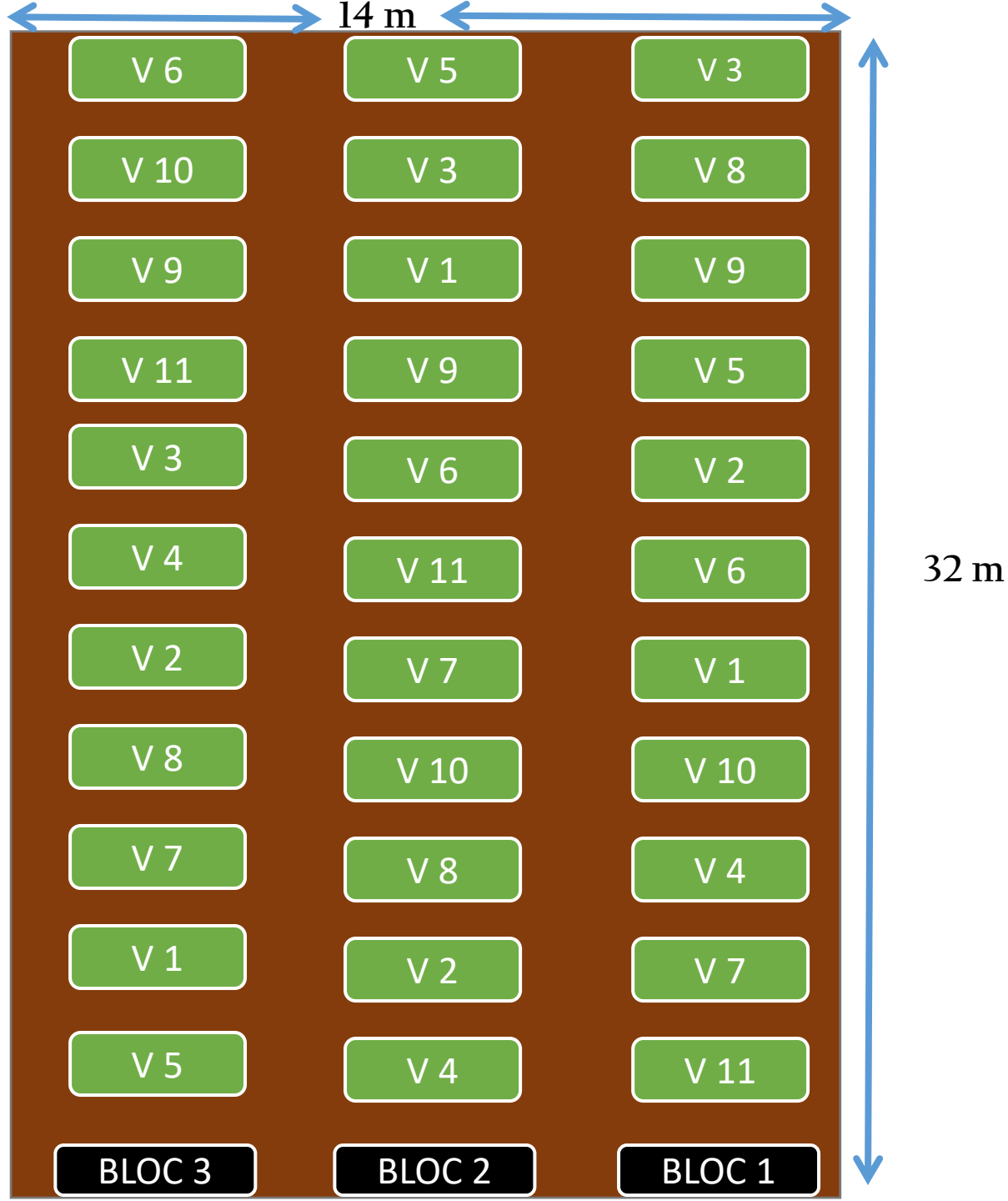
Sowing was carried out on 18 March 2015. The seeds were sown manually by dibbling 3-4 seeds into the soil to a depth of 2-3 cm



Plot size



Experimental
design



Irrigation

The irrigation water was supplied weekly using sprinkler irrigation. The irrigation dose was calculated by a flowmeter which gives a 3.6 mm per hour



Fertilization

The recommended dose for the phosphorus and potassium are respectively is 92 and 50 Units / ha.

The recommended amount of nitrogen was 92 units per hectare.

It was divided into three parts during the stage four true leaves ramification stage and flowering stage.



Study

The growth performance and yield components of the eleven quinoa genotypes was evaluated based on study of different characteristics including



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Growth Parameters



Yield components



Results



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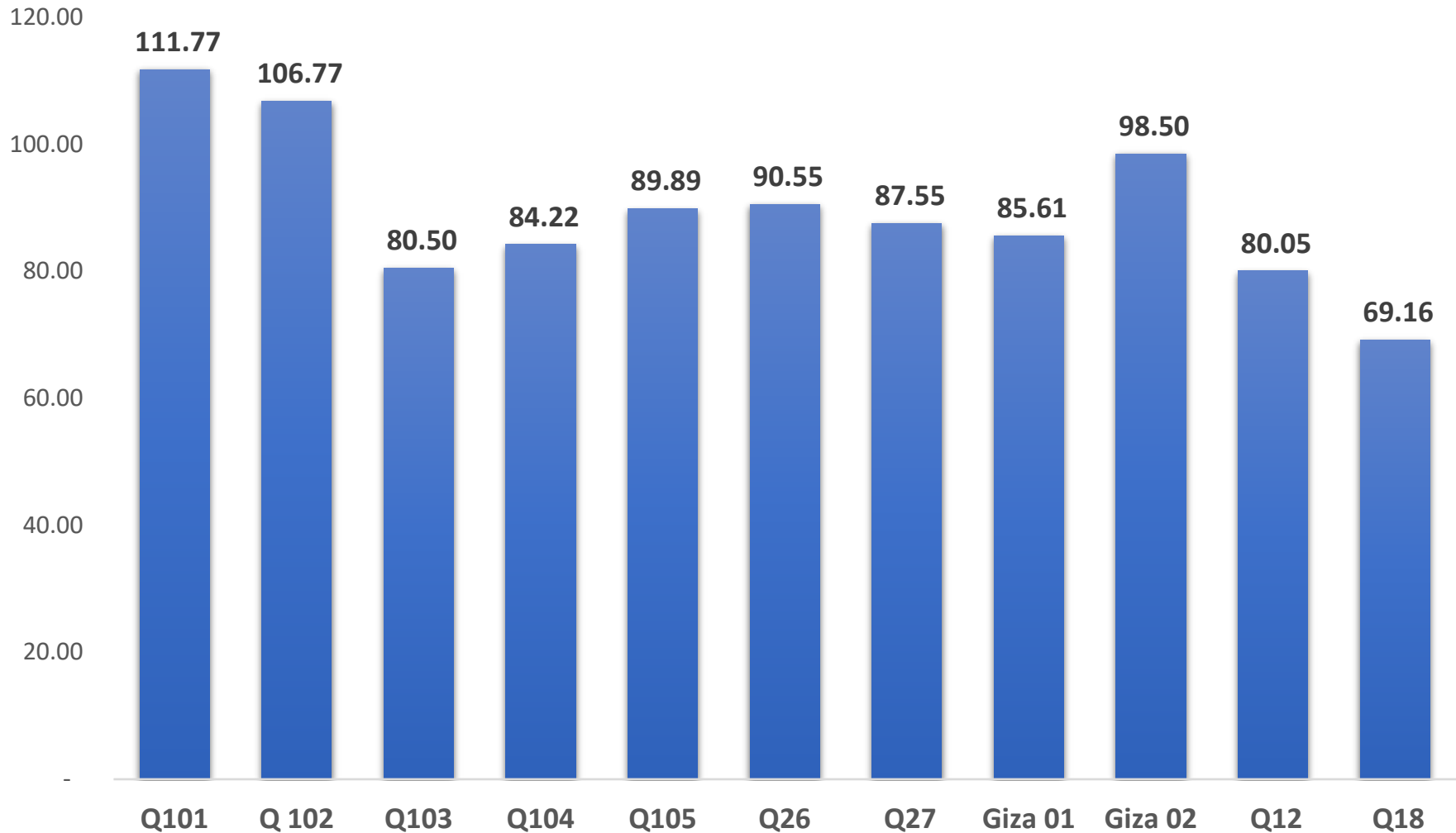
Results



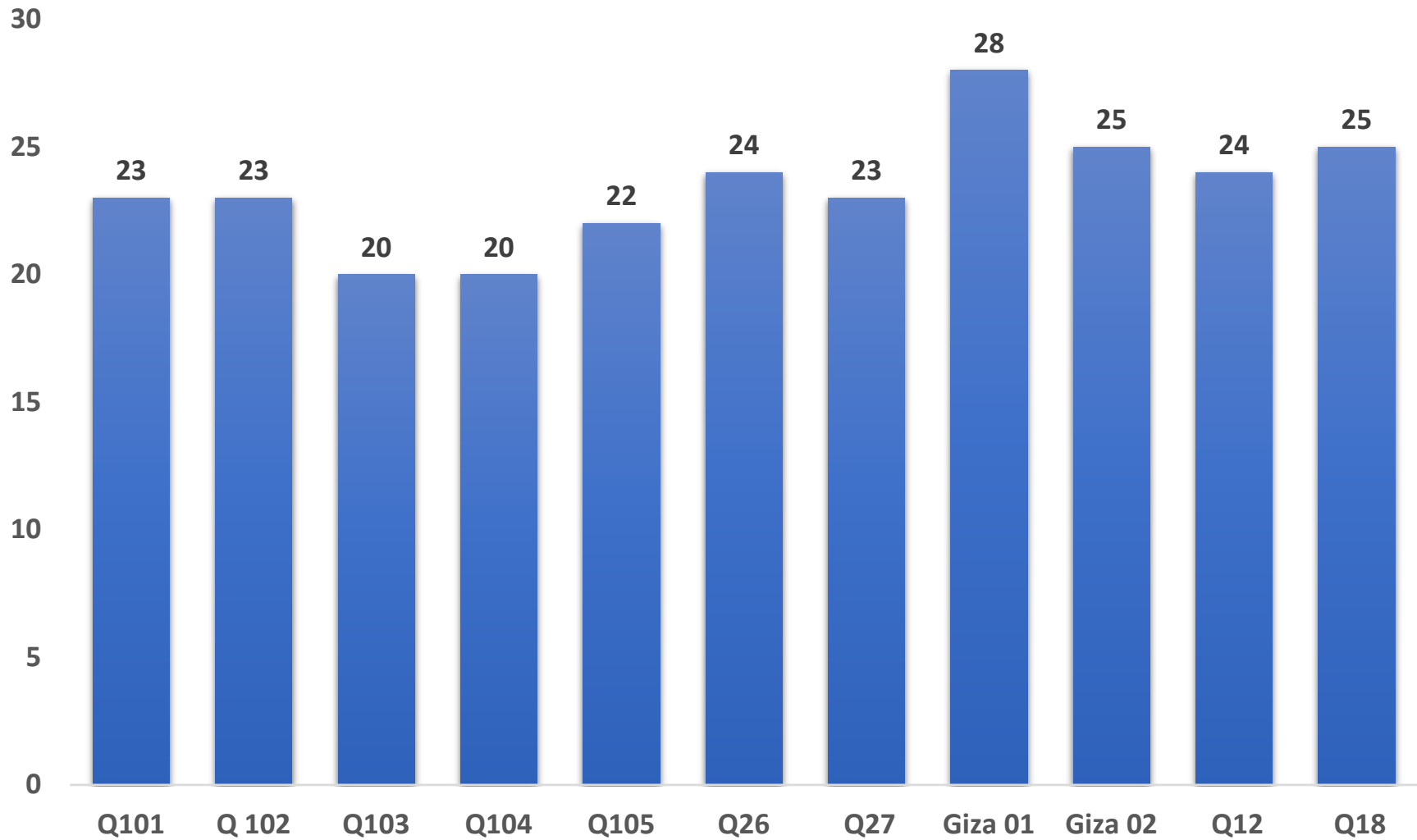
Results



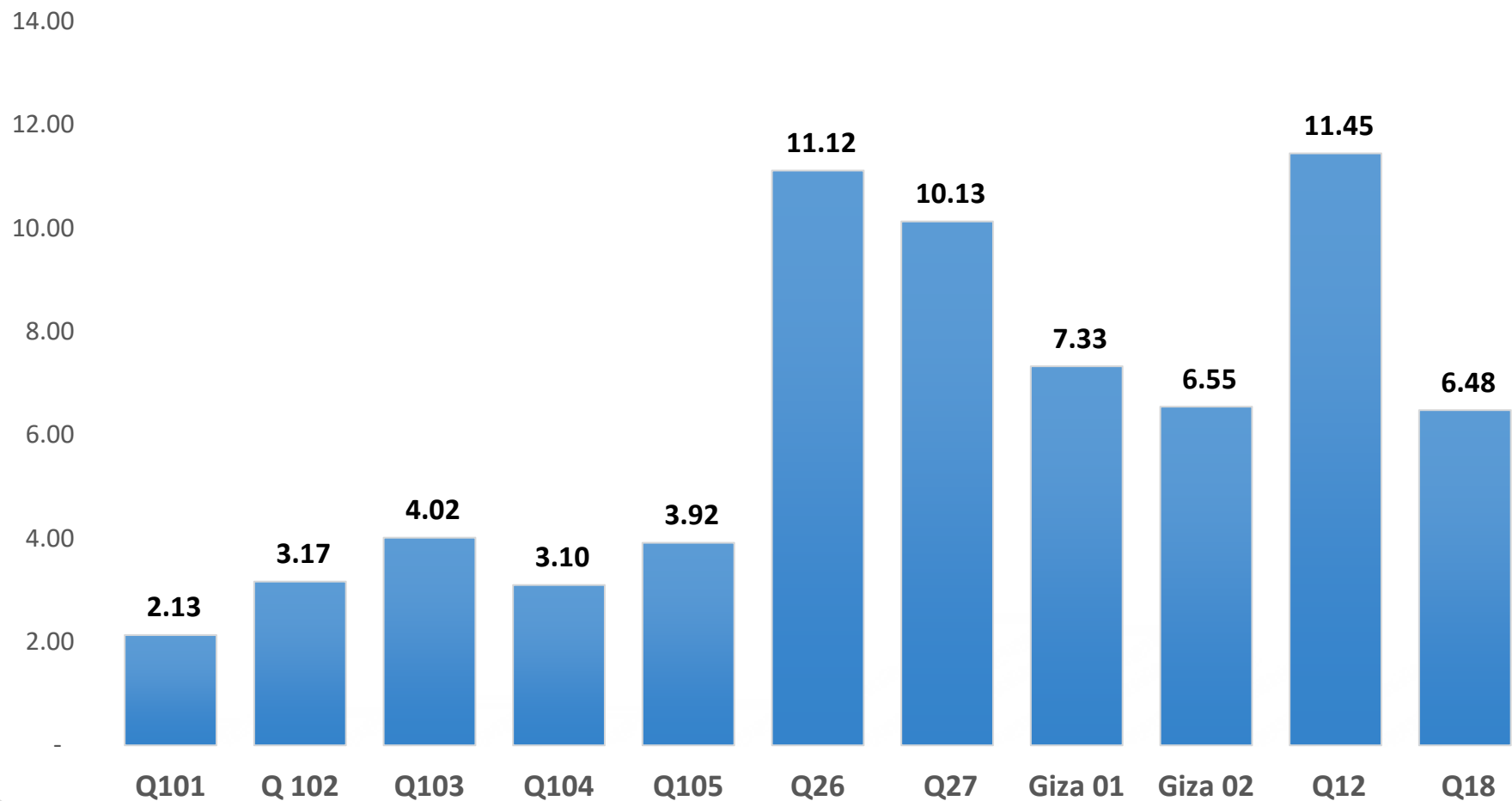
Plant height / cm



Number of branches per plant



Weight of main panicle (g)



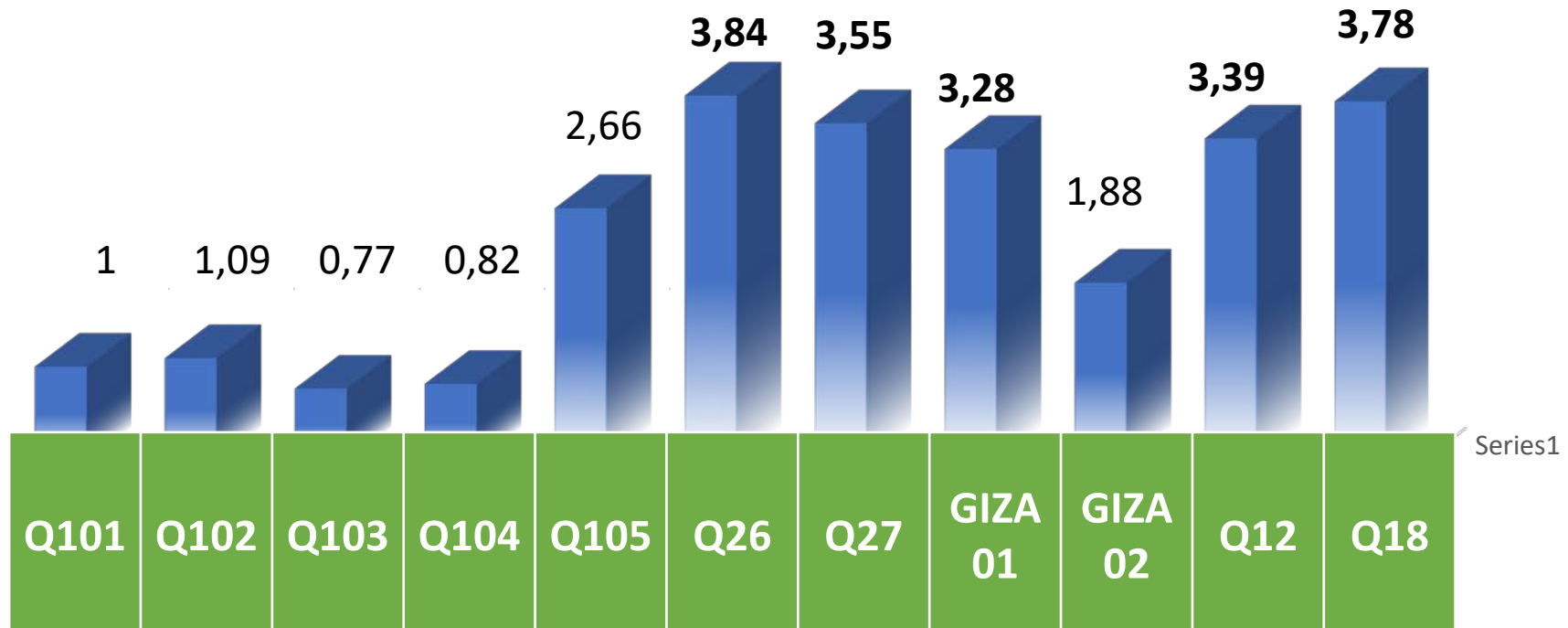
Quinoa yield components



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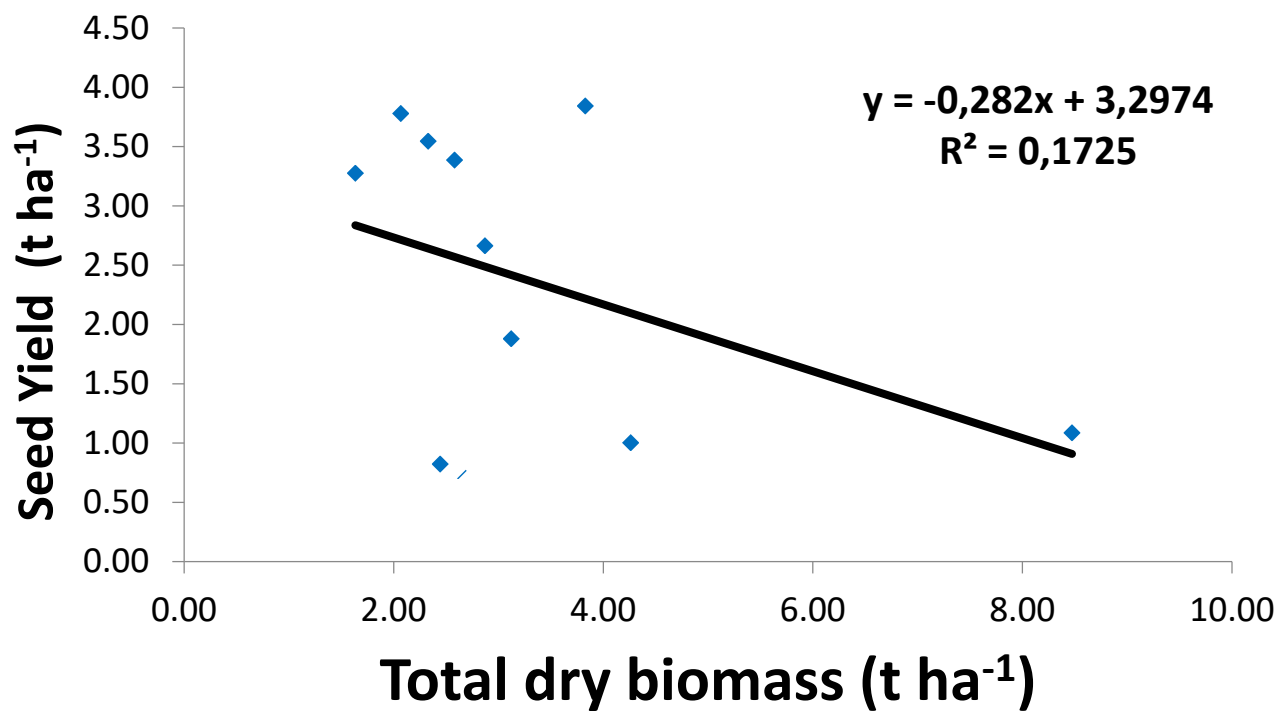


Seed Yield (t ha⁻¹)

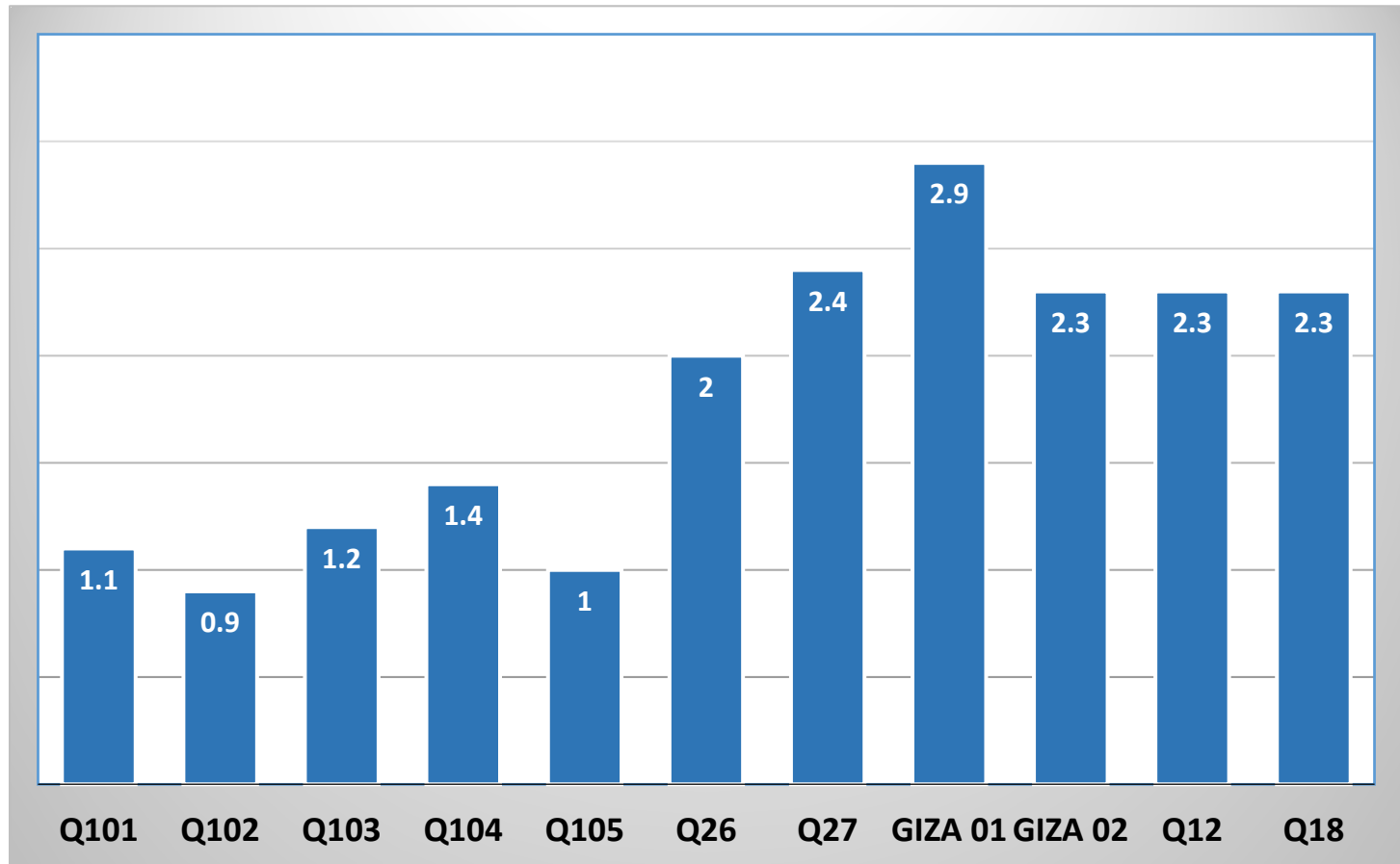


Total Biomass (t ha⁻¹)

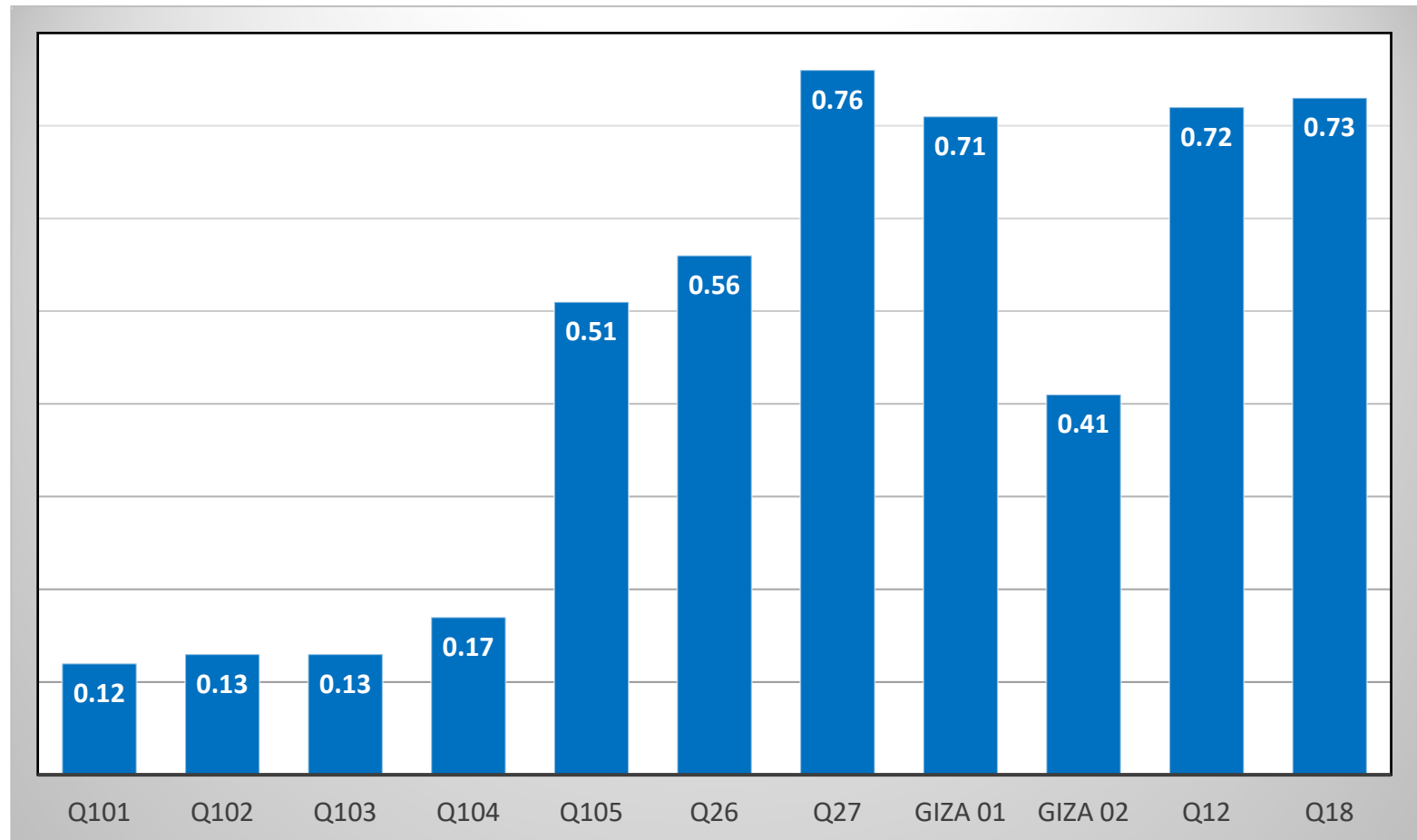
Q101	Q102	Q103	Q104	Q105	Q26	Q27	GIZA 01	GIZA 02	Q12	Q18	MeM3 6:Y37ans
4,26	8,47	2,61	2,44	2,87	3,83	2,33	1,63	3,12	2,58	2,07	2.64



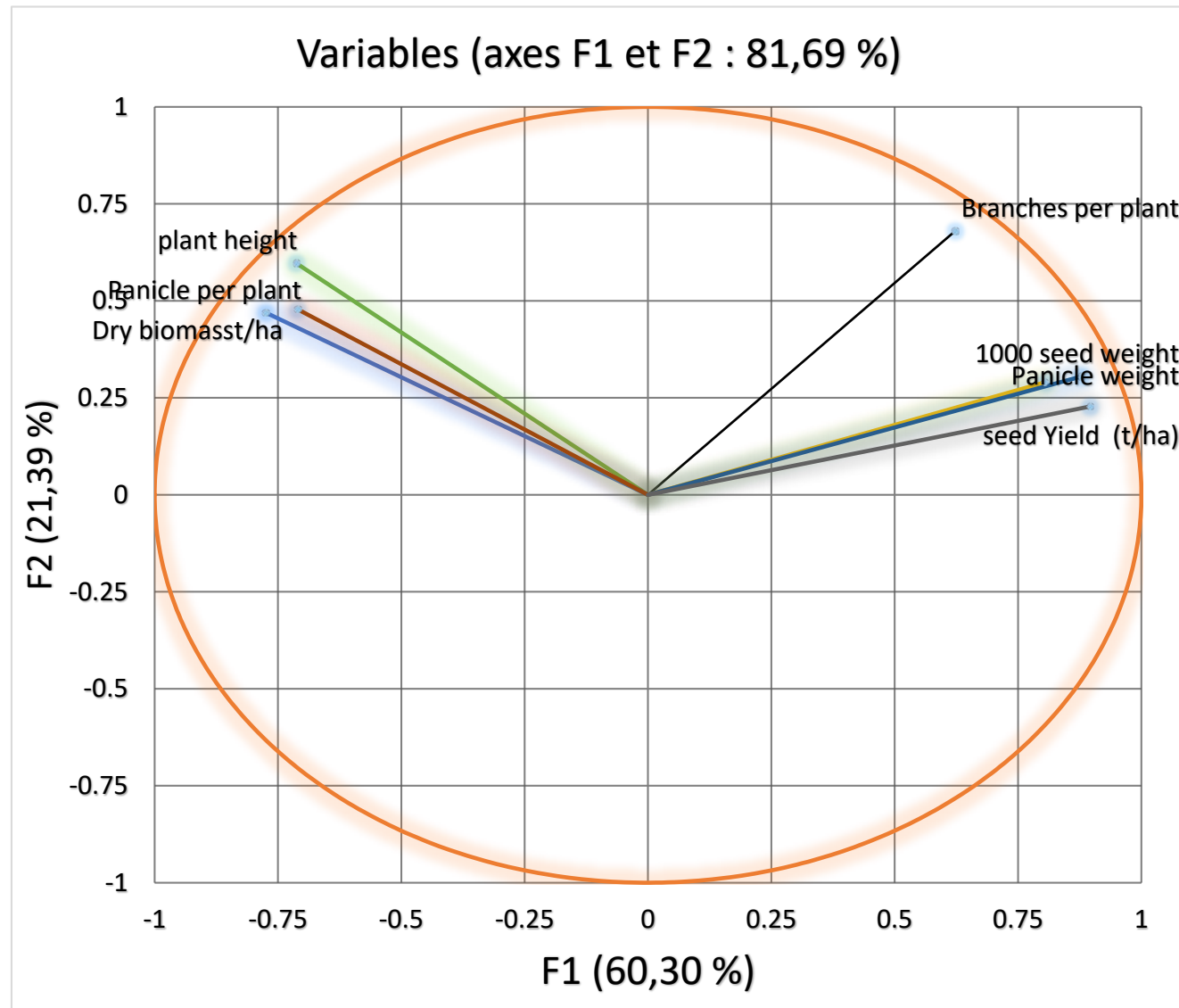
1000 seed weight (g)



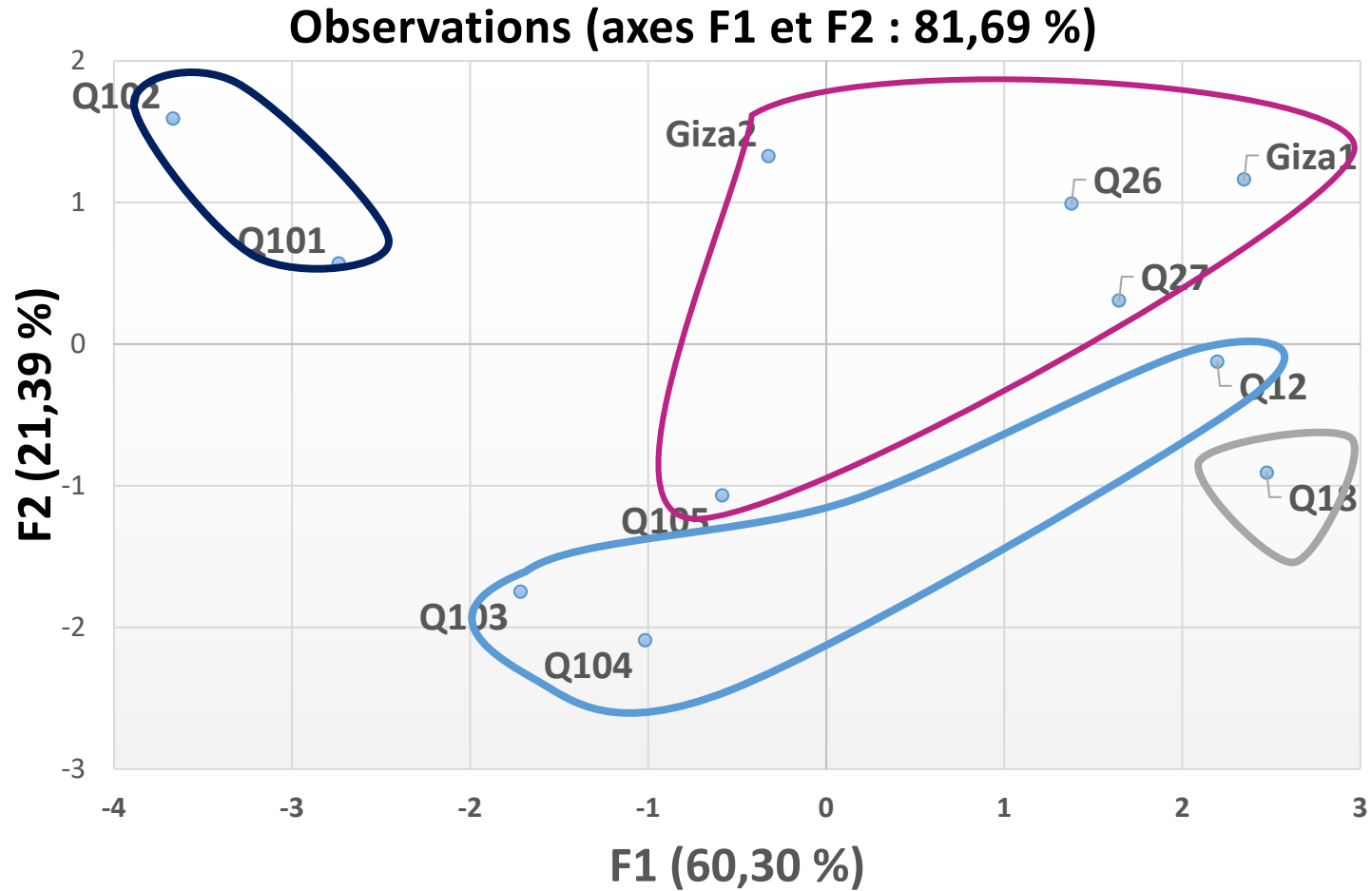
Harvest index



Principal component analyses of variables



Principal component analyses of observable



Conclusions

The results from the field trials show that quinoa holds great promise as a new crop in the agricultural production systems in Algeria adapts very well with the pedoclimatic conditions of Algeria

The seed yields obtained from the genotypes **Q26; Q27; GIZA 01; Q12 and Q18** are similar with the yields reported from the more favorable growing environments in South America and Europe



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Future prospects

The best performing accessions identified in this study which are best suited for Algeria will be tested under conditions of water and salt stress to confirm their adaptation to all Algerian environment.

Produce Quinoa on a large scale for dissemination to the Algerian farmers.

Organize open days to introduce Quinoa into Algerian culture and provide quinoa seeds freely to Algerian population to taste and accept this new plant.

Integrate nutritional value information In nutrition education.



Thank You for your attention



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