



**RESEARCH ON THE SOWING DATE FOR F1VA.68 CUCUMIS MEL
ON VARIETY IN SPRING SEASON IN TUYEN QUANG**

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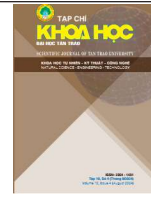
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Abstract:

Cucumis Melon (*Cucumis melon* L.) is a fruit vegetable with high nutritional value, currently cultivated in multiple seasons, across various soil types, and in many regions throughout the year. However, to ensure optimal growth and maximum economic efficiency, it is crucial to consider several factors such as variety selection and appropriate planting time within favorable climatic conditions. These factors can maximize the variety's potential and minimize pest damage while maintaining high effectiveness. An experiment planting the F1VA.68 melon variety at different times during the Spring 2022 season in Tuyen Quang showed that planting on February 20, 2022, resulted in a yield of 114.4 quintals per hectare and achieved the highest economic efficiency of 80,183,400 VND per hectare, while still allowing for optimal scheduling of crop rotation for the following season.



NGHIÊN CỨU THỜI ĐIỂM GIEO TRỒNG GIỐNG DƯA LÊ F1VA.68 Ở VỤ XUÂN TRÊN ĐẤT RUỘNG TẠI TUYÊN QUANG

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Từ khóa:

Dưa lê, F1VA.68 giống, năng suất và hiệu quả kinh tế.

Tóm tắt

Dưa lê (*Cucumis melon* L), là một trong những loại rau ăn quả có giá trị dinh dưỡng cao, hiện nay trồng được nhiều vụ, trên nhiều chân đất và nhiều vùng trong một năm. Tuy nhiên để tạo điều kiện cho cây sinh trưởng phát triển tốt, đạt năng suất và hiệu quả kinh tế cao nhất còn phụ thuộc vào nhiều yếu tố như giống, thời điểm gieo trồng thích hợp để nằm trong khung thời tiết khí hậu thuận lợi sẽ phát huy được tiềm năng của giống và hạn chế sâu bệnh hại mà vẫn cho hiệu quả. Thí nghiệm trồng giống dưa lê F1VA.68 gieo trồng ở các thời điểm khác nhau trên đất ruộng vụ Xuân 2022 tại Tuyên Quang cho thấy gieo trồng vào thời điểm ngày 20/2/2022 cho năng suất thực thu đạt 114,4 (tạ/ha), cho hiệu quả kinh tế cao nhất 80.183.400 (đ/ha), đặc biệt vẫn chủ động về thời gian để thực hiện cơ cấu luân canh cây trồng cho vụ sau.

1. Introduction

The F1VA.68 melon variety is a sweet, short-term variety with very strong growth, yield and quality. However, productivity and efficiency depend on various factors and planting time, because the melon growing season is relatively long from February to September, in which the spring crop is planted in February and March; the crop period fluctuates a lot, for about 2 months. If the crop is sown too early, it will encounter the cold at the beginning of the season, low temperature leads to slow growth of the plant. If sown too late,

at the harvest stage in June, it will often encounter heavy rain and high temperature, the rice field is also susceptible to moisture at the end of the season, causing the plant to get sick, the fruit to rot, affecting the yield. Therefore, if we do not pay attention to the appropriate planting time, it is easy to encounter unfavorable weather conditions, causing pests and diseases, leading to crop failure and affecting the crop rotation structure of the next crop on the field. Choosing the right time to sow is a very important technical step to improve the efficiency of agricultural production. Therefore,

the study “Research on the sowing date for F1VA.68 cucumis melon variety in spring season in Tuyen Quang” is the basis for improving the productivity and economic efficiency of melons in the locality.

2. Methodology

2.1. Objectives

Research object: F1VA.68 melon

Research scope: Spring crop on fields

* Conditions of implementation

* **Implementation scale:** Implementation area: 900 m²

* **Soil conditions:**

Performed on rice fields, with uniform ground surface and mechanical composition and soil properties.

+ VA.68 F1 melon variety: Is a short-term melon variety originating from Japan, imported through Nong Huu Company Limited.

2.2. Research content

Content 1: Evaluation of the impact of planting time on growth and development of F1VA.68 melon variety.

Content 2: Evaluation of the impact of planting time on the resistance to major pests and diseases of F1VA.68 melon variety.

Content 3: Evaluation of the impact of planting time on yield components and productivity of F1VA.68 melon variety.

Content 4: Evaluation of the impact of planting time on economic efficiency

2.3. Research methods

* *The experiment consists of four treatments of planting time, spaced 10 days apart, including:*

Treatment 1: Sowing date: 20/2/2022

Treatment 2: Sowing date: 2/3/2022

Treatment 3: Sowing date: 12/3/2022

Treatment 4: Sowing date: 22/3/2022

The experiment was arranged in a completely randomized design, including 4 *Treatment*, each treatment was repeated 3 times, the area of each plot was 48 m² (8m long, 6m wide), row spacing 0.3, total area 900 m²

**Indicators and methods for monitoring indicators:*

Growing time; Primary and secondary branching; Flowering; Fruit harvesting; Growth and development time (days)

Growth characteristics: Main stem length, Root diameter (cm); Number of primary and secondary branches;

Development characteristics: Number of female flowers; Fruit rate (%).

Fruit characteristics: Fruit height, fruit diameter (cm)

Pest and disease situation according to National Technical Regulations QCVN 01-38/2010/BNNPTNT

Yield components: Number of fruits per tree; fruit weight (grams); Theoretical yield; Actual yield (tons/ha)

Preliminary economic accounting: Total revenue; Total expenditure; Net profit (VND/ha)

The indicators are sampled and monitored according to regulations: 10 trees monitored continuously each plot, except for the first 5 trees. Data is compiled and processed using Excel software and IRRISTAT 5.0.

3. Results

3.1. Evaluation of the influence of planting time on the growth and development of F1 VA.68 melon variety

3.1.1. Evaluation of the influence of planting time on the growth and development stages of F1 VA.68 melon variety

F1 VA.68 melon is a short-term crop that is clearly affected by external conditions, especially the impact of weather and climate. Through monitoring, the F1 VA.68 melon variety planted at different times in the spring crop, produced results shown in Table 3.1 as follows:

Table 3.1. Effect of planting time on growth and development of F1 VA.68 melon

Treatment	Indicators						
	Sowing date	From sowing to germination (Days)	From sprouting to branching (Days)	From branching to flowering (Days)	From flowering to maturity (Days)	Harvest Time (Days)	Total Time (Days)
1	20/2/2022	9	17	15	32	22	9
2	2/3/2022	7	15	14	32	22	90
3	12/3/2022	6	14	14	31	21	86
4	22/3/2022	6	12	13	31	1	

The results of Table 3.1 indicate: The treatments were sown at different times, in which treatment 1 was sown on February 20, 2022, 10 days earlier than the control, treatment 3 was sown on March 12, 2022, 10 days later than the control; treatment 4 was sown the latest on March 22, 2022 and 20 days later than the control.

Sowing to germination stage: Treatment 1 has the longest time from sowing to germination of 9 days, 2 days longer than the control, because after being sown it encountered very low temperatures, the average temperature was below 15 degrees C (Tuyen Quang climate and hydrology). The sowing to germination period of treatment 3 and 4 were 6 days, it was the shortest time because from March onwards, the temperature gradually increased and the rainfall was evenly distributed, favorable for the germination period.

Sprouting to branching stage: The treatment sown on February 20, 2022 had the longest time at 17 days, 2 days longer than the control. The treatment sown on March 12, 2022 had the same time as the control, while the treatment sown on March 22, 2022 had the shortest time, 3 days shorter than the control.

Branching to flowering stage: The treatments going through the branching to flowering stage in

March and April, experienced weather conditions of increased temperature, humidity, rainfall, and sunlight compared to those in February, creating favorable conditions for the plant to grow and flower. The duration of this stage was 13 to 15 days for all treatments, not differing from the control.

Flowering to ripening stage: During this stage, the plant enters the reproductive growth stage. The treatments had relatively stable durations, ranging from 31 to 32 days and similar to the control.

Harvest time: Treatment 1 and 3 had the same harvest time as the control. Treatment 4 had the shortest harvest time of 19 days, 3 days shorter than the control, and due to the planting time, the harvest period was at the end of May and early June, leading to high temperatures and heavy rain, creating favorable conditions for pests and diseases to damage the leaves, reducing harvest time.

Total growth and development time: The treatment sown on February 20, 2022 had the longest total growth and development time, 5 days longer than the control, due to low temperatures at the beginning of the season. The treatment sown on March 12, 2022 had a total time of 4 days longer than the control. The treatment sown on March 22, 2022 had the shortest total time and was

9 days shorter than the control, due to late sowing, the temperature and rainfall gradually increasing towards the end of the season affecting the stages.

3.1.2. Evaluation of the influence of planting time on the emergence rate and some morphological indicators of plants

The growth and development of melons is also affected by climate factors. If the plants

are sown too early in the spring crop, they will encounter cold weather which will affect the growth stage and the seedling stage; if sown too late, during the fruiting and harvesting stages plants will easily encounter hot weather and heavy rain, which will reduce productivity. Through monitoring at different sowing times of the treatments, the results are shown in Tables 3.2 and 3.3 as follows:

Table 3.2. Effect of planting time on emergence rate and plant morphology

Treatment	Chỉ tiêu						
	Growth rate (%)	Height at branching stage (Cm)	Height at flowering Stage (Cm)	Height at harvest stage (Cm)	Body diameter (cm)	Level 1 Branch (Branch)	Level 2 Branch (Branch)
Treatment 1	79,5	33,2	83,3	96,8	0,82	4,7	10,4
Treatment 2 (Control)	87,6	34,6	85,3	102,6	0,86	5,1	11,2
Treatment 3	85,1	33,5	84,2	97,5	0,83	4,2	9,6
Treatment 4	82,7	30,7	82,5	94,2	0,79	4,0	8,7
CV (%)		3,72	1,10	1,31	6,51	6,80	6,02
LSD (05)		2,41	1,88	2,52	0,92	0,61	1,19

Germination rate: The treatments had a germination rate of 79.5-85.1%, of which the lowest was the treatment sown on February 20, 2022, which was 8.1% lower than the control, due to being sown in the earliest Spring crop so low temperatures affected the germination rate.

The plant height of the treatments at the branching stage ranged from 30.7 - 34.6 cm, similar to the control. The plants in the first and third treatments at the flowering stage were close in height to the control. During the flowering stage, the treatment sown on March 22, 2022 had a plant height of 2.8 cm lower than the control with a 95% confidence level. During the harvesting stage the first and third treatments were equivalent to the control in height. The treatment sown on March 22, 2022 had a plant height of 2.6 cm lower than the control with a 95% confidence level.

The treatments had stem diameters of 0.79-0.86 cm which were equivalent to the control. The number of level 1 branches of the treatment sown on March 22, 2022 were 1.1 lower than the control with 95% confidence, while the remaining treatments were equivalent to the control. The number of level 2 branches of the treatment sown on February 20, 2022 was equivalent to the control, meanwhile those of the treatments sown on March 12, 2022 and March 22, 2022 were lower than the control by 1.6-2.5 branches with 95% confidence.

This shows that the growth and development ability of the treatments sown at different times in the spring and autumn crops are affected by specific external conditions such as weather and climate. In the spring crop, the germination and seedling stages are affected due to low temperature and slow growth rate.

Table 3.3. Effect of planting time on female flowering, fruit setting rate and fruit morphology

Treatment	Indicators			
	Female flowers/plant (Flowers)	Fruit setting rate (%)	Fruit height (Cm)	Fruit diameter (Cm)
Treatment 1	6,01	53,24	7,62	8,74
Treatment 2 (Control)	6,07	56,01	7,34	8,91
Treatment 3	5,97	51,93	6,93	7,63
Treatment 4	5,86	49,49	6,14	7,32
CV (%)	6,71		3,51	4,21
LSD (05)	0,68		0,48	0,67

The growth indicators of the treatments in the Spring crop showed that the number of female flowers per plant of the treatments did not differ from the control. The fruit set rate of the treatment sown on February 20, 2022 was equivalent to the control, while the treatments sown on March 12, 2022 and March 22, 2022 had a lower fruit set rate than the control by 3.56 - 8.33%. The fruit height of the treatment sown on February 20, 2022 was similar to the control, while the fruit height of the treatments sown on March 12, 2022 and March 22, 2022 were 1.2cm smaller than the control at a 95% confidence level. The fruit diameter of the treatment sown on February 20, 2022 was equivalent to the control; The treatment sown on

March 12, 2022 and March 22, 2022 had fruit diameters that were 1.28-1.59cm smaller than the control at a 95% confidence level.

3.2. The influence of planting time on the main pests and diseases of F1 VA.68 melon variety

The ability to resist pests and diseases of melons depends on many factors and external conditions such as temperature, rainfall, air humidity, light. With the same variety, the same care conditions but if planted at different times, the ability to resist pests and diseases varies. Through monitoring the planting time of melon variety F1 VA.68 in spring on rice fields, the ability to resist pests and diseases is shown in tables 3.4 and 3.5 as follows

Table 3.4. The influence of planting time on the occurrence of some major pests and diseases in the Spring crop

Treatment	Spring crop (Frequency)			
	Green worm	Melon beetle	Green wilt	Epilogue
1	-	++	+	+
2 (Control)	-	++	+	+
3	+	+++	++	+
4	+	+++	++	+

Note:

Frequency < 5%: - Very rare

Frequency 5 - 25%: + Uncommon

Frequency 25 - 50%: ++ Common

Frequency > 50%: +++ Very common

Major pests in the spring crop are green worms and melon beetles. The level of damage caused by green worms in the first treatment is equivalent to the which was very rare (-), while the third and fourth treatments had an uncommon frequency (+). Melon beetles are common pests on melon plants, causing damage at all stages from seedling stage to flowering and fruit setting, mainly at the branching stage to fruit setting stage. They are active in the early morning and late afternoon, causing damage to the top and young leaves; melon beetles are harmful to all treatments, of which the first treatment is damaged similarly to the control with a common frequency (++); for the other treatments, the damage is more concentrated, with a very common frequency (+++).

The main diseases in melons are wilt and anthracnose. Wilt occurs and develops strongly in conditions of high temperature, high humidity, alternating sunshine, high humidity, and sandy soil. Wilt in the first treatment appeared at the uncommon level (+), similar to the control,

the other treatments were sown later, leading favorable temperature and humidity conditions for the disease to develop and cause a lot of damage, with a frequency of occurrence at the common level (++). Anthracnose appears in hot weather conditions and heavy raining, which makes the disease develop and damage spring melons, appearing from the flowering to harvesting stage. The first treatment is slightly damaged, similar to the control, with a frequency of occurrence at the uncommon level (+); the other treatments were sown later in the late season and had more damage, with a frequency of occurrence at the common level (++).

3.3. Effect of planting time on yield components and yield

Different planting times of the treatments in the Spring crop affected the growth and development ability, the ability to resist pests and diseases, thereby affecting the factors that make up the yield and productivity of the F1 VA.68 melon variety, shown in Table 3.5 as follows:

Table 3.5. Effect of planting time on yield components and yield of F1 VA.68 melon variety

Treatment	Spring crop			
	Number of fruits/tree (fruit)	Fruit weight (gr)	Theoretical yield (Tons/ha)	Actual yield (Tons/ha)
1	3,2	340,1	133,0	114,
2 (Control)	3,4	351,2	154,2	130,6
3	3,1	320,4	124,3	104,5
4	2,9	300,5	104,1	87,
CV (%)	7,62	6,21		3,10
LSD (05)	0,48	0,45		6,79

The number of fruits per tree of the first and third treatments were equivalent to the control, while the fourth treatment had 2.9 fruits per tree which was the lowest number, lower than the control at the 95% confidence level. The fruit weight of the first and third treatment were equivalent to the control, while the last treatment had a lower fruit weight than the control at the 95% confidence level.

Theoretical yield is based on the results of the yield components. The results of theoretical yield in the Spring crop showed that the treatments had theoretical yields ranging from 104.1 to 133.0 quintals/ha, lower than the control by 20.7 to 50.1 quintals/ha. The actual yield of the formulas ranged from 87.3 to 114.4 quintals/ha, lower than the control by 16.2 to 43.3 quintals/ha at the 95% confidence level.

This shows that the planting time of F1 VA.68 melon on rice fields in the spring crop affects the factors that contribute to yield and productivity, most clearly the treatment sown on March 22, 2022, which was sown late in the spring crop and was affected by external conditions and pests and diseases that affect density, pests and diseases concentrated to cause damage, reduced the ability to photosynthesize, reduced the process of nutrient accumulation, the leaves withered more quickly, leading to reduced fruit weight and low yield. The treatment sown on February 20, 2022, was sown the earliest in the spring crop, and was affected by low temperatures at the beginning of the seedling stage.

3.4. Assessing the impact of planting time on economic efficiency

Economic efficiency not only reflects the growth and development of the F1 VA.68 melon variety sown at different times, but also reflects the ability to resist major pests and diseases, the ability to achieve high yields, and the product price at harvest time. Through monitoring the sowing time of the F1 VA.68 melon variety on rice fields in the spring crop, the results are shown in Table 3.6 as follows:

Table 3.6. Effect of planting time of F1 VA.68 melon variety on rice fields in spring crop on economic efficiency

Treatment	Spring crop (VND/ha)		
	Total revenue	Total cost	Profit
1	217.360.000	137.176.600	80.183.4
2 (Control)	195.900.000	134.656.600	61.243.400
3	167.200.000	138.356.600	28.843.400
4	157.140.000	144.436.600	12.703.4

Treatment 1: The plants were sown the earliest. Although the yield was not as high as the control, but the time of harvest was at the beginning of the season, so the average selling price was (19,000 VND/kg), higher than the product price at the

time of the main harvest by (4,000 VND/kg). The total cost of the first treatment was higher than the control in terms of labor and pesticides. The profit was 18,940,000 (VND/ha) higher than the control.

Treatment 3: The profit was 32,400,000 (VND/ha), lower than the control. Although the product price at the time of harvest was higher than the control (1,000 VND/kg), the yield was lower than the control (26.1 quintals/ha), so the total revenue was low and the total cost was higher than the control in terms of labor and pesticides.

Treatment 4: Had the lowest profit in the Spring crop, 48,540,000 (VND/ha) lower than the control, due to the lowest yield, although the market price of the product at the time of harvest was also at the end of the season, with a price of (18,000 VND/kg), higher than the control by (3,000 VND/kg). Also, the total cost is higher than the control, because this treatment was sown the latest, pests and diseases are concentrated, increasing the cost of labor and pesticides.

4. Conclusion and recommendations

4.1. Conclusion

- **Effect of planting time on growth and development:**

The treatment sown on February 20, 2022 had the longest growth and development time, 5 days longer than the control. The treatment sown on March 12, 2022 had a total time longer than the control by 4 days. The treatment sown on March 22, 2022 had the shortest total time, 9 days shorter than the control. The emergence rate of the treatments ranged from 79.5-85.1%, in which the emergence rate treatment sown on February 20, 2022 was 8.1% lower than the control. The plant height of the treatments sown on February 20, 2022 and March 12, 2022 was similar to the control; while the treatment sown on March 22, 2022 had a 2.6cm lower plant height than the control.

- Effect of planting time on pest and disease situation:

The treatment sown on February 20, 2022 had the same pest and disease resistance as the control; the treatment sown on March 12, 2022 and the treatment sown on March 22, 2022 were more susceptible to melon beetles, wilt, and anthracnose than the control, with damage occurring at common and very common frequencies.

- Effect of planting time on yield and productivity components:

The number of fruits per plant and fruit weight of the treatment sown on February 20, 2022 and March 12, 2022 were equivalent to the control; the treatment sown on March 22, 2022 had the lowest number of fruits per plant at 2.9 fruits and the fruit weight was 39.6 grams lower than the control. The theoretical yield of the treatments ranged from 103.9 to 133.0 tons/ha, which was from 20.7 to 49.8 tons/ha lower than the control. The actual yield of the formulas ranged from 87.3 to 114.4 tons/ha, of which the lowest was the treatment sown on March 22, 2022, 43.3 tons/ha lower than the control.

- The effect of sowing time on yield and economic efficiency:

The formula sown on February 20, 2022 achieved the highest economic efficiency of 80,183,400 (VND/ha), which was 18,940,000 (VND/ha) higher than the control. The treatment sown on March 12, 2022 achieved 28,843,400 (VND/ha), 32,400,000 (VND/ha) lower than the control. The treatment on March 22, 2022 achieved the lowest efficiency of 12,703,400 (VND/ha) and was 48,540,000 (VND/ha) lower than the control.

4.2. Recommendation

For the Spring crop in Tuyen Quang, the planting time of F1 VA.68 melon variety on rice fields should be from February 20 to March 10.

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