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Influence of different pulses through drip, irrigation and fertigation levels coupled with mulch on number of fruits per vine of muskmelon (*Cucumis Melo* L.)

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Abstract
Two field trials were conducted at the Instructional Farm of Department of Irrigation and Drainage Engineering, College of Agricultural Engineering and Technology, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, India, during the two successive *Rabi* seasons of 2021-22 and 2022-23. The objective of the present study is to investigate the influence of different pulse, irrigation and fertigation levels on number of fruits per vine of muskmelon. The field experiment was arranged in 36 treatment combinations and each treatment was replicated three times using a strip-split plot design. This experiment consists of four pulse levels as vertical factor *viz*., P_1 - One time per day, P_2 - Two times per day, P_3 - Three times per day, and P_4 - Four times per day with an interval of 30 minutes between two successive pulse levels, three fertigation levels as horizontal factor *viz*., F_1 - 80, F_2 - 85 and F_3 - 100% of RDF and three irrigation levels as sub plot factor *viz*., I_1 (0.7 × ETc), I_2 (0.85 × ETc) and I_3 (1.0 × ETc). The results showed that the pulse, irrigation and fertigation levels and their interaction had significant effects with a probability level of 5% on number of fruits per vine, for both years (2021-22 and 2022-23) and pooled data. The highest number of fruits per vine was found in P_4 (2.3, 2.1 and 2.20), I_3 (2.2, 2.0 and 2.1), F_3 (2.2, 2.1 and 2.1), P_4I_3/P_4I_2 (2.4, 2.2 and 2.3), P_4F_3 (2.5, 2.3 and 2.4), F_3I_3 (2.4, 2.2 and 2.3) and $P_4I_3F_3$ (2.6, 2.5 and 2.6) treatment combinations for the year 2021-22, 2022-23 and pooled analysis, respectively. There was an increasing trend in the number of fruits per vine of muskmelon as the number of pulse, irrigation and fertigation levels increased. As a result, a comprehensive insight helps promote muskmelon production by optimum number of pulse, irrigation and fertigation levels in the Konkan region of Maharashtra state.

Keywords: Number of fruits per vine, muskmelon, reference evapotranspiration (ET_0), depth of irrigation, recommended dose of fertilizer (RDF)

Introduction
The Muskmelon belongs to the family Cucurbitaceae and is considered a vegetable crop being used as a delicious fruit. It is the fourth most important fruit in the world fresh fruit market with several varieties (Mabalaha *et al*., 2007) [15]. It may also be used as a cooked vegetable in its green stage. The ripened fruits are very nutritious and are used for table purpose as well as refreshing drinks. The fruits contain 90 percent water which makes it useful to prevent dehydration and reduce constipation. The potassium present in it is quite helpful in lowering blood pressure (Lester and Hodges, 2008) [14]. It is a rich source of vitamin C, ß-carotene (vitamin A), carbohydrates, sugars, protein and traces of vitamin B6, vitamin K, niacin, vitamin B2, and vitamin B1. Musk melon is a good source of nutrients that improves vision, sooth stomach ulcers, and an immune booster.
India is the 3rd largest producer of Muskmelon after China (13.49 Mt) and Turkey (1.8 Mt) during 2019 (https://www.tridge.com/intelligences/cantaloup/production). The area under cultivation of musk melon in India and its production during the year 2015-16, 2016-17 and 2017-18 was 0.45 lakh ha and 9.34 lakh tonnes, 0.50 lakh ha and 10.97 lakh tonne, and 0.54 lakh ha and 12.30 lakh tonne, respectively. Muskmelon is majorly cultivated in Uttar Pradesh, followed by Andhra Pradesh, Panjab and Madhya Pradesh. In Maharashtra, the area of musk melon and its production during the year 2015-16 and 2017-18 was 460 ha and 9190 MT, and 350 ha and 7080 MT respectively (Anonymous, 2018) [6].

Muskmelon needs warm dry climatic conditions with enough sunshine hours for better growth and production. The optimum temperature required for plant growth is 18-28 °C; if the temperature falls below 12 °C then severe retardation occurs in plant growth. Even though Muskmelon withstands very high temperatures up to 40°C (Meena *et al*., 2019) [18]. Dry weather with clear sunshine during ripening ensures higher sugar content, flavour and a high percentage of marketable yield. Muskmelon can be grown in a wide range of soils, but it grows better in well-drained sandy loam or loam soils rich in organic matter. It grows well in the pH range of 6.0-7.0 (Thind and Mahal, 2020) [24].

The application of crop water requirement through drip irrigation with 75% of crop evapotranspiration (ET_c) resulted in higher yield of potato i.e. 32.1 t. ha^{-1}, which was 26% higher than that of furrow irrigation (Saggu and Kaushal, 1992) [23]. The drip irrigation system showed higher water use efficiency (1.21 kg ha^{-1} m^{-3}) than the furrow irrigation (0.44 kg ha^{-1} m^{-3}) in chilly (Chandio and Yaseen, 1995) [8]. The application of crop water requirement into six pulses with an interval of 50 minutes between two successive pulse irrigation resulted 5.78% higher yield with 25% water saving without mulch and 50% with mulch over continuous irrigation with 100% of crop evapotranspiration (ET_c) in lettuce under sandy soil (Almeida *et al*., 2015) [4].

So many researchers have conducted scientific studies on various cash crops such as strawberry, capsicum, cabbage, cauliflower, watermelon, okra, onion, carrot, and broccoli in the Konkan region (Kadam *et al*., 2015; Madane *et al*., 2018a; Thokal *et al*., 2020; Rawat *et al*., 2022; Bhagwat *et al*., 2023) [12, 16, 25, 22, 7]. Therefore, there is a need for scientific study on the muskmelon crop in the Konkan region of Maharashtra state.

Materials and Methods

The field experiment was conducted during two consecutive *Rabi* seasons of 2021-22 and 2022-23, at the Instructional Farm of Department of Irrigation and Drainage Engineering, College of Agricultural Engineering and Technology, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli. The experimental site is located at 17° 45' 13.1" N latitude and 73° 10' 47.4" E longitude with an altitude of 250 m above M.S.L. Climatic conditions were humid with average annual rainfall at Dapoli region is 3692 mm and average minimum to maximum air temperatures vary between 8 °C to 36.0 °C (Mandale, 2016) [17]. The average relative humidity of the site was about 50% (Gaikwad, 2013) [9].

The two experimental trials were conducted during the *Rabi* season on muskmelon. The time period for the first and second trials of research work is from 22nd November 2021 to 24th February 2022, and 18th November 2022 to 20th February 2023, respectively. The soil texture of the experimental site was sandy clay loam and having field capacity - 26.02%, permanent wilting point - 12.50%, bulk density - 1.68 g.cm^{-3}, basic infiltration rate - 6.03 cm.hr^{-1}, pH - 6.5 and EC - 0.4 respectively.

The field experiment was designed in strip-split plot with three replications of each treatment. The area of the experimental plot was 621.25 m^2 (35.5 m × 17.5 m) and had a bed size of 3.5 m × 1.0 m. The recommended dose of fertiliser for the muskmelon crop is 200:100:100 kg ha^{-1} of NPK (Nitrogen (CH_4N_2O), Phosphorus (KH_2PO_4) and Potassium (K_2O), Kg.ha^{-1}) (TNAU, Coimbatore) was considering applying through water soluble fertilizers. The daily water requirement of muskmelon under a pulse drip irrigation system was worked out by following, FAO-56 Penman-Monteith method (Allen *et al*., 1998) [3]. The available emitter discharge and emission uniformity of the drip irrigation system was recorded as 2.16 L.h^{-1} and 91.0% for the year 2021-2022 and 2.16 L.h^{-1} and 90.8% for the year 2022-2023, respectively. The statistical analysis was carried out by a statistical method known as 'Analysis of variance' appropriate for the 'Strip-split-plot design' using Microsoft Excel® as a computing tool. The standard error (SE) and critical difference (CD) at a five percent level of significance for each factor and their interaction were worked out (Gomez and Gomez, 1984) [10].

Results and Discussion

1. Effect of pulse levels on average number of fruits per vine

The effect of different pulses through drip on average number of fruits per vine during the year 2021-22, 2022-23 and pooled analysis are presented in Table 1 and as shown in Fig. 1. The data presented in Table 1, it is revealed that the number of fruits per vine of muskmelon was increased from P_1 to P_4, during the year 2021-22, 2022-23 and pooled data. From the same table, it is reported that the effect of different pulse levels on number of fruits per vine was found to be significant during the year 2021-22, 2022-23, and pooled analysis. The maximum number of fruits per vine 2.3, 2.1 and 2.2 was observed in pulse level P_4 during the year 2021-22, 2022-23 and pooled analysis, which was found significantly superior to other pulse levels, except the pulse treatment P_3 (2.0) in the year 2022-23. This might happen due to the uniform soil moisture distribution at higher pulse levels.

Table 1: Effect of different pulses through drip on average number of fruits per vine

Pulse levels	2022	2023	Pooled data
P_1	1.9	1.7	1.8
P_2	2.0	1.8	1.9
P_3	2.2	2.0	2.1
P_4	2.3	2.1	2.2
S.E.(m)±	0.0	0.0	0.0
C.D. at 5%	0.0	0.1	0.0

Abdelraouf *et al*., (2022) [1] claimed that the yield of cucumber increases as the number of pulse levels increases from P_1 to P_3. The yield component consists of number of plants per ha, average fruit weight and number of fruits per plant. Based on this, it may be concluded that the number of fruits per vine of muskmelon increases as number of pulse levels increases. The present study found that the maximum number of fruits per vine in the pulse level P_4.

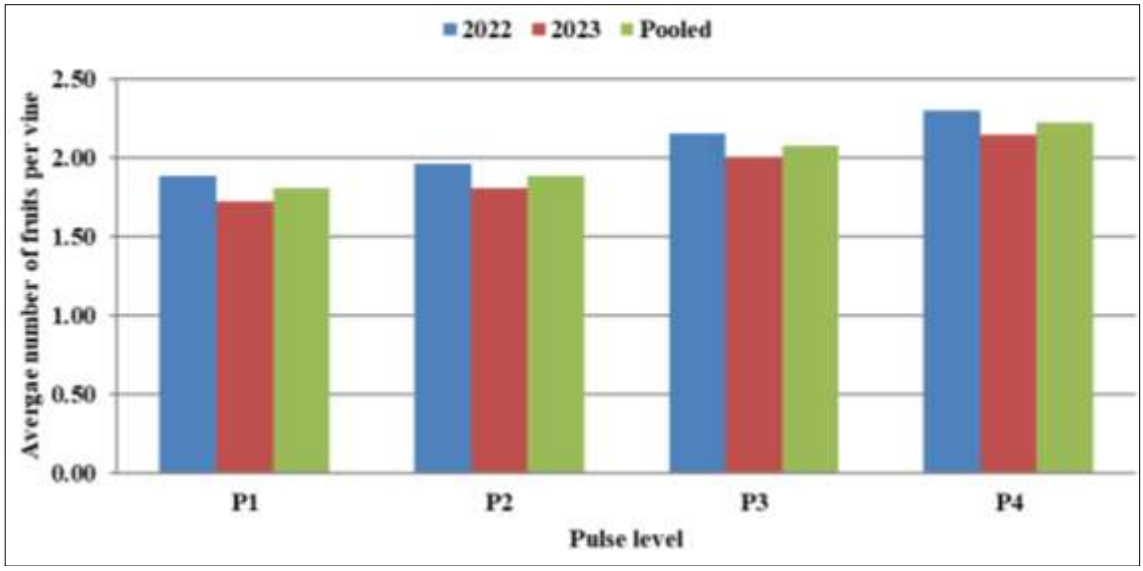

Fig 1: Effect of different pulse levels on average number of fruits per vine

2. Effect of irrigation levels on average number of fruits per vine

The influence of different irrigation levels on number of fruits per vine of muskmelon was observed to be significant during the year 2021-22 and 2022-23, and pooled analysis are reported in Table 2 and graphically shown in Fig. 2. It is noticed from Table 2 that the number of fruits per vine increases from I_1 to I_3 during the year 2021-22, 2022-23 and pooled analysis. The maximum number of fruits per vine of muskmelon was found to be 2.2, 2.0 and 2.1 in irrigation level, I_3 during the year 2021-22, 2022-23 and pooled data, which was significantly superior to other irrigation levels. It is also revealed that the lowest number of fruits per vine i.e. 2.0, 1.8 and 1.9 was observed in irrigation level, I_1 during the year 2021-22, 2022-23 and pooled data, respectively. It might be the result of the creation of favourable conditions in the root zone at optimum irrigation level, I_3.

Table 2: Effect of different irrigation levels on average number of fruits per vine of muskmelon

Irrigation level	2022	2023	Pooled data
I_1	2.0	1.8	1.9
I_2	2.1	1.9	2.0
I_3	2.2	2.0	2.1
S.E.(m)±	0.0	0.0	0.0
C.D. at 5%	0.0	0.0	0.0

The present investigation findings are consistent with those of Utkhede (2018) [26] on the number of fruits per vine of muskmelon. Their study concluded that the number of fruits per vine increases as the irrigation level increases.

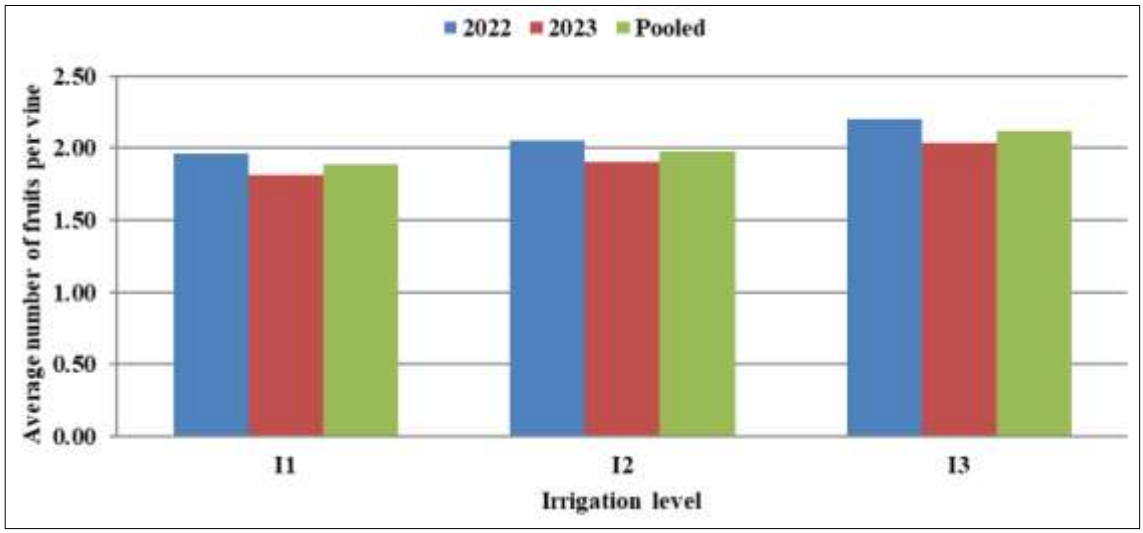

Fig 2: Effect of irrigation levels on average number of fruits per vine

3. Effect of fertigation levels on average number of fruits per vine: The effect of different fertigation levels on number of fruits per vine of muskmelon was found to be significant during the year 2021-22, 2022-23, and pooled analyses are reported in tabular and graphical form in Table 3 and Fig. 3.

Table 3: Effect of fertigation levels on average number of fruits per vine of muskmelon

Fertigation levels	2022	2023	Pooled data
F_1	1.9	1.7	1.8
F_2	2.1	2.0	2.0
F_3	2.2	2.1	2.1
S.E.(m)±	0.0	0.0	0.0
C.D. at 5%	0.1	0.1	0.1

The number of fruits per vine of muskmelon increases from F_1 to F_3, during the year 2021-22, 2022-23 and pooled analysis as reported in Table 3. The maximum number of fruits per vine of muskmelon was observed to be 2.2, 2.1 and 2.1 in fertigation level, F_3 for the year 2021-22, 2022-23 and pooled data, which is at par with the fertigation level F_2 (i.e. 2.1, 2.0 and 2.0). Additionally, it is also noted that the minimum number of fruits per vine was found to be 1.9, 1.7 and 1.8 in fertigation level F_1 during the years 2021-22, 2022-23 and pooled analysis, respectively. It could be because the soil was infused with the optimum quantity of nutrients from the NPK source at regular intervals, which facilitated the growth and yield of muskmelon i.e. number of fruits per vine.

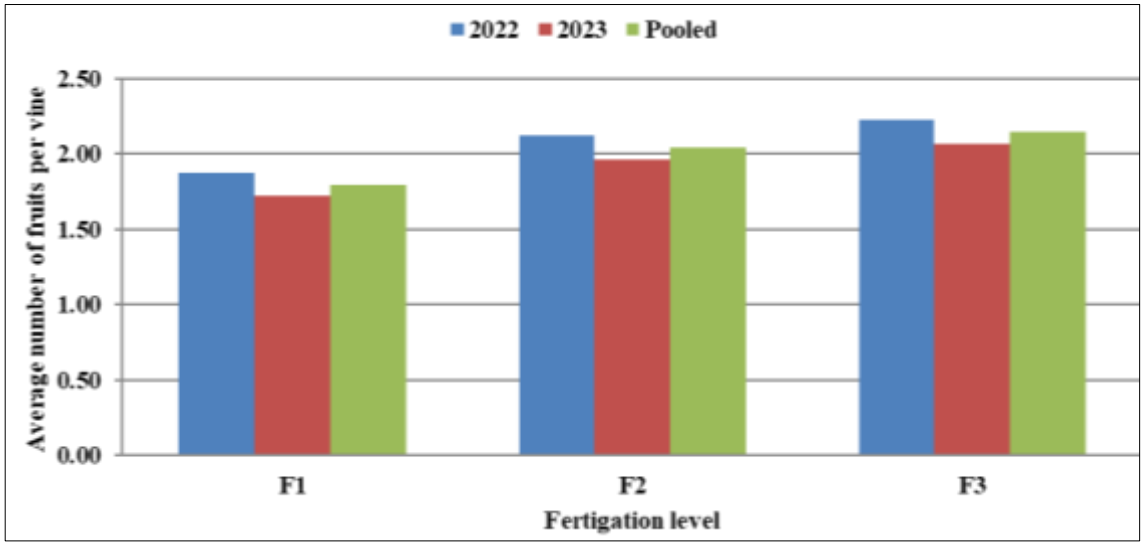

Fig 3: Effect of fertigation levels on average number of fruits per vine

Table 4: Effect of different pulse and irrigation levels on average number of fruits per vine of muskmelon

Treatment combination	2022	2023	Pooled data
P_1I_1	1.8	1.7	1.8
P_1I_2	1.8	1.7	1.7
P_1I_3	2.0	1.8	1.9
P_2I_1	1.9	1.7	1.8
P_2I_2	1.9	1.8	1.8
P_2I_3	2.1	1.9	2.0
P_3I_1	2.0	1.8	1.9
P_3I_2	2.2	2.0	2.1
P_3I_3	2.3	2.1	2.2
P_4I_1	2.2	2.0	2.1
P_4I_2	2.3	2.2	2.3
P_4I_3	2.4	2.2	2.3
S.E.(m)±	0.0	0.0	0.0
C.D. at 5%	0.1	0.1	0.1

These findings are consistent with Monali (2016) [19] who observed that the number of fruits per vine increases as the quantity of fertigation level increases in the case of muskmelon.

4. Interaction effect of different pulse and irrigation levels on average number of fruits per vine

The interaction effect of different pulse and irrigation levels on number of fruits per vine of muskmelon is analysed statistically and results are presented in Table 4 and graphically shown in Fig. 4.

The interaction effect of different pulse and irrigation levels on number of fruits per vine of muskmelon was found to be significant during the year 2021-22, 2022-23, and pooled analysis. From Table 4, it is revealed that the maximum number of fruits per vine during the year 2021-22, was found to be 2.4 in P_4I_3, which is at par with P_4I_2 and P_3I_3 treatments i.e. 2.3. For the year 2022-23, the number of fruits per vine was found to be 2.2 in both treatment combinations P_4I_3 and P_4I_2, and which is at par with P_3I_3 (2.1). Similarly, in case of pooled analysis, the maximum number of fruits per vine was noticed in both treatment combinations i.e. P_4I_3 and P_4I_2 (2.3), and which is at par with P_3I_3 (2.2). The data recorded in Table 4, it is revealed that the minimum number of fruits per vine i.e. 1.8 and 1.7 during the year 2021-22 and 2022-23 in both treatment combinations i.e. P_1I_1 and P_1I_2. For pooled analysis, the lowest number of fruits per vine was observed in the P_1I_2 treatment combination (i.e. 1.7). This might happen due to the improved soil moisture distribution at a higher pulse

level and optimum soil moisture availability at irrigation levels I_2 and I_3, which ultimately leads to the maximum number of fruits per vine in P_4I_3 and P_4I_2 treatment combinations.

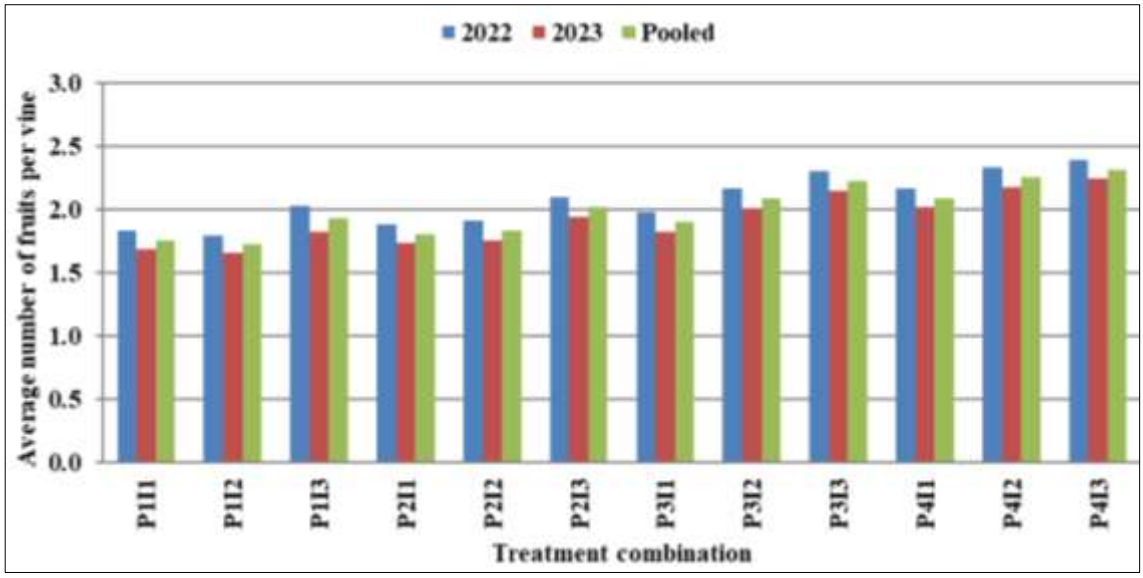

Fig 4: Interaction effect of different pulse and irrigation levels on average number of fruits per vine

The influence of various pulse and irrigation levels on number of fruits per vine of muskmelon has some similarities with the combined findings of Abuarab *et al*., (2011) [2] and Utkhede (2018) [26]. The plant organs number is increased by increasing the number of pulses from P_1 to P_4 for green bean as claimed by Abuarab *et al*., (2011) [2]. Utkhede (2018) [26] study revealed that the number of fruits per vine increased as the irrigation level increased in the case of muskmelon crop.

5. Interaction effect of different pulse and fertigation levels on average number of fruits per vine

The response of different pulse and fertigation levels on number of fruits per vine of muskmelon was worked out statistically and results are presented in Table 5 and shown graphically in Fig. 5.

Table 5: Effect of pulse and fertigation levels on average number of fruits per vine

Treatment combination	2022	2023	Pooled data
P_1F_1	1.7	1.5	1.6
P_1F_2	2.0	1.8	1.9
P_1F_3	2.0	1.8	1.9
P_2F_1	1.8	1.6	1.7
P_2F_2	2.0	1.9	1.9
P_2F_3	2.1	2.0	2.0
P_3F_1	2.0	1.8	1.9
P_3F_2	2.2	2.0	2.1
P_3F_3	2.3	2.1	2.2
P_4F_1	2.1	1.9	2.0
P_4F_2	2.3	2.2	2.2
P_4F_3	2.5	2.3	2.4
S.E.(m)±	0.0	0.0	0.0
C.D. at 5%	0.1	0.1	0.0

The interaction effect of various pulse and fertigation levels on number of fruits per vine was observed to be significant in the year 2021-22, 2022-23 and pooled data. The data presented in Table 5, it is noticed that the maximum number of fruits per vine of muskmelon during the year 2021-22, 2022-23 and pooled analysis was found in P_4F_3 treatment combination i.e. 2.5, 2.3 and 2.4, respectively and which is at par with P_4F_2 (2.2) in the year 2022-23. From Table 5, it is further revealed that the P_4F_3 treatment combination was significantly superior to all other treatments, except the year 2022-23. This may happen due to the improved soil distribution at pulse level, P_4 and optimum nutrient accessibility to the plant at fertigation level, F_3. The influence of various pulse and fertigation levels on number of fruits per vine of muskmelon is pioneer research work as a fertilizer variable is included for the first time with pulse levels; however, these results have some similarities findings with Abuarab *et al*., (2011) [2], Monali (2016) [19]. The findings of Abuarab *et al*., (2011) [2] were on pulse levels whose result concluded that plant organs increased by increasing the number of pulses from P_1 to P_4 for the green bean. Additionally, Monali (2016) [19] found that the number of fruits per vine of muskmelon was found to be increased with an increase in fertigation levels. The result revealed from the present study that the maximum number of fruits per vine at a higher level of pulse and fertigation i.e. P_4F_3 treatment combination.

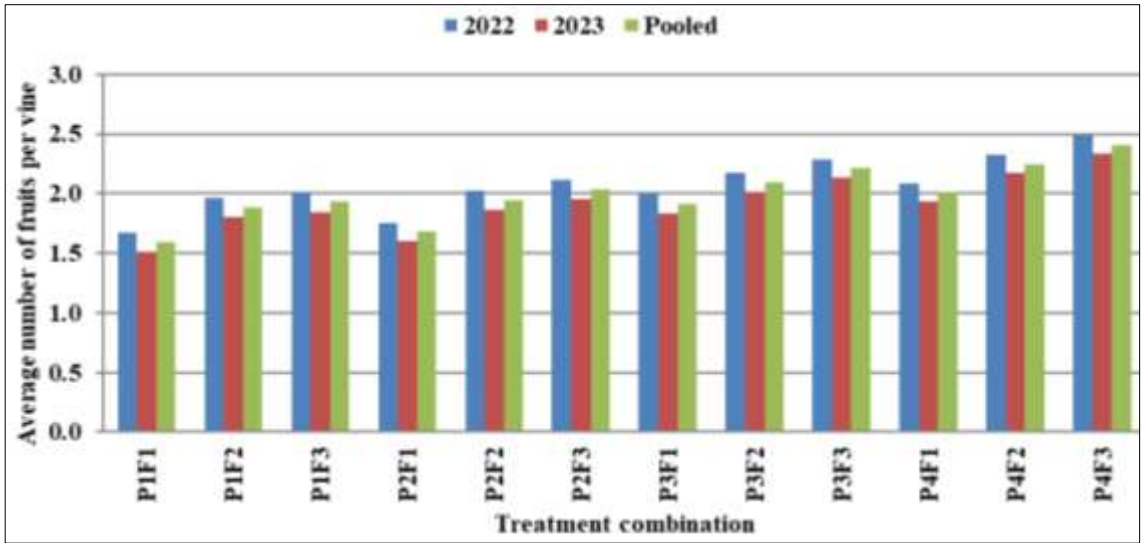

Fig 5: Interaction effect of different pulse and fertigation levels on average number of fruits per vine

6. Interaction effect of different irrigation and fertigation levels on average number of fruits per vine

The influence of different irrigation and fertigation levels on number of fruits per vine of muskmelon is evaluated statistically and results are presented in Table 6 and graphically shown in Fig. 6.

Table 6: Effect of different irrigation and fertigation levels on average number of fruits per vine

Treatment combination	2022	2023	Pooled data
F_1I_1	1.8	1.7	1.7
F_2I_1	2.0	1.8	1.9
F_3I_1	2.1	1.9	2.0
F_1I_2	1.9	1.7	1.8
F_2I_2	2.1	1.9	2.0
F_3I_2	2.2	2.0	2.1
F_1I_3	1.9	1.8	1.9
F_2I_3	2.3	2.1	2.2
F_3I_3	2.4	2.2	2.3
S.E.(m)±	0.0	0.0	0.0
C.D. at 5%	0.0	0.0	0.0

The interaction effect between the irrigation and fertigation levels on number of fruits per vine during the year 2021-22, 2022-23 and pooled analysis was found to be significant. It is revealed from Table 6 that the treatment combination of F_3I_3 was observed to be significantly superior to all other treatments for the year 2021-22, 2022-23 and pooled analysis. The data given in Table 6, it is revealed that the maximum and minimum number of fruits per vine i.e. 2.4, 2.2 and 2.3, and 1.8, 1.7 and 1.7 was observed in F_3I_3 and F_1I_1 treatment combination in the year 2021-22, 2022-233 and pooled data, respectively. This could be the outcome of adequate soil moisture content (i.e. field capacity) and optimum availability of nutrients for the plants, which in turn aid in the production of maximum number of fruits per vine.

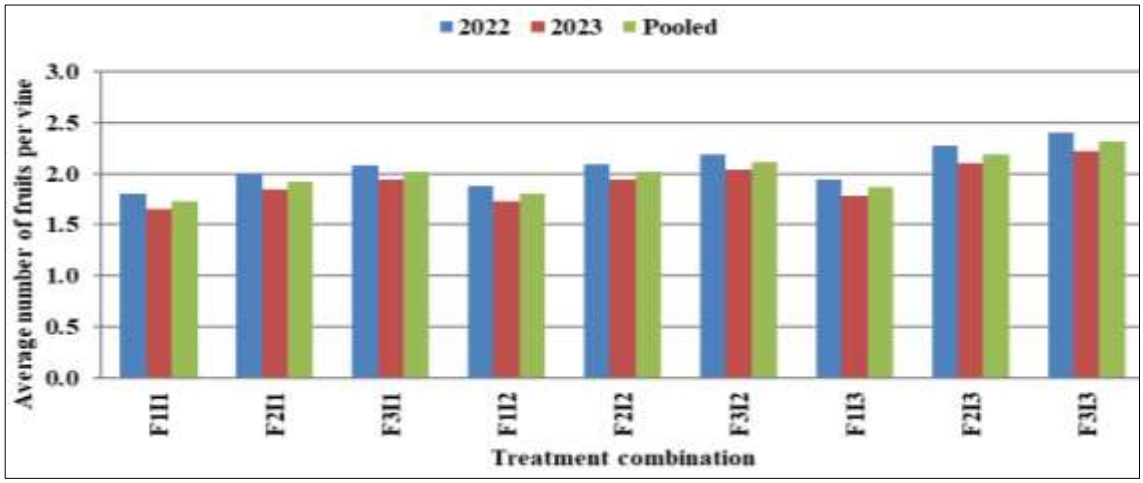

Fig 6: Interaction effect of different irrigation and fertigation levels on average number of fruits per vine

The responses of irrigation and fertigation levels on average number of fruits per vine of muskmelon have similarities with the collective findings of Monali (2016) [19] and Utkhede (2018) [26]. Utkhede (2018) [26] stated that the number of fruits per vine increased as the irrigation level increased in case of the muskmelon crop. In case of fertigation levels, the number of fruits per vine of muskmelon was found to be increased with an increase in fertigation levels as claimed by Monali (2016) [19].

7. Interaction effect of different pulse, irrigation and fertigation levels on average number of fruits per vine

The response of different pulse, irrigation and fertigation levels on the number of fruits per vine of muskmelon is analysed statistically and outcomes are presented in Table 7 and graphically depicted in Fig. 7. The interaction effect of various pulse, irrigation and fertigation levels on number of fruits per vine was noticed to be significant for the years 2021-22 and 2022-23 and pooled data as reported Table 7. The maximum number of fruits per vine found in the $P_4I_3F_3$ treatment combination was observed to be 2.6, 2.5 and 2.6 during the year 2021-22, 2022-23 and pooled analysis, which is at par with both treatments $P_3I_3F_3$ and $P_4I_2F_3$ (2.5) in the 2021-22 and $P_4I_2F_3$ (2.4) in the year 2022-23. Similarly, the lowest number of fruits per vine was recorded in a treatment combination of $P_1I_1F_1$ i.e. 1.6, 1.4 and 1.5 for a given period. The treatment combination $P_4I_3F_3$ produced the maximum number of fruits per vine. This might happen due to the ample amount of soil moisture and nutrient availability to the plants helps in creating a congenial environment in the root zone at higher pulse level.

Table 7: Interaction effect of different pulse, irrigation and fertigation levels on average number of fruits per vine

Treatment combination	2022	2023	Pooled data
$P_1I_1F_1$	1.6	1.4	1.5
$P_1I_1F_2$	1.9	1.8	1.8
$P_1I_1F_3$	2.0	1.8	1.9
$P_1I_2F_1$	1.7	1.5	1.6
$P_1I_2F_2$	1.8	1.7	1.8
$P_1I_2F_3$	1.9	1.7	1.8
$P_1I_3F_1$	1.7	1.6	1.7
$P_1I_3F_2$	2.1	1.9	2.0
$P_1I_3F_3$	2.2	2.0	2.1
$P_2I_1F_1$	1.7	1.6	1.6
$P_2I_1F_2$	1.9	1.8	1.8
$P_2I_1F_3$	2.0	1.9	1.9
$P_2I_2F_1$	1.7	1.6	1.7
$P_2I_2F_2$	2.0	1.8	1.9
$P_2I_2F_3$	2.0	1.9	2.0
$P_2I_3F_1$	1.8	1.7	1.7
$P_2I_3F_2$	2.2	2.0	2.1
$P_2I_3F_3$	2.3	2.1	2.2
$P_3I_1F_1$	1.9	1.7	1.8
$P_3I_1F_2$	2.0	1.8	1.9
$P_3I_1F_3$	2.1	1.9	2.0
$P_3I_2F_1$	2.0	1.9	1.9
$P_3I_2F_2$	2.2	2.0	2.1
$P_3I_2F_3$	2.3	2.1	2.2
$P_3I_3F_1$	2.1	1.9	2.0
$P_3I_3F_2$	2.3	2.2	2.2
$P_3I_3F_3$	2.5	2.3	2.4
$P_4I_1F_1$	2.1	1.9	2.0
$P_4I_1F_2$	2.1	2.0	2.1
$P_4I_1F_3$	2.3	2.1	2.2
$P_4I_2F_1$	2.1	1.9	2.0
$P_4I_2F_2$	2.4	2.2	2.3
$P_4I_2F_3$	2.5	2.4	2.4
$P_4I_3F_1$	2.1	2.0	2.0
$P_4I_3F_2$	2.4	2.3	2.4
$P_4I_3F_3$	2.6	2.5	2.6
S.E.(m)±	0.0	0.0	0.0
C.D. at 5%	0.1	0.1	0.1

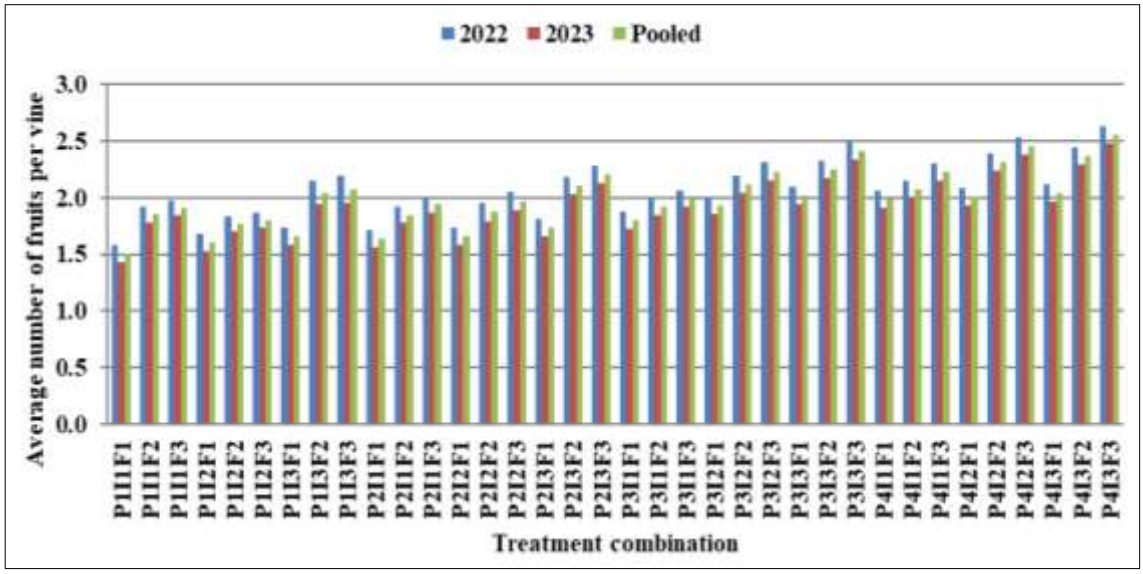

Fig 7: Interaction effect of different pulse, irrigation and fertigation levels on average number of fruits per vine

The influence of various pulse, irrigation and fertigation levels on number of fruits per vine of muskmelon is a pioneer research work that had some similarities with Rawat (2023) [21]. Rawat (2023) [21] reported that most of the yield contributing parameters showed higher values with treatment combination of $P_4I_2F_3$ i.e. Four pulse level + 100% of ET_c + 120% of RDF through WSF. The present study found that the maximum number of fruits per vine of muskmelon recorded in the $P_4I_3F_3$ treatment combination i.e. Four pulse + 100% of ET_c + 100% of RDF (200: 100: 100 kg/ha of N: P: K) through WSF.

Conclusion

The maximum values of average number of fruits per vine were observed in the $P_4I_3F_3$ treatment combination followed by $P_4I_2F_3$ and $P_3I_3F_3$. The results concluded from the present study that the treatment combination $P_4I_3F_3$ (i.e. P4 - Four pulse + I3 - 100% of ETc + F3 - 100% of RDF) can be adopted to get higher values of yield contributing parameters of muskmelon in the Konkan region of Maharashtra.

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