"EVALUATION OF CHILLI HYBRIDS (*Capsicum annuum* L.)"

by

Miss. Bochare Shubhangi Vilas
(Reg. No. 021/309)

A Thesis submitted to the
MAHATMA PHULE KRISHI VIDYAPEETH
RAHURI – 413 722, DIST. AHMEDNAGAR
MAHARASHTRA, INDIA

in partial fulfillment of the requirements for the degree

of

MASTER OF SCIENCE (HORTICULTURE)

in

VEGETABLE SCIENCE

DEPARTMENT OF HORTICULTURE

POST GRADUATE INSTITUTE
MAHATMA PHULE KRISHI VIDYAPEETH
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2023

CANDIDATE'S DECLARATION

I hereby declare that this thesis or part

there of has not been submitted

by me or other person to any

other University or Institution

for a Degree or

Diploma

Place : MPKV., Rahuri

Date : / /2023 **(Shubhangi V. Bochare)**

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CERTIFICATE

This is to certify that the thesis entitled, **"EVALUATION OF CHILLI HYBRIDS (*Capsicum annuum* L.)"** submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri Dist. Ahmednagar (M. S.) in partial fulfillment of the requirement for the award of the degree of **MASTER OF SCIENCE (HORTICULTURE)** in **VEGETABLE SCIENCE,** embodies the results of a piece of *bona fide* research work carried out by **Miss. BOCHARE SHUBHANGI VILAS,** under my guidance and supervision and that no part of the thesis has been submitted for any other degree or diploma.

The assistance and help received during the course of this investigation have been duly acknowledged.

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Maharashtra State, INDIA

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Place : MPKV., Rahuri

Date : / /2023 (S.A. Ranpise)

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To succeed in your mission, you must have single -minded devotion to your goal
-Dr .A.P.J. Abdul Kalam

"Hard work never fails, set your goal work hard achieve it, Success in a life"

First to all, I Bow my head to Shree with whose grace and blessing, I complete this task.

In every one's life, the day arises when one has to shape the feelings in words. Though formal and dead words cannot carry the fragrance of emotions with them, still they are the only available way to express emotions in such a formal acknowledgement. Sometimes the words become unable to express the feelings of mind, because the feelings of heart are beyond the reach of the words, when I came to complete this manuscript, so many memories have rushed through my mind which are full of gratitude to those who encouraged and helped me at various stages of this research work. It gives me immense pleasure to record my feelings at this place.

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Place : MPKV., Rahuri. (Shubhangi V. Bochare)

Date : / / 2023

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LIST OF ABBREVIATIONS AND SYMBOLS

%	:	Per cent
CD	:	Critical difference
Cm	:	Centimeter
DAS		Days after sowing
Fig.	:	Figure
G	:	Gram
et al.	:	And others (et alia)
etc.	:	Etcetera
Ha	:	Hectare
kg	:	Kilogram (s)
M	:	Meter (s)
viz.	:	Videlicet (Namely)
i.e.	:	That is
°C	:	Degree Celsius
cm^2	:	Centimeter square
Mm	:	Millimeter
No.	:	Number
Sr.	:	Serial
/	:	Per (or)
N	:	Nitrogen
P	:	Phosphorus
K	:	Potassium
T	:	Tonnes
cv.	:	Cultivar
RH	:	Relative Humidity
RBD	:	Randomized Block Design
resp.		Respectively
Sem	:	Standard error of the mean
C.V.		Coefficient of Variance
Hrs	:	Hours
Max.	:	Maximum
Min.	:	Minimum
FYM	:	Farm Yard Manure
MPKV.	:	Mahatma Phule Krishi Vidyapeeth
Avg.	:	Average
Mss	:	Mean Sum of Square
Q	:	Quintal
t/ha	:	Tonnes per hectare
Sel.	:	Selection
w.r. t.	:	With respect to

ABSTRACT

EVALUATION OF CHILLI HYBRIDS (*Capsicum annuum* L.)

By

Miss. Bochare Shubhangi Vilas

A candidate for the degree of

MASTER OF SCIENCE (HORTICULTURE)

in

VEGETABLE SCIENCE

2023

Research Guide	**:**	**Mrs. D.D. Patil**
Department	**:**	**Horticulture (Vegetable Science)**

The present investigated entitled “Evaluation of chilli hybrids (*Capsicum annuum*. L) was conducted during the period of *kharif,* 2022 at All India Coordinated Research Project on Vegetable Crops, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri. The experiment was laid out in Randomized Block Design with 11 treatments with three replications. The objective of the experiment was to evaluate the different chilli hybrids for growth, flower character, yield, qualitative character also pest and disease incidence.

The analysis of variance revealed that mean sum of squares due to hybrids was significant for all the characters like plant height (cm), number of primary branches, days to first flowering, days to 50 % flowering, days to first harvest, number of fruits per plant, fruit length (cm), fruit diameter (cm), fruit weight (g), yield per plant (kg), yield per plot (kg), yield per hectare (q/ha) and qualitative characters like plant growth habit, leaf colour, shape of leaves, fruit colour, fruit surface and fruiting habit also for incidence of pest and disease incidence.

Among all 10 hybrids and one check minimum days are required for 50 % flowering in RHRCHHYB-5 (42.70 days) which is at par with RHRCHHYB-1(48.67 days) and among all 10 hybrids and one check RHRCHHYB-5 (60.37 days) required minimum days for days to first harvest which is at par with RHRCHHYB-1 (66.33 days).

Among all ten hybrids and one check maximum fruit length was recorded in hybrid RHRCHHYB-5 (10.10 cm), The maximum fruit breadth was recorded in hybrid RHRCHHYB-9 (1.19 cm) and the maximum fruit weight was recorded in RHRCHHHYB-9 which is at par with RHRCHHYB-5 (4.53 g).

The maximum number of fruits per plant was recorded in hybrid RHRCHHYB-5 (283.08). The highest yield per plant was recorded in hybrid RHRCHHYB-5 (1.27kg). The highest yield per plot was recorded in RHRCHHYB-5 (25.92kg). The highest yield per hectare was recorded in RHRCHHYB-5 (359.99 q/ha) which is at par with RHRCHHYB-1(340.41q/ha), RHRCHHYB-9 (328.19q/ha), RHRCHHYB-10 (325.55q/ha) and RHRCHHYB-8 (308.33q/ha).

Among all hybrids and one check the minimum leaf curl incidence, anthracnose incidence and minimum incidence of thrips, aphids, red spider mite was recorded in hybrid RHRCHHYB-5 Which was at par with RHRCHHYB-1, RHRCHHYB-10 and RHRCHHYB-9 and the minimum incidence of powdery mildew recorded in RHRCHHYB-1 which is at par with RHRCHHYB-5, RHRCHHYB-10 and RHRCHHYB-9.

There was variation in qualitative characters like plant growth habit, leaf colour, shape of leaves, fruit colour, fruit surface and fruiting habit. Overall, for yield and yield contributing characters, pest infestation and disease incidence, the hybrid RHRCHHYB-5 found superior which was at par with hybrid RHRCHHYB-1, RHRCHHYB-9 and RHRCHHYB-10.

1. INTRODUCTION

Chilli (*Capsicum annuum* L.), family-Solanaceae, 2n=2x=24, is one of the vegetables or spice known as hot pepper and used all over the world for its green fruits and pungency. The genus *Capsicum* species was domesticated in Mexico and it is introduced into Spain by Columbus on his return trip in 1493. The word *capsicum* has been derived from the Greek word '*kapsimo*' meaning 'to burn'. Chilli is a branched herbaceous annual or perennial. The fruit are berries, fruit colours varies green to orange or red when ripe. The single flowers are off white colour, flower colours varies with species. Capsaicin is responsible for the pungency in chilli, it is a condensation product of 3 hydroxy-4 ethoxy benzylamine and decylenic acid. The red colour of chilli is due to presence of Capsanthin, which is actually a mixture of esters of capsanthin, capsorubin, zeaxanthin, cryptoxanthin and other carotenoids. The chilli fruit contain an essential oil oleoresin that is used in pharmaceutical, food, and beverage industries for the preparation of value-added products (Andrews, 1984).

There are more than 400 different varieties of chillies found all over the world. The genus *Capsicum* has five domesticated species namely *Capsicum frutescens*, *Capsicum annuum*, *Capsicum chinensis*, *Capsicum pubescence* and *Capsicum baccatum*. From this *Capsicum annuum* is the most widely cultivated species. The world's hottest chilli "Naga chilli or Bhoot jolokia" is cultivated in hilly area of Assam in a small town Tezpur (Andrews, 1984).

Chillies are rich source of vitamins A, C & E. In chilli, red colour due to a pigment capsanthin and pungency due to crystalline acrid volatile alkaloid i.e., capsaicin which is present in placenta of fruit. The seed oil of chilli called oleoresin which is used in food industries and pharmaceutical industries (Andrews, 1984). Capsaicin is used for treatment of sensory nerve fibre disorder, including pain associated with arthritis, psoriasis and diabetic neuropathy. Vitamin A act as a powerful antioxidant and anti-inflammatory agent. Composition of green chilli per 100 g of edible portion contains 24 per cent vitamin A, 404 per cent vitamin C, 85.7 g moisture, 9.5 g carbohydrates, 1.5 g fibre, 0.2 g fats, 7 per cent iron, 2 per cent calcium, 7 mg sodium, 138.5 micro gram/gram capsaicin.

In world, India is the largest producer, consumer and exporter of chillies. India is the world leader in chilli production followed by China, Thailand, Ethiopia and Indonesia. Indian chilli is considered to the world famous for two important commercial qualities of colour and pungency level. Indian chilli mainly exported to Asian countries like China, Sri Lanka, Malaysia, Bangladesh, Singapore, Thailand, UAE etc. In world chilli is raised over an area of 1776 thousand hectares with a production of 7182 thousand tonnes (Anon., 2020).

According to second advance estimates of area and production of horticultural crops in 2021-2022 the production of green chillies in India is 4272 thousand metric tonnes with 405 thousand hectares (Anon., 2021). The major chilli growing states are Andhra Pradesh, Karnataka, Maharashtra, Odisha, Tamil Nadu, Madhya Pradesh, West Bengal and Rajasthan. Andhra Pradesh leading in area and production which contributing 25 per cent total area and over 40 to 50 per cent of the total production. In Maharashtra chilli is mainly grown in Dhule, Jalgaon, Pune, Satara, Sangali, Yavatmal, Aurangabad districts. It has greater potential to increase chilli production in order to promote exports, which may help in price stabilization of the country (Anon., 2020).

Hybrids are easier and faster to grow. They adopt better to stress, disease resistant and they produce larger fruit with high yield. Chilli hybrids gives more yield per unit area in comparison with local variety, which improve the economic status of small and marginal farmers. Hybrids gives high production per unit area and increase the export potential of India all over the world and contribute in rising the agricultural GDP of India.

The evaluation of F_1 hybrids is very essential, to improve further crop improvement. Hybridization is considered an important evolutionary force since it may lead to an increase of the intra specific diversity of participating populations, creation of new hybrids and generation of highly diversified genotypes. In Maharashtra, diverse types of chillies are found with varying characters. The large variability is present with respect to fruit size, shape, colour and growth habits. Hence there is need to evaluate chilli types under Maharashtra condition for excellent quality, yield and growth performances and resistance to biotic and abiotic stresses.

The main goal of most of the plant breeding programme is to increase the yielding ability of crop plants. Information on various quantitative traits, particularly of those that contribute to yield will be useful in planning and successful implementation of the breeding programme. Hybridization is one of the means to increase yield and exploitation of heterosis is an efficient approach for improvement in chilli. This calls for taking stock of earlier work on the crop improvement aspects of chilli especially on heterosis breeding on which the present investigation is concerned. In view of this, present investigation was undertaken in chilli with following objectives:

1. To evaluate the different F_1 hybrids of Chilli for their morphological characters.
2. To study the yield and yield attributing parameters of different F_1 hybrids of Chill

2. REVIEW OF LITERATURE

Chilli (*Capsicum annuum* L.) is popular and well-known vegetable that may be found in a diversity of varieties all over the world. During the *kharif* season of 2022-2023, a study named "Evaluation of chilli hybrids *(Capsicum annuum* L.)" was carried out.

The review of literature is arranged by using headings below:

2.1 Qualitative Characters

2.2 Quantitative Characters

2.3 Yield contributing characters

2.4 Incidence of important diseases and pest

2.1 Qualitative Characters

2.1.1 Plant Growth habit

Dhumal *et al*. (2020) evaluated F_1 progenies of chilli under Kokan agro climatic condition. In that, it was noticed the all progenies are intermediate growth habit except progenies DPL-CH-F1-9, DPL-CH-F1-11 and DPL-CH-F1-12 showed erect growth habit.

Joshi *et al*. (2020) screened fifteen genotypes of chilli to evaluate morphological characterization of chilli. In that a significant amount of variation was found. Plant growth habit was characterized as intermediate and erect, erect was found dominant (66.66 %) while that intermediate (33.33 %).

2.1.2 Shape of leaves

Quresh *et al*. (2015) assessed ten chilli genotypes for evaluation of some morphological and yield characteristics. Some qualitative characters which were found to be variable. In regards to leaf shape, the recorded data showed ovate and lanceolate types leaves.

Joshi *et al*. (2020) screened fifteen genotypes of chilli to evaluate morphological characterization of chilli. In that, significant amount of variation was found. The result showed that most of genotypes have lanceolate leaf shape (93.33 %) while ovate shape occurred very less in genotypes (6.66 %).

Gurung *et al*. (2020) studied genetic diversity of chilli genotypes grown in Bhutan based on morphological characteristics. Twenty-seven genotypes evaluated on the

basis of fifty morphological descriptors. In regards to leaf shape, the result showed that ovate (48.1 %) and lanceolate (44.4 %) dominant over deltoid (7.4 %).

Sonaniya and Singh (2022) studied morphological characterization of chilli germplasm for the mining of breeding traits. The experiment was conducted on fourty eight chilli genotypes. In regards to leaf characteristics, most of the genotype have lanceolate leaf shape (83.33 %) and ovate shape occurred in some genotypes (10.42 %). While some genotypes have broad elliptic leaf shape (6.25 %).

2.1.3 Leaf colour

Quresh *et al*. (2015) assessed ten chilli genotypes for evaluation of some morphological and yield characteristics. Some qualitative characters which were found to be variable. In regards to, leaf colour light green, green, dark green was found in investigation.

Gurung *et al*. (2020) studied genetic diversity of chilli genotypes grown in Bhutan based on morphological characteristics. Twenty-seven genotypes evaluated on the basis of fifty morphological descriptors. In regards leaf colour, the result showed that green colour of leaves found to be more in genotypes (70.45 %) and light green (22.2 %) which dominant over dark green (7.4 %).

Joshi *et al*. (2020) screened fifteen genotypes of chilli to evaluate morphological characterization of chilli. In that a significant amount of variation was found. In that present investigation, dark green leaf colour was observed more frequent (80 %) while green colour was observed less frequent (20 %). The dark green colour of leaves is generally due to presence of high chlorophyll content which directly leads to increased yield.

Sonaniya and Singh (2022) studied morphological characterization of chilli germplasm for the mining of breeding traits. The experiment was conducted on forty-eight chilli genotypes. In regards to leaf colour, dark green leaf colour was observed more frequent (50 %) while medium green colour was observed less frequent (35.5 %) and that of light green colour was minimum (14.58 %).

2.1.4 Fruit Colour

Mahmood *et al*. (2002) conducted research on comparative performance of local and exotic chilli cultivars and the result shows that cultivars PBC-581, PP 9656-

15, Korean, NARC- IV were showing light green colour. Cultivars BS-96, MI-2 and PBC-386 shows green fruit colour. Cultivars PP9656-6 and PBC-534 shows dark green colour. The dark green varieties are observed as an extremely hot.

Sharma *et al*. (2013) studied heterosis for earliness, fruit yield and yield attributing traits in bell paper (*Capsicum annuum* L.var. *grossum*). The different fruit colours observed in parental lines PRC-1 shows dark green colour at immature stage and orange yellow colour at mature stage. California Wonder shows medium green colour at immature stage and red colour at mature stage. Rani selection-1 shows dark green colour at immature stage and red colour at mature stage. SSP shows medium green colour at immature stage and red colour at mature stage. Selection-12-2-1 shows dark green colour at immature stage and red colour at mature stage. SP-613 shows medium green colour at immature stage and red colour at mature stage.

Zahoor *et al*. (2017) assessed six parental lines along with their hybrids. Here the parental lines show various fruit colour, NARC-14/9 shows light green colour. NARC-15/6 and NARC-16/5 shows medium green colour. NARC-16/4, NARC-16/8 and NARC 16/9 shows light green colour.

Haque *et al*. (2019) evaluated thirty-six chilli germplasms in *kharif* season, the result shows that among thirty-six genotypes CO 647 shows black fresh fruit colour, CO 001, CO 637, CO 638, CO 525-1, CO 626 shows dark green colour, light green colour observed in CO 002 and CO 525.

Dhumal *et al*. (2020) evaluated F1 progenies of chilli under Kokan agro climatic condition. It was noticed that the all progenies are green colour except progeny DPL-CH-F1-9 had light green colour and variety Kokan Kirti was found with dark green colour.

2.1.5 Fruit Shape

Sharma *et al*. (2013) heterosis for earliness fruit yield and yield attributing traits bell paper, the investigation shows various fruit shapes in bell paper genotypes. In that rectangular fruit shape was observed in PRC-1and SSP. Triangular fruit shape observed in selection-12-2-1 and triangular pointed shape observed in SP-613. Bell shape observed in California Wonder and Rani selection-1.

Quresh *et al*. (2015) assessed ten chilli genotypes for evaluation of some morphological and yield characteristics. Some qualitative characters which were found to be variable. In regards fruit shape, variation observed in genotypes. Cordate, Blocky and Elongated types of fruits are observed.

Joshi *et al*. (2020) screened fifteen genotypes of chilli to evaluate morphological characterization of chilli. In that, a significant amount of variation was found. Based on fruit shape, cultivars were grouped in to elongate (80 %), triangular (13.33 %) and campanulate (6.6 %).

Dhumal *et al*. (2020) evaluated F_1 progenies of chilli under Kokan agro climatic condition. In that, long fruits were observed in all progenies except DPL-CH-F_1-9 and DPL-CH-F_1-12. In these two progenies, very long fruit shape was observed.

Sonaniya and Singh (2022) studied morphological characterization of chilli germplasm for the mining of breeding traits. The experiment was conducted on forty- eight chilli genotypes. The result showed that, in most of the cases fruit shape is in longitudinal section was horn shaped (45.83 %) followed by narrow triangular (37.50 %), moderately triangular (10.42 %) and few in the case of trapezoidal (6.25 %).

2.1.6 Fruiting Habit

Haque *et al*., (2019) conducted research trial on evaluation of chilli germplasm in the *kharif* season. The result shows that, out of thirty-six genotypes, thirty-five genotypes show solitary fruiting habit and only one shows cluster habits i.e., CO 633.

Joshi *et al*. (2020) screened fifteen genotypes of chilli to evaluate morphological characterization of chilli. In that a significant amount of variation was found. In regards to fruiting habit, the result showed that, intermediate or semi pendent fruit position (53.33 %) was dominant over pendent (40 %) and erect (6.66 %).

Dhumal *et al*. (2020) evaluated F_1 progenies of chilli under Kokan agro climatic condition. The result showed that all the progenies showed solitary and pendant fruiting habit.

Sonaniya and Singh (2022) studied morphological characterization of chilli germplasm for the mining of breeding traits. The experiment was conducted on

forty-eight chilli genotypes. In regards to fruiting habit, most of the cultivars have solitary fruit bearing habit (95.83 %) while 2-3 and cluster type also seen in 2.08% each.

2.1.7 Fruit surface

Quresh *et al*. (2015) assessed ten chilli genotypes for evaluation of some morphological and yield characteristics. Some qualitative characters which were found to be variable. In regards fruit surface, the result showed that some genotypes have wrinkled fruit surface and some has smooth fruit surface.

Gurung *et al*. (2020) studied genetic diversity of chilli genotypes grown in Bhutan based on morphological characteristics. Twenty-seven genotypes evaluated on the basis of fifty morphological descriptors. In regards fruit surface, semi wrinkled (59.3 %) dominant over smooth (25.9 %) and wrinkled (14.8 %).

Sonaniya and Singh (2022) studied morphological characterization of chilli germplasm for the mining of breeding traits. The experiment was conducted on forty eight chilli genotypes. The result showed that, fruit surface is slightly roughed in many cases followed by smooth (39.58 %) and rough (8.33 %).

2.2 Quantitative Characters

2.2.1 Growth parameters

2.2.1.1 Plant height

Tembhurne *et al*. (2008) evaluated fourteen chilli (*C. annuum* L.) in that highest height of the plant observed in 'Byadagi Kaddi' genotype (80.93 cm) and 'HCSG2' (50.17 cm) observed as a lowest height genotype.

Cheema *et al*. (2010) examined chilli hybrids which is developed by genetic male sterility and concluded MS-12 x Acc-16 (101.78 cm) was best for plant height. MS-12 x Acc-12 (100.11 cm), MS-12 x Acc-20 (98.78 cm) and MS-12 x Acc-17 (94.89 cm) are also good in plant height.

Jabeen *et al*. (2011) conducted research on performance of chilli genotypes and hybrids under Kashmir valley conditions. In that genotype CH-4 (64.30 cm) observed as highest plant height followed by SH-C-107 (64.00 cm) and SH-C-111 (63.00 cm). Lowest height observed in genotype CH-2 (46.00 cm).

Dhaliwal *et al*. (2014) conducted research on nine F_1 hybrids of chilli along with four hybrids check (CH-1, Soldier, Rudra, CH-3) and concluded that Rudra

observed as a highest plant height (90.1 cm) and minimum plant height observed in CH-26 (59.3 cm).

Janaki *et al*. (2015) studied the performance of chilli genotypes for yield and yield attributing traits. The genotype LCA-720 observed as a maximum plant height (127.75 cm) followed by LCA-707 (117.30 cm). Genotype LCA-305 observed as a minimum plant height (49.95 cm).

Yatagiri *et al*. (2017) conducted research on nineteen genotypes of chilli under Konkan conditions in Maharashtra and recorded maximum plant height in 'LCA-334' (70.20 cm) and 'Konkan Kirti' (48.90 cm) recorded as lowest in plant height.

Dhumal *et al*. (2020) evaluated fifteen hybrids of chilli and recorded plant height ranged between 55.55 cm to 97.37 cm.

Kumar *et al*. (2022) conducted trial on evaluation of hybrid chilli genotypes under Prayagraj agro climatic conditions. In regards plant height among twenty hybrids highest plant height was observed in IET-CHHYB-3 (65.66 cm) which was significantly superior overall remaining nineteen genotypes. The plant height ranged between 26.33 cm to 65.66 cm and the lowest plant height recorded in T-20 REKHA (26.33 cm).

2.2.1.2 Plant Spread

Uma Jyothi *et al*. (2011) conducted research on ten cultivars of chilli and recorded cultivar Ajeet-3 has maximum plant spread (115.6 cm) and minimum plant spread in DSL-1 (90.6 cm).

Mahantesh *et al*. (2013) conducted research on genetic variability studies in chilli (*Capsicum annuum* L.) and concluded high estimates of heritability for plant spread (North-South) at 60 days (64.27 %), 12 days (65.47 %) and (East-West) at 60 days (60.5 %).

Quartey *et al*. (2014) evaluated eight genotypes of chilli and recorded highest plant spread in Archard (101.68 cm) and lowest plant spread in Sunny F_1 (66.95 cm).

Herison *et al*. (2014) assessed thirteen hybrids of chili in that hybrid H-23 (77.8 cm) shows maximum plant spread and hybrid Prada (40.8 cm) shows lowest plant spread.

Vijaya *et al*. (2014) examined twenty-four genotypes of chilli and recorded ‘CKBL’ (48.10 cm) showed maximum plant spread which is at par with ‘LCA-424’ (41.40 cm) and ‘CA-960’ (18.40 cm) showed minimum plant spread.

Sharma *et al*. (2015) evaluated three sweet pepper varieties and recorded maximum plant spread in ‘California Wonder’ (41.58 cm) and ‘Yellow Wonder’ (37.54 cm) showed minimum plant spread.

Kumar *et al*. (2022) conducted trial on evaluation of hybrid chilli genotypes under Prayagraj agro climatic conditions. The recorded data showed that plant spread ranged between 20.33 cm to 48.66 cm. The highest plant spread was observed in the genotype IET-CHIHYB-3 (48.66 cm) followed by IET-CHIHYB-4 (46.33 cm) and the lowest plant spread was recorded in genotype T-20 Rekha (20.33 cm).

2.2.1.3 Number of primary branches per plant

Ukkund *et al*. (2007) conducted research on twenty chilli genotypes and the result shows that ‘PMR-5’ showed maximum number of primary branches per plant (9.45) and genotype ‘9639’ showed minimum number of primary branches (6.85).

Amit *et al*. (2014) examined twenty-three chilli genotypes and recorded maximum number of branches was present in genotype ‘Pusa Sadabahar’ (10.62) and minimum number of branches are present in genotype ‘PCB-08-CH’ (4.70).

Vijaya *et al*. (2014) conducted research on twenty-four genotypes of chilli in that ‘Sankeshwar’ having maximum number of primary branches (7.47) and ‘LCA-424’ having minimum number of primary branches (7.27).

Jamal *et al*. (2015) revealed that the SAU-Cayenne (9.3) showed maximum number of branches and minimum number of branches observed in SAU-Agri (6.8).

Rohini and Lakshmanan (2017) assessed F_1 hybrids in chilli and recorded LCA 334 x Arka Lohit having highest number of branches per plant (14.67) and lowest number of branches (7.00) in LCA 625 X K 1.

Nivedha *et al*. (2019) evaluated chilli hybrids and recorded that number of branches per plant ranged between 7.00 to 12.7.

Dhumal *et al*. (2020) conducted research on chilli genotypes and results shows that progeny DPL CH-F_1-14 (7.75) showed maximum number of primary branches and DPL CH-F_1-9 (4.50) showed minimum number of primary branches per plant.

2.2.1.4 Days to 50% flowering

Farhad *et al*. (2008) conducted research on forty-two genotypes of chilli and recorded average minimum days to 50 % flowering were (61.7) days and maximum days to 50 % flowering were (82.30) days.

Phulari (2012) conducted research on five chilli (*C. annuum* L.) varieties and Lavangi variety of (*C. frutescens* L.) reported that 'black short' took minimum days (47.00) for days to 50 % flowering and maximum days were taken by variety 'Deonur Bydagi' (64.00) days.

Shiva *et al*. (2013) evaluated twenty-one Paprika like chillies (indigenous germplasm) and recorded ICBD-17 took minimum days (54.33 days) to 50 % flowering and ICBD-5 took maximum (61.33 days) days to 50 % flowering.

Vijaya *et al*. (2014) evaluated twenty-four chilli genotypes in that the result shows that 'LCA-304' took minimum days (49.33 days) to 50 % flowering while 'G-3' took maximum days (76.33 days) to 50 % flowering.

Rohini and Lakshmanan (2017) conducted research on thirty F_1 hybrids with their six parental lines of chilli and results shows that mean value for days to 50% flowering ranged between 69.51 days (LCA-625) to 76.39 days (LCA-334) in parents and minimum days to 50 % flowering 67 days took by hybrid P5 x P4 in among hybrids.

Janaki *et al*. (2015) assessed chilli genotypes for yield and yield attributing traits and recorded HC-28 took maximum days that is 42 days to 50% flowering and minimum days (24 days) were taken by LCA-709 followed by Pusa Sadabahar (25.50 days).

Yatagiri *et al*. (2017) evaluated nineteen chilli genotypes and the result shows that 'Karvir local' took minimum days (45.50 days) to 50 % flowering and 'Pashighat-7' took maximum days (84.50 days) to 50 % flowering.

Pandiyan *et al.* (2019) conducted research trial on vegetative growth and yield performance of chilli hybrids All India Coordinated Vegetable Improvement Project hybrid trials (IET, AVT-1 and AVT-2). In regards days to 50 % flowering IET entries

showed significant variation showed significant variations early 50% of flowering was found from 2014/CILHYB-3 (68 days) followed by 2014/CILHYB-6,7 and Kashi-Anmol (76.4 days).

2.2.1.5 Days to first harvest

Amit *et al*. (2014) evaluated twenty-three genotype the result shows that the genotype Surajmukhi took minimum number of days to first harvest (101.26) days and PCP-CH-4-08 took maximum number of days to first harvest (124.11) days in green chillies.

Datta and Jana (2014) assessed fifteen genotypes of chilli and recorded that genotype CA-29 took minimum days to first fruit harvest that is 77.37 days and G-4 took maximum days to first fruit harvest that is 139.53 days in green chillies.

Kumari *et al*. (2017) screened sixteen genotypes and revealed that days taken to first picking ranged from 91 to 103.11 days with an overall mean of 99.48 days.

Yatagiri *et al*. (2017) conducted research on nineteen chilli genotypes for yield and yield attributing traits. The result shows that minimum days to first harvest observed in genotype Karvir local (74.50) days and maximum days were taken by Pashighat-7 (116.50) days.

Pandiyan *et al*. (2019) conducted research trial on vegetative growth and yield performance of chilli hybrids All India Coordinated Vegetable Improvement Project hybrid trials (IET, AVT-1 and AVT-2). In regards to days to first harvest, 2014/CILHYB-3 is (85.8) days which was followed by BSS-453 (89.3) days.

2.2.2 Fruit characters

2.2.2.1 Fruit length

Rohini and Lakshmanan (2017) conducted research on six parental lines of chilli with their thirty F_1 hybrids. From parental lines, fruit length range from 6.56 cm (LCA-334) to 8.62 cm (LCA-625) from parental lines and Pusa Jwala x K1 showed the maximum fruit length (10.38 cm) and minimum fruit length observed in Pusa Jwala x LCA-334 (6.47 cm) among hybrids.

Vijaya *et al*. (2014) examined twenty-four genotypes of chilli and found that the genotype Sankeshwar shows maximum length (14.61 cm) and minimum fruit length observed in CKBL genotype (4.91 cm).

Jaisankar *et al*. (2015) conducted research on chilli genotypes for green fruit yield and the result shows that V-3 showed maximum fruit length (6.06 cm) which is at par with V-6 (6.19 cm) and V-11showed (3.93 cm) minimum fruit length among the genotypes.

Nagaraju *et al*. (2017) evaluated fifteen chilli hybrids with their parents and fruit length recorded ranges between 6.30 to 15.21 cm in parents and 10.96 to 14.46 cm in hybrids.

Nivedha *et al*. (2019) conducted research trial on thirty chilli hybrids along with their parents and reported that the fruit length was highest in AVPP 0716 x AVPP 0717 (9.83 cm).

Dhumal *et al*. (2020) screened fifteen chilli hybrids and recorded progeny DPL CH-F_1-12 (11.26 cm) which is maximum fruit length among the progenies and minimum fruit length recorded in progeny DPL CH-F_1-4 (7.24 cm).

Kumar *et al*. (2022) conducted trial on evaluation of hybrid chilli genotypes under Prayagraj agro climatic conditions. In regards fruit length among twenty hybrids highest fruit length was observed in IET-CHIHYB-6 (12.90 cm) followed by IET-CHIHYB-3 (12 cm) and the lowest fruit length was observed in IET-CHIHYB-9 (5.90 cm).

2.2.2.2 Fruit Breadth

Vijaya *et al*. (2014) evaluated twenty-four genotypes of chilli and recorded maximum fruit diameter in the genotype ‘Byadagi Dabbi’ (1.60 cm) and minimum fruit diameter was seen in genotype ‘Byadagi Kaddi’ (0.78 cm). The maximum fruit diameter in ‘Byadagi Dabbi’ followed by ‘LCA-436’ (1.45 cm).

Jaisankar *et al*. (2015) screened chilli genotypes for green fruit yield. In that genotype V 1 was reported maximum fruit diameter (1.41 cm) followed by V 5 (1.14 cm) and V 9 reported minimum fruit length (0.85 cm).

Janaki *et al*. (2015) reported that the maximum diameter of fruit was observed in the genotype Warangal Chapatta (3.17 cm) followed by LCA-702 (2.12 cm) and LCA-708 (2.04 cm) and the minimum diameter of fruit was recorded in LCA-756 (0.76 cm).

Rohini and Lakshmanan (2017) conducted research on six parental lines of chilli with their thirty F_1 hybrids. In that LCA 625 x Arka Lohit showed minimum fruit diameter (2.57 cm) and maximum fruit diameter observed in K 1 x Arka Lohit (3.97 cm).

Nagaraju *et al*. (2017) evaluated fifteen chilli hybrids and their parents in that fruit diameter ranged from 4.53 cm to 9.28 cm among parents and 3.88 cm to 7.18 cm among hybrids.

Nivedha *et al*. (2019) revealed that fruit diameter among thirty hybrids varied from 6.07 cm to 2.67 cm. In that CA 116 x AVPP 0717 showed highest fruit diameter followed by AVPP 0717 x EC 737329.

Dhumal *et al*. (2020) screened fifteen chilli progenies and recorded maximum fruit diameter in the variety Konkan Kirti (0.90 cm), while progeny DPL CH-F_1-13 (0.74 cm).

Kumar *et al*. (2022) conducted trial on evaluation of hybrid chilli genotypes under Prayagraj agro climatic conditions. The result revealed that the diameter of fruit was in the range of 0.17 to 1.09 cm. The highest fruit diameter was observed in genotype IET-CHHYB-3 (1.09 cm) followed by genotype IET-CHIHYB-4 (1.01 cm) whereas the lowest diameter of fruit observed in genotype REKHA (0.17 cm).

2.2.2.3 Fruit Weight

Tembhurne *et al*. (2008) screened fourteen chilli genotypes and recorded that maximum green fruit weight in Byadagi Dabbi (1.08 g) and minimum green fruit weight was recorded in HCS-G8 (0.46 g)

Chaudhary *et al*. (2013) assessed ten chilli hybrids and found that mean for fruit weight ranged from 87.67 to 322.76 g with a grant mean of 26.71 g.

Amit *et al*. (2014) screened twenty-three chilli genotypes and reported that LCA-357 (5.19 g) showed maximum fruit weight and minimum fruit weight was observed in K-1 (1.71 g).

Dhaliwal *et al*. (2014) evaluated nine promising F_1 hybrids and concluded maximum fruit weight in CH-21 (3.00 g) and minimum fruit weight in CH-25 (2.06 g).

Jaisankar *et al*. (2015) screened thirteen varieties of chilli for yield and yield attributing components and recorded maximum fruit weight in V 1 (4.64 g) and minimum fruit weight in V 11 (1.32 g).

Nagaraju *et al*. (2017) evaluated fifteen chilli hybrids with their parents and revealed that mean for green fruit weight ranged from 6.76 to 11.21 g for parents and 6.34 to 14.43 g for hybrids.

Yatagiri *et al*. (2017) conducted research on nineteen chilli genotypes and concluded that highest green fruit weight in genotypes 'Karvir Local' (6.01 g), followed by Arka Supriya (4.56 g) and lowest fruit weight recorded in Pashighat-7 (1.65 g) and 'Konkan Kirti' (2.45 g).

Nivedha *et al*. (2019) screened thirty F_1 hybrids and noticed that the highest green fruit weight of 4.31 g was observed in hybrid CA 116 x AVPP 0717 followed by AVPP 0717 x AVPP 0716.

Kumar *et al*. (2022) conducted trial on evaluation of hybrid chilli genotypes under Prayagraj agro climatic conditions. The result revealed that the average fruit weight of chilli genotypes ranged between 1.25 g to 3.21 g. The highest fruit weight observed in IET-CHIHYB-3 (3.21 g) followed by IET-CHIHYB-4 (3.06 g) while the lowest was observed in genotype REKHA (1.25 g).

2.3 Yield contributing characters

2.3.1 Number of fruits per plant

Pramila *et al*. (2009) assessed forty-three chilli genotypes and the result shows that highest number of fruits were observed in EC519649 (234.8) and minimum fruits in EC519661 (51.3).

Chaudhary *et al*. (2013) evaluated ten parental genotypes along with their twenty-five F_1 hybrids and revealed that mean value for number of fruits per plant ranges from 43.73 to 111.20 with grant mean of 66.47.

Amit *et al*. (2014) examined twenty-three chilli genotypes and concluded genotype Surajmukhi (198.25) having maximum number of fruits per plant followed by Pusa Jwala (194.26) and minimum number of fruits per plants were observed in CCH-05 (66.64).

Janaki *et al*. (2015) experimented sixty-three genotypes of chilli for yield and yield attributing components and the result shows that LCA-706 (480) gives large number of fruits per plant and few numbers of fruits were produced by LCA-707 (71.90).

Jaisankar *et al*. (2015) screened thirteen varieties of chilli and recorded maximum number of fruits per plant were present in V11 (33.12/plant). Followed by V7 (31.28/plant), V1 showed (11.11/plant) minimum number of fruits per plant.

Yatagiri *et al*. (2017) evaluated nineteen chilli genotypes and the result shows that 'Konkan Kirti' showed highest number of fruits per plant (173) followed by 'LCA-366' (156.70) and 'Jayanti' (155.50). While 'Phule Sai' showed minimum number of fruits per plant (32.30) followed by 'Pashighat-7' (38.90) and 'Pashighat-5' (39.90). The results shows that average number of fruits per plant ranged from 32.30 to 173.00 with mean value of 102.65.

Nivedha *et al*. (2019) assessed thirty F_1 hybrids with their parents and reported hybrid CA 116 x AVPP 0717 (187.80) recorded the maximum number of fruits per plant followed by AVPP 0717 x CA 116 (183.60) and AVPP 0717 x EC 737329 (174.80). In parents CA 116 (105.60) gives maximum number of fruits per plant and AVPP 0717 (76.80) gives least number of fruits per plants.

2.3.2 Green fruit yield per plant

Phulari (2012) evaluated five varieties of *Capsicum annuum* (black short, Deonur Byadagi, Jwala, Pant C-1 and Sankeshwari) and Lavangi variety of *Capsicum frutescens* and recorded Deonur Byadagi produce highest green fruit yield per plant (227.47 g) and lowest green fruit yield per plant produced by black short (150.38 g).

Amit *et al*. (2014) screened twenty-three genotypes of chilli and the result shows that highest green fruit yield per plant in the genotype 'CH-1' (854.65 g) followed by Pusa Jwala (540.49 g) and the lowest fruit yield per plant in the genotype 'AG-08' (258.85 g).

Rohini and Lakshmanan (2017) examined the performance of six parental lines of chilli with their thirty F_1 hybrids and the result shows that highest fresh fruit yield per plant was produced by parent LCA 625 (332.45 g) and lowest fruit yield per plant produced by PKM 1 (197.60 g). In F1 hybrids the result shows that highest fruit yield per plant was observed in LCA 625 X K1 (752.93 g) and lowest fruit yield per plant was observed in Pusa Jwala x LCA 334 (272.16 g).

Suryakumari *et al*. (2014) screened ninety-four Paprika accessions and recorded that best five hybrids with high performance for fresh fruit yield per plant were

LCA-436 x CA-960 (279.7 g), LCA-436 x Byadagi Dabbi (207.39 g), LCA-422 x CA-960 (217.19 g), LCA-431 x Byadagi Dabbi (220.3 g) and LCA-414 x Byadagi Dabbi (175.06 g).

Jamal *et al*. (2015) recorded that SAU-Cayenne gives maximum yield per plant (380.7 g) and SAU-Agni gives minimum fruit yield per plant (83.95 g).

Rohini and Lakshmanan (2017) examined the performance of six parental lines of chilli with their thirty F_1 hybrids and the result shows that highest fresh fruit yield per plant was produced by parent LCA 625 (332.45 g) and lowest fruit yield per plant produced by PKM 1 (197.60 g). In F1 hybrids the result shows that highest fruit yield per plant was observed in LCA 625 X K1 (752.93 g) and lowest fruit yield per plant was observed in Pusa Jwala x LCA 334 (272.16 g).

2.3.3 Green fruit yield per plot

Sahu *et al*. (2016) screened nineteen chilli genotypes and the result shows that 2012/CHIVAR-5 (24.06 kg) produces highest fruit yield per plot and 2014/CHIVAR-2 (5.52 kg) produces lowest fruit yield per plot.

Kumari *et al*. (2017) evaluated sixteen chilli genotypes and recorded that fruit yield per plot ranged between 8 to 19.52 kg with an overall mean of 14.03 kg. In that 2014/CHIVAR-9 produces maximum fruit yield per plot and 2016/CHIVAR-5 produces minimum fruit yield per plot.

Pandiyan *et al*. (2019) conducted research trial on vegetative growth and yield performance of chilli hybrids All India Coordinated Vegetable Improvement Project hybrid trials (IET, AVT-1 and AVT-2). In regards yield per plot, the maximum yield was found in 2014/CSHIHYB-2 (39.1 kg/plot).

Kumar *et al*. (2022) conducted trial on evaluation of hybrid chilli genotypes under Prayagraj agro climatic conditions. The result showed that fruit yield per plot was ranged between 0.33 Kg to 1.60 kg. The highest fruit yield per plot was observed in IET-CHIHYB-3 (1.60 kg) followed by genotype IET-CHIHYB-6 (1.59 kg) while the lowest yield per plot was observed in genotype REKHA (0.33 kg).

2.3.4 Green fruit yield per hectare

Amit *et al*. (2014) assessed twenty-three chilli genotypes and the result shows that CH-1 (25.00 t/ha) produces highest fruit yield per hectare and lowest fruit yield per hectare were produced AG-08 (7.66 t/ha).

Vijaya *et al*. (2014), evaluated twenty-four genotypes of chilli and recorded genotype 'Sankeshwar' (37.39 t/ha) gives maximum fruit yield per hectare and minimum fruit yield per hectare were produced by 'CKBL' (7.62 t/ha).

Jamal *et al*. (2015) revealed that the genotype SAU-Cayenne produced maximum yield per hectare (1.5 t/ha) and minimum fruit yield per hectare were produced by SAU-Agni (1.2 t/ha).

Kumari *et al*. (2017) conducted research trial on sixteen chilli genotypes and the result shows that genotype 2014/CHIVAR-9 produces maximum fruit yield per hectare (132.75 qt/ha) and 2016/CHIVAR-5 produces minimum fruit yield per hectare.

Yatagiri *et al*. (2017) examined nineteen genotypes of chilli and noticed that fruit yield per hectare ranged between 2.72 to 19.72 t/ha with an average mean of 11.22 t/ha fruit yield. In the result highest fruit yield per hectare was observed in Pant-C3 (19.72 t/ha) followed by 'LCA-334' (19.61 t/ha) and lowest fruit yield observed in genotype 'Pashighat-7 (2.72 t/ha).

Kumar *et al*. (2022) conducted trial on evaluation of hybrid chilli genotypes under Prayagraj agro climatic conditions. The result showed that fruit yield per hectare ranged between 1.16 tonnes to 12.40 tonnes. The highest fruit yield per hectare was observed in IET-CHIHYB-3 (12.40 tonnes) followed by IET-CHIHYB-4 (11.60 tonnes). While the lowest fruit yield observed in genotype REKHA (1.16 tonnes).

Mhaske *et al.* (2022) evaluated twenty-eight F1 progenies of chilli for yield and yield attributing characters. The result showed that green fruit yield per hectare ranged from 288.52 q to 515.51q per hectare.

2.4 Incidence of important diseases and pest

Diseases

1. Incidence of Leaf curl virus (%)

Babu *et al*. (2002) screened three hundred and eight chilli genotypes under field condition to identify sources of resistance against the leaf curl caused by thrips and

mites and they recorded three as a resistant, four as a moderately resistant and three as a field tolerant germplasm.

Manju and Sreelathakumary (2002) evaluated thirty-two accessions of hot chilli and reported that the minimum incidence of 5.50 per cent and maximum incidence of 12.7 per cent were observed.

Ajjappalavara and Channagoudra (2009) screened thirty-six chilli genotypes and noticed that the range for leaf curl complex incidences was in the genotypes AD-8 (30.7 %) to Byadgi Dabbi (62.13 %).

Yatagiri *et al*. (2017) evaluated nineteen genotypes of chilli for yield attributing traits and incidence of leaf curl and white fly and revealed that maximum incidence of leaf curl disease was observed in the genotype Pashighat-7 (18.90 %) and minimum incidence in the genotype 'Pant-C3' (5.3 %).

Nivedha *et al*. (2019) screened thirty F_1 hybrids and their parents for yield and resistance to leaf curl disease and revealed that per cent of infection for leaf curl disease was found to be the lowest (2.92 %) in the parent AVPP0717 and in the hybrids CA 116 x AVPP 0717 (8.41 %) while the highest (78.79 %) of infection was observed in EC 739329 x VIO 37449.

2. Incidence of Powdery mildew (%)

Rajesh and Mohrir (2015) screened chilli genotypes for check resistance against powdery mildew diseases and revealed that among nineteen genotypes, Arka Suphal and Orissa Local genotypes were found to be highly resistant and two genotypes Phule Jyoti and Nandi were categorized as a resistant. CH-1, Pant C-1, Pusa Sadabahar and Khurasani were moderately resistant to this disease.

Hareesh *et al*. (2016) conducted research trial on field evaluation of chilli genotypes for resistance to powdery mildew caused by *Leveillula Taurica*. In that research, seventy genotypes were evaluated to search resistance source against powdery mildew in chilli. Among seventy genotypes DCA-1, DCA-2, DCA-3, DCA-4, DCA-5, DCA-7, DCA-8, DCA-9, DCA-10, DCA-11, DCA-12, DCA-13, DCA-14, DCA-22, DCA-23, DCA-23, DCA-24, DCA-25, DCA-26, DCA-35, DCA-42, DCA-44, DCA-45, DCA-57 and DCA-59 showed moderately resistant reaction during both *kharif* and *rabi* season.

3. Incidence of Anthracnose (%)

Sharath *et al*. (2020) screened thirty-one genotypes of chilli to investigate anthracnose resistant. In that, the genotype DCA-67, DCA-69, DCA-189, DCA-302 and DCA-305 were reacted resistant to anthracnose in field as well as artificial screening which can be used for resistant breeding programme.

Arjun *et al*. (2020) assessed 132 chilli genotypes for anthracnose resistance under field condition. In the present investigation, fifteen genotypes were moderately resistant to anthracnose which can be serve as donors for anthracnose resistance breeding.

Tembhurne *et al*. (2021) screened inbred lines of chilli for anthracnose resistant. In that, the result showed PBC-80, G-4-L and M-421 were completely resistant to anthracnose of chilli. While Byadagi Dabbi and Byadagi Kaddi were susceptible to anthracnose.

Pests:

1. Infestation of Thrips (%)

Sandeep *et al*. (2010) screened sixty chilli lines against thrips and yellow mites and revealed that fourteen lines are moderately resistant but none of the lines were resistant.

Roopa and Kumar (2014) conducted field experiment to study the seasonal incidence of pest of capsicum noticed that number of pests ranged from 0.00 to 0.10 with mean of 0.04 per three leaves per plant. The maximum incidence was noticed during third week of November.

Latha and Hunumanthraya (2018) screened thirty-one chili genotypes against chilli thrips (*Scitrtothrips dorsalis*) and yellow mite. The recorded observations showed that none of them was found completely free from the attack of pest. The genotype DCC-3, DCC-185, DCC-109 and DCC-89 were observed as moderately resistant. While DCC-66 and Byadagi Kaddi were found highly susceptible to both thrips and mites.

Suhasini *et al*. (2023) evaluated chilli varieties for growth, yield and thrips incidence in Central Telangana zone. The result showed that among the ten chilli

varieties, Muchia has shown lowest incidence of thrips and leaf curl index hence, this variety have scope for future crop improvement programme

2. Infestation of Aphids (%)

Roopa and Kumar (2014) conducted field experiment to study the seasonal incidence of pest of capsicum noticed that number of pests ranged from 0.00 to 0.10 with mean of 0.04 per three leaves per plant. The maximum incidence was noticed during third week of November.

Rajput *et al*. (2017) screened different chilli genotypes against major insect pest. The result showed that among eleven hybrids GCh-3 and GCh-2 were found to be resistant against aphids and mites.

Kumar *et al*. (2021) screened ten chilli varieties against major insect pest infesting chilli crop during kharif. The result showed that, the minimum infestation of aphid was found in variety Arka Khyati followed by Arka Sheepal, Arka Lohit, Mathania Local, Arka Meghana, Arka Sweta, Mathania Long, RCH-1 and Pusa Sadabahar while maximum aphid infestation found in variety Pusa Jwala.

3. Infestation of Red spider mites (%)

Sandeep *et al*. (2010) screened sixty chilli lines against thrips and yellow mites and revealed that fourteen lines are moderately resistant but none of the lines were resistant.

Rajput *et al*. (2017) screened different chilli genotypes against major insect pest. The result showed that among eleven hybrids GCh-3 and GCh-2 were found to be resistant against aphids and mites.

Latha and Hunumanthraya (2018) screened thirty-one chili genotypes against chilli thrips (*Scitrtothrips dorsalis*) and yellow mite. The recorded observations showed that none of them was found completely free from the attack of pest. The genotype DCC-3, DCC-185, DCC-109 and DCC-89 were observed as moderately resistant. While DCC-66 and Byadagi Kaddi were found highly susceptible to both thrips and mites.

Sultana *et al*. (2022) conducted trial on incidence of chilli mite on chilli varieties under field condition. The result concluded that the tested genotypes G-13, G-27, G-30 and G-31 showed remarkable resistance to mite.

3. MATERIALS AND METHODS

The present investigation on "Evaluation of Chilli Hybrids (*Capsicum annuum*.L)" will be conducted at AICRP On Vegetable Crops, Department of Horticulture, MPKV, Rahuri during *kharif* 2022.

The details of material and methods used to study the "Evaluation of chilli hybrids", the experimental design adopted and the statistical procedure followed are mentioned in the chapter.

3.1 Location of Experimental Site and Climate

All India Coordinated Research Project Vegetable Crops, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth Rahuri situated at 19^0-47' North latitude and 74^0 -19' East longitude with 495 to 565m altitude above mean sea level and situated in 6^{th} agroclimatic zone of Maharashtra State. The plot selected for conducting the experiment had a uniform soil depth and fertility. The soil was medium calcareous and well drained.

Geographically Rahuri belongs to semi-arid climate with annual rainfall 520mm mainly distributed from June to September - October. The mean minimum and maximum temperature ranges between 10-25ºC and 25-35ºC respectively and an average day length of 12 hrs and 08 minutes. The weather during experimentation was bestowed with rainfall of 485 mm distributed from June to September.

3.2 Experimental details

1. Crop : Chilli
2. Genotypes : 10+1 (Check-Teja 4)
3. Spacing (cm) : 60 x 60 cm
4. Design : Randomized Block Design (RBD)
5. Treatments : 10
6. Replications : 3
7. Crop duration : 150 – 180 days
8. Season : *Kharif*-2022
9. Year of experiment : 2022-2023

3.3 Plan Layout of experiment

The experiment was laid out during *kharif* -2022 at the AICRP on Vegetable crops, Department of Horticulture MPKV, Rahuri, in Randomized Block Design with three replications. The experiment comprises ten F_1 hybrids with one standard check.

3.3.1 Treatment Details

S.N.	Treatment Details
1	RHRCHHYB-1
2	RHRCHHYB-2
3	RHRCHHYB-3
4	RHRCHHYB-4
5	RHRCHHYB-5
6	RHRCHHYB-6
7	RHRCHHYB-7
8	RHRCHHYB-8
9	RHRCHHYB-9
10	RHRCHHYB-10
11	TEJA-4

3.4 Cultural practices

3.4.1 Raising of seedlings

Raised bed of size 3 m x 1 m x 15 cm (length, breadth, height) was prepared. The top 5 cm layer of soil was prepared by mixing well rotten farm yard manure and sieved soil. Seeds of each hybrid, parent and check are sown in rows 10 cm apart. Seed treatment was done with Bavistin @ 3g/kg of seed before sowing. Watering was done regularly after sowing with the help of rose-can. The beds are kept weed free by regular weeding.

3.4.2 Field preparation

The field was ploughed and brought to fine tilth. Twenty-five tones of FYM and recommended dose of fertilizers (150:50:50 NPK kg/ha) were incorporated in to the soil. The total dose of phosphorus, potassium and half of nitrogen were applied as a

basal dose at the time of transplanting. The remaining dose of nitrogen was to top dressed a month after transplanting.

3.4.3 Transplanting

Forty-five days old, uniform and healthy seedlings with an average height of 15 cm were selected and dipped in the solution containing Trichoderma 10ml and 25g Carbendazim in 10 litres of water for protection against pests and diseases. Seedlings are transplanted on 25-08-2022 with a spacing of 60 X 60 cm.

3.4.4 Gap filling

Gap filling was done 8 days after transplanting and plant population of each treatment plot was maintained.

3.4.5 Irrigation

Irrigation was given regularly and uniformly through drip irrigation.

3.4.6 Weeding

Hand weeding was done at fifteen days interval and 4-5 weeding are done and the plot is kept weed free.

3.4.7 Plant Protection

The Plant Protection was done by spraying imidacloprid (1ml/l) and drenching with fungicides like copper oxychloride and when required to provide protection against pests and diseases.

3.5 Observations recorded

3.5.1 Qualitative characters

3.5.1.1 Plant growth habit (Spreading / Semi-spreading / Erect)

Plant growth habit was recorded by visual observation.

3.5.1.2 Shape of leaves (Narrow / Broad)

Observation of shape of leaves was recorded by visual appearance.

3.5.1.3 Leaf colour (Dark green / Green / Light green)

Observation of leaf colour was recorded by visual appearance.

3.5.1.4 Fruit colour (Green / Light green / Dark green)

Observation of fruit colour was recorded by visual appearance.

3.5.1.5 Fruit shape (Tapering / Conical / Oval)

Observation of fruit shape was recorded by visual appearance

3.5.1.6 Fruiting habit (Solitary / Clustering / Erect / Pendulous)

Observation of fruiting habit was recorded by visual appearance.

3.5.1.7 Fruit surface (Smooth / Wrinkled)

Observation of fruit surface was recorded by visual appearance.

3.6 Quantitative Characters

3.6.1 Growth parameters

3.6.1.1 Plant height (cm)

Five plants were selected randomly and height is measured with the help of meter tape and expressed in terms of average (cm).

3.6.1.2 Plant Spread (cm)

Plant spread was measured from east-west and south-north direction and mean was calculated and expressed in cm.

3.6.1.3 Number of primary branches per plants

Five plants were selected randomly and the total main branches were calculated at the time of maturity and expressed in the term of average.

3.6.1.4 Days to 50 % flowering

Days to 50 % flowering were recorded based on the date of sowing to the date on which 50 % of the plant from each treatment flowered were recorded and expressed in whole numbers.

3.6.1.5 Days to first harvest

The number of days required for the first green fruit harvest from the date of sowing for each treatment recorded separately.

3.6.2 Fruit Characters

3.6.2.1 Fruit length (cm)

Fruit length was recorded by selecting random five fruit of each treatment and fruit length measured by using meter scale, expressed as in average.

3.6.2.2 Fruit breadth (cm)

Fruit breadth was recorded by selecting random five fruit of each treatment and fruit breadth measured by using vernier calliper, expressed as in average.

3.6.2.3 Fruit weight (g)

Fruit weight was recorded by selecting random five fruit of each treatment and measured by using weighing balance, expressed as in average.

3.7 Yield contributing characters

3.7.1 Number of fruits per plants

Five plants were selected and total fruits were counted for observation and expressed as average at the time of harvest.

3.7.2 Green fruit yield per plant (kg)

Five plants were selected and taken whole fruit weight of each treatment by using weighing balance and expressed as in average. The fruits collected from whole plot of each treatment by using weighing balance, expressed as in average.

3.7.3 Green fruit yield per plot (kg)

Five plants were selected and taken whole fruit weight of each treatment by using weighing balance and expressed as in average. The fruits collected from whole plot of each treatment by using weighing balance, expressed as in average.

3.7.4 Green fruit yield per hectare (q/ha)

Based on the plot yield, yield per hectare was calculated.

3.8 Incidence of important diseases and infestation of pest (%)

Incidence of disease were recorded by using disease rating scale and infestation of pest were recording by using per cent of pest incidence formulae.

Number of affected plants from each genotype was recorded by taking actual count at fifteen days interval from 30 DAT. Affected plants were tagged for easiness in counting. Percentage of affected plants was worked out by using following formula**.**

The per cent pest infestation and disease incidence was calculated as per cent disease Index (P.D.I).

$$\text{P.D.I.} = \frac{\text{Number of affected plants per plot}}{\text{Total number of plants per plot}} \times 100$$

Total number of plants = Affected plants + Healthy plants

3.8.1 Disease

3.8.1.1 Incidence of Leaf curl (%)

The total number of plants affected by leaf curl the affected plants are recorded and expressed as per cent (Joshi and Choudhary, 1981).

The Per cent Disease Incidence (PDI) was calculated using the formula.

$$\text{Percent leaf curl incidence} = \frac{\text{Number of infected plants per plot}}{\text{Total number of plants per plot}} \times 100$$

Percent disease infection	Grade	Reaction
0	0	Immune (I)
1-9 %	1	Resistant (R)
10-19 %	2	Moderately resistant (MR)
20-39 %	3	Moderately susceptible (MS)
40-69 %	4	Susceptible (S)
70-100 %	5	Highly susceptible (HS)

3.8.1.2 Incidence of powdery mildew (%)

The per cent powdery mildew incidence was recorded as per cent leaf area infected for all the hybrids, which were scored following zero to Five disease rating scale (Mayee and Datar, 1986) as given below the table given by Bliss (1937) was referred for transformation of pest and disease index into Arc sine values for further analysis of data.

$$\text{Per cent powdery mildew incidence} = \frac{\text{Number of affected plants per plot}}{\text{Total number of plants per plot}} \times 100$$

Disease Rating Scale for Powdery Mildew

Grade	Description (% Area infected)	Reaction
0	0 % Infection	Immune (I)
1	1- 10 % Infection	Resistant (R)
2	11- 15 % Infection	Moderately resistant (MR)
3	16- 25 % Infection	Moderately susceptible (MS)
4	26- 50 % Infection	Susceptible (S)
5	More than 50 % Infection	Highly susceptible (HS)

3.8.1.3 Incidence of Anthracnose (%)

The per cent anthracnose incidence was recorded as per cent leaf area infected for all the hybrids, which were scored following zero to Five disease rating scale was referred for anthracnose transformation of pest and disease index into Arc sin values for further analysis data.

$$\text{Per cent disease incidence for anthracnose} = \frac{\text{Number of infected plants per plot}}{\text{Total number of plants per plot}} \times 100$$

Grade	Description (% Area infected)	Reaction
0	0 % Infection	Immune (I)
1	1- 10 % Infection	Resistant (R)
2	11- 15 % Infection	Moderately resistant (MR)
3	16- 25 % Infection	Moderately susceptible (MS)
4	26- 50 % Infection	Susceptible (S)
5	More than 50 % Infection	Highly susceptible (HS)

3.8.2 Pest

3.8.2.1 Infestation of Thrips (%)

Per cent infestation of thrips was calculated by following formula.

$$\text{Thrips infestation (\%)} = \frac{\text{Number of affected leaves}}{\text{Total number of leaves}} \times 100$$

3.8.2.2 Infestation of Aphids (%)

Per cent of infestation Aphids was calculated by following formula.

$$\text{Aphids infestation (\%)} = \frac{\text{Number of affected leaves}}{\text{Total number of leaves}} \times 100$$

3.8.2.3 Infestation of Red spider mites (%)

Per cent infestation of Red spider mites was calculated by following formula.

$$\text{Red spider mites infestation (\%)} = \frac{\text{Number of affected leaves}}{\text{Total number of leaves}} \times 100$$

Statistical Analysis and the data interpretation

The data recorded for different characters will be subjected to statistical analysis for Randomized Block Design (RBD) and the ANOVA has been given as per method given by Panse and Sukhatme (1985). The standard error of the means was determined wherever the results are significant and the critical difference (CD) between the means was calculated at 5 % level of significance. In a Randomized Block Design, the data of individual plant characters / parameters were subjected to the analysis of variance.

The data were obtained for each parameter was subject to statistical analysis of variance (ANOVA) within the treatments. The comparison of mean was carried out by Randomized Block Design for significance of SE and CD at 5 % level as suggested by Panse and Sukhatme (1985).

The skeleton ANOVA table for RBD with t treatment and replications used are given below:

Sources of variation	**Degree of freedom**	**Sum of Squares**	**MSS**	**F value**	
				Calculated	**Tabulated**
Replication	(r-1)	RSS	RMSS = RSS/(r-1)		
Treatment	(t-1)	TrSS	TrMSS = TrSS/(t-1)	TrMSS/ErSS *Significant at 5% **Significant at 1%	
Error	(r-1) (t-1)	ESS	EMSS = ESS per (r-1) (t-1)		
Total	Rt-1	TSS			

Where,

r = Number of replications

t = Number of treatments

ESS = Error sum of square

MSS = Mean sum of square

A. Critical Difference

CD =SEd × t Value at 5% at error degree of freedom

$$SEd = \sqrt{\frac{2EMS}{r}}$$

Where,

SEd = Standard error of difference between two treatment means

EMS = Error Mean of Square

B. Standard Error of Mean

$$SEd = \pm\sqrt{\frac{2EMS}{r}}$$

C. Coefficient of Variation (CV) (%)

Coefficient of variation is standard deviation expressed as percentage of Mean.

$$CV\% = (SD/X) \times 100$$

Where ,

SD = Standard deviation

x = Mean of character

D. Mean

Mean of the character was estimated by summing up of all the observation and dividing the sum by the number of observations.

$$(X) = \Sigma Xi / N$$

Where,

ΣXi = Summation of all the observations, N = Number of observations

4. RESULTS AND DISCUSSION

4.1 Qualitative Characters

4.1.1 Plant growth habit

The data on plant growth habit are presented in Table 4.1. The variability in the plant spread of chilli hybrids and check was recorded, out of ten hybrids and one check the spreading plant growth habit was observed in hybrids RHRCHHYB-1, RHRCHHYB-5. Semi spreading plant growth habit was observed in hybrids RHRCHHYB-2, RHRCHHYB-3, RHRCHHYB-8, RHRCHHYB-9 and RHRCHHYB-10. Erect plant growth habit was observed in hybrids RHRCHHYB-4, RHRCHHYB-6, RHRCHHYB-7 and check Teja-4.

The above obtained results are in conformity with the results studied by Dhumal *et al*. (2020) reported intermediate growth habit and erect growth habit, Joshi *et al*. (2020) reported erect and growth habit.

4.1.2 Shape of Leaves

The data on shape of leaves are presented in Table 4.1. The variability in the shape of leaves of chilli hybrids and check was recorded, out of ten hybrids and one check broad shape of leaves were observed in hybrids RHRCHHYB-1, RHRCHHYB-5, RHRCHHYB-9 and RHRCHHYB-10, Narrow shape of leaves was observed in hybrids RHRCHHYB-2, RHRCHHYB-3, RHRCHHYB-4, RHRCHHYB-6, RHRCHHYB-7, RHRCHHYB-8 and check Teja-4.

The above obtained results are in conformity with the results studied by Quresh *et al*. (2015), Joshi *et al*. (2020), Gurung *et al*. (2020), Sonaniya and Singh (2022).

4.1.3 Leaf Colour

The data on colour of leaves are presented in Table 4.1. The variability in the colour of leaves of chilli hybrids and check were recorded. Dark Green colour of leaves was observed in hybrids RHRCHHYB-1, RHRCHHYB-5 and check Teja-4. Green colour of leaves were observed in hybrids RHRCHHYB-2, RHRCHHYB-3, RHRCHHYB-4, RHRCHHYB-6, RHRCHHYB-7, RHRCHHYB-8, RHRCHHYB-9, RHRCHHYB-10. The colour variation in leaves of different hybrids might be due to the

differences in genetic makeup of hybrids. Dark green colour of leaves helpful for the higher yield due to more chlorophyll assimilation.

The above obtained results are in conformity with the results studied by Quresh *et al*. (2015) found light green, dark green and green leaf colour, Gurung *et al*. (2020) found light green, dark green and green leaf colour, Joshi *et al*., (2020) found dark geen and green leaf colour, Sonaniya and Singh (2022) found dark green, medium green and light green.

Table 4.1. Qualitative characters of different chilli hybrids

Sr. No.	Hybrids	Plant growth habit (Spreading/Semi spreading /Erect)	Shape of leaves (Broad /Narrow)	Colour of leaves (Dark green/ Green/ Light green)
1.	RHRCHHYB-1	Spreading	Broad	Dark green
2.	RHRCHHYB-2	Semi spreading	Narrow	Green
3.	RHRCHHYB-3	Semi spreading	Narrow	Green
4.	RHRCHHYB-4	Erect	Narrow	Green
5.	RHRCHHYB-5	Spreading	Broad	Dark green
6.	RHRCHHYB-6	Erect	Narrow	Green
7.	RHRCHHYB-7	Erect	Narrow	Green
8.	RHRCHHYB-8	Semi spreading	Narrow	Green
9.	RHRCHHYB-9	Semi spreading	Broad	Green
10.	RHRCHHYB-10	Semi spreading	Broad	Green
11.	Teja-4 (Check)	Erect	Narrow	Dark green

4.1.4 Fruit Colour

The data on colour of fruits are presented in Table 4.2. The variability in the fruit colour of chilli hybrids and check were recorded, out of ten hybrids and one check Green colour of fruits were observed in hybrids RHRCHHYB-1, RHRCHHYB-3, RHRCHHYB-5, RHRCHHYB-7, RHRCHHYB-8 and RHRCHHYB-9. Light green colour of fruits was observed in hybrids RHRCHHYB-2, RHRCHHYB-4 RHRCHHYB-6 and RHRCHHYB-10. Dark green colour of fruits was observed in check Teja-4.

The above obtained results are in conformity with the results studied by Mahmood *et al*. (2002) reported light green, dark green and green fruit colour, Sharma *et al*. (2013) reported medium green and dark green fruit colour at immature stage, Zahoor *et al*. (2017) reported light green and medium green fruit colour, Haque *et al*. (2019) reported black fresh, dark green and light green fruit colour, Dhumal *et al*. (2020) reported dark green, green and light green colour.

4.1.5 Fruit Shape

The data on shape of fruits are presented in Table 4.2. Among all ten hybrids and one check the Tapering fruit shape were observed in hybrids RHRCHHYB-1, RHRCHHYB-2, RHRCHHYB-3, RHRCHHYB-4, RHRCHHYB-5, RHRCHHYB-6, RHRCHHYB-7, RHRCHHYB-8, RHRCHHYB-9, RHRCHHYB-10 and check Teja-4.

The above result is in accordance with Sharma *et al*. (2013), Quresh *et al*. (2015) reported Cordate, Blocky and Elongated types of fruits, Joshi *et al*. (2020) reported elongate triangular and campanulate shapes of fruits, Dhumal *et al*. (2020) reported long and very long fruits, Sonaniya and Singh (2022) reported triangular, moderately triangular and trapezoidal fruit shape.

4.1.6 Fruiting habit

The data on fruiting habit is presented in Table 4.2. The data obtained for fruiting habit by visual observation of different chilli hybrids revealed that all the hybrids along with check Teja-4 have solitary and pendulus fruit bearing habit.

The result goes in line with Haque *et al*. (2019) reported solitary and cluster fruit bearing habit, Joshi *et al*. (2020) reported semi pendent, pendent and erect fruiting habit, Dhumal *et al*. (2020) reported all progenies showed solitary and pendent fruit bearing habit, Sonaniya and Singh (2022) reported solitary and clustering fruit bearing habit.

4.1.7 Fruit surface

The data on fruit surface is presented in Table 4.2. It was revealed that out of ten hybrids and one check, all hybrids and one check Teja-4 have wrinkled fruit surface.

Such type of variation in fruit surface was also noticed by Quresh *et al*. (2015) found wrinkled and smooth fruit surface, Gurung *et al*. (2020) found semi

wrinkled, wrinkled and smooth fruit surface, Sonaniya and Singh (2022) found rough, slightly rough and smooth fruit surface.

Table 4.2. Qualitative characters (Fruit characters) of different chilli hybrids

Sr. No.	Hybrids	Fruit colour (Light green/ Green /Dark green)	Fruit shape (Tapering/ oval/ Conical)	Fruiting habit (Solitary/ Clustering and Erect/ Pendulus)	Fruit surface (Wrinkled/ Smooth)
1	RHRCHHYB-1	Green	Tapering	Solitary and pendulus	Wrinkled
2	RHRCHHYB-2	Light green	Tapering	Solitary and pendulus	Wrinkled
3	RHRCHHYB-3	Green	Tapering	Solitary and pendulus	Wrinkled
4	RHRCHHYB-4	Light green	Tapering	Solitary and pendulus	Wrinkled
5	RHRCHHYB-5	Green	Tapering	Solitary and pendulus	Wrinkled
6	RHRCHHYB-6	Light green	Tapering	Solitary and pendulus	Wrinkled
7	RHRCHHYB-7	Green	Tapering	Solitary and pendulus	Wrinkled
8	RHRCHHYB-8	Green	Tapering	Solitary and pendulus	Wrinkled
9	RHRCHHYB-9	Green	Tapering	Solitary and pendulus	Wrinkled
10	RHRCHHYB-10	Light green	Tapering	Solitary and pendulus	Wrinkled
11	Teja-4 (Check)	Dark green	Tapering	Solitary and pendulus	Wrinkled

4.2 Quantitative Characters

4.2.1 Growth Parameters

4.2.1.1 Plant Height (cm)

Data presented in Table 4.3 and graphically represented in Fig. 4.1 showed the variation in plant height of different chilli hybrids.

The variability in the plant height of chilli hybrids and check obtained at last harvest. The plant height of different hybrids at last harvest and check were ranged from 60.91 to 71.37 cm. Maximum plant height was observed in hybrid RHRCHHYB-7 (71.37 cm) which is at par with check Teja-4 (70.81 cm), RHRCHHYB-6 (70.61 cm), RHRCHHYB-4 (70.53 cm), RHRCHHYB-5 (67.86 cm), RHRCHHYB-1 (66.01 cm) and RHRCHHYB-9 (65.70 cm). Minimum plant height found in RHRCHHYB-2 (60.91 cm).

It might be due to genetic characters as well as it might depends on environmental factors, which ultimately responsible for increasing the photosynthetic activities, rate of chlorophyll formation, nitrogen metabolism and auxin contents in such plants of chilli, which ultimately improved the plant height.

The above result is in accordance with Tembhurne *et al*. (2008) recorded plant height ranged from 50.17 to 80.93 cm, Dhaliwal *et al*. (2014) recorded plant height ranged from 50.30 to 90.10 cm, Yatagiri *et al*. (2017) recorded plant height ranged from 48.90 to 70.20 cm, Dhumal *et al*. (2020) recorded plant height ranged from 55.55 to 97.37 cm.

4.2.1.2 Plant spread (cm)

Data presented in Table 4.3 and graphically represented in Fig. 4.2 and Fig. 4.3 showed the variation in plant spread of different chilli hybrids.

The variability in the plant Spread of chilli hybrids and check obtained at last harvest. From all the ten hybrids and one check Teja-4, the north-south spread was recorded which is ranged from 52.53 to 82.56 cm. The maximum north-south spread was recorded in RHRCHHYB-5 (82.56 cm) which is at par with hybrids RHRCHHYB-1 (76.57 cm), RHRCHHYB-10 (68.67 cm) and RHRCHHYB-9 (67.41 cm). Minimum north south spread found in hybrid RHRCHHYB-7(52.53 cm).

The east-west spread was recorded at last harvest which is ranged from 52.49 to 78.12 cm. The maximum east-west spread was recorded in RHRCHHYB-5 (78.12 cm) which is at par with hybrids RHRCHHYB-1 (73.07 cm), RHRCHHYB-10 (68.55 cm) and RHRCHHYB-9 (67.72 cm). Minimum north south spread found in hybrid RHRCHHYB-7 (52.49 cm).

Above findings regarding plant spread in different hybrids are in accordance with Quartey *et al*. (2014) recorded plant spread ranged from 66.95 to 101.68 cm, Herison *et al*. (2014) recorded plant spread ranged from 40.80 to 77.80 cm.

4.2.1.3 Number of primary branches per plant

Data presented in Table 4.3 and graphically represented in Fig. 4.4 showed the variation in number of primary branches of different chilli hybrids.

There is a significant difference in the number of primary branches in all the hybrids with check. Number of primary branches per plant at last harvest is obtained

in a range from 4.33 to 9.00, where the maximum number of primary branches observed in hybrid RHRCHHYB-5 (9.00) which is at par with hybrids RHRCHHYB-1 (8.67), RHRCHHYB-10 (8.00). Minimum number of primary branches found in hybrid RHRCHHYB-7 (4.33). Probable reason for increased number of branches might be due to the fact that, increased rates of photosynthesis and photosynthates supply for the maximum branches.

The findings are in analogous with Ukkund *et al*. (2007) recorded number of primary branches ranged from 6.85 to 9.45, Vijaya *et al*. (2014) found number of primary branches ranged from 7.27 to 7.47, Jamal *et al*. (2015) recorded number of primary branches ranged from 6.8 to 9.3, Dhumal *et al*. (2020) recorded number of primary branches ranged from 4.50 to 7.75.

Table 4.3. Performance of different chilli hybrids in respect of plant height, plant spread, number of primary branches

Sr. No.	Hybrids	Plant height (cm)	Plant spread (north-south) (cm)	Plant spread (east-west) (cm)	Number of Primary branches
1	RHRCHHYB-1	66.01	76.57	73.07	8.67
2	RHRCHHYB-2	60.91	55.73	55.39	5.00
3	RHRCHHYB-3	63.04	65.73	67.22	7.33
4	RHRCHHYB-4	70.53	56.18	57.16	5.67
5	RHRCHHYB-5	67.86	82.56	78.12	9.00
6	RHRCHHYB-6	70.61	53.49	55.11	5.00
7	RHRCHHYB-7	71.37	52.53	52.49	4.33
8	RHRCHHYB-8	62.33	63.09	66.95	6.00
9	RHRCHHYB-9	65.70	67.41	67.72	7.67
10	RHRCHHYB-10	65.06	68.67	68.55	8.00
11	Teja-4 (Check)	70.81	61.19	58.39	6.33
	S.E.m. ±	2.04	3.11	2.00	0.35
	CD at 5 %	6.02	9.17	5.90	1.03
	CV (%)	5.30	8.42	5.44	9.09

4.2.1.4 Days to 50 % flowering

Data presented in Table 4.4 and graphically represented in Fig. 4.5 showed the variation in days to 50 % flowering of different chilli hybrids.

The range of days to 50 % flowering in chilli hybrids was observed from 42.70 to 58.37 days. Among all 10 hybrids and one check minimum days are required for 50 % flowering in RHRCHHYB-5 (42.70 days) which is at par with RHRCHHYB-1(48.67 days). The early flowering in certain hybrids indicated adaptability of these hybrids in a particular environment, which might have resulted in early termination of vegetative phase and initiation of reproductive stage as compared to those hybrids, which took longer time to flowering.

Above findings days to 50 % flowering in different hybrids are in accordance with Phulari (2012) recorded days to 50 % flowering ranged from 47.00 to 64.00 days, Shiva *et al*. (2013) recorded days to 50 % flowering ranged from 54.33 to 61.33 days, Janaki *et al*. (2015) recorded days to 50 % flowering ranged from 24.00 to 42.00 days, Yatagiri *et al*. (2017) recorded days to 50 % flowering ranged from 45.50 to 84.50 days.

4.2.1.5 Days to first harvest

Data presented in Table 4.4 and graphically represented in Fig. 4.6 showed the variation in days to first harvest of different chilli hybrids.

The range of days to first harvest in chilli hybrids was observed from 60.37 to 78.05 days. Among all 10 hybrids and one check RHRCHHYB-5 (60.37 days) required minimum days for days to first harvest which is at par with RHRCHHYB-1 (66.33 days), RHRCHHYB-10 (67.08 days), RHRCHHYB-9 (69.33 days) and check Teja-4 (69.49 days). The hybrid RHRCHHYB-7 required maximum days for days to first harvest (78.05 days). It is also reported to be little bit concern to the available favourable climatic conditions of the region

The variation in days required for first harvesting was also noticed in Kumar *et al*. (2012).

Table 4.4. Performance of different chilli hybrids in respect of days to 50% flowering and days to first harvest

Sr. No.	Hybrids	Days to 50 % flowering	Days to first harvest
1	RHRCHHYB-1	48.67	66.33
2	RHRCHHYB-2	56.00	73.33
3	RHRCHHYB-3	52.50	71.00
4	RHRCHHYB-4	52.59	71.64
5	RHRCHHYB-5	42.70	60.37
6	RHRCHHYB-6	58.12	77.05
7	RHRCHHYB-7	58.37	78.05
8	RHRCHHYB-8	53.01	71.36
9	RHRCHHYB-9	52.97	69.33
10	RHRCHHYB-10	51.06	67.08
11	Teja-4 (Check)	52.22	69.49
	S.E.m. ±	2.72	3.35
	CD at 5 %	8.02	9.87
	CV (%)	8.96	8.29

4.3 Fruit characters

4.3.1 Fruit length (cm)

Data presented in Table 4.5 and graphically represented in Fig. 4.7 showed the variation in fruit length of different chilli hybrids.

The range of fruit length in chilli hybrids was recorded, which is ranged between 8.14 cm to 10.10 cm. Among all ten hybrids and one check maximum fruit length was recorded in hybrid RHRCHHYB-5 (10.10 cm) which is at par with RHRCHHYB-10 (10.09 cm), Teja-4 (9.42). Minimum fruit length was recorded in RHRCHHYB-8 (8.14 cm). It might be due to the fact that, genetic nature, environmental factor as well as it would depends on growth, reproductive phases which influences fruit length.

The findings are in analogous with Nagaraju *et al*. (2017) recorded fruit length ranged from 6.30 to 15.21 cm in parents and 10.96 to 14.46 cm in hybrids,

Nivedha *et al*. (2019) recorded highest fruit length was 9.83 cm, Dhumal *et al*. (2020) recorded fruit length ranged from 7.24 to 11.26 cm.

4.3.2 Fruit breadth (cm)

Data presented in Table 4.5 and graphically represented in Fig. 4.8 showed the variation in fruit breadth of different chilli hybrids.

Table 4.5. Quantitative Characters (Fruit characters) of different chilli hybrids

Sr. No.	Hybrids	Fruit length (cm)	Fruit breadth (cm)	Fruit weight (g)
1	RHRCHHYB-1	8.34	1.13	4.42
2	RHRCHHYB-2	8.32	1.11	4.08
3	RHRCHHYB-3	8.37	1.05	4.10
4	RHRCHHYB-4	8.22	1.10	3.73
5	RHRCHHYB-5	10.10	1.14	4.53
6	RHRCHHYB-6	8.39	0.81	4.05
7	RHRCHHYB-7	8.43	0.76	3.56
8	RHRCHHYB-8	8.14	1.12	4.21
9	RHRCHHYB-9	8.33	1.19	4.68
10	RHRCHHYB-10	10.09	1.13	4.44
11	Teja-4 (Check)	9.42	1.03	3.67
	S.E.m. ±	0.48	0.05	0.21
	CD at 5 %	1.41	0.16	0.62
	CV (%)	9.47	8.92	8.85

Besides fruit length, the breadth of fruit also determines fruit weight and influence the yield of the plant. The fruit breadth obtained is ranged from 0.76 to 1.19 cm. The maximum fruit breadth was recorded in hybrid RHRCHHYB-9 (1.19 cm) which is at par with RHRCHHYB-5 (1.14 cm), RHRCHHYB-1 (1.13 cm), RHRCHHYB-10 (1.13 cm), RHRCHHYB-8 (1.12 cm), RHRCHHYB-2 (1.11 cm), RHRCHHYB-4 (1.10 cm), RHRCHHYB-3 (1.05 cm) and check Teja-4 (1.03 cm). The minimum fruit breadth was recorded in hybrid RHRCHHYB-7 (0.76 cm). It might be due to the fact that, genetic variability of different hybrids of chilli and their rate of acclimatization in the given environment. It might have also due to the larger size of the ovule.

The findings are in analogous with Jaisankar *et al*. (2015) found fruit breadth ranged from 0.85 to 1.41 cm, Dhumal *et al*. (2020) found fruit breadth ranged from 0.74 to 0.90 cm.

4.3.3 Fruit weight (g)

Data presented in Table 4.5 and graphically represented in Fig. 4.9 showed the variation in fruit breadth of different chilli hybrids.

The perusal data of fresh fruit weight (g) of different hybrids was recorded. The fruit weight obtained is ranged from 3.56 to 4.68 g. The maximum fruit weight was recorded in RHRCHHHYB-9 which is at par with RHRCHHYB-5 (4.53g), RHRCHHYB-10 (4.44 g), RHRCHHYB-1 (4.42 g), RHRCHHYB-8 (4.21 g), RHRCHHYB-3 (4.10 g) and RHRCHHYB-2 (4.08 g). The minimum fruit weight was recorded in RHRCHHYB-7 (3.56 g). This variation in fruit weight might be due the fact that, more the seed weight and fruit diameter maximum would be the fruit weight in the crop like chilli. Further, variation in fruit weight might also be known due to differences in the genetic constitution of the hybrids under study and environmental conditions at the time of fruit development.

The findings are in analogous with Amit *et al*. (2014) found fruit weight ranged from 1.71g to 5.19, Jaisankar *et al*. (2015) found ranged from 1.11 to 4.64 g,

4.4 Yield contributing characters

4.4.1 Number of fruits per plant

Data presented in Table 4.6 and graphically represented in Fig. 4.10 showed the variation in number of fruits per plant of different chilli hybrids.

The perusal data of number of fruits per plant of different hybrids was recorded. The number of fruits per plant was recorded is ranged from 243.53 to 283.08. The maximum number of fruits per plant was recorded in hybrid RHRCHHYB-5 (283.08) which is at par with RHRCHHYB-1(280.64), RHRCHHYB-10 (264.20), RHRCHHYB-9 (263.29), RHRCHHYB-3 (262.23), RHRCHHYB-8 (261.21) and check Teja-4 (260.33). The minimum number of fruits per plant was recorded in RHRCHHYB-7 (243.53).

Above findings regarding in different hybrids are in accordance with Pramila *et al*. (2009) reported number of fruits per plant ranged from 51.3 to 234.8, Janaki *et al*. (2015) reported number of fruits per plant ranged from 71.90 to 480, Yatagiri *et al*. (2017) reported number of fruits per plant ranged from 32.30 to 173.00, Nivedha *et al*. (2019) reported number of fruits per plant ranged from 76.80 to 187.80.

4.4.2 Green fruit yield per plant (kg)

Data presented in Table 4.6 and graphically represented in Fig. 11 showed the variation in green fruit yield per plant of different chilli hybrids.

The result of the present investigation for green fruit yield per plant was recorded. The yield per plant was recorded is ranged from 0.87 to 1.27 kg. The highest yield per plant was recorded in hybrid RHRCHHYB-5 (1.27 kg) which is at par with RHRCHHYB-1 (1.23 kg), RHRCHHYB-9 (1.18 kg) and RHRCHHYB-10 (1.17 kg). Lowest yield per plant was recorded in RHRCHHYB-7 (0.87 kg).

The result goes in line with Amit *et al.* (2014) recorded fruit yield per plant ranged from 258.85 to 858.61 g, Rohini and Lakshmanan (2014) recorded highest fruit yield per plant 752.93 g.

4.4.3 Green fruit yield per plot (kg)

Data presented in Table 4.6 and graphically represented in Fig. 12 showed the variation in green fruit yield per plot of different chilli hybrids.

The result of the present investigation for green fruit yield per plot was recorded. The yield per plot was recorded is ranged from 17.31 to 25.92kg. The highest yield per plot was recorded in RHRCHHYB-5 (25.92kg) which is at par with RHRCHHYB-1 (24.51kg), RHRCHHYB-9 (23.63kg), RHRCHHYB-10 (23.44kg). The lowest yield per plot was recorded in RHRCHHYB-7(17.31kg).

Above findings regarding in different hybrids are in accordance with Sahu *et al*. (2016) recorded green fruit yield per plot ranged from 5.52 to 24.6 kg, Kumari *et al*. (2017) recorded green fruit yield per plot ranged from 8.00 to 19.52 kg, Pandiyan *et al*. (2019) recorded highest green fruit yield per plot 39.1 kg.

4.4.4 Green fruit yield per hectare (q/ha)

Data presented in Table 4.6 and graphically represented in Fig.13 showed the variation in green fruit yield per hectare of different chilli hybrids.

The result of the present investigation for green fruit yield per hectare was recorded. The yield per hectare was recorded is ranged from 240.41 to 359.99 q/ha. The highest yield per hectare was recorded in RHRCHHYB-5 (359.99 q/ha) which is at par with RHRCHHYB-1(340.41 q/ha), RHRCHHYB-9 (328.19 q/ha), RHRCHHYB-10 (325.55 q/ha) and RHRCHHYB-8 (308.33 q/ha). The lowest yield per hectare was recorded in RHRCHHYB-7 (240.41 q/ha). Genetic makeup of single hybrid is the support of favourable climatic conditions as well as agronomical practices might provide appropriate conditions for more vegetative and reproductive growth i.e., vigour of crop like chilli. RHRCHHYB-5 might get such favourable conditions in the present study, there by effects in the production of more number of good quality fruits and it would be converted into maximum yield per plant and hectare basis.

Table 4.6. Performance of different chilli hybrids in respect of no of fruits per plant, yield per plot, yield per hectare

Sr. No.	Hybrids	Number fruits per plant	Yield per plant (kg)	Yield per plot (kg)	Yield per hectare (q/ha)
1	RHRCHHYB-1	280.64	1.23	24.51	340.41
2	RHRCHHYB-2	251.63	1.02	20.50	284.72
3	RHRCHHYB-3	262.23	1.07	21.40	297.22
4	RHRCHHYB-4	254.42	1.05	21.26	295.27
5	RHRCHHYB-5	283.08	1.27	25.92	359.99
6	RHRCHHYB-6	247.03	0.98	19.97	277.35
7	RHRCHHYB-7	243.53	0.87	17.31	240.41
8	RHRCHHYB-8	261.21	1.10	22.20	308.33
9	RHRCHHYB-9	263.29	1.18	23.63	328.19
10	RHRCHHYB-10	264.20	1.17	23.44	325.55
11	Teja-4 (Check)	260.33	1.05	21.02	291.94
	S.E.m. ±	8.03	0.04	1.10	21.15
	CD at 5 %	23.70	0.13	3.25	62.40
	CV (%)	5.33	7.08	8.79	11.05

The variation of the green fruit yield per hectare was might be due to number of fruits per plant, fruit length and weight of fruits having direct positive

correlation to yield which was also observed by Sharma *et al.* (2010), Chattopadhyay *et al.* (2011), Mhaske *et al.* (2022) and indirect effect on yield, number of branches per plant and plant spread also reported by Tembhurne *et al.* (2008).

4.5 Incidence of important diseases and pest:

4.5.1 Incidence of Leaf curl (%)

The extent of disease infection of leaf curl in different chilli hybrids is recorded in Table 4.7 and Fig.14. The ten chilli F_1 hybrids and one check were evaluated against murda complex under natural disease pressure condition. According to disease rating scale of leaf curl virus among all 10 hybrids and one check RHRCHHYB-5 (10 %), RHRCHHYB-1 (15%), RHRCHHYB-10 (10%), RHRCHHYB-9 (10%), RHRCHHYB-2 (15%), RHRCHHYB-3 (15%), RHRCHHYB-4 (15%) RHRCHHYB-8 (15%) and check Teja-4 (15%), was recorded moderately resistant. RHRCHHYB-6 (25%) and RHRCHHYB-7 (25%) was recorded moderately susceptible.

The similar results were also reported by Babu *et al*. (2002), Manju and Sreelathakumary (2002), Ajjappalavara and Channagoudra (2009), Yatagiri *et al*. (2017), Nivedha *et al*. (2019),

4.5.2 Incidence of powdery mildew (%)

The extent of disease infection powdery mildew in different chilli hybrids is recorded in Table 4.7 and Fig.15. The ten chilli F_1 hybrids and one check were evaluated against powdery mildew incidence under natural disease pressure condition. According to disease rating scale of powdery mildew from all ten hybrids and one check RHRCHHYB-1 (10%), RHRCHHYB-3 (10%), RHRCHHYB-9 (10 %) was found resistant to powdery mildew and RHRCHHYB-5 (15 %), RHRCHHYB-8 (15%), RHRCHHYB-10 (15%), Teja-4 (15%) was recorded moderately resistant to powdery mildew. RHRCHHYB-2 (20%), RHRCHHYB-4 (25%) and RHRCHHYB-6 (30%) and RHRCHHYB-7 (30%) was recorded moderately susceptible.

The similar results were also reported by Rajesh and Mohrir (2015), Hareesh *et al*. (2016).

4.5.3 Incidence of Anthracnose (%)

The extent of disease infection of anthracnose in different chilli hybrids is recorded in Table 4.7 and Fig.16. The ten chilli F_1 hybrids and one check were evaluated

against Anthracnose incidence under natural disease pressure condition. According to disease rating scale of anthracnose from all 10 hybrids and one check RHRCHHYB-1 (10 %), RHRCHHYB-5 (10 %), RHRCHHYB-9 (10 %), RHRCHHYB-10 (10 %), Teja-4 (10 %) was recorded resistant to anthracnose. RHRCHHYB-3 (15 %), RHRCHHYB-4 (15 %) was recorded moderately resistant. RHRCHHYB-2 (20 %), RHRCHHYB-4 (20 %) RHRCHHYB-8 (20 %) and RHRCHHYB-6 (25 %) and RHRCHHYB-7 (25 %) was recorded moderately susceptible.

The similar results were also reported by Sharath *et al*., (2020), Arjun *et al*. (2020), Tembhurne *et al*. (2021).

Table 4.7. Data regarding of disease infection in different chilli hybrids

Sr. No.	Hybrids	Incidence of leaf curl (%)	Incidence of powdery mildew (%)	Incidence of anthracnose (%)
1	RHRCHHYB-1	15 (22.79)	10 (18.43)	10 (18.43)
2	RHRCHHYB-2	15 (22.79)	20 (26.57)	20 (26.57)
3	RHRCHHYB-3	15 (22.79)	10 (18.43)	15 (22.79)
4	RHRCHHYB-4	15 (22.79)	20 (26.57)	15 (22.79)
5	RHRCHHYB-5	10 (18.43)	15 (22.79)	10 (18.43)
6	RHRCHHYB-6	25 (30.0)	30 (33.21)	25 (30.0)
7	RHRCHHYB-7	25 (30.0)	30 (33.21)	25 (30.0)

8	RHRCHHYB-8	15 (22.79)	15 (22.79)	20 (26.57)
9	RHRCHHYB-9	10 (18.43)	10 (18.43)	10 (18.43)
10	RHRCHHYB-10	10 (18.43)	15 (22.79)	10 (18.43)
11	Teja-4 (Check)	15 (22.79)	15 (22.79)	10 (18.43)
	S.E.m. ±	0.66	0.69	0.67
	CD at 5 %	1.9569	2.05	2.0
	CV (%)	7.43	6.99	7.60

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4.5.4 Infestation of Thrips (%)

The extent of pest infestation of thrips in different chilli hybrids recorded in table 4.8 and Fig.17. The ten chilli F_1 hybrids and one check were evaluated against Thrips infestation under natural condition. From all ten hybrids and one check the minimum infestation of thrips was recorded in RHRCHHYB-5 (5.16 %) followed by RHRCHHYB-1 (6.89 %) and RHRCHHYB-10 (7.20 %). Maximum infestation of thrips was recorded in RHRCHHYB-7 (13.67 %) and RHRCHHYB-6 (13.23 %).

The result goes in line with Sandeep *et al*. (2010), Roopa and Kumar (2014), Latha and Hunumanthraya (2018), Suhasini *et al*. (2023).

4.5.5 Infestation of Aphids (%)

The extent of pest infestation of aphids in different chilli hybrids recorded in table 4.8 and Fig.18. The ten chilli F_1 hybrids and one check were evaluated against Aphids infestation under natural condition. From all ten hybrids and one check the minimum infestation of Aphids was recorded in RHRCHHYB-5 (6.13 %) followed by RHRCHHYB-1 (7.21 %) and Maximum infestation of aphids was recorded in RHRCHHYB-7 (12.78 %) and RHRCHHYB-6 (12.45 %).

The result goes in line with Roopa and Ashok Kumar (2014), Rajput *et al*. (2017), Kumar *et al*. (2021).

4.5.6 Infestation of red spider mites (%)

The extent of pest infestation of red spider mites in different chilli hybrids recorded in table 4.8 and Fig.19. The ten chilli F_1 hybrids and one check were evaluated against red spider mites infestation under natural condition. From all ten hybrids and one check the minimum infestation of red spider mites was recorded in RHRCHHYB-5 (5.76 %) followed by RHRCHHYB-1 (7.10 %) and RHRCHHYB-10 (7.16 %). Maximum infestation of red spider mites was recorded in RHRCHHYB-7 (12.78 %) and RHRCHHYB-6 (12.34 %).

The result goes in line with Sandeep *et al*. (2010), Latha and Hunumanthraya (2018), Sultana *et al*. (2022).

Table 4.8. Performance of chilli hybrids against pest infestation

Sr. No.	Hybrids	Infestation of Thrips (%)	Infestation of Aphids (%)	Infestation of red spider mites (%)
1	RHRCHHYB-1	6.89 (15.22)	7.21 (15.58)	7.1 (15.45)
2	RHRCHHYB-2	8.45 (16.90)	9.32 (17.78)	7.26 (15.63)
3	RHRCHHYB-3	9.15 (17.44)	8.94 (17.23)	8.12 (16.40)
4	RHRCHHYB-4	12.43 (19.63)	11.78 (19.09)	11.65 (18.98)
5	RHRCHHYB-5	5.16 (13.14)	6.13 (14.34)	5.76 (13.90)
6	RHRCHHYB-6	13.23 (21.62)	12.45 (20.95)	12.34 (20.85)
7	RHRCHHYB-7	13.67 (21.71)	12.78 (20.96)	12.78 (20.96)
8	RHRCHHYB-8	8.84 (17.30)	8.62 (17.08)	8.18 (16.62)
9	RHRCHHYB-9	7.23 (15.89)	9.19 (17.98)	7.81 (16.53)
10	RHRCHHYB-10	7.2 (15.58)	9.07 (17.55)	7.16 (15.54)
11	Teja-4 (Check)	8.9 (16.58)	8.96 (16.64)	8.31 (16.01)
	S.E.m. ±	0.90	0.91	0.87
	CD at 5 %	2.66	2.69	2.57
	CV (%)	9.00	8.89	8.88

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5. SUMMARY AND CONCLUSION

The present investigation on “Evaluation of Chilli Hybrids (*Capsicum annuum* L)” will be conducted at AICRP on Vegetable Crops, Department of Horticulture, MPKV, Rahuri during *kharif* 2022. The evaluation of F_1 hybrids is very essential, to improve further crop improvement. Ten F_1 Chilli hybrids with one commercial check evaluated in this research work.

Hybridization is considered an important evolutionary force since it may lead to an increase of the intra specific diversity of participating populations, creation of new hybrids and generation of highly diversified genotypes.

Qualitative Characters

The variability in the plant spread of chilli hybrids and check was recorded, out of ten hybrids and one check the spreading plant growth habit was observed in hybrids RHRCHHYB-1 and RHRCHHYB-5.

The variability in the shape of leaves of chilli hybrids and check was recorded, out of ten hybrids and one check broad shape of leaves was observed in hybrids RHRCHHYB-1, RHRCHHYB-5, RHRCHHYB-9 and RHRCHHYB-10, Dark Green colour of leaves were observed in hybrids RHRCHHYB-1, RHRCHHYB-5 and check Teja-4.

The variability in the fruit colour of chilli hybrids and check were recorded, out of ten hybrids and one check Green colour of fruits were observed in hybrids RHRCHHYB-1, RHRCHHYB-3, RHRCHHYB-5, RHRCHHYB-7, RHRCHHYB-8 and RHRCHHYB-9. Light green colour of fruits were observed in hybrids RHRCHHYB-2, RHRCHHYB-4 RHRCHHYB-6 and RHRCHHYB-10. Dark green colour of fruits were observed in check Teja-4. All the chilli hybrids along with check Teja-4 have solitary and pendulus fruit bearing habit and out of ten hybrids and one check, all hybrids and one check Teja-4 have wrinkled fruit surface.

Quantitative Characters

Among all 10 hybrids and one check minimum days are required for 50% flowering in RHRCHHYB-5 (42.70 days) which is at par with RHRCHHYB-1(48.67 days) and among all 10 hybrids and one check RHRCHHYB-5 (60.37 days) required minimum days for days to first harvest which is at par with RHRCHHYB-1 (66.33 days).

Fruit characters

Among all ten hybrids and one check maximum fruit length was recorded in hybrid RHRCHHYB-5 (10.10 cm). The maximum fruit breadth was recorded in hybrid RHRCHHYB-9 (1.19 cm) and the maximum fruit weight was recorded in RHRCHHHYB-9 which is at par with RHRCHHYB-5 (4.53g).

Yield contributing characters

The maximum number of fruits per plant was recorded in hybrid RHRCHHYB-5 (283.08). The highest yield per plant was recorded in hybrid RHRCHHYB-5 (1.27 kg). The highest yield per plot was recorded in RHRCHHYB-5 (25.92 kg). The highest yield per hectare was recorded in RHRCHHYB-5 (359.99 q/ha) which is at par with RHRCHHYB-1 (340.41 q/ha), RHRCHHYB-9 (328.19 q/ha), RHRCHHYB-10 (325.55 q/ha) and RHRCHHYB-8 (308.33 q/ha).

Incidence of Diseases and Pest

Among all hybrids and one check the minimum leaf curl incidence, anthracnose incidence and minimum infestation of thrips, aphids, red spider mite was recorded in hybrid RHRCHHYB-5, RHRCHHYB-1, RHRCHHYB-10 and RHRCHHYB-9 and the minimum incidence of powdery mildew recorded in RHRCHHYB-1, RHRCHHYB-5, RHRCHHYB-10 and RHRCHHYB-9. This hybrids was observed resistant and moderately resistant for diseases and pest.

Chilli (*Capsicum annuum* L.) is one of the most important cash crops grown extensively in Maharashtra and it has received great consumer acceptance for its characteristic pungency and flavour. One of the first step in increasing productivity is introduction of F_1 hybrids, which are genetically superior, high yielding, pest and disease free and having other value-added traits. Hence, the study was under taken to evaluate chilli F_1 hybrids for growth, yield and quality traits and an attempt was made to find out the most suitable chilli F_1 progenies for growing in Maharashtra.

Overall, for yield and yield contributing characters, pest and disease incidence, the hybrid RHRCHHYB-5 found superior which was at par with hybrid RHRCHHYB-1, RHRCHHYB-9 and RHRCHHYB-10, which should be evaluated for further research work.

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7. APPENDICES

Appendix-I : Details of Meteorological Data During Experimental Period

Temperature (^{0}C)	Temperature (°C)		Relative Humidity (%)		Sunshine (hrs)	Rainfall (mm)
	Max.	Min.	Max.	Min.		
June 2022						
22	38.3	26.3	65	25	05.1	000.0
23	38.1	26	65	30	06.0	001.2
24	35.8	26.2	71	38	06.0	001.3
25	33.4	24.9	79	51	03.4	013.8
26	31.1	24.3	83	57	03.0	008.3
July 2022						
27	34.1	25.1	76	45	08.4	000.0
28	30.3	23.8	91	68	02.3	118.6
29	30.1	23.9	85	66	03.0	043.6
30	30.1	24.6	82	59	03.6	002.8
31	28.0	23.6	83	67	02.1	004.8
August 2022						
32	31.3	24.2	80	58	05.5	001.2
33	25.8	22.7	78	68	02.9	034.6
34	27.8	22.2	93	68	04.2	048.8
35	29.3	22.9	88	66	04.7	081.2
September 2022						
36	29.6	23.0	92	67	4.3	117.4
37	29.8	23.9	84	64	4.3	007.6
38	28.9	23.1	87	69	3.6	051.6
39	28.6	22.4	92	69	1.7	058.8
October 2022						
40	31.2	22.7	94	65	7.7	063.2
41	30.8	22.7	92	59	6.1	025.4
42	32.3	20.7	85	39	8.3	000.0
43	32.1	18.5	84	32	9.8	000.0
44	31.3	18.2	79	36	8.6	000.0

Appendix-I contd…

Temperature (^{0}C)	Temperature (°C)		Relative Humidity (%)		Sunshine (hrs)	Rainfall (mm)
	Max.	Min.	Max.	Min.		
November 2022						
45	30.7	17.4	84	33	07.7	000.0
46	30.4	19.6	84	50	05.7	000.0
47	30.8	21.7	91	54	05.4	050.4
48	27.1	16.7	83	53	05.4	023.2
December 2022						
23	26.2	17.4	93	54	04.7	047.4
24	28.2	15.9	87	46	05.7	000.0
25	27.8	12.6	91	39	07.3	000.0
26	27.6	13.8	91	46	06.3	000.0
January 2023						
27	28.1	15.1	83	48	01.1	000.0
28	25.2	14.6	88	54	05.4	000.0
29	26.7	14.0	89	44	06.9	000.0
30	24.7	12.0	92	42	07.5	000.0

8. VITAE

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IN

VEGETABLE SCIENCE

2023

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