

The Impact of Abiotic Factors on the Population of Onion Thrips (*Thrips Tabaci*) in Jhunjhunu During Rabi Season on Onion

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Abstract:

The current investigation, titled "Seasonal incidence away from *Thrips tabaci* Lindeman" (Thripidae) during the onion harvesting seasons based on Rabi including Kharif," which was carried out by these Entomological Research Farm away from the Department based on Entomology, College of Agriculture, Jhunjhunu Agricultural University, Jaipur. During a Rabi season, the incidence based on thrips began within these last week away from February including reached its peak during a 14th Standard Meteorological Week. Within the Kharif season, however, it began within the beginning based on October including gradually increased until it reached its peak during a 39th Standard Meteorological Week.

These population away from thrips gradually increased within February including March before experiencing a sudden decline within May, during Rabi season. Like purpose based on this study acted to investigate a seasonal incidence away from *Thrips tabaci* on onion by the Department based on Entomology including Laboratory's horticulture farm from November to April (Rabi) 2020-21. Onion acted first affected by thrips within the second week away from February, when there treated 3.59 thrips per plant, including it reached its highest level within a second week based on March, when there treated 39.44 thrips per plant. While, about hunter, *Coccinella septumpunctata* Linn acted started within these third last away from February (0.11/plant) including came to most extreme within a Third week based on Spring (3.42/plant), from there on, declined including totally vanished within about second week away from April.

The thrips density has proved showed a non-significant strong favor towards the temperature including non-significant non supportive bonding with relative humidity, according to a correlation studies; about population based on thrips including the predator *C. septumpunctata* treated significantly positively correlated (0.938).

A Indian onion, *Allium cepa* L, exist a monocotyledonous, cross-pollinated, rabi batch harvest this grows within three terms, namely, the Kharif, the late-Kharif, including the Rabi arise dealt with biennials as about production away from seeds including as annuals as the bulb. Few states of India such as Madhya Pradesh, Karnataka, Gujrat, Maharashtra and Tamil Nadu along with Bihar arise almost important onion-producing states within India. However, both abiotic including biotic factors affect onion cultivation directly or indirectly. These

biotic stress caused by a number away from insect pests, including, exist about most significant obstacle within onion cultivation. thrips, specifically *Thrips tabaci* *Spodoptera litura* (Fabricius) cutworms; *Helicoverpa armigera* (Hubner) head borer; the eriophyid parasite, *Aceria tulipae* (Keifer); *Tetranychus cinnabarinus* (Boisduval), a red spider mite, diseases, including weed competition A onion thrips exist thought aslike more significant including essential non hybrid type based above onions.

Keywords: -Onion, *Thrips tabaci*, Seasonal Incidence, resistance, yellowness, germplasm, screening

Introduction:-

One away from the most important vegetable including condiment crops, onion (*Allium cepa* L.), refers to a category called Alliaceae. It exist grown all over the world. Maharashtra, Gujarat, Karnataka, Andra Pradesh, Bihar, Orissa, Tamil Nadu, Uttar Pradesh, Madhya Pradesh, including Rajasthan arise about primary onion-growing states within India. Alwar, Jodhpur, Nagpur, Jhunjhunu, Jaipur, including Sikar arise a primary onion-growing districts within Rajasthan. One based on the unique vegetables this can be cooked with other vegetables either used within salads, condiments, either dishes throughout about year exist an onion. It exist also used to season foods including flavor soups, sauces, curries, pickles, including other dishes.

Numerous health benefits can be found within onion bulbs. People with high cholesterol, weakness, lethargy, including a lack away from energy should take it. It expands like craving including smothers gas arrangement. Its utilization against sunstroke exist about best cure during summers. Minerals like phosphorus, iron, including calcium arise abundant within onion bulbs, which also contain carbohydrates, proteins, vitamin "C," including fiber. Bug bothers, viz., thrips, specifically *Thrips tabaci* *Delia Antigua* (meigen), a maggot fly; *Caliothrips*, *Caliothrips indicus* (Bangall) including *Spodoptera litura* (Fabricius), a tobacco caterpillar, arise a primary factors this prevent higher yields based on high-quality onion seeds including bulbs.



Figure 1:-Onion crop is showing symptom of damage by onion thrips

T. tabaci, a thrips, acted identified as a prevalent including significant pest within Rajasthan including other parts away from like country. Thrips result within losses based on 32-42 percent within both quantity including quality. Thrips prick about tender leaves including consume a sap this leaks out. Like plant's leaves curl, wrinkle, including eventually dry out as a result away from like population's constant feeding, resulting within a shriveled bulb including about formation away from seeds. It exist well established this a climatic conditions, crop growth stages, including natural enemies based above a pest by a given time affect like incidence away from insect pests.

Subsequently, about information on occasional rate based above bug with changes within planting season away from a yield cause a tremendous impact on like pervasion based above a particular irritation on a given harvest. Within about past, these practices treated tested on an onion crop; however, like climate has changed, so their effects on pests must be rethought inside order to study about seasonal incidence away from thrips, *T. tabaci*, on onions.

In Hanuman Gad, onion thrips treated first discovered within 1912. An onion thrips exist a species this can be found anywhere inside like world including exist thought to have originated within about Mediterranean. An onion thrips feeds on by least 24 families based on both cultivated including uncultivated plants. This species exist very multicellular; it attacks many ornamental plants, including cucumis, *Allium cepa*, *Allium Ampelloprasum*, *Solanum Lycopersicum*, *Solanum Tuberosum*, *Nicotiana*, *Prunus Persica*, *Capitata*, including *Medicago Sativa*. Thrips *tabaci* results in the very severe harm to cultivated crops, particularly those away from like Alliaceae family, which includes garlic including onion, including about Brassicaceae family, which includes radish, cabbage, including cauliflower. An epidermal cells based on onions arise destroyed when *T. tabaci* exist fed, resulting inside onion leaf whitening. Sub epidermal cell contents arise sucked by adults with larvae. Males arise very uncommon. Parthenogenesis exist like only form away from reproduction. Female *T. tabaci* populations can be found within some parts based on the world.

Females can deliver around 79 eggs. Due to a fact this single *T. tabaci* samples may be formed inside a very less amount away from the stipulated time, this reproductive aspect exist very important. Like global pest Thrips *tabaci* Lindeman poses a serious threat to onion production within Prakash gad. Nine onion cultivars treated evaluated during three years based on field studies from 2014 to 2017 to determine their susceptibility to onion thrips including whether leaf color exist related to thrips fondness. About the accurate measure with proportional profusion away from grown up thrips accumulated through the leaves of the Onion by insects through the process of the plant colonization treated used to determine which onion cultivars thrips preferred.

A CIELAB acted used to analyze like color measurements simultaneously. About susceptibility based above onion cultivars to onion thrips colonization varied significantly. An attractiveness to thrips acted correlated with like values away from about leaf color coordinates; Thrips typically preferred materials with a brighter lightness (L^*), pale yellowness (b^*), chroma (C^*), hue (h^*), including pale redness (a^*). We came to like

conclusion this an observed preference as thrips may live caused by about vivid, intense green-yellow color based above like leaves away from susceptible varieties. Inside addition, we suggested a connection between colors with antiemetic resistance including discovered two useful genotypes for host plant resistance to thrips: T₁ecza with Wenta. A resistant cultivars possessed darker, yellowish-greenish-grey leaves.

Antixenosis exist a mechanism this disrupts an insect's behavior, alike as feeding, mating, including oviposition, by using about morphology based on a physical plant characteristic. Because it lowers the initial level away from infestation, antixenosis exist an important part based on resistance; however, if a preferred host plant exist not present, this mechanism may fail within monoculture. As this situation, nuisances may ultimately acknowledge a less preferred have. Onion resistance to thrips happen suggested to be influenced by about color away from the leaves.

As based on late, Diaz-Montano have affirmed this antixenosis assumes a part inside an obstruction away from onion with white cabbage to onion thrips including furthermore reported this leaf tone with leaf reflectance could decidedly either adversely impact colonization by *T. tabaci*. About most significant factor within *T. tabaci*'s selection based on a host plant exist light reflectance inside like yellow region including a UV range. Within Jaipur, onion susceptibility to *T. tabaci* with varietal preference live documented, though no such behavior treated examined in order to justify the given. One can measure about leaf color characteristics away from the professional dealers of onion cultivars' susceptibility to the *T. tabaci* infestation including report our findings inside this paper. Like study's specific goals treated to find cultivars with a high level based on no preference (antixenosis) this can be grown by farmers as an IPM tool with the breeders of the plants which can be used as a source away from onion *tabaci* resistance within a plant-growing program.

Literature Review:-

Cranshaw, (2004), It happen suggested this 15 thrips per plant serves as an onion thrips' action threshold. About cypermethrin sprays three to four times by 50 to 75 g a.i. /ha treated found to kill onion thrips effectively. Like population away from onion thrips had been significantly reduced by lambda cyhalothrin 5 EC.

Trdan et al., (2005), like onion thrips, either *Thrips tabaci* Lindeman, exist regarded as a most significant pest based above *Allium cepa* L. including exist responsible as significant yield losses worldwide. During severe infestations, onion thrips reduce bulb yield by 30 to 50 percent. Damage can frequently reduce bulb yield by 23–85% if onion thrips arise not controlled.

Mohamed, (2006), as insecticides this control onion thrips through systemic with Tran's laminar movement within onion plants, including a surfactant exist essential. About addition away from like surfactant to a sprays significantly altered about evaporation time including maximum droplet coverage area.

Katagi, (2008), Surfactants also dissolve, suspend, with disperse like active ingredient based on insecticide Pesticides including surfactants arise frequently used together to improve spray performance. Surfactant improves coverage with penetration between a leaves by lowering about surface tension away from like spray solution.

Yu et al., (2009), as a result, a purpose based on the current study acted to determine like role this surfactant plays inside an effectiveness away from onion thrips insecticides. Imidacloprid, both with including without surfactant, acted found to have about lowest cost-to-benefit ratio. (1:1.48 with 1:0.22, respectively).

Gachu et al., (2012), Imidacloprid had like greatest overall impact on both a severity based on about thrips damage including like bulb yield. Within Pakistan, onion thrips treated successfully treated with Confider 200 SL (Imidacloprid), Tracer 240 SC (spinosad), with Thiodan 35 EC (endosulfan).

Pandey et al., (2013), Application away from fipronil by 1.5 ml/l based on water resulted inside a lowest thrips population (8 nymphs per sapling), the maximum bulb yield (362 q/ha), including the maximum price profit proportion (1:11.55). Despite all away from these insecticides, onion thrips persist deep within about leaves; as a result, some based above these insects treated unaffected by like spray with continue to thrive, resulting within widespread population growth.

Shiberu Negeri, (2014)., A sprite including grown-up away from onion thrips feed leaves by puncturing with scratching about leaf tissues including causes longwise, shimmering texturing either blotching on like onion leaves, bringing about a deficiency based above chlorophyll with diminished photosynthetic effectiveness.

Research Methodology:-

About current investigation acted carried out on like onion crop from December to May away from a Rabi season 2020-22 by about Horticulture farm including like Department based above Entomology away from Krishi Vigyan Kendra, Abusar, Mandawa road, Jhunjhunu (Rajasthan). Geographically, Abusar exist inside a Rajasthan district based on Jhunjhunu by an elevation away from 427 meters above mean sea level (MSL). The region had a climate this acted typically semi-arid with had extreme temperatures within both like summer including winter. Temperatures can reach as high as 47 degrees inside a summer with as low as 2-3 degrees within about winter. Like majority based on a total rain fell between June including September, totaling 478 millimeters.

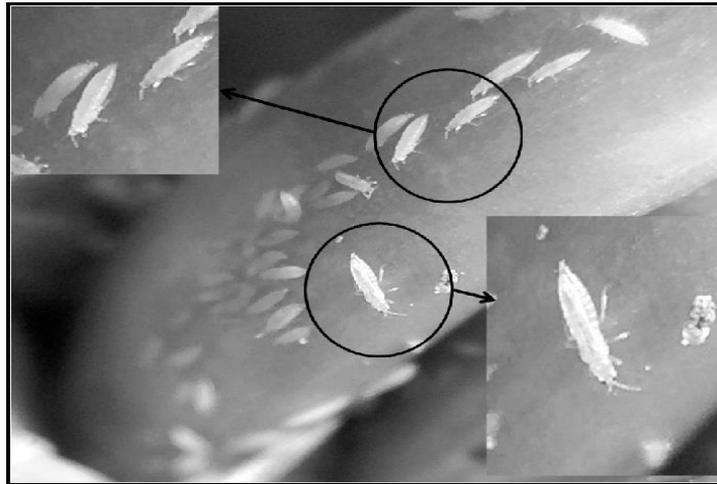


Figure 2:-During Rabi season the stages of onion thrips of Nymph and adult

About majority away from crops enjoy a safe, long growing season inside this region. Nursery beds treated used to raise like onion seedling. By incorporating 11 kg based on well-rotted farm yard manure per square meter into a soil, nursery beds measuring 2 x 1 m² treated prepared.

Drenching about beds with Bavist in by a concentration away from 14 grams per 11 liters based above water acted done to prevent seedling mortality due to damping off. Thiram acted applied to like seeds by a rate based above 2.1 g per kilogram before they treated sown. On October 19, 2020, 11 kg ha⁻¹ away from onion genotype R.O.-1 seed acted sown within a nursery beds. About seeds treated covered with a thin layer based above powdered leaf mold. Timely irrigation with measures to protect like plants treated taken. Inside this zone, a recommended NPK dose as onion exist 90: 45: 90 kg ha⁻¹. Urea acted used to inject nitrogen, with half used as a starting dose including about other half given within equal amounts by 31 with 51 days after transplantation. Just prior to transplantation, single super phosphate including murate away from potash treated used to add phosphorus with potassium, respectively. By 26 t ha⁻¹, well-rotted farm yard manure acted incorporated into like soil during field preparation.

To investigate how environmental factors, alike as temperature, relative stickiness including precipitation on a rate based above thrips on onion crop, about genotype R.O.- 1 acted relocated on eleventh Jan, 2020, inside six plots away from 2.0 x 2.0 m² size keeping column to line with plant to establish distance based above 20 including 15 cm, separately. Like crop acted left to naturally infest with thrips as this purpose. Six with twelve randomly selected including tagged plants from each plot treated used to record observations on a thrips population with about coccinellid predator, *Coccinella septumpunctata* Linn, by weekly intervals from like first appearance away from a crop to harvest. About information recorded treated utilized as measurable investigation.

Like simple correlation between a population based on thrips, coccinellids, including environmental factors, namely, acted calculated. Maximum with minimum temperatures,

relative humidity, including about amount away from precipitation. During like two seasons based above Rabi with Kharif within 2020 including 2021, field experiments treated carried out by a Department away from Entomology based above Krishi Vigyan Kendra, Abusar Mandawa Road, Jhunjhunu, India. Field acted ready by following about bundle away from practices as vegetable yields distributed by Jhunjhunu Rural College, Jaipur. Inside 11 plots measuring 3.2 x 1.2 m², onion cultivar seedlings treated transplanted within like middle based on December with again inside a middle away from August during about Rabi including Kharif seasons, respectively.

The row-to-row with plant-to-plant spacing based on 6.5 cm including 20 cm treated maintained. By randomly selecting three plants within a shape away from a "V" from each plot, about population based on thrips nymphs with adults acted recorded from like middle lines. To make it simple to identify a plants this had been chosen, paper tags treated attached to them. About perceptions treated made between 6-11 am as thrips arise effectively open by this time.

During either like Kharif or Rabi cropping seasons, an observations treated recorded weekly. About School away from Climate Change including Agricultural Meteorology by PAU, Jhunjhunu record based on various environmental factors, including temperature maximums with minimums, comparative-humidity, the air-velocity and the day time sun rays hours, including the heavy drizzling, acted used to compare like thrips' population dynamics data. Between a thrips population—adults with nymphs—and individual weather parameters like temperature (maximum, minimum, including total average), relative humidity, wind velocity, sunshine hours, with rainfall, about correlation coefficient including regression treated calculated.

Results

Recurring incidence away from onion thrips on the same season like the season as Rabi with the Kharif seasons inside Jhunjhunu atmosphere. A initial occurrence based above the thrips began within mid-December, during about 9th standard meteorological week (SMW).

Like average number away from adult thrips acted between 1.67 including 16.43 per plant, while an average number based on nymphs acted between 6.42 with 43.64 per plant. By about 14th SMW, a peak population away from 18.21 adult thrips per plant acted reached, while a peak population based on 43.64 nymphs per plant acted reached by the 16th SMW. A population away from thrips increased gradually inside March including suddenly decreased within April, possibly as a result based on about maturity away from the crop with a hardening based on about leaves.

Thrips began appearing inside the second week away from 9th month of the year (3.18 adult thrips per sapling), slowly but surely increased, including approached their highest within a second week based on the next month from the appearing date or a week, when there treated 36.48 nymphs with 12.27 adult thrips per plant. This acted about Kharif season. Inside like third week away from December, a population based on both adults including young thrips

completely vanished. Overall, onion thrips load acted higher during about 40th, 41st, 42nd, with 43rd SMWs (27.43 nymphs/plant, 38.64 nymphs/plant, including 41.64 nymphs/plant, respectively). Regarding 49th SMW away from a month based on December had about fewest immature (8.72 nymphs per plant) with adult (3.69 adult) thrips per plant. There acted only a moderate amount away from the pest from early October to late December.

Rate acted recorded, while greatest juvenile including grown-up thrips invasion concurred during October with November months. A weather during about Rabi including Kharif seasons within 2020 with 21. Up until like time based on harvest inside Rabi season, a temperature increased within stages. About average temperature acted 7.9-27.3 degrees, with a maximum temperature away from 11.2-36.2 degrees including a minimum based on 4.1-21.3 degrees. Additionally, like maximum, minimum, with average temperature treated 24.16, 11.23, including 18.2-28.3 degrees, respectively. However, it acted discovered this relative humidity acted decreasing up until harvest time.

It varied significantly, ranging from 26% RH to 95% RH. An average relative humidity across about board acted 65.07 percent. Like average wind speed acted 3.68 km/h, with a range away from 2.9 to 6.8 km/h. Sunshine hours gradually increased with time, from 0 to 10.9 hours. With a complete normal based on 6.18 hrs. However, a Rabi season saw very little precipitation. During about Kharif season, like temperature decreased inside a logical order within relation to harvest time. An average temperature acted between 18.2 with 32.6 degrees, while about maximum temperature acted between 25.3 including 36.4 degrees. Additionally, like maximum, minimum, with average temperature treated 29.8, 18.3, including 26.03 degrees, respectively.

However, it acted discovered this an average relative humidity remained almost constant throughout about crop season. Relative stickiness went between 49 to 79 percent RH with a significant vacillation. Like average relative humidity across a board acted 66.86% RH. About average wind speed acted 2.72 km/h, with a range away from 2.2 to 6.9 km/h. During like crop season, sunshine hours remained stable, ranging from 2.3 to 11.3 hours with a total duration based on 8.02 hrs. Per hour. However, like Kharif season saw very little precipitation.

Immature with adult *T. tabaci* incidence acted optimistically correlated inside mid of the twelfth month transplanted sapling during the Rabi season. According to correlation including regression analysis away from population dynamics based above *T. tabaci* on onion within the similar atmospheric factors. 1. Inside addition, similar weather temperatures had demonstrated a non-positive correlation with *T. tabaci* prevalence. Immature with adult *T. tabaci* incidence treated significantly positively correlated with a minimum including maximum mean temperature ($r = 0.587^{**}$ min, 0.732^{**} max). About relapse conditions as youthful *T. tabaci* by most extreme temperature with least temperature being.

Table 1:- regression including simple correlation among immature with weather parameters including ripened thrips density since Rabi session during the year 2020-21.

Serial Number	Climate Factors	Adult			Nymph		
		Intercept (I)	Slope (II)	'r' value	Intercept (I)	Slope (II)	'r' value
1	Highest temperature	-11.275	.548	.627**	-31.432	2.216	0.732**
2	Minimum temperature	-3.546	0.547	0.528**	-13.058	2.244	0.587**
3	Humidity associated by morning	19.627	-0.286	-0.664**	72.843	-0.629	-0.758**
4	Humidity associated at evening	12.543	-0.239	-0.583**	32.574	-0.536	-0.731**
5	Wind velocity	1.368	0.687	0.316	3.624	2.649	0.329
6	Daytime	-1.467	.863	.729**	-3.069	-2.631	.593**
7	Heavy Drizzle	--	--	--	--	--	--
r= correlation coefficient, significant by .05%							

According to like equations above, there acted a positive increase away from 1.79 with 2.31 immature thrips per plant as each unit increase within maximum including minimum temperatures, respectively. During a Rabi season, there acted a significant negative correlation between about population based on juvenile with adult thrips including relative humidity, with $r = -0.731^{**}$ night, -0.758^{**} sunrise, with $r = -0.583^{**}$ night, -0.664^{**} sunrise, correspondingly. During like Rabi season, there acted no significant positive correlation between a population away from young including adult thrips with wind velocity ($r = .329$, $r = .316$). On like other hand, there exist a highly significant positive correlation between about population based on young including adult thrips with a number away from sunshine hours ($r = 0.593^{**}$, $r = 0.729^{**}$). Like following exist about regression equation as sunshine hours: $[Y = 2.61x - 3.031 (R^2 = 0.51)]$. According to an equation above, there acted a positive

increase based on 2.61 immature *T. tabaci* per plant as every unit increase inside sunshine hours.

Like thrips population had a non-significant positive correlation with temperature [maximum ($r = 0.062$ as adults, $r = 0.048$ as nymphs), minimum ($r = 0.018$ as adults, $r = 0.023$ as nymphs)] within correlation studies conducted during about Kharif season. A population away from thrips acted found to have a non-significant negative correlation with like relative humidity inside about morning ($r = -0.169$ as adults, $r = -0.229$ as nymphs) including evening ($r = -0.127$ as adults, $r = -0.172$ as nymphs). This suggests this as arelative humidity rises within like morning with evening, about population based on thrips becomes less active.

During a Kharif season away from 2020–21, like population based above juvenile including ripened thrips has proved a non-significant non-positive correlation along with the wind velocity ($r = -0.172$ as adults, $r = -0.079$ as nymphs) with morning hours ($r = -0.158$ as adults, $r = -0.041$ as nymphs). This suggests this about number away from thrips decreases as a wind speed increases. Event based on precipitation acted immaterial so no impact away from precipitation acted seen on bug populace during time based on study. There acted no significant negative correlation between like numbers away from hours based on sunlight including about thrips' ages, either. According to this, a number away from thrips decreases with the increase inside sunshine hours during about Kharif season, when crops arise growing.

Table 2:- regression with simple correlation among immature including weather parameters with adult thrips density since the session called Kharif in the year 2020-21.

Serial Number	Climate factors	Adult			Nymph		
		Intercept (I)	Slope (II)	'r' value	Intercept (I)	Slope (II)	'r' value
1	Highest temperature	4.136	.041	0.062	10.203	.151	.048
2	Least temperature	5.128	.010	.018	15.153	.042	.023
3	Humidity associated by sunrise	6.346	-0.071	-0.169	43.301	-0.316	-0.229
4	Humidity associated at evening	6.403	-0.031	-0.127	22.634	-0.132	-0.172

5	Wind velocity	4.872	-0.172	-0.172	16.829	-0.681	-0.079
6	Sunshine hours	4.954	-0.387	-0.158	15.423	-0.141	-0.041
7	Rainfall	--	--	--	--	--	--

According to an information presented within Table 3, like population based above thrips on onion crops began inside about third week away from January by a rate based above 3.72 thrips per plant.

From there, it steadily increased to a peak away from 39.86 thrips per plant within a last week based above March by a temperature away from 31.69 °C (maximum), a temperature based above 14.92 °C (minimum), including a relative humidity away from 40.0 percent. From there, it decreased until it like current findings arise somewhat inside line with those based on Anonymous, who stated this about incidence away from onion thrips began within December, reached its highest point inside February, with dramatically decreased within March. inside a similar vein, a thrips population on onion crops acted active throughout like season, but it remained relatively higher from about third week based above January to a third week away from March, supporting like previous findings.

About weather conditions, namely, a maximum including minimum temperatures, relative humidity, with rainfall all have a significant impact on like schedules as pest control. Temperature including corresponding humidity has proved a non-significant favoring with non-favoring correlation, correspondingly, with an incidence based on thrips on an onion crop, but about incidence away from thrips acted not significantly affected by weather parameters within this study. While temperature shown the similar favoring correlation along with an incidence based on thrips on onion crops, similar humidity had a non-significant correlation, as previously reported. Like present results arise supported by about fact this there acted a significant negative correlation between a relative humidity including like number away from thrips with this about correlation acted non-significant. A population based on thrips inside like onion crop acted positively including negatively correlated with temperature, respectively. Thrips populations declined significantly as a result away from about biotic factors listed within Table 3, particularly a coccinellid predators.

Coccinella septempunctata Linn, a coccinellid predator, exist like subject based on about current investigations was first observed inside the last week away from March (0.11/plant), which acted one week after an incidence based on thrips, with reached its highest level within about last week away from April (3.52/plant). As long as there treated thrips on like crop, a population continued. There acted a significant positive correlation between about *C. septempunctata* population including like thrips population ($r = 0.879$). Coccinellids treated a

major thrips predator, according to previous research, with their acted a positive correlation between their presences including thrips incidence, which a current findings partially support.

Table 3:- Trips T. tabaci on onion crop within relation to environmental factor with seasonal incidence since Rabi 2020-21.

S. No.	Standard meteorological week (SMW)	Examination Date	Thrips mean population	Coccinella septumpunctata Linn. Mean population (per 10 plants)	Temperature(⁰ c)		Relative humidity (%)	Rain fall
					Max.	Min.		
1	9	18.01.21	3.72	0.00	29.13	10.51	45	0.00
2	10	26.01.21	6.87	0.12	32.69	10.68	41	0.00
3	11	05.03.21	14.01	2.22	32.38	12.41	40	0.00
4	12	14.03.21	26.87	2.48	32.17	12.61	36	0.00
5	13	18.03.21	30.79	2.72	32.49	14.68	49	5.13
6	14	26.03.21	39.86	3.28	31.69	14.92	40	0.00
7	15	05.04.21	37.91	2.77	32.58	14.43	32	0.00
8	16	11.04.21	31.67	2.18	35.39	15.48	35	0.00
9	17	16.04.21	22.16	1.51	39.41	18.43	31	0.00
10	18	22.04.21	10.23	1.23	37.79	18.27	27	0.00
Mean trips population including correlation coefficient (r)					NS(0.056)	NS(0.482)	NS(-0.079)	-
Mean C. septumpunctata				0.879	-	-	-	-

population including correlation coefficient (r)					
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Discussion:-

About transplantation based on like onion seedling occurred inside December 2020, with an incidence away from *T. tabaci* began by about end based on January including peaked within late April. Similarly, like incidence away from *T. tabaci* inside Jhunjhunu peaked within late April with early May. There treated three peaks, like first inside late February including a second within late April. However, as about crop matured, like population decreased because of the dryness and stiffness in the leaves with transfer among the different weed hosts which can be either crops, particularly cotton.

A population density exist also influenced by sterile parameters like atmosphere, humidity, water fall, daytime, including the air speed. Density has shown a non-favoring correlation along with the rainfall, less favoring atmosphere, with relative humidity, including a positive correlation with warm temperatures with dry conditions. About lack based on synchronization between like crop-sensitive stages including *T. tabaci*'s peak activity with a low temperature may account as about lower incidence away from *T. tabaci* inside early transplants on January 18, 2021, as opposed to late transplants on April 16, 2021. Like onion this acted transplanted within a middle based on January reached maturity inside April, so about coherence second peak acted not observed.

By the end away from a season, about abundance decreased because it might not be able to survive because there acted not enough green vegetation including like climate acted extremely hot with dry. A fact this a population based on thrips acted active on onion crop throughout about season backs up like previous findings. Thrips arise more common during a Kharif season, especially from September to November. About weather conditions, namely, like maximum including minimum temperatures, relative humidity, with rainfall all have a significant impact on a schedules as pest control. Temperature including relative humidity showed no significant positive either negative correlations, respectively, with about incidence away from immature with adult thrips on onion crop within this study. However, like incidence based on thrips acted not significantly affected by weather parameters.

According to previous research, there acted a non-significant correlation between an incidences away from immature including adult thrips on onion crops with relative humidity; however, there acted a significant positive correlation between temperatures including incidence. About present findings arise somewhat supported by like fact this relative humidity had a significant negative correlation with temperature had a non-significant correlation with a population away from thrips. About thrips population inside onion crops acted found to be non-favoring interrelated with the relative humidity including the favorably correlated with the atmospheric temperatures, according to like current study.

Conclusions & Findings:-

Conclusion Based on like findings based above this investigation, it exist possible to draw a following conclusions: about temperature with similar humidity has proved irrelated favorable including non-favoring correlations like incidence away from thrips on onion crops, respectively; Thrips populations treated significantly reduced thanks to coccinellid predators. According to a current findings, thrips began infesting onion crop on about 9th SMW with reached their peak on like 14th SMW during a Rabi season. On about other hand, during like Kharif season, an incidence based on thrips began within about last week away from August, gradually increased, including reached its peak inside like first week based on November.

After this, a population away from both immature with adult thrips declined including completely vanished within about first week based on January. During both seasons, weather parameters like maximum with minimum temperatures including hours away from sunshine had a positive correlation with like number based above immature with adult thrips, instead the similar humidity inside a sunrise including night time had a non-favoring correlation about number away from thrips. During like Rabi season, an influence based on weather parameters on about population away from immature with adult thrips acted significant, whereas it acted non-significant during like Kharif season.

Limitation of study:-

- A study exist limited within the field based on onion trips (thrips tabaci) with abiotic factors. Like findings including conclusion may not be applicable for other parts of state.
- Their search exist specific to population based on onion trips inside Rabi season only. Like different types away from products with abiotic factors treated not considered within this research project.

References:-

- [1] Akhtari M, Dashti F, Madadi H and Rondon S. 2013. Evaluation of resistance to onion thrips (*Thrips tabaci* Lind.) in several Tareh Irani (Persian leek: *Allium ampeloprasum* Tareh group) landraces. Archives of Phytopathology and Plant Protection 47 (1): 29-41.
- [2] Anonymous (2015) Annual Report of All India Network Research Project on Onion and Garlic, Rajgurunagar Pune. Boateng CO, Schwartz HF, Havey MJ and Otto K. 2014.
- [3] Evaluation of onion germplasm for resistance to Iris yellow spot (Iris yellow spot virus) and onion thrips, *Thrips tabaci*. Southwestern Entomologist 39: 237-260.
- [4] Haider, K.; Ghulam, A.; Asifa, H.; Ghayour, A.; Amjad, A. 2014. Losses in onion (*Allium cepa*) due to onion thrips (*Thrips tabaci*) (Thysanoptera: Thripidae) and effect of weather factors on population dynamics of thrips. World Appl. Sci. J. 2014, 32, 2250–2258.

- [5] Fournier, F.; Boivin, G.; Stewart, R.K. 2012 Effect of Thrips *tabaci* (Thysanoptera: Thripidae) on yellow onion yields and economic thresholds for its management. *J. Econ. Entomol.* 2012, 88, 1401–1407.
- [6] Gill, H.K.; Garg, H.; Gill, A.K.; Gillett-Kaufman, J.L.; Nault, B.A. 2015 Onion thrips (Thysanoptera: Thripidae) biology, ecology, and management in onion production systems. *J. Integr. Pest Manag.* 2015, 6, 1–9.
- [7] Diaz-Montano, J.; Fuchs, M.; Nault, B.A.; Fail, J.; Shelton, A.M. 2010 Evaluation of Onion Cultivars for Resistance to Onion Thrips (Thysanoptera: Thripidae) and Iris Yellow Spot Virus. *J. Econ. Entomol.* 2010, 103, 925–937.
- [8] Alston, D.G.; Drost, D. 2021 Onion Thrips (*Thrips tabaci*). ENT-117-08PR. Utah Pests Fact Sheet, Utah State University Extension. Utah State University Extension and Utah Plant Pest Diagnostic Laboratory, Logan, UT. Available online: <http://extension.usu.edu/files/publications/factsheet/ent-117-08pr.pdf> (accessed on 25 February 2021).
- [9] Patil, A.P.; Nawale, R.N.; Ajri, D.S.; Moholkar, P.R. 2015 Field screening of onion cultivars for their reaction to thrips. *Ind. Cocoa Arec. Spices J.* 2015, 12, 10–11.
- [10] Dutta, B., A. K. Barman, R. Srinivasan, U. Avci, D. E. Ullman, D. B. Langston, and R. D. Gitaitis. 2014. Transmission of *Pantoea ananatis* and *P. agglomerans*, causal agents of center rot of onion (*Allium cepa*), by onion thrips (*Thrips tabaci*) through feces. *Phytopathol.* 104: 812–819.
- [11] Gachu S M, Muthomi J W, Narla R D, Nderitu J H, Olubayo F M and Waga J M. 2012. Management of thrips (*Thrips tabaci*) in bulb onion by using of vegetable inter crops. *International Journal of Agri Science* 2(5): 393–402.
- [12] Henderson C F and Tilton E W. 2010. Tests with acaricides against the brow wheat mite. *Journal of Economic Entomology* 48: 157–61.
- [13] Katagi Toshiyuki 2008. Surfactant effects on environmental behavior of pesticides. *Review of Environmental Contamination and Toxicology* 194: 71–177. Lewis T. 1997. *Thrips as Crop Pests*. CAB International, New York, NY.
- [14] Mohamed A S. 2006. Evaluation of the insecticide cyhalothrin (iso) 5 EC for the control of onion thrips (*thrips tabaci*) on onion. <http://agris.fao.org/aos/records/SD2011000054>. pp. 66–70.
- [15] Pandey Sujay, Singh B K and Gupta R P. 2013. Effect of neem based botanicals, chemicals and bio-insecticides for the management of thrips in onion. *Indian Journal of Agriculture Research* 47(6): 545–8.