

Combining ability studies in Tomato (*Solanumlycopersicum*L.)

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Abstract

At Vegetable Research Farm of Division of Vegetable Science, SKUAST-Kashmir, Shalimar, twelve diverse lines of tomato (*Solanumlycopersicum* L.) were crossed in a diallel fashion as per the Method II and Model I of Griffing (1956 a, b), to generate sixty-six crosses during Kharif 2020. These sixty-six crosses (excluding reciprocals) were evaluated along with the twelve parents in Randomized Block Design during Kharif season 2021 at three locations. The observations were recorded on eighteen diverse traits. The analysis of variance for general combining ability (GCA) and specific combining ability (SCA) revealed significant mean squares due to gca and sca for all the traits under consideration. The mean squares due to gca x environments and sca x environments were found significant for most of the characters. None of the parents possessed significant and desirable general combining ability for all the traits. Different parents were found to reveal desirable general combining ability for different traits. Similarly, none of the crosses possessed significant and desirable specific combining ability for all the traits. However, different crosses were found to reveal desirable specific combining ability for different traits.

Key words: Tomato, General Combining Ability, Specific Combining Ability

Introduction

Tomato (*Solanumlycopersicum*L. Syn. *Lycopersicon esculentum* Mill.) belongs to family Solanaceae with chromosome number $2n = 24$ (Peralta *et al.*, 2005). It is one of the most popular vegetables in India. Due to its increasing commercial and dietary value, wide adaptability, potential for growing under various cultivation conditions, relatively short life cycle, photoperiodic insensitivity, good productivity, and good capacity for seed production, it is becoming more and more well-liked on a global scale. Because of these characteristics and several other advantages like relatively small genome, the absence of gene duplication, the ease with which pollination and hybridization can be managed, the capacity for asexual propagation (grafting) and the ability to regenerate entire plants from various explants, it is used as a model plant for both basic and applied research projects (Bai and Lindhot, 2007; Prema *et al.*, 2011; Venkadeswaran *et al.*, 2018).

Owing to the economic, nutritional and medicinal importance of the crop, a need-based crop development programme is necessary. Prior to beginning of any development programme through hybridization, it is necessary to understand the ability of different genotypes to combine. The choice of the best genotypes and the appropriate breeding technique for the creation of improved varieties and hybrids depend heavily on this knowledge. The general and specific combining ability of parents and their progeny can be assessed through a variety of various biometrical procedures. One of these methods is the diallel analysis suggested by Griffing (1956a,b) and Hayman (1954a).

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Materials and Methods

Twelve diverse lines of tomato (*Solanumlycopersicum* L.) were crossed in a diallel fashion as per the Method II and Model I of Griffing (1956 a, b), to generate sixty-six crosses at Vegetable Research Farm of Division of Vegetable Science, SKUAST-Kashmir, Shalimar during Kharif 2020. These sixty-six crosses (excluding reciprocals) were evaluated along with the twelve parents in Randomized Block Design during Kharif season 2021 at three locations viz. E₁: Vegetable Experimental Farm, Division of Vegetable Science, SKUAST-Kashmir, Shalimar; E₂: Vegetable Seed Multiplication Farm, SKUAST-Kashmir, Shuhama and E₃: Faculty of Agriculture, SKUAST-Kashmir, Wadura. The observations were recorded on eighteen diverse traits. The data thus generated was subjected to standard statistical procedures.

Results and Discussion

The analysis of variance for general combining ability (GCA) and specific combining ability (SCA) (Table 1) revealed significant mean squares due to gca and sca for all the traits under consideration. The mean squares due to gca x environments were found significant for all characters except number of days to first flowering, number of days to first fruit set, number of days to first fruit harvest, number of primary branches plant⁻¹, seed yield fruit⁻¹ and 100 seed weight. The mean squares due to sca x environments were found significant for all characters except number of days to first fruit set, number of days to first fruit harvest, number of primary branches plant⁻¹, number of fruits cluster⁻¹, plant height, average fruit weight, seed yield fruit⁻¹ and 100 seed weight. The above findings are in accordance with the findings of Dharva *et al.* (2018), Kumar *et al.* (2018), Rajkumar *et al.* (2018), Mishra *et al.* (2020), Veena *et al.* (2019), Bhajantri *et al.* (2022), Ummyiah *et al.*, 2021 and Ummyiah *et al.*, 2015(a).

The general combining ability analysis (Table 2) showed that none of the parents possessed significant and desirable general combining ability for all the traits. However, different parents were found to reveal desirable general combining ability for different traits. The parents exhibiting significant and desirable GCA effects for most of the traits were SKAU-T-165690, SKAU-T-914091, SKAU-T-914108, SKAU-T-617047, SKAU-T-164334 and SKAU-T-914106 in individual and data pooled over environments. Hence, these parents could be selected for use in future crop improvement programmes and direct selection for higher values of yield plant⁻¹ can be made in advanced generations of their heterotic crosses. Similar findings with respect to GCA effects were also reported by Jadav *et al.* (2017), Kaushik *et al.* (2018), Rajkumar *et al.* (2018), Veena *et al.* (2019), Ummyiah *et al.*, 2015(b) and Vekariya *et al.* (2019), Kumar *et al.* (2020), Lone *et al.* (2022).

The specific combining ability analysis for different traits showed that none of the crosses possessed significant and desirable specific combining ability for all the traits. However, different crosses were found to reveal desirable specific combining ability for different traits. The crosses exhibiting significant and desirable SCA effects for most of the traits were SKAU-T-02 x SKAU-T-164334, SKAU-T-914103 x SKAU-T-914091, SKAU-T-914113 x SKAU-T-165690, SKAU-T-165690 x SKAU-T-145057, SKAU-T-914108 x SKAU-T-914106 and SKAU-T-914103 x SKAU-T-165690 in individual and data pooled

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over environments. Hence, these crosses with desirable SCA for maximum traits, could be selected for use in future breeding programmes i.e., hybrid development. Similar findings with respect to SCA effects were also reported by Dharva *et al.* (2018), Kaushik *et al.* (2018), Rajkumar *et al.* (2018), Veena *et al.* (2019), Vekariya *et al.* (2019), Mishra *et al.* (2020), Liu *et al.* (2021), Ummiyah *et al.* 2015(c) and Arora *et al.* (2022).

These desirable specific cross combinations resulted out of crosses between the parents with high x high, high x low, low x high, low x low, high x average, average x low or low x average general combining ability (Table 3). The perusal of results indicated that superior crosses for different traits involved all types of combiners, which was reported by several workers in most of the crop species. Dass *et al.* (1997) concluded that good cross combination is not always result of high x high general combiners. The superiority of crosses involving high x low or average x low combiners as parents could be explained on the basis of interaction between positive alleles from good/average combiners and negative alleles from the poor combiners as parents (Dubey, 1975). The high yield of such crosses would be non-fixable and thus could be exploited for heterosis breeding. The superior cross combination involving low x low general combiners could result from over dominance and epistasis (Rehman *et al.*, 1981). The crosses could be exploited for isolation of pure lines through pedigree method of breeding involving progeny testing, since that non-additive component is predominant.

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Table 1(a): Analysis of variance for combining ability for maturity, growth, yield and quality traits in Tomato (*Solanumlycopersicum*L.) [Pooled data over environments]

| Source of variation | d.f | Number of days to first flowering | Number of days to first fruit set | Number of days to first fruit harvest | No. of pickings | No. of fruits cluster ⁻¹ | No. of fruits plant ⁻¹ | Fruit length (cm) | Fruit diameter (cm) | No. of locules fruit ⁻¹ |
|---------------------|-----|-----------------------------------|-----------------------------------|---------------------------------------|-----------------|-------------------------------------|-----------------------------------|-------------------|---------------------|------------------------------------|
| environments | 2 | 795.97** | 839.63** | 730.69** | 89.19** | 14.52** | 1484.69** | 14.04** | 15.11** | 15.24** |
| gca | 11 | 23.52** | 56.00** | 211.40** | 13.68** | 0.98** | 893.28** | 3.83** | 4.68** | 3.83** |
| sca | 66 | 22.54** | 28.25 | 67.38** | 13.51** | 0.48** | 645.05** | 2.38** | 2.78** | 2.77** |
| gca x environments | 22 | 0.31 | 0.19 | 0.39 | 0.26** | 0.11** | 6.27** | 0.06** | 0.03* | 0.03* |
| sca x environments | 132 | 0.41* | 0.22 | 0.26 | 0.33** | 0.03 | 5.04** | 0.04** | 0.03* | 0.03** |
| Error | 154 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pooled | 462 | 0.30 | 0.28 | 0.31 | 0.06 | 0.03 | 0.65 | | | |

*, ** Significant at 5 and 1 per cent levels, respectively

Table 1(b): Analysis of variance for combining ability formaturity, growth, yield and quality traits in Tomato (*Solanumlycopersicum*L.) [Pooled data over environments]

| Source of variation | d.f | Pericarp thickness (mm) | No. of primary branches plant ⁻¹ | Plant height (cm) | Average fruit weight (g) | Fruit yield plant ⁻¹ (kg) | Fruit yield hectare ⁻¹ (q) | Seed yield fruit ⁻¹ (g) | Seed yield plant ⁻¹ (g) | 100 Seed weight |
|---------------------|-----|-------------------------|---|-------------------|--------------------------|--------------------------------------|---------------------------------------|------------------------------------|------------------------------------|-----------------|
| environments | 2 | 19.98** | 28.84** | 516.74** | 1724.07** | 4.59** | 631967.71** | 16.02** | 47.72** | 0.18** |
| gca | 11 | 6.33** | 1.65** | 584.22** | 1366.07** | 0.97** | 134265.13** | 15.94** | 20.97** | 1.20** |
| sca | 66 | 4.64** | 0.37** | 871.15** | 791.07** | 0.85** | 117545.17** | 15.97** | 13.76** | 0.40** |
| gca x environments | 22 | 0.10** | 0.03 | 5.97** | 4.40** | 0.01** | 2529.13** | 0.03 | 0.24** | 0.02 |
| sca x environments | 132 | 0.07** | 0.01 | 1.54 | 1.25 | 0.01** | 1982.03** | 0.01 | 0.16** | 0.09 |
| Error | 154 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pooled | 462 | 0.02 | 0.02 | 2.48 | | 296.86 | | 0.07 | 0.02 | 0.01 |

*, ** Significant at 5 and 1 per cent levels, respectively

Table 2(a): Estimation of general combining ability effects of parents for maturity, growth, yield and quality traits in Tomato (*Solanumlycopersicum*L.)

| Parents | Number of days to first flowering | Number of days to first fruit set | Number of days to first fruit harvest | No. of pickings | Number of fruits cluster ⁻¹ | Number of fruits plant ⁻¹ | Fruit length (cm) | Fruit diameter (cm) | No. of locules fruit ⁻¹ |
|---|-----------------------------------|-----------------------------------|---------------------------------------|-----------------|--|--------------------------------------|-------------------|---------------------|------------------------------------|
| SKAU-T-01 | 1.252** | 0.581** | 1.756** | 0.364** | 0.088* | -5.672** | 0.743** | 0.784** | 0.549** |
| SKAU-T-914103 | -0.537** | -0.858** | -2.511** | 1.270** | 0.358** | 10.909** | -0.068* | -0.144** | -0.148** |
| SKAU-T-914113 | -0.802** | -2.201** | -5.238** | 0.281** | 0.049 | 1.783** | -0.119** | -0.294** | 0.027 |
| SKAU-T-620438 | 0.150 | 0.303** | 0.076 | 0.032 | 0.073** | -1.008** | -0.118** | -0.153** | -0.146** |
| SKAU-T-165690 | -0.670** | -0.138 | -1.385** | 0.060 | 0.054* | 0.831** | 0.170** | 0.264** | 0.469** |
| SKAU-T-914108 | -0.677** | -0.465** | 0.495** | -0.140 | 0.147** | 3.762** | 0.144** | 0.231** | 0.221** |
| SKAU-T-02 | -0.181* | -0.364** | -2.819** | -0.473** | -0.083** | -2.622** | -0.070* | -0.051 | -0.348** |
| SKAU-T-914106 | -0.215** | -1.311** | -0.192* | 0.168* | 0.167** | 4.284** | -0.005 | 0.087** | 0.219** |
| SKAU-T-617047 | -0.790** | -1.626** | -0.649** | -0.050 | 0.014 | 1.638** | 0.511** | 0.541** | 0.446** |
| SKAU-T-914091 | -0.256** | -0.006 | -1.932** | 0.469** | 0.115** | 1.308** | 0.133** | 0.168** | 0.095** |
| SKAU-T-145057 | 1.401** | 1.942** | 1.593** | -1.065** | -0.218** | -5.776** | -0.226** | -0.124** | -0.107** |
| SKAU-T-164334 | 0.046 | 0.396** | 1.303** | 0.356** | -0.013 | 0.869** | 0.191** | 0.109** | 0.054 |
| SE± (g_i) | 0.08149 | 0.07943 | 0.08312 | 0.08381 | 0.03101 | 0.11920 | 0.03089 | 0.02656 | 0.02750 |
| SE±(g_i-g_j) | 0.12036 | 0.11733 | 0.12278 | 0.12380 | 0.04581 | 0.17607 | 0.04563 | 0.03923 | 0.04063 |
| C.Dat 5% | 0.23653 | 0.23056 | 0.24127 | 0.18447 | 0.06825 | 0.34600 | 0.06799 | 0.05845 | 0.06054 |

*, ** Significant at 5 and 1 per cent levels, respectively

Table 2(b): Estimation of general combining ability effects of parents for maturity, growth, yield and quality traits in Tomato (*Solanumlycopersicum*L.)

| Parents | Pericarp thickness (mm) | No. of primary branches plant ⁻¹ | Plant height (cm) | Average fruit weight (g) | Fruit yield plant ⁻¹ (kg) | Fruit yield hectare ⁻¹ (q) | Seed yield fruit ⁻¹ (g) | Seed yield plant ⁻¹ (g) | 100 Seed weight (g) |
|---|-------------------------|---|-------------------|--------------------------|--------------------------------------|---------------------------------------|------------------------------------|------------------------------------|---------------------|
| SKAU-T-01 | 0.857** | 0.090** | 3.408** | 6.816** | -0.024 | -9.029** | -0.004** | -0.984** | 0.035** |
| SKAU-T-914103 | -0.296** | 0.403** | 6.086** | -6.961** | -0.032 | -12.104** | -0.009** | 0.933** | 0.004** |
| SKAU-T-914113 | -0.126** | 0.210** | -1.545** | -4.760** | -0.084** | -30.981** | 0.002** | 0.304** | 0.011** |
| SKAU-T-620438 | -0.112** | 0.157** | -1.651** | -5.083** | -0.116** | -43.007** | -0.004** | -0.315** | 0.002** |
| SKAU-T-165690 | 0.302** | 0.004 | 3.084** | 4.202** | 0.147** | 54.254** | 0.009** | 0.469** | 0.012** |
| SKAU-T-914108 | 0.247** | 0.044* | 4.387** | 8.071** | 0.258** | 96.163** | 0.007** | 1.279** | 0.004** |
| SKAU-T-02 | -0.273** | -0.123** | -1.057** | 1.580** | 0.004 | 1.691 | 0.003** | 0.451** | -0.011** |
| SKAU-T-914106 | 0.583** | -0.237** | 1.473** | 1.490** | 0.044* | 16.122** | -0.001 | -0.520** | 0.024** |
| SKAU-T-617047 | 0.460** | 0.042 | 4.557** | 9.988** | 0.230** | 85.386** | 0.005** | 0.035 | -0.022** |
| SKAU-T-914091 | -0.010 | 0.222** | 0.852** | 1.132** | 0.142** | 52.260** | 0.001* | 0.196** | -0.016** |
| SKAU-T-145057 | -0.176** | -0.217** | -6.649** | -1.386** | -0.197** | -73.229** | -0.003** | -1.040** | -0.003** |
| SKAU-T-164334 | -0.043 | 0.150** | -1.224** | 4.889** | 0.177** | 65.492** | 0.010** | 0.295* | 0.014** |
| SE± (g_i) | 0.04100 | 0.02210 | 0.23312 | 0.19636 | 0.01810 | 2.54544 | 0.00040 | 0.06183 | 0.00066 |
| SE±(g_i-g_j) | 0.06056 | 0.03264 | 0.34434 | 0.29004 | 0.02680 | 3.75986 | 0.00069 | 0.09138 | 0.00098 |
| C.Dat 5% | 0.09024 | 0.04863 | 0.67666 | 0.56996 | 0.03985 | 7.38855 | 0.00103 | 0.13609 | 0.00146 |

*, ** Significant at 5 and 1 per cent levels, respectively

Table 3a: Best specific cross combinations for different traits on the basis of sca and gca of parents involved in Tomato (*Solanumlycopersicum*L.) (based on pooled analysis)

| S. No. | Traits | Crosses | sca effect | gca effect of parents | S. No. | Traits | Crosses | sca effect | gca effect of parents |
|--------|---------------------------------------|-------------------------------|------------|-----------------------|--------|------------------------------------|-------------------------------|------------|-----------------------|
| 1. | Number of days to first flowering | SKAU-T-02 x SKAU-T-164334 | -6.130** | A x L | 6. | No. of fruits plant ⁻¹ | SKAU-T-914113 x SKAU-T-145057 | 37.674** | H x L |
| | | SKAU-T-914113 x SKAU-T-165690 | -4.326** | H x H | | | SKAU-T-620438 x SKAU-T-617047 | 16.874** | L x H |
| | | SKAU-T-165690 x SKAU-T-145057 | -2.730** | H x L | | | SKAU-T-914108 x SKAU-T-914091 | 15.345** | H x H |
| | | SKAU-T-914113 x SKAU-T-145057 | -2.531** | H x L | | | SKAU-T-02 x SKAU-T-914091 | 12.551** | L x H |
| | | SKAU-T-02 x SKAU-T-914091 | -2.361** | A x H | | | SKAU-T-02 x SKAU-T-164334 | 7.573** | L x H |
| 2. | Number of days to first fruit set | SKAU-T-02 x SKAU-T-164334 | -7.764** | L x H | 7. | Fruit length (cm) | SKAU-T-914113 x SKAU-T-620438 | 4.438** | L x L |
| | | SKAU-T-914113x SKAU-T-165690 | -6.199** | H x L | | | SKAU-T-914103x SKAU-T-914091 | 2.245** | L x H |
| | | SKAU-T-914106 x SKAU-T-617047 | -4.431** | H x H | | | SKAU-T-914113x SKAU-T-165690 | 1.820** | L x H |
| | | SKAU-T-914103 x SKAU-T-617047 | -4.328** | H x H | | | SKAU-T-165690 x SKAU-T-145057 | 1.693** | H x L |
| | | SKAU-T-02 x SKAU-T-914091 | -2.651** | L x L | | | SKAU-T-914106 x SKAU-T-617047 | 1.596** | L x H |
| 3. | Number of days to first fruit harvest | SKAU-T-02 x SKAU-T-164334 | -10.579** | L x H | 8. | Fruit diameter (cm) | SKAU-T-914103x SKAU-T-914091 | 2.489** | L x H |
| | | SKAU-T-914113x SKAU-T-165690 | -10.078** | H x H | | | SKAU-T-914113x SKAU-T-165690 | 2.453** | L x H |
| | | SKAU-T-914103x SKAU-T-165690 | -9.272** | H x H | | | SKAU-T-02 x SKAU-T-164334 | 1.911** | L x H |
| | | SKAU-T-914113 x SKAU-T-145057 | -7.656** | H x L | | | SKAU-T-165690 x SKAU-T-145057 | 1.659** | H x L |
| | | SKAU-T-620438 x SKAU-T-617047 | -6.772** | L x H | | | SKAU-T-914106 x SKAU-T-617047 | 1.317** | H x H |
| 4. | No. of pickings | SKAU-T-02 x SKAU-T-164334 | 4.602** | L x H | 9. | No. of locules fruit ⁻¹ | SKAU-T-02 x SKAU-T-164334 | 2.629** | L x L |
| | | SKAU-T-02 x SKAU-T-914091 | 4.170** | L x H | | | SKAU-T-914103 x SKAU-T-617047 | 1.573** | L x H |
| | | SKAU-T-620438 x SKAU-T-617047 | 4.079** | L x L | | | SKAU-T-914113x SKAU-T-165690 | 1.520** | L x H |
| | | SKAU-T-914113 x SKAU-T-145057 | 2.349** | H x L | | | SKAU-T-914103x SKAU-T-914091 | 1.389** | L x H |
| | | SKAU-T-01 x SKAU-T-617047 | 2.131** | H x L | | | SKAU-T-914108 x SKAU-T-914106 | 0.956** | H x H |
| 5. | No. of fruits cluster ⁻¹ | SKAU-T-914103 x SKAU-T-617047 | 0.922** | H x L | 10. | Pericarp thickness (mm) | SKAU-T-02 x SKAU-T-164334 | 3.076** | L x L |
| | | SKAU-T-914108 x SKAU-T-914091 | 0.687** | H x H | | | SKAU-T-914103x SKAU-T-914091 | 2.619** | L x L |
| | | SKAU-T-02 x SKAU-T-164334 | 0.640** | L x L | | | SKAU-T-914106 x SKAU-T-617047 | 1.480** | H x H |
| | | SKAU-T-620438 x SKAU-T-617047 | 0.596** | H x L | | | SKAU-T-914103 x SKAU-T-914108 | 1.387** | L x H |
| | | SKAU-T-914113x SKAU-T-165690 | 0.526** | L x A | | | SKAU-T-914113x SKAU-T-165690 | 1.227** | L x H |

Table 3b: Best specific cross combinations for different traits on the basis of sca and gca of parents involved in Tomato (*Solanum lycopersicum* L.) (based on pooled analysis)

| S. No. | Traits | Crosses | sca effect | gca effect of parents | S. No. | Traits | Crosses | sca effect | gca effect of parents |
|--------|---|-------------------------------|------------|-----------------------|--------|---------------------------------------|-------------------------------|------------|-----------------------|
| 11. | No. of primary branches plant ⁻¹ | SKAU-T-914103x SKAU-T-165690 | 0.655** | H x L | 15. | Fruit yield hectare ⁻¹ (q) | SKAU-T-914113x SKAU-T-165690 | 483.644** | L x H |
| | | SKAU-T-914108 x SKAU-T-914106 | 0.655** | A x L | | | SKAU-T-02 x SKAU-T-164334 | 479.138** | L x H |
| | | SKAU-T-02 x SKAU-T-164334 | 0.622** | L x H | | | SKAU-T-914103x SKAU-T-914091 | 445.200** | L x H |
| | | SKAU-T-914106 x SKAU-T-617047 | 0.591** | L x L | | | SKAU-T-914108 x SKAU-T-914106 | 417.305** | H x H |
| | | SKAU-T-914103x SKAU-T-914091 | 0.481** | H x H | | | SKAU-T-165690 x SKAU-T-145057 | 392.574** | H x L |
| 12. | Plant height (cm) | SKAU-T-914113 x SKAU-T-145057 | 34.640** | L x L | 16. | Seed yield fruit ⁻¹ (g) | SKAU-T-02 x SKAU-T-164334 | 0.058** | H x H |
| | | SKAU-T-02 x SKAU-T-164334 | 26.949** | L x L | | | SKAU-T-620438 x SKAU-T-617047 | 0.044** | L x H |
| | | SKAU-T-620438 x SKAU-T-617047 | 18.473** | L x H | | | SKAU-T-914103x SKAU-T-914091 | 0.036** | L x A |
| | | SKAU-T-01 x SKAU-T-617047 | 16.792** | H x H | | | SKAU-T-914108 x SKAU-T-914091 | 0.030** | H x A |
| | | SKAU-T-914103x SKAU-T-165690 | 16.279** | H x H | | | SKAU-T-914103 x SKAU-T-914108 | 0.027** | L x H |
| 13. | Average fruit weight (g) | SKAU-T-914113x SKAU-T-165690 | 50.958** | L x H | 17. | Seed yield plant ⁻¹ (g) | SKAU-T-914113 x SKAU-T-145057 | 4.443** | H x L |
| | | SKAU-T-914103x SKAU-T-914091 | 40.041** | L x H | | | SKAU-T-620438 x SKAU-T-617047 | 4.213** | L x L |
| | | SKAU-T-02 x SKAU-T-164334 | 37.410** | H x H | | | SKAU-T-02 x SKAU-T-164334 | 3.769** | H x A |
| | | SKAU-T-165690 x SKAU-T-145057 | 28.484** | H x L | | | SKAU-T-914108 x SKAU-T-914106 | 3.421** | H x L |
| | | SKAU-T-914108 x SKAU-T-914106 | 27.407** | H x H | | | SKAU-T-914113x SKAU-T-165690 | 1.967** | H x H |
| 14. | Fruit yield plant ⁻¹ (kg) | SKAU-T-914113x SKAU-T-165690 | 1.297** | L x H | 18. | 100 seed weight (g) | SKAU-T-914103x SKAU-T-914091 | 0.073** | H x L |
| | | SKAU-T-02 x SKAU-T-164334 | 1.283** | L x H | | | SKAU-T-914103 x SKAU-T-617047 | 0.072** | H x L |
| | | SKAU-T-914103x SKAU-T-914091 | 1.198** | L x H | | | SKAU-T-620438 x SKAU-T-617047 | 0.054** | H x L |
| | | SKAU-T-914108 x SKAU-T-914106 | 1.123** | H x A | | | SKAU-T-165690 x SKAU-T-145057 | 0.053** | H x L |
| | | SKAU-T-165690 x SKAU-T-145057 | 1.061** | H x L | | | SKAU-T-914113x SKAU-T-165690 | 0.041** | H x H |

H: High, L: Low and A: Average