The Pharma Innovation Journal 2022; 11(7): 756-758

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(7): 756-758

www.thepharmajournal.com
Received: 06-04-2022
Accepted: 13-05-2022

MI Makhdoomi
High Mountain Arid Agriculture Research Institute, Leh, Ladakh, India

Ambreen Nabi
KVK Budgam, Jammu and Kashmir, India

Sabia Akhter
KVK Budgam, Jammu and Kashmir, India

Vaseem Yousuf
KVK Budgam, Jammu and Kashmir, India

Bhinish Shakeel
KVK Budgam, Jammu and Kashmir, India

Shazia Ramzan
KVK Budgam, Jammu and Kashmir, India

Iram Farooq
KVK Budgam, Jammu and Kashmir, India

KA Zargar
KVK Budgam, Jammu and Kashmir, India

Corresponding Author:
MI Makhdoomi
High Mountain Arid Agriculture Research Institute, Leh, Ladakh, India

Mean performance of carrot (*Daucus carota* L.) genotypes for yield and yield contributing characters under cold arid conditions of Ladakh

MI Makhdoomi, Ambreen Nabi, Sabia Akhter, Vaseem Yousuf, Bhinish Shakeel, Shazia Ramzan, Iram Farooq and KA Zargar

Abstract
The present investigation entitled "Mean performance of carrot *(Daucus carota* L.) genotypes for yield and yield contributing characters under cold arid conditions of Ladakh" was carried out at Vegetable Research Farm HMAARI Leh to find out the performance of different genotypes of carrot (*Daucus carota* L.) with respect to yield and yield contributing characters during year 2019 and 2020, comprising sixteen carrot genotypes. The experiment was laid in RBD with three replications. Observations were recorded on root length (cm), Root diameter(cm), root weight (g) and yield (q/ha) for two consecutive years and data pooled over two years revealed that SK-C-13 performed best in terms of all the characters studied i.e root length (16.30cm), Root diameter (2.86cm), root weight (62.86g) and yield (260.92q/ha) and has a potential to be utilised for further breeding programmes for the improvement of carrot in Leh region.

Keywords: Performance, genotypes, contributing, conditions, Ladakh

Introduction
UT of Ladakh is situated at 3000 m amsl with uneven topography. The region is characterised by extreme temperature variations, low precipitation mostly in the form of snow, high wind velocity, sparse plant density, thin atmosphere with high UV-radiation and fragile ecosystem (Angmo, 2018) [6]. The temperature drops down to -30 ºC in winter. Only single cropping is possible in the upper reaches of the UT as the winters are long and harsh and temperature even dips to -30ºC. As the region experience heavy snowfall, and the roads are almost cut off for 6 months in a year. Availability of locally grown fresh vegetables is restricted to summer months and therefore, there are seasonal differences in dietary intake of food. The availability of fresh vegetable decreases significantly during the winter months, which has resulted in unbalanced diet. Self-sufficiency in food is an important issue for the region. Filling the gap between the required quantity and the quantity locally produce is a difficult task in this region. Farmers in the area grow number of vegetables, potato being most widely grown vegetable crop grown on an area of 75.6%. Followed by peas (10.7%), onion (3.4%), cabbage (3.3%), carrot (2.0%) and cauliflower (1.8%). A variety of crops are being grown by the farmers. In addition, diversity helps farmers to cope with any unforeseen situation affecting a particular or a bulk of vegetables. These crops are preferred due to their long storage life and can feed the population during long harsh winters when open cultivation of vegetable crops is not possible. Preference for crops such as potato, onion, cabbage and carrot was largely because of its long term storage capacity during winter months when the region remains cut-off and open field cultivation is not possible (Angmo, 2018) [6]. So it is mandatory that high yielding varieties are grown in the area to meet the needs of local populations and the visitors visiting in the region. Carrot being one of the important root crops and rich in carotene can prove beneficial in maintaining health and nutrition in the area. Environmental factors influence growth, yield and quality of carrots in many different ways. Su-ojala (2000) [5] reported that low precipitation at the end of the growing season may promote dying of the oldest leaves. Furthermore, low soil moisture will force the plants to invest in root extension growth rather than storage root development resulting in a reduction in root yield (Lada and Stiles, 2004) [2]. So number of genotypes were evaluated for growing in harsh environmental conditions of ladakh region.

Material and Methods

The present investigation entitled "Mean performance of carrot genotypes for yield and yield contributing characters under cold arid conditions of Ladakh" was carried out at Vegetable Research Farm, High Mountain Arid Agriculture Research Institute (HMAARI station) Stakna Leh during summer 2019 and 2020. Leh is cold arid region with temperature range from -30 to 30ºC. The annual precipitation is less than 10 mm mainly in the form of snow. The soil is sandy with low levels of organic content. There is only a single growing season during summers. Sixteen diverse genotypes/lines of carrot, maintained by the research station were evaluated for yield and yield contributing characters. The experiment was laid out in RBD with three replications. The observations were recorded on Root length (cm), root diameter (cm), Average root weight (g) and Root yield (q/ha).

Results and Discussion

The estimates of mean values is depicted in table 1. There was significant difference in the genotype for the characters under study.

Table 1: Mean Performance of Carrot Genotypes for Yield and Yield Contributing Characters

Germplasm/Lines	Root length (cm)	Root diameter (cm)	Average root weight (g)	Root yield (q/ha)
SK-C-101	14.97	2.13	56.63	235.19
SK-C-102	14.22	2.35	50.41	207.98
SK-C-103	15.73	2.41	58.48	242.69
SK-C-104	13.93	2.26	47.32	196.82
SK-C-105	15.78	2.37	55.13	228.83
SK-C-106	15.69	2.41	60.38	250.62
SK-C-107	13.86	2.16	52.03	234.77
SK-C-108	12.13	2.07	45.45	187.90
SK-C-109	15.91	2.86	54.64	226.95
SK-C-110	14.27	2.64	50.34	208.90
SK-C-111	13.81	2.48	47.17	195.75
SK-C-112	14.32	2.56	50.86	206.85
SK-C-113	16.30	2.61	62.86	260.92
SK-C-114	15.16	2.59	59.17	245.58
SK-C-115	14.29	2.46	53.73	223.03
SK-C-116	12.85	2.34	49.14	203.94
Mean	14.58	2.42	53.36	222.29
CD (p< 0.05)	2.27	0.38	2.88	3.63

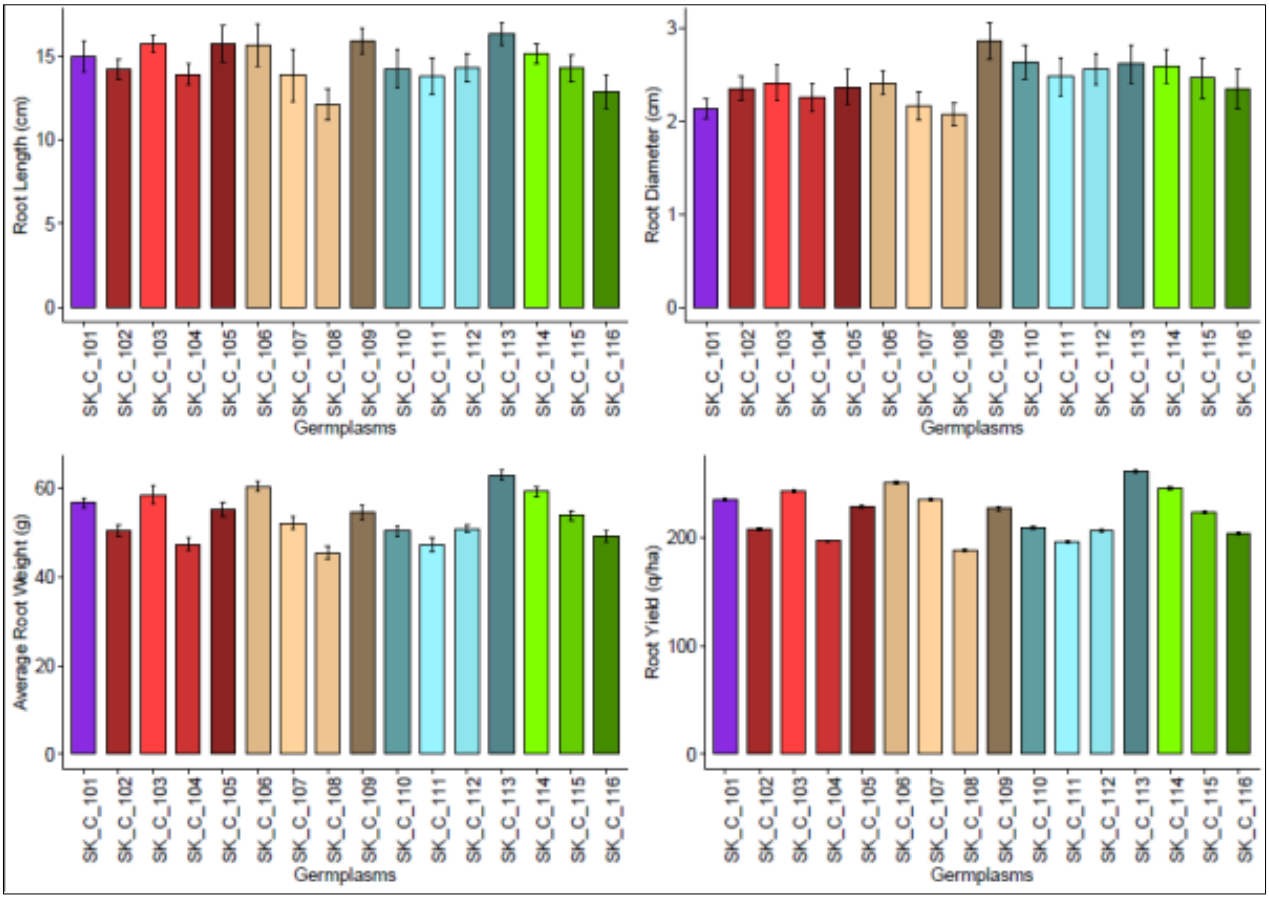

Fig 1: Graphical representation of mean performance of carrot genotypes for yield and yield contributing characters

1. **Root Length:** A significant variation was recorded in root length among the genotypes (Table 1). The longest root was observed in SK-C-113 (16.30 cm) which was at par with 'SK-C-109 (15.91cm) and 'SK-C-105 (15.78cm) while the shorter root was produced in the genotype SK-C-108 (12.13). Root length in the study varied from 12.13 to 16.30 cm.
2. **Root Diameter:** The widest root diameter was recorded in genotype 'SK-C-109 (2.86 cm) which was at par with SK-C-110(2.64cm), SK-C-113(2.61cm) and SK-C-114(2.59cm) (Table 1). The 'SK-C-108 have the shortest (2.07cm). Root diameter in the study varied from 2.07 to 2.86cm. The difference in root girth in different genotypes may be due to difference in their genetic makeup.
3. **Root Weight:** A significant difference was observed among the carrot genotypes with respect to individual root weight (Table 1). The highest root weight was observed in SK-C-113(62.86 g) followed by 'SK-C-106 (60.38 g). The lowest root weight was recorded in SK-C-108 (45.45cm). The variations in weight of root among different carrot genotypes might be due to the varietal difference. The results of the present investigation are similar to that of Mapari *et al*., (2009) [4] and Dongarawar *et al*., (2018) [1] in radish and Ladumore *et al* (2010) in carrot.
4. **Yield Hectare^{-1}:** The root yield significantly varied ranging from 187.90q/ha to 260.92q/ ha among the various genotypes (Table 1). The genotype SK-C-113 produced the highest yield per hectare (260.92q/ha) which was significantly higher than all other genotypes under study). The lowest yield was found in SK-C-108 (187.90q/ha).

Root length, root diameter, individual root weight, yield per hectare are the determinants of the yield. The genotype SK-C-113 showed vigorous growth and highest individual root weight, root diameter as well as higher yield (t/ha).

Reference

1. Dongarawar LN, Kashiwar SR, Ghawade SM, Dongarawar UR. Varietal Performance of Radish (*Raphanus sativus* L.) Varieties in Black Soils of Vidharbha-Maharashtra, India. International Journal of Current Microbiology and Applied Sciences. 2018;7(1):491-501.
2. Lada R, Stiles A. Fact sheet. Pro-cessing carrot research program water require-ment and irrigation management for optimizing carrot yield and quality. Nova Scotia Agricultural College, Truro, NovaScotia, Canada, 2004.
3. Ladumor RG, Nandre BM, Sharma MK, Wankhade VR, Joshi PC. Performance of Different Varieties of Carrot (*Daucus carota* L.) with Respect Yield, Quality and Chemical Compositions under Varying Sowing Times. International Journal of Current Microbiology and Applied Sciences. 2020;9(2):126-132.
4. Mapari AV, Dod VN, Peshattiwar PD, Thorat, A. Genetic variability in radish. The Asian J Hort. 2009;4(2):225-258.
5. Suojala T. Growth of portioning between shoot and storage root of carrot in the northern climate. Agric. Food Sci. 2000;9(1):49-59.
6. Tsering Stobdan, Stanzin Angmo, Dorjey Angchok, Eli Paljor, Thinles Dawa, Tashi Tsetan, *et al*. Vegetable Production Scenario in Trans-Himalayan Leh Ladakh Region, India. Life Science Journal. 2018;3(1):85-92.