DBpia

Growth Rsponse of Seedlings of Major Fruit Vegetables as Affected by Supplemental Irradiation of Far-red for Producing Uniform Seedlings Suitable for Use in Grafting Robots

저자
(Authors)

Hyunseung Hwang, Hyunyoung Mo, Changhoo Chun

출처
(Source)

한국원예학회 학술발표요지 , 2019.10, 99-100(2 pages)

HORTICULTURE ABSTRACTS , 2019.10, 99-100(2 pages)

발행처
(Publisher)

한국원예학회
Korean Society For Horticultural Science

URL

http://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE09263572

APA Style

Hyunseung Hwang, Hyunyoung Mo, Changhoo Chun (2019). Growth Rsponse of Seedlings of Major Fruit Vegetables as Affected by Supplemental Irradiation of Far-red for Producing Uniform Seedlings Suitable for Use in Grafting Robots. 한국원예학회 학술발표요지, 99-100

이용정보
(Accessed)

이화여자대학교
203.255.***.68
2020/05/18 03:56 (KST)

저작권 안내

DBpia에서 제공되는 모든 저작물의 저작권은 원저작자에게 있으며, 누리미디어는 각 저작물의 내용을 보증하거나 책임을 지지 않습니다. 그리고 DBpia에서 제공되는 저작물은 DBpia와 구독계약을 체결한 기관소속 이용자 혹은 해당 저작물의 개별 구매자가 비영리적으로만 이용할 수 있습니다. 그러므로 이에 위반하여 DBpia에서 제공되는 저작물을 복제, 전송 등의 방법으로 무단 이용하는 경우 관련 법령에 따라 민, 형사상의 책임을 질 수 있습니다.

Copyright Information

Copyright of all literary works provided by DBpia belongs to the copyright holder(s)and Nurimedia does not guarantee contents of the literary work or assume responsibility for the same. In addition, the literary works provided by DBpia may only be used by the users affiliated to the institutions which executed a subscription agreement with DBpia or the individual purchasers of the literary work(s)for non-commercial purposes. Therefore, any person who illegally uses the literary works provided by DBpia by means of reproduction or transmission shall assume civil and criminal responsibility according to applicable laws and regulations.

EC, 중-EC, 저-EC 처리구에서 공급액의 평균 EC는 각각 1.6, 1.3, 1.0dS·m^{-1}이었다. 재배 종료까지 '설향'의 수분흡수량은 배액 고-EC는 40.5L·plant, 중-EC는 49.3L·plant, 저-EC는 57.5L·plant 이었으며, 배액 EC 수준이 낮을수록 수분 흡수량은 증가하였다. 뿌리 건물중은 5.5-5.1g으로 처리 간에 큰 차이가 없어, 배액 EC 2.5dS·m^{-1} 수준에서 뿌리 손상은 없는 것으로 생각되었다. '금실'의 수량은 배액 고-EC 처리에서 6,321kg으로 가장 적었고, 중-EC는 102%, 저-EC는 105%로 다소 증가하는 경향을 보였다. '설향'과 '매향'의 수량도 같은 경향을 보였으나, 100-102% 범위로 차이가 크지 않았다. 평균 과중은 배액 EC가 낮을수록 증가하였다. 배액의 EC 수준이 높을수록 과실의 당도는 높아지는 경향을 보였는데, 당도의 차이는 12월에 1.4°Brix로 가장 컸고 봄철로 갈수록 적었다. 이상의 결과로 보아, 딸기 수경재배 시 동절기에 배액의 EC를 높게 관리할 경우, 식물체의 수분 흡수가 억제되어 과실 당도를 높일 수 있었으나, 배액 EC가 2.5dS·m^{-1} 보다 높을 경우에는 과실 크기가 작아지고 수량이 감소하는 결과를 초래하였으므로 주의가 필요하다고 판단되었다.

T. ※ 개인정보 표시제한 yhkhappy@korea.kr

57 P-1

Evaluation of Bioassay Methods for Testing Bacterial Soft Rot Resistance in Commercial Radish Cultivars

Ho-sun Lee[1]*, Tania Afroz[1], Young-Ah Jeon[2], Jung-Sook Sung[1], Ju-Hee Rhee[1], Awraris Derbie Assefa[1], Jaejong Noh[1], Aejin Hwang[1], On-sook Hur[1], Na-Young No[1], Jae-Eun Lee[1], and Su Kim[3]
[1]National Agrobiodiversity Center, National Institute of Agricultural Science, Jeonju 54874, Korea, [2]International Technology Cooperation Center, RDA, Jeonju 54875, Korea, [3]Institute of Plant Analysis Technology Development, The Saeron, Suwon 16648, Korea

Bacterial Soft rot, caused by Pectobacterium carotovorum subsp. carotovorum (Pcc), is one of the destructive diseases of radish (Raphanus sativus) in Asian countries. The objective of this study was to establish an efficient bioassay method for massive evaluation of resistance of radish genetic resources to bacterial soft rot. First, we have investigated resistance degree of 41 commercial radish cultivars to five isolates of Pcc KACC 10225, KACC 10343, KACC 10421, KACC 10458, and KACC 13953. Among the isolates, KACC 10421 was the strongest bacterium that showed susceptible to moderate resistant disease response to bacterial soft rot. Six radish cultivars (S1, N2, SAM1, SAK1, NS1, K1) that showed 2 susceptible (S1 and NS1) and 4 moderate resistant (N2, SAM1, SAK1, and K1) disease response were used for testing bioassay methods based on several conditions such as incubation temperature (25 & 30°C), seedling growth stage (second and fourth leaf), and inoculation methods (spraying, soil drenching & root dipping). All of cultivars showed the highest disease index (DI) when sprayed KACC 10421 at fourth leaf stage and incubated at 30°C. However, S1, N2, K1, NS1 were also susceptible to bacterial soft rot when sprayed and incubated at 25°C. SAK1, K1, and NS1 showed high DI when sprayed at second leaf stage and incubated at 30°C. Our study results suggest that spraying at fourth leaf stage and incubation at 30°C could be the efficient screening method for resistant radish germplasm to bacterial soft rot.

T. 063-238-4930, hosun83@korea.kr

58 P-1

Effects of Air Temperature and Duration of Acclimation after Cold Storage of Strawberry Transplants Propagated in a Plant Factory with Artificial Light

Meiyan Cui[1], Minh Duy Pham[1], Hyunseung Hwang[1], Byungkwan Lee[1], and Changhoo Chun[1,2]*
[1]Department of Plant Science, Seoul National University, Seoul 08826, Korea, [2]Research Institute of Agriculture and Life Sciences, Seoul National University, Seoul 08826, Korea

Low temperature storage (-2°C) is a common practice to long-term storage of strawberry transplants. However, sudden temperature changes occurred when they are transplanted just after the long-term low temperature storage may negatively affect the subsequent growth. To apply intermediate air temperature during acclimation period would increase survival rate and promote subsequent growth of the transplants. To determine the optimum air temperature and duration of acclimation, 'Maehyang' transplants propagated in a plant factory with artificial light (PFAL) were acclimated at 0, 5, 10, and 15°C for 1, 2, 3, 4, and 5 weeks, respectively, after the transplants were stored at -2°C. Transplants acclimated at 0°C for 1 week showed similar shoot fresh weight as the transplants before the storage, while that of transplants acclimated at 5 and 10°C was lower regardless of duration. At acclimation temperature of 15°C, root fresh weight decreased as duration of acclimation was prolonged, and the lowest fresh weight was found in the 5-week long acclimation. Maximum decay was observed when they were acclimated at 15°C regardless of acclimation duration. Five weeks acclimation resulted in the detrimental effects on quality of transplants and their subsequent growth at all the acclimation temperatures. Results indicated that higher acclimation temperature with longer acclimation period results in the greater loss in biomass and more severe decay. Therefore, 0°C and 1 week would be the optimal acclimation conditions for the strawberry transplants propagated in a PFAL and long-term stored at low temperature just before being brought out to be transplanted for fruit production or transplant propagation.

T. 02-880-4577, changhoo@snu.ac.kr

59 P-1

Growth Rsponse of Seedlings of Major Fruit Vegetables as Affected by Supplemental Irradiation of Far-red for Producing Uniform Seedlings Suitable for Use in Grafting Robots

Hyunseung Hwang[1], Hyunyoung Mo[1], and Changhoo Chun[1,2]*
[1]Department of Plant Science, Seoul National University, Seoul 08826, Korea, [2]Research Institute of Agriculture and Life Sciences, Seoul National University, Seoul 08826, Korea

이화여자대학교 | IP:203.255.***.68 | Accessed 2020/05/18 03:56(KST)

In grafting using automatic robots, it is important to produce seedlings for scion and rootstock having uniform stem diameter and hypocotyl length, and to determine the optimal environmental condition for doing it. Monochromatic far red light is known to have the effect of plant stem elongation and its appropriate control can be useful for controlling the elongation of the hypocotyl length. Supplemental far-red light irradiation can be expected to reduce the seedling production time for scion and rootstock used for robot-grafted transplant production, since securing their hypocotyl length and stem diameter are crucial for successful grafting using robot. We conducted this study to examine the effects of supplemental far-red LEDs on growth and morphology of scion and rootstock seedlings. Seeds of scions and rootstocks of cucumber ('Joeunbaegdadagi', Seminis Korea, Korea; 'Heukjong', Hungnong Seeds Co., Korea), tomato ('Super Doterang', Takii korea, Korea; 'B-Blocking', Takii korea, Korea), pepper ('Shinhong', Nongwoo Bio Co., Ltd., Korea; 'Tantan', Nongwoo Bio Co., Ltd., Korea) and watermelon ('Sambokkul', Hungnong Seeds Co., Korea; 'Bulrojangsaeng', Syngenta Korea, Korea) were sown and cultured in a plant factory with LED lighting. The seedlings were cultured at PPF of 200 $\mu mol \cdot m^{-2} \cdot s^{-1}$, photoperiod of 16 $h \cdot d^{-1}$, air temperature during photo- and dark periods of 26/22°C, and CO_2 concentration of 600 $\mu mol \cdot mol^{-1}$. The light treatments were W5F0 (treatment code for cool white LEDs : far-red LEDs = 5 : 0), W5F1 (cool white LEDs : far-red LEDs = 5 : 1), W5F2 (cool white LEDs : far-red LEDs = 5 : 2), and W5F3 (cool white LEDs : far-red LEDs = 5 : 3) in photon flux density. The scions of Cucubitaceae (cucumber and watermelon) in treatment W5F2 had the longest hypocotyl length while the scions of Solanaceae (pepper and tomato) cultivated under the conditions of treatment W5F1 had the longest hypocotyl length. The hypocotyls of rootstocks of all tested cultivars were elongated by irradiation of far-red light, but no significant difference was found among the treatment of different photon flux density of far-red light. Stem diameter of all tested cultivar except tomato scions in treatment W5F1 and W5F2 were greater than those in other treatments. The fresh weights of Cucubitaceae scions in treatment W5F2 was the greatest and that of rootstock was not significantly different among treatments. Results indicate that supplemental LED lighting of far-red light has strong effects on hypocotyl elongation and of seedlings and production period of scions and rootstock can be shortened by doing that.

T. 02-880-4577, changhoo@snu.ac.kr

60 P-1

한지형 마늘 고품질 다수성 신품종 '만산'

High-yielding Cultivar of Garlic (*Allium sativum* L.) 'Mansan'

최민선, 곽정호, 권영석, 김철우, 한지원*, 배상경
국립원예특작과학원 채소과

Min-Seon Choi, Jung-Ho Kwak, Young-Seok Kwon, Cheol-Woo Kim, Ji Won Han*, and Sang Kyung Bae
Vegetable Research Division, National Institute of Horticutural and Herbal Science, RDA, Muan 58545, Korea

마늘은 국내 양파와 함께 주요 조미채소 중의 하나이다. 마늘은 영양번식작물로 재배품종은 한지형은 재래종, 난지형은 도입종이 주로 재배되고 있다. 마늘 품종육성은 돌연변이를 통하여 얻어진 우수 개체를 증식하여 품종화 하거나, 외국에서 도입하여 재배하고 있는 실정이다. 고위도지역에서 자생하는 마늘 중 꽃이 피고, 임성이 있어서 종자를 얻을 수 있고, 교배도 가능한 유전자원이 있다. 꽃피는 자원을 이용한 품종육성은 80년대 중반부터 시작하였으며 지금까지 한지형 및 한지·난지 겸용 품종 등 다수를 육성 보급하였다. 신품종 '만산'은 2000년에 가임 마늘인 14－2w의 방임 수분을 통해 얻은 진성 종자 11립 중 기내 파종과 순화 완료 후 최종 선발 된 2번째 종자에서 유래한 마늘 구를 선발하였고, 인편 및 주아를 이용하여 증식 후 특성조사하여 선발하였다. 2011년에 생산력 검정을 실시하였고, 2012년에 '원교 57023호'로 명명하여 2014년까지 3년간 수원, 단양, 남해, 무안, 경북, 제주 지역에서 지역적응성 검정을 수행하였다. 초형, 구형, 구중 등의 균일도가 높고 기존 한지형보다 수량성이 좋으나 난지형 지역에서는 기존 품종보다 우수하지 않아 한지형 재배 품종으로 2015년 직무육성심의회에 상정하여 보호 출원하였다. 마늘 인편은 6쪽 비율이 높아 기존 한지형 소비지역에서 선호도가 높을 것으로 생각된다. 구중은 31.6g으로 대비품종보다 무거우며 초장, 엽수, 엽초경은 대비 품종보다 높은 경향을 보였다. 평균 수량은 1,092kg/10a로 대비품종(1,038kg/10a)보다 5.2% 높다.'만산'의 내한성은 한지 대비품종과 유사하고, 기존 한지 재래종보다 바이러스 저항성이 높아 기존의 한지형 재래종인 의성, 단양마늘 등과 함께 심을 수 있을 것으로 생각된다.

T. 061-238-6632, support06@korea.kr

61 P-1

Growth of Ginseng Seedlings as Affected by Photoperiod and Light Intensity in a Plant Factory With Artificial Light

Byungkwan Lee[1], Hyunseung Hwang[1], Minh Duy Pham[1], Meiyan Cui[1], Inbae Jang[2], and Changhoo Chun[1,3]*
[1]Department of Plant Science, Seoul National University, Seoul 08826, Korea, [2]Department of Herbal Crop Research, NIHHS, RDA, Eumseong 27709, Korea, [3]Research Institute of Agriculture and Life Sciences, Seoul National University, Seoul 08826, Korea

Ginseng is a shade plant which is sensitive to light environment. Accordingly, it is crucial to find suitable light condition to achieve highest efficiency for cultivation in a plant factory with artificial light (PFAL). This study was conducted to determine how photoperiod and light intensity influence on growth of Korean ginseng (*Panax ginseng* C.A Meyer) 'Chunpoong' cultivated in a PFAL. In this experiment, stratified ginseng seeds were sown into plastic container (520 × 365 × 200 mm) filled with commercial growing medium (Golden Root, Nongkyung Co., Ltd., Korea). Seedlings were consequently grown under warm-white LED lamps (YHT-020-L5-K, YUYANG DNU Co., ltd., Korea) with a combination of three photoperiods (8, 12, and 16 h) and four light intensities (50, 120, 190, and 260 $\mu mol \cdot m^{-2} \cdot s^{-1}$) for 15 weeks. They were irrigated using tap water with 7 days of interval. Averages in air temperature and relative humidity were 24.3°C and 58.3%, respectively. Seedlings grown under a longer photoperiod and

이화여자대학교 | IP:203.255.***.68 | Accessed 2020/05/18 03:56(KST)