核农学报 2012, (8) 1215-1222 DOI: ISSN: 1000-8551 CN: 11-2265/S

同位素示踪·资源环境·动植物生理

PP_{333},CCC,B_9喷施对彩色马蹄莲矮化效应的研究

李风童, 包建忠, 刘春贵, 孙叶, 马辉, 张甜, 陈秀兰

江苏里下河地区农业科学研究所, 江苏 扬州 225007

摘要： 采用多效唑(PP_{333})、矮壮素(CCC)和$B_9$3种植物生长延缓剂对彩色马蹄莲(*Zantedeschia hybrida*)2个三角叶型品种‘Golden chalice’和‘Fire glow’以及2个窄叶型品种‘Lip stick’和‘Garnet glow’进行不同浓度喷施处理,研究植物生长延缓剂对彩色马蹄莲的矮化效应。结果表明:各品种对不同药剂处理响应不同,同种药剂各浓度处理间无明显规律性。3种生长延缓剂对抑制4个品种的株高生长,提高其叶片叶绿素含量都能起到良好的效果。根据冠幅、叶长、叶宽、花梗长、花梗粗等观赏性状综合比较来看,PP_{333} 1500mg/L处理对‘Golden chalice’各性状均起到明显抑制作用,矮化效果较好;而CCC 250mg/L处理对‘Fire glow’和‘Lip stick’矮化效果最好;B_9 1000mg/L处理对‘Garnet glow’矮化效果较好,各性状抑制程度与对照相比差异均达到显著水平。总之,彩色马蹄莲品种间差异较大,无法筛选特定的生长延缓剂进行统一调控,但是,3种药剂对4个品种都有矮化效应,在生产中进行适宜浓度喷施可作为调控株型,提高盆栽质量的重要手段。

关键词： 彩色马蹄莲 植物生长延缓剂 矮化

DWARFING EFFECTS OF PACLOBUTRAZOL, CHLORCHOLINCHLORID AND DAMINOZIDE FORLIAR SPRAYS ON *Zantedeschia hybrida*

LI Feng-tong, BAO Jian-zhong, LIU Chun-gui, SUN Ye, MA Hui, ZHANG Tian, CHEN Xiu-lan

Research Institute of Agricultural Sciences, Jiangsu Lixiahe District, Yangzhou, Jiangsu 225007

Abstract: Dwarfing effects of the plant growth retardant on *Zantedeschia hybrida*were investigated by foliar sprays of paclobutrazol (PP_{333}), chlorcholinchlorid (CCC) and daminozide (B_9) at four concentrations on two triangle leaf type cultivars ‘Golden chalice’ and ‘Fire glow’, as well as two narrow leaf type cultivars ‘Lip stick’ and ‘Garnet glow’. Results indicated that all the three plant growth retardants showed favorable effects on inhibiting plant height and increasing leaf chlorophyll content in four cultivars. However, no significant regularity existed among different treatments using the same plant growth retardant, and each cultivar showed various responses to different retardants. According to the statistics on the ornamental traits of crown width, leaf length, leaf width, peduncle length and peduncle thickness, the application of 1500 mg/L PP_{333} was the most effective treatment on inhibiting the growth of all the ornamental traits in ‘Golden chalice’. The 250 mg/L CCC treatment had the best dwarfing effect on ‘Fire glow’ and ‘Lip stick’, while the spraying of 1000 mg/L B_9 did best for dwarfing ‘Garnet glow’, which could achieve significant difference level compared with control. Large differences of habits were observed among the cultivars of *Zantedeschia hybrida*. Thus the same concentration and plant growth retardant are not fit for all of the cultivars. However, all the three retardants can be used for regulating plant architecture and improving potting quality of *Zantedeschia hybrida* with reasonable concentration.

Keywords: *Zantedeschia hybrida* plant growth retardant dwarfing

收稿日期 2012-07-02 修回日期 2012-07-26 网络版发布日期

DOI:

基金项目:

江苏省农业科技自主创新资金项目[CX(11)1018]

通讯作者: 陈秀兰(1956-),女,江苏泰兴人,学士,研究员,研究方向为辐照加工与辐射育种。Tel:0514-87302326;E-mail:yzchxl@163.com

作者简介:

作者Email: yzchxl@163.com

参考文献：

[1] 师向东, 吕建华. 彩色马蹄莲种球国产化技术研究初报[J]. 中国球根花卉年报, 2005, 91-94
[2] 吴红芝, 石景峰, 郑思乡, 张敬丽, 周 涤. 彩色马蹄莲2n花粉诱导及其三倍体植株的获得[J]. 农业生物技术学报, 2011, 19(4): 662-668
[3] Singh Y, Baijnath H, van Wyk A E. Taxonomic notes on the genus *Zantedeschia*spreng (Araceae) in southern Africa[J]. South African Journal of Botany, 1996, 62: 321-324
[4] Snijder R C, Brown F S, van Tuyl J M. The role of plastome-genome incompatibility and biparental plastid inheritance in interspecific hybridization in the genus *Zantedeschia* (Araceae)[J]. Floriculture and Ornamental Biotechnology, 2007, 1(2): 150-157
[5] 文颖强, 刘雅莉, 王荣花, 许勇泉. 6-BA和PP_{333}对郁金香切花的保鲜研究[J]. 西北植物学报, 2005, 25(12): 2535-2538
[6] 罗红艺, 景洪娟, 李金枝. 含矮壮素的保鲜剂对非洲菊切花衰老的影响[J]. 植物生理学通讯, 2004, 40(5): 553-555
[7] 王炳奎, 金子渔, 赵妙珍, 赵燕申. 多效唑对小麦幼苗根系形成及活力的影响[J]. 核农学报, 1993, 7(3): 129-133
[8] 陈龙清, 张雨琴, 袁芳亭. PP_{333}及矮壮素对地被菊试管苗生根的影响[J]. 植物生理学通讯, 2004, 36(5): 425-427
[9] Tekalign T, Hammes P S. Response of potato grown under non-inductive condition to paclobutrazol: shoot growth, chlorophyll content, net photosynthesis, assimilate partitioning, tuber yield, quality, and dormancy. Plant Growth Regulation, 2004, 43: 227-236
[10] 王惠群, 萧浪涛, 李合松, 彭志红. 矮壮素对马铃薯磷素营养动态变化和产量的影响[J]. 核农学报, 2008, 22(2): 218-222
[11] 毛龙生, 高 勇, 姚亚英, 钱 遥, 唐吟岚. PP_{333}、B_9、CCC对盆栽一串红矮化效应研究[J]. 园艺学报, 1991, 18(2): 177-179
[12] 贾 茵, 张启翔, 潘会堂, 董玲玲. PP_{333}、CCC、B_9对盆栽小报春矮化效应研究[J]. 北京林业大学学报, 2010, 32(4): 218-222
[13] 张 剑, 张志国, 隋艳晖. 植物生长延缓剂对万寿菊穴盘苗生长的控制作用研究[J]. 中国生态农业学报, 2007, 15(6): 101-103
[14] 姜 英, 彭 彦, 李志辉, 吴志华, 任世奇. 多效唑、烯效唑和矮壮素对金钱树的矮化效应[J]. 园艺学报, 2010, 37(5): 823-828
[15] 任吉君, 王 艳, 孙秀华, 王 雪, 罗祥华, 何景新. 多效唑、矮壮素和摘心对孔雀草的矮化效应[J]. 沈阳农业大学学报, 2006, 37(3): 390-394
[16] 义鸣放, 孙 凌. PP_{333}对盆栽一品红新梢伸长抑制的效应 [J]. 北京农业大学学报, 1994, 20(2): 146
[17] 张孝岳, 黄国林, 龙次平. 植物生长调节剂对梅花盆花培植的影响[J]. 园艺学报, 2006, 33(6): 1357-1360
[18] 陈健辉, 王厚麟. 多效唑对水仙生长发育的影响[J]. 广西植物, 2010, 30(2): 161-165
[19] 彭 峰, 陈嫣嫣, 郝日明, 夏 冰. 多效唑和矮壮素对盆栽彩色马蹄莲的矮化实验[J]. 植物资源与环境学报, 2004, 13(4): 32-34
[20] 朱志勇, 郝玉芬, 李友军, 刘英杰, 段有强, 李 强, 郭 甲. 镉对小麦旗叶叶绿素含量及籽粒产量的影响[J]. 核农学报, 2011, 25(5): 1010-1016
[21] 姜 英, 李志辉, 彭 彦, 任世奇. 比九、多效唑、根太阳对金叶假连翘株型的控制效应[J]. 热带作物学报, 2010, 31(4): 651-654
[22] Latimer J. Selecting and using plant growth regulators on floricultural crops [M]. Virginia Cooperative Extension Publication, No. 430-102, Virginia, 2012
[23] Whipker B E, McCall I. Response of potted sunflower cultivars to daminozide foliar sprays and paclobutrazol drenches. HortTechnology, 2000, 10: 209-211

本刊中的类似文章

1. 王峰, 徐飚, 杨正林, 凌英华, 何光华, 陈胜, 卿明敬, 桑贤春.EMS诱变水稻矮生资源的鉴定评价[J]. 核农学报, 2011,25(2): 197-201
2. 纪桂君,曹国印.(~(14)C-三唑基)-多效唑的合成[J]. 核农学报, 1990,4(01): 43-46
3. 张超, 孙君灵, 贾银华, 周忠丽, 潘兆娥, 何守朴, 王杰, 徐正君, 杜雄明.激素对陆地棉矮化突变体AS98的生理影响[J]. 核农学报, 2010,24(2): 375-381
4. 贾小云,贺立恒,李润植.植物形态建成基因:遗传操作提高作物产量的靶标[J]. 核农学报, 2005,19(01): 37-40+28