Physiological studies on hyberid tea roses

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The study was carrid out in two consecutive seasons of 1991/1992<1992/1993 on one Rose variety namely Mercedes at the ExperimentalStation of the Faculty of Agricultural at Moshtohor, Zagazig University.This investigation included two parts, the first part studied theeffects of GAJ, kinetin, Pac1obautrazol and ethrel. The second part aimedto study the effect of plant density under open land. The most importantout look of the present investigation were:The first part.1- Tne number of leaves per flower stem was increased significnatly byspraying Mercedes rose with kietin 200 ppm followed by GAJ 300ppm or kinetin 100 ppm and at cart by pacrobutrazol 100 ppm andethrel 100 ppm.2- Different GA3' kinetin, paclobutrazol and ethre1 treatments resulted inan significant increase of fresh weight of flower stem with leaves. Theheaviest weight was obtained when treating plants with 200 or 100 ppmkinetin followed by 300 ppm GA3 and at last by GA3. paclobutrazol at200 ppm and ethrel 100 ppm.3- There was a positive linear correlation between the GA3. kinetin andpaclobutrazo] conceutration and the dry weight of flower stem withleaves while a negative correlation was occurred with ethrel withwinter and spring flush.4- Highest number of flower per plant was increased significantly byapplication' Mercedes' rose with paetobatrazal at 200. 100 ppmfollowed by 200 ppm of kinetin and GA) at 300 ppm with winter flush.While kinetin at 200 ppm, Paclobutrazol 200ppm. GA3 200pp1l1andethrell00 ppm, respectively with spring flush.5- The addition of GA) and kinetin at different concentrations generallyresulted in an increase in flower stem especially: with the highestconcentration. But the addition of ethrel gave least length as the controlplants especially with the high concentration. While the treatments withpaclabut razol especially at low concentration produced the taller thauany other treatmcnts and the control plants in the two !lushs.(,_ flowcr stem thickness exceeded as paclobutrazal concentrationincreased also this increase was pronounced with the highest level ofkinetin application, on the other band tile lowest level of ethre]treatment had obvious effect.7- Spraying Mercedes rose with GA3, kinetin, paclobUlrazol and ethrelresulted in an increase in the diameter ofthe !lowers in most cases and8- Hinebavoitehstflufrsehsehs.weights of flowers in the winter flush were obtained fromtrealing Mercedes rose with 200 ppm paclobutrazal, 200 ppm kinetinand 300 ppm GA3 ' respectively. Whiel the application of 200 ppmethrel gave the least results in this respect. As for spring !lush kinetin200ppm produced the maximum fresh weight followed bypaclobutl1zol 200 ppm, kinetin 100 ppm, GA3 300 p.p.m and last byeOthnretlheOotOhper.p.smid.e the highest cOllcentration of ethre' (200 ppm) reducedthe fresh weight of flower in the winter and spring flush.9- The mean dry weight of flowers was increased by GA3, kinetin,paclobutrazal and ethral treatments. Heaviest dry weight wereproduced from spraying plants with 200 ppm/paclobutrazol, 200 ppmkinetin followed by paclobutrazal at 100 ppm. GA3 300 ppm kinetiu'00 ppm and ethrel 100 ppm, respectively at winter flush. While thetreatments. by kinetin 200 ppm, paclobutl1zal 200 pp'" and GA3 at 300ppm, respectively, gave the best results with spring flush.10- The nitrogen content was increased in the two seasons espcially: withthe high concentl1 ion of both kinetin and paclobutrazal. While the lowconcentration of ethrel lead an increase in the total nitrogen contentin opposite of the high concentrtion.11_ Spraying Mercedes rose with GA3. kinetin, paclobutraZOl and etnrelincreased the carbohydrate content Higher value was produced with200 ppm paclobufllZol followed by etbrallOO ppm, kinetin 100 and200 ppm in the first and second seasons.12- The addition of kinetin at 100 or 200 ppm gave the the maximum valueof chlrophyll "A" followed by paclobutrazol 200 ppm and at the last by13-paMc1oosbt utorfaztohleata1p0p0liepdpmk.inetin and paclobatrazol treatments

increasedchlorophyll B but ethrel addition decreased it in this respect.The results of the present research show that in order to get goodquality of both flowering and vegetative characters with Mercedes mose. itis advisable to practice the following .A- Us•ing Foliar application with GA3 at 300 ppmwas more effective onflowering and growth characters than 200 ppm.B- Treating with foliar application ofkinetiu at 200 ppm that resulted ingood quality concerning flowering and vegetative growth.C- Using paclobutrazal with the high.concentration of 200 ppm gave thebest results in improving the flowering qualities such as number anddiameter of flowers, fresh and dry weights of flower stem.D- Using foliar application with ethrel at low concentratiou (100 ppm) wasmore effective on growth and flowering than high concentration (200ppm).The second part:I_ There was a negative linear correlation between increased plant densityper m1and the number of leaves per flower stem. Plant density at 10or16 plantslm2 produced the max:imumnumber of leaves per flower stemcompared than to 20 or 24 plants/m2.2_ The population of 10 or 16 plantslm1caused in a significant increase inthe fresh and dry weight of flower stem with leaves in both flushs3- Plant density at 20 or 16 plantslm2 produced the maximum number offlowers per plant compmed with 10 or 24 plantslm4- The highest numher of flowrs per m2 was obtained with 20 plantslm2followed by 24 16 plants/m2, respectively, While 10 plants/ln2produced the least one in this conceOl.5- 20 plantslm2 gave the longest flower stem while 16 or 24 plants/m2produced the next value in this concern, On the other hand 10 plants/m2prodnced the shortest flower stem In winter flush, While 24 plantslnl2gave the longest flower stem followed by 20, 16 plants/m2, respectively6- aTthseprdinifgfefrluensht . plant density produced the same result on flower stem7_ dAiasm’ feoterr.mean diameter of a flower, population 10 or 16 plants/m2gavethe maximum diameter of a flower while 20 or 24 plantslm2gave thenext value in this concem.8- Heviest fresh and .dry weight of flowers were obtained from 10or 16plants/m2, While 24 plants/m2 produced the least fresh and dry weightsof flowers in winter flush, While 20 or 24 plantslm2 gave the maximumdry weight of flowrs in the spring flush.9- The highest nitrogen content was produced with 16 plantslm2, while 10or 20 plants/m2 gave the next value in this concern, The minimumnitrogen content gave with 24 plantsJm2.10- 16 plantslm2 gave the highest value of total carbohydrate in bothseasons, whiel24 plants/m2 produced the least value in this concern in11-boththe smeaasxoinms.um value of chlorophyll A and B produced by 10 orl6planOtsnlmb2asiins bootfh tsheeasseonsre. sults, the following recommendation could bepresented sixteen plantslm2 is a siutable planting distance for betterproduction of cut flowers from mansedes Rose plants.