some relationships between growth of ornamental plant and landsoape gardening

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This investigation aimed to evaluate the effect ofsome hortioul tural and environmental aspects on the grorihand appearance of somegarden elements, as well as ,trees,lawns, hedges, succulent and cacti plants as principleelements in landscape.The study included the effect ot bed orientation onthe growth sight under shade or sunlight spot in the garden.The criticism ot so_ garden in foriegn countriesand in Egypt was also considered in this work.The most important parts are the followingI •.Effect ot plant at.rial on air telBJ)!r&ture1- Effect of trees:. Trees are the dominant visual elements ot plantmaterials used to modify air temperature especially inthe aird zone climates. They provide shelter from sunburn in &umner,and minim1ze the hot day temperature.This was found to depend on the tree forms and shape atfoliage tree 8S well as the density. Par example 2i s1mi-.!:2! edulis cover 22.89 .2 from the ground area and participateby).75°C in lowering the air temperature. Astor Cassia nodosa cover 21.72 m2from the ground areaand participate by 2.200C, but Grevillea robusta treedecrease air temperature by 1.49°C when tree occupied10.75 .2 from the ground area.However, number at branches, shape of toliage, densityand kind of leaves were affected on air temperature.The neeclle leaves tree i.e. Pinus halepensla reduced airtemperature by 10.8°C comparedwith).2°C for broadleaves tree as Ficus elastica. It seams that Coniferousevergreens absorb more sunlight and thus they are veryeftect! ve in reducing air temperature arround theirspots. As for the tine leaves tree Jacaranda ovalitoliareduced air temperature by 7.1 °C in April.Concerning garden build1Dgs the study proved a reductionot 9°C indoors, Casimiroa tree shared the buildingsin reducing the air temperature by 12.2)OC in August,while Casim1roa tree shared by).2,3°C as comparedto temperatureot sand walk.Fastigate and Columnar trees act as accental andexclamation point 8 similar to a church steeple on thesk;yline at the country town. Spreading trees not onlygive the teeling at breadth and extend but also theymodify air temperature in different 1J&78 due to thenumber of branches earried on the tree and- the shape ofleaves as well as the method of branching.’lb.e obtained data i.n this thesis proved the abovepoints.2- Effect of lawns:During November, Bermudagrass minimized the hot~ temperature by 1.5°C when the soil humidity was 16.7~.When soil humidity increased to 18.93%, the reduced teaaperaturewas 4.)8°0. Lawn irrigation decreased air temperatureb7 3.4°C compared with the dry lawn which decreasedair temperature only by 1.5°C.II. Hedges1- ~ oriental!s, L.hedgel.l-Effect af short level trimming at 70 emsThe establishment of the hedge depended uponthe direction of hedge. It was found that South and Westdirect1aDs were more agreeable to establish short Thujahedges, since that provided complete seperation of thegarden part s.1.2- Effect of high level trimming at 90 emThuja shrub added 0.259 m2as a living weil tothe hedge exposed to the West direction, South directioncreateel 0.271 .2 as 11V1Dg greene1’7 in the garden.All d:Lrections of tall trimming increased the shrubwidth; East and North tall trimmed shrubs showed thelargest gap area inbetween. whereas West and South directionsgave little gap areas. The sight and screening ofthe hedge depended upon triDDning level as well as to theirdirection.2- Ficus nitida hedgeThe data for l’icu8 n1tida hedge took similar trendof the 1’l:nlja hedge. However, all transplants should beshortened in early stage of growth to a min:l1lRlm to enhancebranch formation. It was proved that increasing plantingdistance bad a negative correlation with the rate of thehedge furnish1 ng in the garden.J- Lantana camara hedgePrIming of Lantana camara hedge once/year stimulatesthe basic grQrih at the end of the

growing seasoncompared with the frequent pruning. The frequent pruningalso increased shoots number to 82 compared to)2 shootsfor pruning once/year. Thus low hedge tri””ng producedshorter -and more compact hedges compared to pruning once/year.4- Duranta plumeria var varigataThe growth of hedge grown as low hedge was veryslaw, in order to overcome this problem, Pelargomyzonal was planted in the gaps of hedge to complete itsbeauty.On this ground, it could be emphasized that someflowering perennials could help in creatiDg a lovelyscenery and a h@rmoD3e”ffeot if corporated with a slowgrowing hedge especial17 at the starting years.III. !he contr1.bu.t1on of succulent plants OD. IRlcculgtgarden constructionaaceulents take several years before they appeartheir effects on the garden view. Agave plant occupiedbetween 0.)07 m2 - 0.502 m2 from the garden and O.05~-0.109 m3 at space in the first stage of its creation.The seener,- of succlent plants became large enoughto attract the attention of garden visitors in _turingstage. Opuntia vulgaris and Lophocereu8 shotti occupied6.039 .3 and 0.174 .) respeotive17 from the garden spacea·fter (8) ye~s from planting. .ve americapa var Darginatacould share by 2.264 .3 from the garden spacewhen the plant facing fest side, wMla it will share by2.649 .3 it they taciDg the Bast side of succulentgarden. Generally, the growth of succulent s was morelarger when the plants were racing the West.direction.The leaves and some branches of succulent plant had tobe thiDned in order to allow sunlight to interferebetween the plantaeThe scenery ofdifterent succulent and cactusgenera in constructing the garden will vary due to theircombination as well &8 the individuality distribution •. If one genus is only used 1t IDB7 create a repeated 8ce-DB17. In formal garden it DI8.7 be useful.IV. The etfect ot p1aDt orientat:1on on the plaat I1”O’!thand 81f51 .ppearanoe1- Sal v:1a spleD.deneShade and sunlight in the g~en can determinethe growth and its appearance in the garden, Sal viasplendens ~ be grown under shade garden conditiona andit Will show so_ orD8llenta1 growth under such cond1tions.The plant w111 occupy a m-.J.1er area, about 0.581 m2•~erea8 under full sunlight it will occupy about 0.916 .2.Hence the number of plants needed to blossomin the gardenbed or borders has to be perfectly caleal.ated dependingon the position in sun or shade.2- HYbrid Tea RosesHybrid Tea Roses grown under SUllD3’ conditionsoccupied 0.635 m2 from the garden. C&1culating the numberof ~brid Tea Roses plants needed to cover 10 m2 in aSlDIQ’ location, it was found to be 15.7 shrubs comparedto 20.7 shrubs needed to fulfill the same effect, andsharing by 3.01 m3of a fiOll’ering surface in SUlU1Y locationcompared to 1.66 .3 in shade one•.In our opinion Floribunda Roses 1II8.T create more effectivegroups when planted in front bed, in combinationwith BTbrid Tea Roses.3- Senecio doriaPlanting Senecio doria in the garden depends uponthe amount of light which will be exposed to them. Shadylocations are more suitable to its growth as single speci.-n. Under those conditions, eftr:,y plant creates largesize and more vigure end occupies about 1.33 m2• Plantexposed to full sunlight occupies less area of 0.580 m2in the garden. Also,’ it lEst be planted in combinationwith flowering annual plants.4- Dracaena dracoDracaena draco plants g:rown in SUIIDi’ locationscompletely different from those grown UDder shady condltione. !he plant creates a strong focal point in’ the. garden with J branches and 410 cmtall trunk. The crownproduoes 11 orown divisions. whereas. in Bh.ac17 locationsit has only 2 branches, with 340 cmslength trunk.5- Agaveamericana var marginataAir,aveamericana var marginata 1s preferably grownin SIDIQ” location in the garden to create a focal pointof great visual interest in a ~ corner. The plantoccupied about 6.61 .2 in the garden area and shared b73.90 m3 for ornamenting the garden. While. plants grownin sh.ads”locations were not too sh~.,..s, B!aJ.uatioD of Citadel prdensLandscape gardening has an. important role in beautifyingtouristic areas, the business of landscape gardeniDgnot only g1ves our monumentplaces the gloriousand beautY’. but also they have not harm or to changetheir essential characteristics. Plant materials chosenfor those places should be connected with their hi8’torioalimportance.PaD young palms should be 11ed out in the poole.location to complete the historical panora.a ot theCitadel garden. There are two suggestions for redesigningot the garden which in tront Citadel gardensfacing salah SBlm’s street, the first ~at1on 1slcreating formal. garden or creatiDg Su.coulent garden.Lawns should share in gardens design. The width ot Eastside lawn is agreeable to create a mixed border facingthe Citadel wall.Some harmfUl effects II8Y affect the gardening creationsuch as ground. water which ~ increase due to useof _ch irrigation which could affect the historicalbuild1ng8~ However. irrigation bY’DROPlets and/or sprinklingmethodscould be adopted.To ask more safet,. to 01tade1

constructions. thelevel. of ground water, and slope of ground BIIlat beexamined and a distance of 10-15 mmust be left tosurround the C1tadel wall.VI. It!!J.uatJ.ODof the uveloplPnt of Tabr1r sauare prdenThe development of Tahrir square garden passed b,. differentstages froa 1958 to 1988.The distribution of trees was well organised in theperiod from 1958 to 1964. Although, the garden containeda lax-ge lawn area, but this area was dirtded to man.J' parts.The des1gDof (1958-1964) contained d1fferentelements ofdesign, lawns, trees and shrubs, but it was lacking theherbaceous plant s which had the colouring effect s.In the second period troll 1964 to 1981 the designercreated a formal carpet garden facing Tahrir adminstrativebuilding. The annual and herbaceous plants were usedin the different, levels ot beds in the central garden.In the thi.rd period frOID 1983 to 1985 during theconstructing ot the under growndmetro, the garden "ssneglected and becamein a bad statement. All the plantsdied and its colour changed to yellow brown. However, thetrees groups were in a better case since they tolerantedthe negligence.The newdesign (1988) ot Tahr1r square gardens dependedupon the modernlandscape lines, with smoothcurving lines.Generally, it could concluded that Tahrir squaregarden in 1988 is very suitable state, although thisarranged is not quite enough to overco_ the ~ture requirement••VII. Critioi. studies 1D the. prden.1- ¥he-Khan garden in Shoubre.i'henew 41reotion ot Agha-Khan garden dependedupon.1. Min1m:.1zingthe garden _1ntenance and increasing theirparclo% Bize b.Tusing lawn edged b7 short anIDIsl plant 8as Viola tricolor , - Tropaeolum ~ and Tagetespatula.2. Providing new garden appearance b7 used palm trees.3. The cmmeotiDg between garden cles1gn and town plann1 ng.On this ground, the garden could complete thepla.nning.b7 using iron trame around the garden.2- Evaluation of 80me green area in Cairo streetsD1e green, colour decreased in cairo, due to ID8D3'd1struotioDS of III8JV' plant materia1s. &lch partition rtIEqlead to poor maintenance and sharp edges of the bed cornerswhiCh cause IIBD1' troubles for the n11 aintenance.Gener8.l.17, 1t was noticed that the desigDs and connectionof plant -.ter1als in Cairo street. were not wellorganised, III&D1' plant materials are grown under untavourablecoDditioJllJ which loose the. the cha1w:Le •• and minimizetheir function in urban conditions. Plant materials inCairo streets are not properly maintened.Wereoollllllend,using different genera of trees in avertical and horizontal shapes in landscape design whichmodify the air temperature especially in hot arid zoneskeside increasing soil lawn humidity which reflect decreasingthe garden air temperature.South and Wes1;directions are more agreeable toestablish Thui!; orientallst Picus nitida hedges, theirsight and screening depend upon trimming level as .wellas their directions.The low hedge trimming and frequentpruning produce more COJl.P&cthedge.Using some noweringperennials could help in creating a lovely scenery inthe garden.The ~.cenery of different combinations' of succulentgenera in suoculent garden 1s more effective than usingonly' one. The leaves and some branches of succulents hadto be thinned to allow sunlight !Dbetween.Growth, appearance and number of plants 8S well ass.J.via splendens t lfTbrld Tea Roses , DracanaeDa dracoand Agave americana were more effective in sunny spotsbut Senoio doria prerers shady location in the garden.The designer or living landscape must have an entireknowledge of the plants and the long term effectof his design for future maintenance based on the townconditions.