

TROPICAL TURFGRASS PLANTING

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Good planting practices are necessary to achieve quality turfgrass, and avoid future maintenance problems. It is important to choose a turfgrass species that matches your requirements and proposed use (see CUGE Know Your Turfgrass series). Most tropical turfgrasses are planted vegetatively by sodding, close turfing, or other method, though some may be planted by seed.

Before planting, seedbed must be prepared, consisting of a good rootzone material, properly graded to allow for drainage (see CUGE Research Technical Note *Tropical Turfgrass Lawn Construction*, serial no. 1113-01). Starter fertiliser should be incorporated into the top 3 cm of rootzone during final smoothing with a hand rake. Use a fertiliser with a basic ratio of either 1-2-1 (ex. 12-24-14) or 1-1-1 (ex. 15-15-15), applied at a rate to provide 4 kg N (nitrogen)/1000 square metres. Prior to planting, provision must be made for rolling (vegetative planting), mulching (seeding), and irrigation (all planting methods).

After planting, turf should be mowed soon after it reaches the desired height – do not allow turf to grow too high prior to first mowing, as this will stress seedlings. A sharp rotary mower should be used for initial mowings, as a reel will pull out seedlings (reel may be used for sodded turf). Backpack mowers should not be used, as they will damage seedlings.

SODDING

Sodding consists of laying turf sheets or rolls end to end (Fig. 1a). Sodding results in instant turf, though for sports turf an establishment period of 2 weeks should be allowed for initial rooting. However, sodding is the most expensive method of turfgrass establishment.



Figure 1. A) Sodding turfgrass. B) Sod of proper thickness and maturity. C) Postplant rolling is necessary to prevent dieback.

Quality sod is genetically pure, with no weeds, freshly cut, and mature, yet lacking a thatch layer. Soil layer should not be too thick (maximum 20 mm) (Fig. 1b), and of the same, or similar texture as the rootzone, otherwise drainage problems associated with soil layering will occur. An alternative is to wash soil from sod prior to planting.

¹ Fertiliser rates given are in actual N (nitrogen). For example, if the required rate is 4 kg N/1000 square metres, and you are using 15-15-15 fertiliser, then the amount of fertiliser required would be: $4 \text{ kg N} \div (15\% \text{ N}) = 26.6 \text{ kg fertiliser}$. For more information, see CUGE Research Technical Notes *Tropical Turfgrass Fertilisation* serial no: 1113-10)

After sodding, roll for good soil contact, then thoroughly irrigate to wet rootzone, followed by daily light irrigation (if needed – avoid saturating the soil) until roots begin to grow into soil. Irrigation should then be reduced to every 2 or 3 days until established. Roll once again during this period (Fig. 1c). Topdress with rootzone mix to fill in any cracks appearing between sod pieces. Fertilise again 2 weeks after planting with a 4-1-2 ratio turfgrass fertiliser to apply 3 kg N (nitrogen)/1000 square metres.

Close turfing is a type of sodding where small, irregular turf pieces are used in planting (Fig. 2a). Though turf pieces are laid touching one another, an irregular surface results, as pieces vary in soil thickness, and contact is not uniform (Fig. 2b). If close turfing is used, sequential topdressings and rollings will be necessary to gradually achieve a level turf surface.



Figure 2. a) Planting by close turfing. b) Post plant topdressings and rollings are required to prevent an uneven turf surface.

PLUGGING OR OPEN TURFING



Figure 3. An individual turf plug

Plugging or open turfing involves planting of 50 – 70 mm diameter plugs (rooted turf pieces with soil) into shallow holes. Plugs may be grown in plug trays, or cut from sod (Fig. 3). Planting is on a grid, with plugs approximately 300 mm apart. Immediately after planting, topdress to fill in and roll. Thereafter, roll once or twice more until establishment, and topdress as necessary, as plugs may begin to rise above soil surface. Following planting, lightly irrigate daily if needed (avoid saturating the soil). After rooting occurs, decrease to every 2 – 3 days until estab-

lished. Every two weeks after planting, fertilise with a turfgrass fertiliser to apply a rate of 2 kg N (nitrogen)/1000 square metres until established.

Other types of vegetative planting (stolonising, sprigging) are described in the pages following. These are not commonly done in Singapore, though they may be more cost effective for certain land uses, particularly larger areas. They will be the subject of future CUGE research.

STOLONISING

Stolonising involves broadcasting rhizome or stolon pieces over the soil surface. Turfgrass establishment by stolonising is faster than seeding, but slower than sodding. Rhizomes/stolons should be freshly harvested, and have at least 3 nodes (growing points).

To stolonise, spread 3 – 5 cubic metres of stolons per 1000 square metre area. Higher rates will result in more rapid establishment. After broadcasting, topdress with rootzone mix 5 – 10 mm thick, roll, and water in. To avoid stolon desiccation, stolonise by section of lawn, followed by topdressing/watering. After planting, irrigate lightly up to 3 times per day if needed, to keep stolons moist. After rooting occurs, decrease to daily for 1 – 2 weeks, then every 2 – 3 days until establishment. Every two weeks after planting, fertilise with a turfgrass fertiliser having a basic ratio of 4-1-1 or 4-1-2 to apply a rate of 2 kg N (nitrogen)/1000 square metres until established.

SPRIGGING

Sprigging involves partially burying stolons in rows 15 – 30 cm apart. Sprigging can be done by hand, or by specialised sprigging machines (Fig. 4).

Though sprigging is less expensive than stolonising, as stolon rate is typically half, establishment rate may be a bit slower. Post plant care, including irrigation and fertilisation, are the same as stolonising.



Figure 4. Machine for sprigging turfgrass.

SEEDING

Not all tropical turfgrasses can be seeded. An advantage of seeding is the cost; seeding is much less expensive than vegetative planting. Another advantage is that seed can be easily stored until planting. Disadvantages include the need for more frequent irrigation, and increased risk of erosion (relative to sodding) during establishment. For these reasons, seeding is not commonly practiced in Singapore.

Buy seed that is certified for quality, including purity (pure cultivar, no noxious weeds, especially perennial grasses or sedges), and freshness (high germination percentage).

Seeding rates are listed in Table 1. Always follow recommended seeding rates, as too high rates result in weak seedlings and damping off fungal disease, and too low rates slow establishment and increase weed competition. Adjust the actual seeding rate by calculating pure live seed (% PLS), where % PLS = % purity X % germination. Both % purity and % germination should be listed on seed label. For example, if:

% purity = 70% and

% germination = 80%, then

% PLS = $0.7 \times 0.8 = 0.56 = 56\%$

Therefore, if tabled seeded rate = 2.0 kg/100 square metres, then

actual seeding rate will be: $2.0 \times 100/56 = 3.6$ kg/100 square metres

Table 1. Seeding rates for tropical turfgrass

TURFGRASS	SEEDING RATE (Kg/100 sq metres)	GERMINATION RATE (days)
<i>Axonopus compressus</i> (cowgrass)	0.6-1.2	7-14
<i>Cynodon dactylon</i> (bermudagrass)	0.5-0.8	7-15
<i>Digitaria didactyla</i> (Serangoongrass)	0.2-0.8	7-14
<i>Eremochloa ophiuroides</i> (centipedegrass)	2.0-3.0	7-14
<i>Paspalum vaginatum</i> (seashore paspalum)	0.4-0.7	10-14
<i>Zoysia japonica</i> (Japanese lawngrass)	1.0-1.5	10-14

Hydroseeding is a rapid, efficient method in which seed is mixed as a slurry with a cellulose or other mulch, together with starter fertiliser and perhaps a tackifying (sticking) agent (Fig. 5).



Figure 5. Planting by hydroseeding

Slurry is then applied with a hydroseeder. As cellulose slurry is applied during hydrosprigging, no subsequent mulching is required. However, post plant irrigation and fertilisation is still needed. The method can also be used in sprigging turf; in this case it is called hydrosprigging. Hydroseeding is not commonly used in Singapore, and will be the subject of future CUGE research.

After seeding, very lightly rake seedbed to incorporate seed within top 10 mm soil. Mulch with straw or similar mulch at a rate of approximately 490 kg/1000 square metres. Coverage of soil should be approximately 75% when looking straight down onto surface (raking and mulching are not necessary when hydroseeding). Irrigate lightly up to 3 times per day if needed, to keep seed moist. After shallow rooting occurs, decrease to 2 times per day for one week, then decrease to once per day until establishment. Every two weeks after planting, fertilise with a complete fertiliser to apply a rate of 2 kg N (nitrogen)/1000 square metres until established.