



# EMPIRE TURF™

## *Performs*

Including  
Research Data

**Conclusive evidence**  
from around Australia and the World



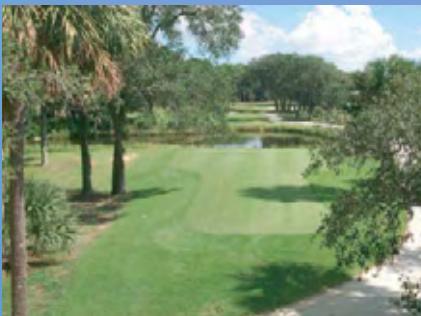
**Roadsides**



**Homes**



**Amenity Areas &  
Developments**



**Sports Venues**



**Parks**



**Schools**

Roadsides

Schools

Parks/Sport

Homes

Amenities

Research





# Empire Turf has proven its drought survivability in many real world test sites.

*Since Empire's Australian release back in 2003, people have been testing Empire for drought tolerance. Some of the greatest proof that Empire stands far above other turf varieties, when it comes to drought survivability, has been its ability to survive and prosper on natural rainfall across many drought stricken sites*

*around Australia. Various home owners have helped test Empire Turf, with no irrigation for many years, with great success. Testing on turf farms, parks and schools has shown its ability to go dormant with drought stress, yet return to great condition quickly after rain. Empire's amazing number of rhizomes allow it to remain dense even when under drought stress, whilst Couch and Kikuyu thin out, leaving gaps for weeds. \*Moderate irrigation needed in climates similar to Perth.*

## Roadsides

A Roads Department trial in NSW has seen Empire Turf do well with no irrigation once established. Another roadside test has seen Empire Turf prove itself yet again.

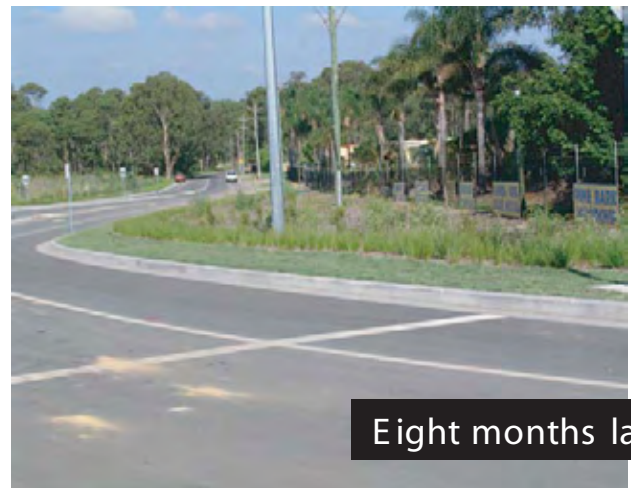
**Test 1:** Windsor Road, Kellyville.

Roads Department trial. Duration 2 years.

No Irrigation was used on this Western Sydney, NSW site after about 6 weeks.



Soon after installation



Eight months later



One year later



Two years later



# More early Empire Turf trials.



## Test 2: Another roadside project.

This site is at Randwick in Sydney. For the past three years, this footpath area has performed extremely well. Notice the absence of weeds. Couch or Kikuyu never looks like this after three years on a roadside. Compared to Couch and Kikuyu, Empire Turf requires less than half the maintenance, and on roadsides often hardly any at all.

Roadsides



## Empire Turf has the strongest turf rolls or slabs.



Empire has a massive rhizome system, far more extensive than Couch or Kikuyu turf. These deep, tough rhizomes not only ensure the strongest and easiest-to-handle turf rolls or slabs, but they also provide Empire with its unmatched survivability. It is the extensive stores of carbohydrates that provide Empire Turf with its staying power. Simply put, with Empire's much higher food reserves, it survives longer than other turf types.





# Schools - A tough testing ground.

After a few months, just prior to first use.

## Test 3:

Empire Turf has proven itself for almost two years at this busy primary school, in Engadine, NSW. The wear tolerance has been first-rate, and the maintenance savings, compared to Kikuyu, have been high. Far less mowing. The turf in this school yard was installed as all turf should be in schools. It was installed, and then a good period of no use was allowed for. It had months to establish before being used. In cooler areas, avoid winter installation in schools.



## EmpireTurf

**"It is a strong grass which can take a lot of wear and tear."**

**Father Peter Rankin,**  
St John Bosco Primary School

Empire Turf was widely used around the buildings, and under light to moderately shaded areas at St John Bosco Primary School. After almost two years and lots of wear, the Empire has proven to be school tough.

Almost two years and lots of use.





# Arndell Anglican College uses Empire Turf for two years.



## Test 4:

Adrian, the groundsman from Arndell Anglican College decided to trial Empire Turf in a few spots almost two years ago.

Last year he said "That in one very high wear area it is still going strong after more than a year. Kikuyu only lasted for 6 weeks in that area".

Schools



The top left photo shows Empire doing well in an Arndell school courtyard. Above right is a picture of an area that rarely gets watered, and has only been mown a handful of times each year. Notice the Empire Turf that has not been mown around the posts. It is still very low, and not overgrown.

The two photos to the left show Empire Turf being used in hard to reach places. The last time Adrian was asked how often he mows these areas he said " I have never mown or trimmed the areas next to the fence, even after a year". He intends to very occasionally trim these areas with a brush cutter. Notice the absence of weeds in any of these photos.





# Parks and sporting facilities



## Yarra Glen Racecourse, Victoria.

The Empire turf in this photo was laid only 6 weeks prior. As in this instance, in Victoria, Empire takes very quickly in the warmer months. Before laying Empire in the cooler months in Melbourne, check with your local grower. Empire Turf can be oversown with Rye grass in Autumn in cooler regions.

## Golf Courses

*(Performance with less inputs).*

Empire Turf has been used on many golf courses around the world. In the USA it has been used extensively for roughs, fairways, tees, and around greens and bunkers. In Australia, golf courses that have tried it are amazed at its faster growth rate, and ease of establishment compared to any other Zoysia grass.

They have found its growth to be slower than Couch, which means savings on mowing costs, however many green keepers have been surprised

with its toughness to wear and tear. Its thicker more dense rhizome system is allowing it to cope with divots just as well as any Couch, but with less mowing.



As golf courses find more and more pressure from authorities to reduce water, pesticides, herbicides, and fertiliser use, they will need to switch to a lower input turf such as Empire.

**Test 5:** Parramatta Golf Course recently conducted a preliminary trial of about 70 square metres of Empire on a moderately shaded tee. A further more comprehensive trial is now underway. However, Max Suckling, from Parramatta Golf Course said, “The Empire turf performed better than the Couch and the Kikuyu in the moderately shaded tee area. It withstood the dry periods well. It did shrivel under severe drought, but it came back quicker and thicker than the Couch and Kikuyu when watered. Empire did not thin out as much as the Couch and Kikuyu.



# Empire does well in a park in Darwin.

## Test 6:

When it comes to humidity tolerance, Empire Turf is as good as any. Empire is performing well in Darwin, Brisbane, and in Florida in the USA. The Empire in this park has performed well for the last two years. The ability to not thatch has set it apart from any other Zoysia in Darwin. Thatch can be a real problem with the older style Zoysias, but with Empire, even in humid climates, thatch is easy to control. After two years of monitoring this park, it can be declared a success.



## Two Years Later in Darwin.

After two years, and two very eventful wet seasons, the Empire Turf is still performing wonderfully at this Park in Darwin. The less-required mowing frequency of Empire is real bonus for hot humid places like the top end.

**Empire Turf performs in the tropics.**



# EMPIRE Turf - A beautiful home lawn.

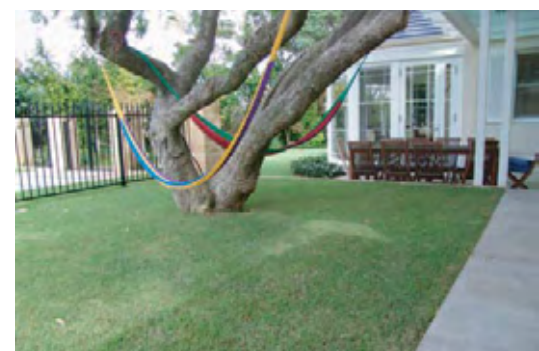
Empire turf laid July 2003 Randwick NSW.



## Test 7:

The photos of this Randwick residence speak for themselves. This Empire was installed almost three years ago, providing a long term successful lawn for this residence. Best of all, the Empire lawn looks absolutely beautiful.

It compliments the beautifully landscaped gardens, offering an easy to maintain lawn. Below to the left, the Empire Turf is coping well with this salt water pool.



One important lesson learned from monitoring this project was the importance of raising the mower height for moderately shaded areas, as seen below. Under this tree, the Empire Turf thinned when it was mown at the shorter mowing heights but remained successful in the sunny areas. So in moderately shaded areas, mow at a minimum height of 50mm.



# Empire Turf is backyard tough

WORONORA HEIGHTS, SYDNEY.

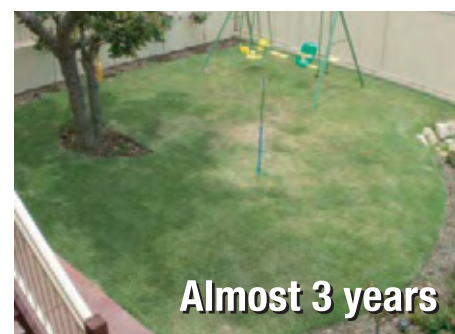
Whilst building



## Test 8:

**Installed November 2003**

Talk about tough. The before and after building photos to the left show how good Empire is at coping with wear and tear. The deep massive underground rhizome system that makes Empire Turf unique, allows it to bounce back better from damaging building works, or other wear and tear. Of course, even Empire has its limits, so be sensible about construction works, and still try to limit damage. The photo second from the top, showing the backyard after the building work was completed, was taken two and half years after the Empire turf was installed.



Almost 3 years



Year 1

Empire Turf is the perfect lawn for the backyard. It copes well with the typical busy family, kids and their swings, or the other games and activities that kids undertake. Empire can cope as well as any other lawn with

dogs. The photo to the left shows this backyard lawn a few months after establishment. The photo above shows the lawn two and a half years later during summer, whilst receiving very little water, due to Sydney's water restrictions. The home owner of this Southern Sydney home said, **"We are finding Empire to be extremely low maintenance. Five mows from May to the beginning of December has allowed us to do other things with our time. With the water restrictions, we rarely water it. Even if it does brown off in the dry, it greens up so quickly after the rain. The Empire Zoysia has proven to be excellent at outcompeting the weeds"**. Andrew & Kaylene



## Three years of success; water restrictions, and near the ocean.

### Test 9: Cronulla, NSW



Year 1



Year 2



Year 3

When this Cronulla resident was asked about how the Empire Turf was performing he said, "Good as gold. Never watered it since the water restrictions, and I have had to rely totally on

rainwater. I have been mowing every two weeks during this summer period. I fertilised with Dynamic Lifter approximately every 3 months. I am very happy with it".

## People are talking about Empire Turf



South WA



Perth

"Our new Empire lawn is constantly green, slow growing, soft and water wise. Low maintenance with high quality presentation, perfect! The best in the west". Marc and Melony, Prevelly Beach, Margaret River. "We love our new Empire lawn. It is so lovely and soft and so easy to maintain". *John and Linda, Old Broadwater Farm, Busselton.*

Perth in Western Australia, has a unique environment. Empire Turf has proved it can cope with the tough sandy soils, the dry summers, and the lower mowing heights of Perth. Many homes, developments, and parks have now been successfully turfed with Empire. Empire's ability to survive longer and still remain dense with less water, makes Empire the best choice for Perth. Its deep thick rhizomes help it thrive in Perth's sugar sand type soils.



# Empire Turf near the beach, Qld Test 10:



About a year ago, a trial area of Empire Turf was laid adjacent to this Gold Coast beach in Queensland. This park type area gets frequent wear and has been treated the same as other turf types nearby. Our observations show that the Empire Turf has performed far better than the Couch and Sea Shore paspalum lawns nearby. Empire has remained thick and dense, with few weeds, whilst the other types have thinned, and have far more weeds.







# EMPIRE TURF™ Performs



Drought Survivor • Less Mowing • Hard Wearing • Simply Beautiful





# Empire Turf is becoming the developers' turf of choice in Florida, USA.

**Why? Because Empire Turf is solving their problems.**

## The Problems:

- 'High' water use in residential landscapes.
- Policy makers refusing to issue building permits.
- Developers had to demonstrate reduced water use in the landscapes they were developing.

## The Solution:

- Select more drought tolerant plants and turf.

## How Empire became the choice turf to solve water issues.

A few years back, Florida went through a really bad drought, with basically almost no rain for a full summer. These large developments were forced to shut down their irrigation systems due to water restrictions.



With the vegetation being planted on very sandy soils, it did not take long for everything to brown off. This went on for many months and when it finally rained again, and the developers were allowed to turn the water back on, they noticed something. All the turf varieties except for one had suffered severe damage, with many areas needing replacement. The landscape management people on these sites, soon realised that the areas turfed with Empire, had not only greened up quickly after the rain, and renewed irrigation, but there was practically no damage to the turf areas. They did not have to replace the Empire Turf, like they had to with the Couch and Buffalo turf. This huge money saving made Empire the choice turf for so many large developments. Now it even helps them get plans approved for new developments.



Four of the largest developments in Florida now use Empire as their main turf. Developments such as the Villages, which is the largest housing estate in the world. The Villages are so big they have two large shopping centres, built in the development, plus 9 golf courses. To organise enough Empire, the Villages have their own Turf Depot, where growers from all over the country regularly ship in 10 semi loads of Empire Turf a day. Other Developments include the Boca Grande, The Landings, and the Reunion. Each have vast areas of Empire being used in parks, homes, schools, golf courses, ball parks etc.



# Australian turf farmers visit Florida and discover Empire is very popular.

*This story is from an American press release.*

## **Reunion Resort Selects EMPIRE Zoysia**

Sod Solutions patented "EMPIRE" Zoysia, which has been chosen as the exclusive landscape turfgrass at Reunion Resort & Club, a 2300 acre development just south of Walt Disney World in Orlando, FL.

"This is a great grass," said Mark Cole, director of golf course maintenance for Ginn Golf, a division of the company that is developing Reunion and several other upscale communities in Florida and South Carolina. "It's shade tolerant, heat resistant and drought resistant. We can take it down to 7/16-inch (1.1cm) and put it on tee tops in shady areas or we can bring it up to an inch and a half (3.8cm) and cut it with a regular rotary mower."



Cole was speaking to a group of Australian sod producers augmented by extension agents and landscape journalists. The Australians were touring the Southeastern U.S. in search of solutions to the island nation's severe five year drought. Reunion was one of many stops on the tour.



*EMPIRE's extensive, dense root system contributes to its drought tolerant qualities.*



# "I fell in love with the appearance of Empire"

"I love this grass", said Kevin Clingerman, landscape manager for Ginn. "When we started looking for an alternative to St. Augustine grass, the first thing that attracted me to EMPIRE was aesthetics. We are trying to create the aura of backyard Americana and I fell in love with the appearance of EMPIRE before we even began to evaluate its performance".

Durability and drought resistance were the first two performance factors that caught Clingerman's attention.

"Reunion is a resort on steroids and a community in progress," he said. "We are perpetually under construction but everything has to look beautiful. We have to be green even if it means putting the grass down before the irrigation system is in".



***Cole chimed in: "We put some of it on the ground without irrigation and it got no water for a month and then after half an inch of rain it greened up in two days".***

Perhaps EMPIRE's most remarkable characteristic is its shade tolerance in comparison to other Zoysia grasses. Cole and Clingerman took the group to a site shaded by about a dozen

mature oak trees and showed a stand of EMPIRE overseeded with winter rye and holding its own.

"That spot never gets any direct sunlight", Cole said, "and it's so shade tolerant that you don't have to change your irrigation practices and it will come out (of overseed) better than Bermuda".

Neither Clingerman nor Cole has noted any disease problems and one treatment took care of an attack by billbugs, (not common in Australia). "You can spray anything on it that you'd put on Bermudagrass (Couch)," Cole said.



***"This is a great grass for Florida", he added. "Water drives development in Florida. Because of consumption limitations, we've had to reduce or even eliminate irrigation to established areas to accommodate a grow-in situation on a golf course or major landscape feature. We can trust this grass to come back when we turn the water back on. We've done it numerous times".***



# Pests and Disease monitoring of Empire Turf.

So far in Australia, we have noticed that Empire turf appears to be far less prone to attack from Army Worm, Web Worm and Black Beetle compared to other lawn types. Occasionally with Empire Turf we have seen some damage from these pests, but less frequently and less severe than most other types of turf. There are readily available and well known control measures for these problems should they ever occur.



We have noticed that Mealy Bug has caused problems in some Empire lawns in Queensland. The good news is that Mealy Bug is easy to control in turf. It generally only causes problems in the more humid areas of Australia in turf, and rarely will be of concern in other regions. Mealy bugs produce large amounts of honeydew, (a white powdery secretion) which can coat turf and surrounding surfaces with a sticky layer, making them relatively easy to identify. Please see the photos. If these symptoms are observed, it is advisable to take action.



For the home lawn, Confidor, a readily available remedy will work well, and can be used as a preventative or cure. A quick search on the internet will reveal many other home made remedies for control of Mealy Bug. There is also a biological control, which is the Australian Ladybird known as the Mealy bug destroyer (*Cryptolaemus montrouzieri*), which can be purchased from various suppliers. For larger areas there are other low cost chemicals that will easily control mealy bug. Please ask your local grower for more information.

**We have not seen any disease problems with Empire in Australia at this stage. Occasionally dry patch can occur in non wetting soils, however this is a problem with the soil not the turf. This can be corrected by applying a wetting agent to the area.**





# Plot comparison and turf farm trials.

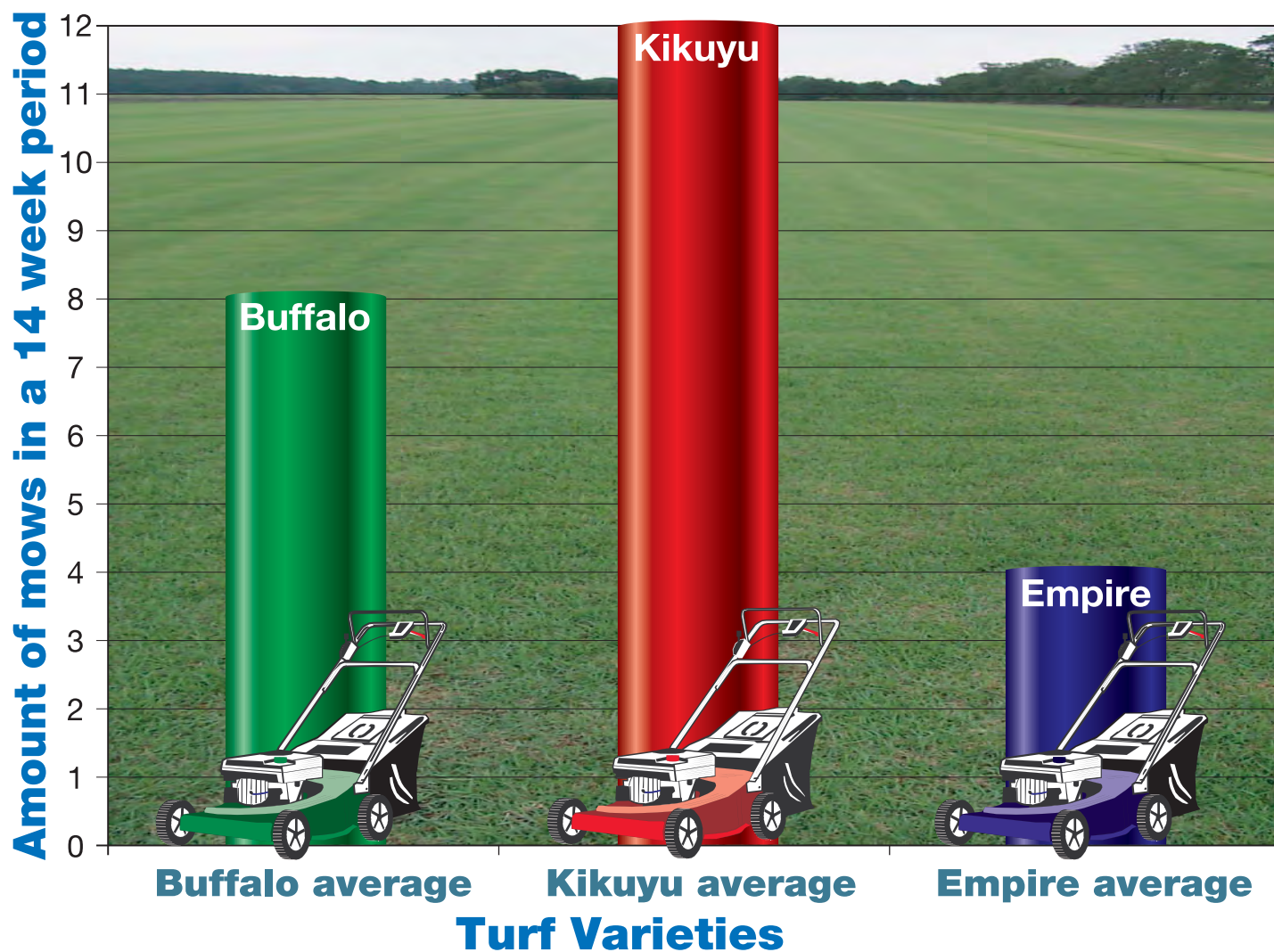
## Test 11:

### Proof that Empire Turf needs less mowing.

Mowing trials were conducted by Henry Locock Lawn Care, an independent maintenance organisation over spring and summer in Australia in 2005, using 6 replicated plots of each variety, spread over two different properties. The results were conclusive, and

have backed up long held beliefs in the industry. The results show that Kikuyu requires 3 times more mowing than Empire Turf. Kikuyu also requires 1.5 times more mowing than 3 Soft Leaf Buffalo varieties which were also tested and averaged. These results are significant as they highlight the potential to save money, and most importantly, time on maintenance.

## AVERAGE MOWING FREQUENCY FOR SPRING AND SUMMER 2005



*Note: The graph above shows the frequency of mowing over a 14 week period. The graph shows that Empire Turf only required mowing 4 times in 14 weeks. Kikuyu required 12 mows in this 14 week period.*

*Empire Turf will save your clients thousands on mowing costs on any of their projects. (When calculating these figures an average was taken over the 6 plots of each variety, and then rounded to the nearest whole number).*

**Empire Turf is very different to any other Zoysia.** Although Empire is classified as a Zoysia japonica, botanically it is clearly very different to other Zoysias of this group. In fact some herbariums classify it differently. Perhaps it should be in its own category. All other Zoysia japonicas are either too slow to establish, or have thatch problems. Zoysia matrellas, are ridiculously slow, and have never been successful in Australia. In the USA, there are many Zoysia varieties, but none compare to Empire.

In fact the Zoysias are mainly sold in the transition zone (an area that is as cold as Thredbo in winter, and as humid as Townsville in summer). Buffalos and Couchs have trouble surviving in these areas. Empire is the only Zoysia that has been very successful outside this zone. Huge volumes are being sold in Florida, Texas and elsewhere. As Empire Turf becomes very popular, which it will, other Zoysias from the USA will probably emerge in Australia. Remember, none come close when comparing with Empire.



# More information on mowing trials.

Test 11: continued

OTHER OBSERVATIONS MADE FROM THIS TRIAL

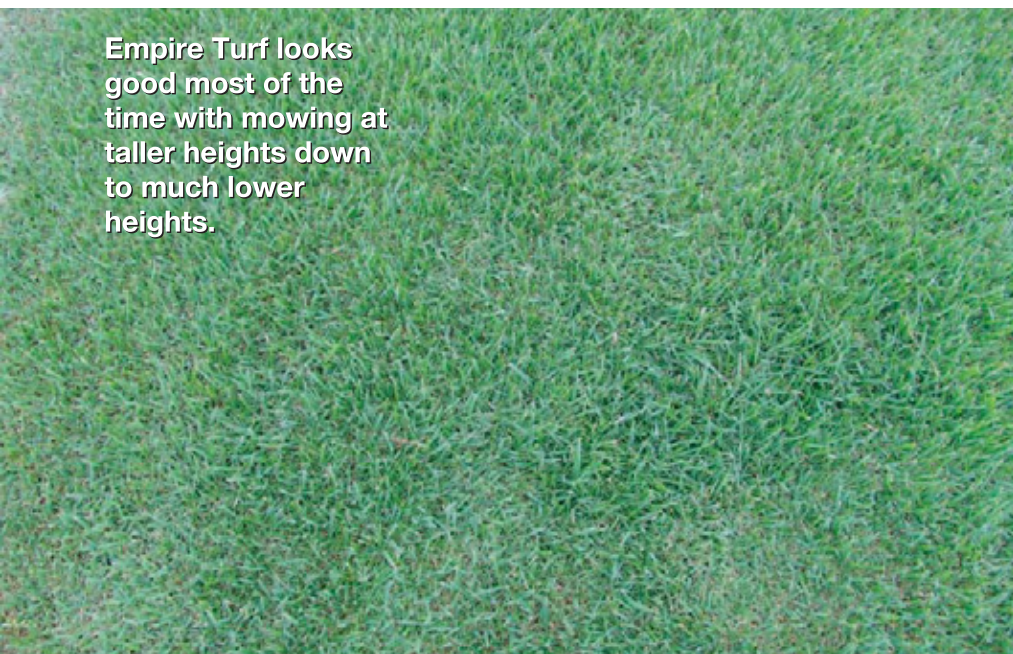


The mowing trials were conducted on two separate turf farms at Windsor, NSW. One site had more water and fertiliser applied than the other site. All maintenance and data collection was conducted by an independent contractor. The results listed so far are half way results, and full results will be available once the trial has been fully completed. Originally a Couch variety was to be used in the trial, but unfortunately many of the Couch plots (particularly at one site) took far longer to strike, and had big areas of die back. So for this reason the Couch plots

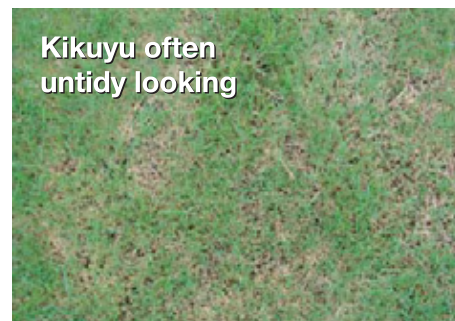
were eliminated from the mowing trial. The Kikuyu, the 3 Buffalos, and the Empire Turf took well.

Once the 6 replicated plots of each variety were established, the mowing contractor only mowed a plot if it was 90mm in height. Although this is tall, it is the maximum acceptable height for turf before it really looks untidy. Each week the contractor mowed any plot that was higher than the 90mm. Over the 6 plots, the Kikuyu was mown 12 times, whilst the Empire was mown only 4 times on average.

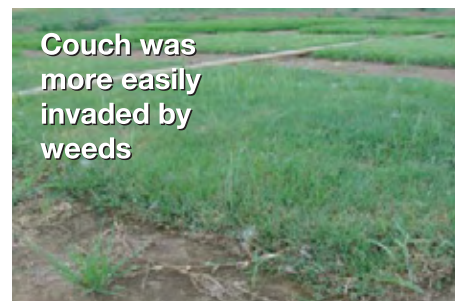
Empire Turf looks good most of the time with mowing at taller heights down to much lower heights.



Kikuyu often untidy looking



Couch was more easily invaded by weeds



One revelation to come from this mowing trial, was that the Empire Turf, and the Buffalo varieties coped far better with this type of mowing regime. Remember, the plots were mown when they reached 90mm in height, which often happens on commercial sites like roadsides, factories, schools, golf course roughs and home lawns. Empire and Buffalo turf plots remained thick and healthy, whilst the Kikuyu was all over the place, sometimes looking OK, but more often looking scrappy and sparse. The Couch, although establishing too late for the mowing part of the trial, was never the less mown the same way, and near the end of the trial, it

scalped badly after mowing, and had bad weed invasion, particularly at the less fertilised and watered site. The Couch also had the worst autumn colour, already browning off after early cold snaps. Henry, the contractor mowing for the trials said **"The Empire Turf and the Buffalo varieties coped well with the higher grass height before mowing, whilst the Kikuyu and the Couch varieties really needed to be mown when the height reached 50 mm. The Kikuyu and Couch really needed much more frequent mowing than this trial allowed for. Empire Turf coped well."**



# Evaluation of Quality and Winter Colour.

**NSW Department of Primary Industries and Crop and Nursery Services evaluations.**

**Summary of results.**

At both sites, Ashley Senn, of the NSW Department of Agriculture, evaluated the plots in May 2006. His final summary said “The three buffalos and Empire zoyzia are all dense and even. Scalping in these varieties is negligible. Kikuyu looks acceptable but is less dense and has minor scalping (at Site 2) – which is slightly uneven. Greenlees Park Couch has moderate scalping, is clumpy and has significant frost burn. It is uneven and mediocre in appearance. Couch had the most weeds and (at Site 1) was the hardest to establish. Only Shademaster Buffalo was

rated as thatchy, whilst Empire was noted not to be thatchy. Of Empire Turf (at site 2) he said, “Empire zoyzia is dark green, dense, quite even and not overly spongy”. Site one had a similar comment. “Empire has a better late Autumn colour than Greenlees Park Couch. Stays greener”. Empire was also noted to have many fine roots, at both 8cm and 13 cm. More than Couch and Kikuyu over both sites. These evaluations give further evidence that Empire Turf copes far better with infrequent mowing than Couch and Kikuyu. Less mowing saves money. The many fine roots displayed by Empire, may help explain why Empire strengthens the soil more than Kikuyu and Couch.

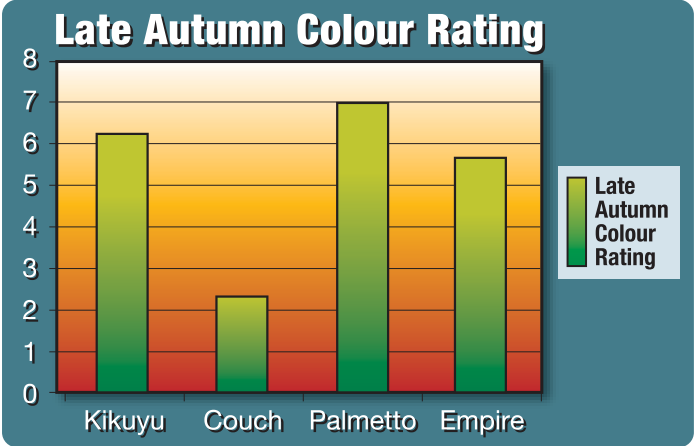


**Empire has good autumn colour.** In late autumn, Crop and Nursery Services rated the plots for cold weather colour. There had already been several frosts in the Windsor area of Western Sydney. Empire showed good autumn winter colour, compared to Couch which had by far the worst. Its colour was just rated below Kikuyu, and a little bit further behind Palmetto, which is known to have excellent winter colour. In heavy frost areas Empire will go dormant, but this shows it will go dormant well after Greenlees Park Couch. In areas that receive only light frosts, Empire will often stay green all year round.



Three years ago, this group of turf farmers were very excited to see Empire Turf doing so well in Queensland. A turf that performs in Queensland, without the high maintenance of other turf varieties. These were some of our early research plots of Empire Turf in Queensland. Empire Turf has now been widely used in Queensland by many developers, home owners, councils and sports facilities. Empire Turf is creating a real buzz amongst turf professionals in Queensland, as many of them believe they now have the best suited turf for humid environments.

**For more detailed information on this or any research summarised in this booklet, contact your local grower.**

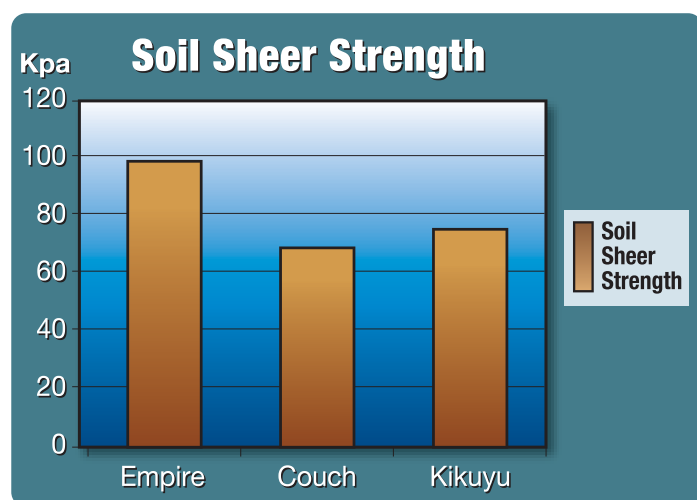




## Empire Turf strengthens soil almost 40% more than Couch and Kikuyu.

Recently, Ian Paananan, lead scientist at Crop and Nursery Services was contracted to test the strengthening effect that Empire Turf has on soil compared to Couch and Kikuyu. He used a recently calibrated Controls T174 Shear Vane

tester, on 30 randomly selected sample areas of each of the varieties. The test results were taken from 6 replicated plots of each variety. All plots were grown using the same conditions, and at the same time.



The soil was a clay-type soil, and was saturated prior to testing. The results found that there was significant difference between the results at the 1% level. This simply put, means that the results are statistically valid. The bare soil had an undrained shear strength of 66Kpa. The Couch only strengthened the soil to 68.1 Kpa, and the Kikuyu to 72.4 Kpa. The Empire Turf strengthened the soil to 97.9 Kpa on average. These readings were taken at a depth of 5cm below the ground. As a result, Empire Turf is the logical choice for soil stabilisation. In engineering circles, it is well known that Kikuyu is better for erosion than couch. Now we have proof that Empire is a far better soil stabiliser than Kikuyu.

## Empire Turf has more rhizomes than couch and Kikuyu. This is one reason why it strengthens the soil more.

Crop and Nursery Services, the independent consultant that tested Empire's soil strength, also took samples of the 3 turf types, with the aim of finding out which turf type has more rhizomes. The top parts of the turf (above ground parts), mainly leaf and stem were removed with a shear. Then 30 cm squares were taken at a depth of approximately 18cm.

The soil was then washed off the samples. Once this was done, each sample was weighed. Only Rhizomes and roots were left. Results: The Empire had under ground roots and Rhizomes weighing 290 grams, whilst Kikuyu had 220 grams and Couch had 200 grams per 0.9 of a square metre. The extra amount of underground mass explains why Empire strengthens the soil more.





# No mowing trial, Perth WA.



## Test 12:

An informal no-mowing trial was conducted at Bullsbrook in Perth, which showed how Empire Turf can look presentable even after one year of not being mowed. The photo to the left shows Empire with no mowing and no fertiliser for almost a year. It must be noted that these soils are very sandy, with little nutrients. The plots were regularly watered. In the top right hand corner of this photo you will notice the other plots in the trial. Empire was a real standout compared to the other varieties. It had good turf quality through out, whilst other types resembled overgrown grass.



The photo above shows Empire Turf with the left side receiving a dose of fertiliser, whilst the right side received none. The side with no fertiliser amazingly still looked like an acceptable lawn. The left side with fertiliser, looked better than the other plots, but could do with a mow. On sites that receive a bit of wear, fertiliser is required, but on passive areas, Empire can be kept lean, and have less mowing.



With the same treatment as the Empire, the Kikuyu grew tall and looked horrible. It was also very sparse and thin looking when viewing from above. This would make good cattle feed, but as a lawn it is unacceptable.



(Left) Empire Turf, provided it is left a little longer, does well in moderate shade, as can be seen from the trial on the left. Under the same shaded conditions, Kikuyu has thinned out, and is unable to form a lawn (Right). If Empire is used in moderate shade, do not mow it below 50mm in height, with a better height being 60mm.





*Some Empire research - USA*

# University of Florida Studies.

## **EMPIRE Research – Fertilisation, Deficit Irrigation and Nutrient Leaching Study.**

### **RESULTS:**

- EMPIRE maintained acceptable colour with less nitrogen.
- In all four fertilisation regimes, EMPIRE maintained better colour and overall turfgrass quality than Buffalo Cultivars.
- EMPIRE requires less mowing and can be mowed with a rotary mower.
- EMPIRE comes back faster in the spring or after drought stress.



## **A summary of some of the information from Empire studies in the USA.**

### **EMPIRE Research – Fertilisation Study**

- 2000-2002 at SMR Sod Farm in Bradenton.
- Applied 0, 3, 6, or 9 lbs N in 3 apps per year.
- Low maintenance.
- Rated quality, colour, density, spectral reflectance.

### **RESULTS:**

***Compared to Buffalo, the Empire required less Nitrogen to look good.***

### **EMPIRE Research – Deficit Irrigation Study**

- Glass house research, Ph D student project.
- Objective to look at different grasses under deficit irrigation rates over time.
- Maintained grasses at 100, 80, 60, or 40% ET.

Empire Turf performed near the top in all categories. Quality, Photosynthesis rates, Root Growth.

### **EMPIRE Research – Nutrient Leaching Study**

- Part of a FDEP \$3.5 million grant to study nutrient leaching in lawn grasses.
- Apply different N rates to newly planted and established grasses, and monitor.

### **RESULTS:**

***Backs up other previous results that Empire Turf needs less fertiliser.***



#### **Photo:**

Empire is now being widely used on golf courses. The lower nutrient requirements are good for the environment, and also help the golf course industry use less inputs.

This golf course has oversown the Empire Turf with Rye grass. For those very cold climates, oversowing with Rye Grass is a good option for colour all year round.



# Empire Turf: History, characteristics, other information.

## History

Empire Turf was first sold in Australia in Early 2003, and in the USA in 2000. This faster establishing form of Zoysia japonica has changed the way people feel about Zoysia. Years ago some people tried some of the older types of Zoysia, mainly being Zoysia matrellas, or very slow growing Zoysia japonicas, with a great deal of disappointment. They were just too slow to establish, thatched badly, and cost way too much. Empire Turf has fixed all that. Instead of taking over 2 years to grow a crop, many Australian

farmers have planted Empire in November, and have it ready by April or May. Ready in only 6 to 7 months. Now the world had a Zoysia that established easily. Empire is still the only Zoysia with these spectacular performance capabilities. Over the last 3 years, many schools, councils, government departments, landscaper, sporting facilities, and home owners, have experienced how good Empire turf is. Empire Turf has now been thoroughly proven over 3 years in Australia to be the best turf for Australia.

## Why use Empire Turf?

Far Less Mowing  
Very Hard Wearing  
Low Thatch  
Less Scalping  
Less Weeds  
Strong Turf Rolls

Relatively Finer Leaf  
Cold, Humidity and Heat Tough  
Reasonable Shade Tolerance  
Soft and Non Scratchy  
Less Fertiliser and Chemicals  
Strengthens the Soil the most

## Best Drought Survivability and Susceptibility of any.

### Mechanicals

Internode Length	30-35 mm
Diameter	2.5-3.5 mm
Leaf Width	5-6 mm
Shoot Density	32 Per dm2
Rhizome Density	3.22 KG/m2
Ground Shear	
Strength 5cm deep	97 Kpa *

*\*Based on a test carried out on 30 random samples, in a saturated clay type soil. See Page 16.*



## Extra Info

Empire Zoysia has excellent salt tolerance, and thrives near coastal areas, particularly foreshore areas. It can be mown at heights as low as

12mm to heights as high as 70mm. Optimum general mowing heights are 35 to 50 mm for sunny areas, and 50 to 70mm for shade.

Empire Turf available from...