



lippia
case study



A learning experience

Management technique: mix of competitive pasture alternatives, spraying and grazing management strategies

Property names: 'Myling' and 'Sefton'
Location: Tuloona (60km south of Goondiwindi)
Manager/owner: Jack and Julia Gooderham

- KEY POINTS:**
- Use of an introduced pasture mix to compete with lippia, believing a pasture monoculture is less successful
 - Rotational grazing practices maximises competitive pasture growth
 - Believes "nature doesn't need a plough"
 - Difficulties in preserving native pastures
 - 2023 ha (5000 acres) of predominantly cropped land
 - 607 ha (1500 acres) grazing land including 80 ha (200 acres) of native pastures
 - Heavy floodplain soil

background

'Myling' and 'Sefton' are adjacent properties covering a total area of 2023 ha (5000 acres). Both properties consist entirely of heavy floodplain soils. 1416 ha (3500 acres) are cropped to cotton, sorghum, wheat, chick peas and barley in a five year rotation. The balance is grazing land for 200 head of cattle. Most of this is improved pasture, with about 80 ha (200 acres) of native pasture left. The properties receive an average annual rainfall of 570 mm and experience floods every few years. Big floods submerge the whole property.

The property has been managed by the Gooderhams since 1979. Jack first noticed lippia (*Phyla canescans*) on the banks of Croppa Creek in 1986. Initially he didn't recognise the plant but realised that because of its spreading nature it could be a problem.

extent and effects and of lippia infestation

Over time, and particularly after flooding episodes, lippia has spread over the whole property (apart from farming land), despite initially spot spraying patches with Glyphosate.

Slumping and erosion became evident along Croppa Creek which runs through the properties. To protect against further erosion, Jack converted creek banks to cultivation creating 'buffer paddocks'. Establishing sustainable, introduced pasture in these paddocks was not easy, with grasses failing to take hold many times and lippia infesting virtually all the paddocks to some degree. "You could have barely run a bandicoot on them," says Jack.

Jack does not consider lippia to be a problem in his cropping paddocks as it can be cultivated out; however he rates lippia as his worst pasture weed. Jack also has concerns about cattle eating lippia due to lack of nutrition and potential toxicity.

The time and effort Jack has invested in trying to eradicate lippia has been costly and frustrating. "If I knew then what I know now I could have saved myself a lot of time and money."



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control strategies

1. Pasture establishment

Jack believed that strong pasture growth could out-compete lippia so sought a pasture establishment method that would foster this outcome.

Jack originally planted his pastures using a cultivator but this was not successful. Now, he uses no mechanical means to disturb the soil at all when establishing pasture. "Grass seeds like to be in the top layer of organic matter and fine silt. The plough destroys this layer. Some grasses can stand being planted deeper such as bambatsi and purple pigeon, but generally grasses are designed to germinate in that top layer of organic matter. Nature doesn't need a plough," says Jack.

Jack's method is to poison the lippia (and other ground cover) in summer, leaving the stubble and organic matter on the surface over the winter. New pasture is then seeded (using either a fertiliser spreader or aeroplane) in early spring to maximise its exposure to rainfall.

Having tried many grasses Jack has settled on a mix of purple pigeon (*Setaria incrassata* cv. Inverell), bambatsi (*Panicum coloratum* var. *makarikariense*), fine-cut rhodes (*Chloris gayana*), and floren bluegrass (*Dicanthium aristatum*). This mix responds to different rainfall rates, and ensures growth over all the seasons. Fine-cut rhodes and purple pigeon take off very quickly, providing ground cover. Bambatsi and floren bluegrass take much longer to become established but will eventually outcompete these other grasses and can withstand floods. Jack allows the grasses to establish and set seed before grazing. "You have to be prepared to have those pastures out of commission (not grazed) for two years."

Newly seeded pastures are sprayed to control lippia regrowth two to three times each year for the first few years until the grasses have established. Jack spot sprays or boom sprays with 2, 4-D amine at a rate of 2L/ha, mixed with 150-200 L of water to ensure the droplets are big to avoid misting. He uses twice the normal rate of wetting agent. This is done to ensure good contact with the weed. Jack believes that you must spray within 10 days of rain when lippia is actively growing and starting to flower. Because Jack and his neighbours grow cotton he will only spray when moisture, temperature and wind speed are suitable.



Above: One of Jack's native pasture paddocks. There is a lippia patch in foreground.

2. Native pasture management

Management of the 80 ha (200 acres) of native pasture has been challenging. Over several years Jack has strategically sprayed heavily infested patches of lippia with 2, 4-D amine, sometimes resorting to the use of quad bikes in rough country in order to do so. In the past few years he also hand sowed some floren bluegrass and bambatsi in minor gullies and watercourses that run through these paddocks in an attempt to prevent lippia getting strongly established.

Jack doesn't want to fully develop these paddocks as they are his only native pastures and include some stands of native trees which are unique on the otherwise treeless plain of Tullooona, but feels he may be forced to sow them further with introduced pasture as the Native grasses are being gradually overtaken by lippia.



3. Grazing regime

Underpinning and integral to Jack's control and management of lippia is grazing management. He grazes in a rotational system and moving the cattle when grass cover is reduced to 70-80%. Jack provides supplementary feed year round and monitors consumption levels to know when to move the cattle. Paddocks are spelled for at least 30 days after grazing. Jack believes that rotational grazing ensures pastures can compete with Lippia and his stock have access to good supplies of feed year round.

4. Aerial seeding of creek banks

Early in 2004, Jack initiated pre-emptive measures on his creek bank land, aerial seeding this area (approximately 120 ha [300 acres]) with a mix of silk sorghum, floren bluegrass, bambatsi and green panic grasses (*Panicum maximum*). Jack hopes this mix will establish a strong cover of grass and prevent lippia from overrunning these areas. As expected Jack has had only moderate strike from this seeding but is happy to get a few grass plants established as they will then put down their own seed.



Above: Slumping and erosion in Croppa Creek, which runs through the Gooderham's property.

lessons learnt

After many years of experimenting with different pasture grasses, different establishment methods and several herbicides, Jack feels he has finally found a method for establishing sustainable pasture and controlling lippia in following the measures outlined above. "It was very expensive, frustrating and disheartening doing all these things and getting no result and having Lippia infest paddocks, but I feel that the ball is finally starting to roll my way. It has been a learning experience."

Establishing sustainable introduced pasture was not easy, with grasses failing to take hold many times and lippia infesting virtually all the paddocks to some degree. The 'No-plough' method has worked well for Jack in this respect. Jack has found it much harder to establish pasture on old farming country than on land that hasn't been farmed. Jack believes that many of his early pasture failures were due to planting the grass seeds with a light mix of a cover crop such as oats. After several pasture failures Jack came to the conclusion that these other crops were drying the soil out too much and starving young grass plants of moisture. Jack now plants only grass and introduces medic when the grasses are established.

Jack planted a 16 ha (40 acre) paddock with straight floren bluegrass and while this was very effective at competing with lippia (in fact it is a virtual monoculture) it has not proven to be viable production-wise in the long term. Jack has found that the floren bluegrass grows vigorously giving excellent feed in wet years but is more or less dormant, giving no feed, in dry years. He also says that for best growth it requires regular inputs of nitrogen fertilizer or needs to be grown with legumes, which are hard to establish in floren bluegrass due to its competitiveness.

After almost 20 years of involvement with lippia Jack finally believes he has some control over the situation. Throughout this period there were times when he more or less gave up, but with some well timed words of encouragement from others, he continued, and now, instead of paddocks of lippia, he has very productive pastures. Jack is also willing to further his repertoire in dealing with lippia. He would like to start monitoring patches of lippia on the properties using GPS technology and aerial photography to relate management practices with outcomes. Jack's learning experiences are not over yet!