Your road to pasture success

Disease, climate and pest pressures

BARENBRUG

Pasture Maintenance – Weeds and Pests

Weeds and pests will commonly reduce productivity or in some cases ruin a pasture. Pastures will often be challenged and their composition affected by weeds and pests. Seasonal monitoring and timely or programed responses will keep the pastures productive, greatly aid animal performance and pasture persistence. Good pastures should be looked after and even some semi run-down ones can be brought to a higher level of productivity through good agronomy. Some key times, terms and tips that will help design a pasture maintenance program:

Autumn clean

Sometimes used in areas that have active pastures over summer and/or an early break in autumn. This may also coincide with emergence of pasture pests such as RLEM, cockchafers and corbies, and an insecticide may be added in some cases.

Examples:

- Broad-leaved weeds, at early stage of growth MCPA, 2,4-D, Terbutryn
- Cockchafers, corbies, RLEM etc a-cypermethrin, Fenitrothion and others
- Annual grass weeds (in mixed pasture) Paraquat (usually done separately and after a systemic broad-leaved application).

Winter clean

Largely used in areas with late/limited autumn break as a first chance to address annual grass weeds. Often associated with using simazine to reduce population of *Vulpia spp.* (Silver grass). May sometimes also include Paraquat +/- Diquat in the program for other weeds. Should be completed when the pasture is both well established, with a good root system and well before clovers start to move. Should be strongly considered where Vulpia content >15-20% as Vulpia offers little nutrition and inhibits clover growth. Winter cleaning can also be used as a pre-cursor to sowing a new pasture next year i.e. tidy up as many grass weeds as possible. Utilise the remnant pasture, and with the benefit of some weed control taken place with a different chemical group, well before a knock-down later.

Spray-grazing

Using a sub-lethal dose targeting broad-leaved weeds such as thistles, capeweed and erodium. Typically a Group I hormone like MCPA or 2,4-D to stress the weeds, increase sugar content, then after stock with-holding period has been observed, use the livestock to graze the remnant weeds. Look at labels for details. Can be very effective and relatively low-cost, especially for more extensive pasture systems. Other formulations of various herbicides may also be looked at. Monitor for potential nitrate poisoning of stock in heavy weed situations. Try to avoid using hormone sprays after about late July as the sub-clovers will soon be initiating flowering and spraying may affect seed-set.

Pasture topping

Usually carried out in mid spring to sterilise the seed-set in the emerging weedy pasture grasses. Graze the crop evenly to get an even re-growth, then at about 50% ear emergence apply low rates of glyphosate or Paraquat, plus a good wetter. Strong perennial species will come through, and the seed of next year's weedy grasses (and some other weeds) is significantly reduced. Works well on annual ryegrass, Vulpia, barley grass and brome grasses. Can be really good to coincide with a Time-rite* application for RLEM. Less effective on biennials such as some bromes, fog-grass and not for perennials such as kikuyu and brown-top.

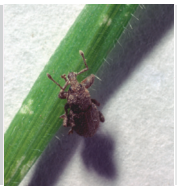
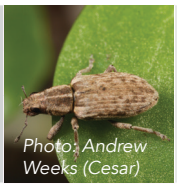
Other perennial weeds

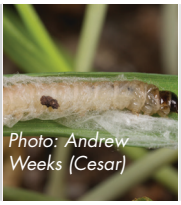
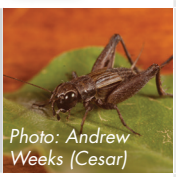
In circumstances of semi-improved, lax grazed and low-modest fertility, weedy perennial grasses, rushes and some woody weeds will need to be addressed. This may be as boom spraying, spot spraying or 2-direction wick-wiping. Some useful active ingredients are flupropanante, glyphosate, metsulfuron, clopyralid, triclopyr/picloran/ aminopyralid, as a starting point.

*Bayer Crop Science

Common pasture pests

The incidence of pests will differ widely from year to year and place to place. The distribution, frequency and intensity thresholds of many pests are not well understood, although there are in some cases well-known locations and regions subject to specific threats on an annual basis. Often cultural and management techniques as well as sound varietal selection will be the best long-term solution to creating resilient pasture systems. Some sort of short-term intervention with insecticide is however warranted where pastures may be establishing initially or immediate objectives and investments need to be protected.

			Description	Damage	Control
Beetles	**Black beetle** ***Heteronychus arator***		Scarab beetle to 15mm long, shiny black. Larvae 5-30mm, dark yellow head with legs. Found mostly in humid areas with summer moisture, but range not well known, although some areas and sites have high numbers annually.	Pasture damage caused by adults and larvae. Larvae feed on roots over summer-early autumn. Adults feed on all plant parts to just below soil surface. Can devastate newly sown or oversown pastures.	Cultivation in heavily infested sites followed by a fallow. NEA2 rygrasses or hardy perennials. Seed treatments. Spray options very limited.
	Blackheaded cockchafers ***Aphodius tasmaniae***	 Photo: Andrew Weeks (Cesar)	Black-brown shiny scarab 10-12mm in length. Adults emerge to fly in mid-late summer, laying eggs in short, (often) weaker pastures. Eggs hatch early autumn. Larvae fairly wriggly, off-white, slender body from 3-15mm. Shiny black head.	Most severe in mid-late autumn in existing or newly direct drilled pastures. Burrowing undermines roots, and grubs will surface feed on all useful pasture plants including grasses, lucerne, clovers. Burrows found near soil piles.	Cultivation, fallow or break crops may assist. Phalaris and cocksfoot more resilient than other pasture species. Readily controlled with insecticide sprays.
	Redheaded cockchafers ***Adoryphorus coulonii***	 Photo: Andrew Weeks (Cesar)	Shiny black scarab to about 15mm. Grubs off-white with red-brown head, from 5-30mm. Docile and slow moving, thicker of body than black-headed cockchafers.	Grubs from summer through autumn, over winter and then again next spring. Feed on roots 20-40mm below ground surface. Damage by large 9-10 month old grubs can become suddenly apparent and severe.	Trampling with heavy stock/ rates may assist. Cultivation prior to re-sowing. Plant deep-rooted species for long-term tolerance.
	Yellowheaded cockchafers ***(many species)***	 Photo: Andrew Weeks (Cesar)	Brown or satin black scarabs to about 14mm long. Larvae from 5-30mm, c-shaped, off-white and dark yellow head. Some species annual, some biennial life-cycle.	Grubs feed through autumn and winter on roots below ground surface, often in limited patches but damage followed by bird activity can be severe.	Trampling with heavy stock/ rates may assist. Cultivation prior to re-sowing. Plant deep-rooted species for long-term tolerance.
	Wireworm and False Wireworm ***Elateridae spp and Gonocephalum spp.***	 Photo: Cesar	**Wire-worm:** Dark-grey-brown-black oblong. Also known as click beetle. **False wireworm:** Adult similar colours but oval shape. Cream-yellow-golden larvae. Distinctly segmented body.	Eggs laid on or just below surface. Eat germinating seeds and roots of young seedlings. Usually in upper 5cm of soil. Adults may chew and ringbark seedling stems. Often a pest of weedy or trashy sites, especially lo/no till situations.	Reduce crop trash. Cultivation and fallowing. Knock-down insecticides. Suitable seed coating insecticide.
Weevils	**Argentine stem weevil** ***Listronutus bonariensis***		Grey-brown adult beetles to 3.5mm, dispersing by flight. White larvae from 1-5mm long, legless, off-white with brown head. Species is known in some districts, although frequency and intensity not well documented.	Larvae will mine grass stems, especially Italian or nil endophyte perennial ryegrass, cocksfoot and spring planted cereals. Tillers wilt and yellow. Adults forage on young grass shoots. Damage in no-till re-seeding situations can be high.	Grass-free break and/or 4-6 week spring fallow. AR1 and NEA2 endophyte grasses offer protection from larvae and adults. Phalaris is also a good option.
	Sitona weevil ***Sitona discoideus***	 Photo: Andrew Weeks (Cesar)	Small grey-tan weevil to 3mm long. Grubs to 3mm, chubby pale and legless, often feed on or burrow into legume nodules. Adults disperse by flying.	Larvae feed on roots of lucerne and other pasture legumes and flat-weeds. Grasses rarely affected by grubs, but adults will feed on most pasture species including grasses, leaving a scalloped leaf edge. Young tillers in no-till are very susceptible.	Cultivation and fallow. Chemical control may be an option if needed in heavy infestations.
	Whitefringed weevil ***Naupactus leucoloma***	 Photo: Andrew Weeks (Cesar)	Adults grey-tan with dark striations, large weevil to 12mm long. Larvae to 12mm, fat, cream with pale indistinct head region with distinct chewing mouth parts.	Most often a pest of lucerne, especially 2-3 year old stand out of no-till establishment when damage may appear as wilting and plant loss in summer. Avoid close cropping with other hosts e.g. potatoes, peas, etc.	Farm hygiene, crop rotations and cultivation. Cereal break crop. Soil fumigation has been performed. Sprays ineffective.

Moths	**Armyworms** *Persectania spp., Mythimna convecta*		Adult moths 20mm long with 40-43mm wingspan, grey-yellow-brown. Eggs hatching usually mid spring. Young caterpillars cream-green-tan. Mature to 40mm long, brown, black or khaki with 3 stripes running dorsal length of body.	Prefer to lay eggs in long grass. Grasses and cereals most affected, especially hay crops. Leave margins scalloped or stripped, seed heads lopped off or drooping. Numbers and damage favoured by warm, dry spring conditions.	Keep pastures short or well grazed through early-mid spring. Chemical control is effective. Re-infestation from surrounding paddocks is common.
	Corbie grubs *Oncopera spp.*		Brown-grey moths to 30mm long, 40mm wingspan. Eggs <1mm laid in long grass and trash, initially cream turning black over time. Larvae from 3mm to 60mm long, grey-purple with shiny head. Soil tunnels with clean entrance (no spoil).	Caterpillars from 30mm or so will surface feed at night to denude pastures of perennial grasses, especially from late autumn - early spring. Weakened root system and crows feeding will lead to pulling and bare patches in paddocks.	Keep pastures short or well grazed through late spring and summer. Chemical control is effective with timely application, usually mid-autumn.
	Greasy, Pink, Brown (True) Cutworms *Agrotis spp.*		Often one of 3-4 species, including Bogong moth. Adults grey-brown from 36 to 45mm wingspan. Larvae up to 50mm long, grey to dark grey, often pinkish, plump, found just at or below soil surface, often curled up.	Eggs laid in moist, loose soil. Young larvae may chew foliage, larger caterpillars cut stems of seedlings at ground level. Mostly feed at night. Also feed on other crops including establishing pasture. May be found virtually year-round.	Cultivation and knock-down insecticide before sowing. Monitoring of early crops stages. Chemical control.
	Pasture Webworm *Hednota spp.*	 Photo: Andrew Weeks (Cesar)	Adults yellow-tan to grey-brown small moth 20-22mm wingspan. Distinct beak-like snout. Larvae from 1-18mm light brown, often green gut line visible. Young larvae form silk lined tubes in leaves, older larvae within soil in vertical tunnels.	Adults emerge late summer. Eggs hatch mid-autumn, larvae feeding late autumn - mid spring. Feed on newly sown pastures and cereals. Young larvae chew foliage, larger take leaves into tunnels. Mostly feed at night. Pupate (dormant) over summer.	Crop rotations and cultivation. Monitoring of early crops stages, especially first 3-6 weeks after emergence. Chemical control. Seed treatment may be useful.
Others	**redlegged earth mite (RLEM) and blue oat mite (BOM)** *Halotydeus destructor, Penthaleus spp.*	 RLEM Photo: Cesar  BOM Photo: Cesar		Especially problematic in emerging and seedling pastures. Mites will suck the nutrients from swelled seeds, and young plants. If plants are older, a typical whitening/silvering of part or all of the leaves is evident.	Use seed treated with correct systemic insecticide, monitoring, and an integrated spray program.
	Lucerne flea *Sminthurus viridus*	 Photo: Andrew Weeks (Cesar)	Wingless, yellow-green insect from 1-3mm in size. Pale yellow eggs laid in spring and autumn or in moist summer areas in clusters at soil level. Adults have a leaping action and often called 'springtails'.	Spring and autumn, summer pastures also affected. Clover, grass and lucerne leaves initially speckled then windowed out. Severe infestations may strip leaves back to veins and petioles.	Monitoring of pastures or crops. Close grazing to admit summer heat/sunlight into canopy. Chemical control.
	Root aphid *Aploneura lentisci*		Yellow-white, oval shaped up to 2mm long with 2 segmented antenna. Found in white, waxy exudates fairly deep in ryegrass root systems. Unless close inspection, may be confused with mealy bugs or other root activity.	Root aphids suck root sap. Not thought to kill plants but productivity and pasture may decline through compounded stresses. Around 10-20 colonies per spaded square of soil may represent economic damage.	Cropping break (grass-free). NEA2 or AR37 endophyte ryegrasses. Cocksfoot or phalaris pastures.
	Wingless grasshopper *Phaulacridium vittatum*	 Photo: D Hobern, Atlas of Living Australia	Grey-brown adults to around 18-20mm. Occasionally develop wings to fly short distances. Eggs laid in autumn to 20mm under soil surface, hatching early summer. Juveniles from 4-5mm pinkish, to brown 8-10mm, size increasing with maturity.	Summer and autumn pest. Prefer to feed on broad-leaved species, especially clovers and broad-leaved weeds and often found on overgrazed sites. May do severe damage in dry years on green summer pastures.	Improve pasture growth ensuring grasses are well maintained. Chemical control.
	Black field crickets *Teleogryllus commodus*	 Photo: Andrew Weeks (Cesar)	Adults shiny black-dark brown, up to 25mm long, with very long antennae. Eggs yellow, laid in loose clusers under the soil. Nymphs resemble adults, are smaller and lack wings.	Dry summer and autumn pastures on over-grazed, dry cracking soils. Infestations may eat entire plants and emerging seedlings. Ryegrass is especially susceptible; phalaris, fescue, cocksfoot, lucerne are more tolerant.	Maintain pasture groundcover. Sow more resilient species. Chemical control of infested site and surrounding areas.
	Slug and Snails *(many species)*	 Photo: Cesar	Slugs may be black-grey to yellow-brown, from1mm to 35-50mm. Eggs often clusters in soil and trash 1-1.5mm soft, white-transluscent. Snails of various sorts including garden snails and conical (pointed).	Newly hatched, very small slugs may feed within drill-rows and not emerge to take surface baits. Damage may occur to all parts of plants at any stage. Seedlings especially vulnerable. Older leaves typically have oblong windows rasped out.	Sow seed with an approved slug-bait in problem situations. Monitor and re-apply if needed. Cultivation will assist initially.

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Perennial Pasture Checklist

Assess	**Composition**	Useful species Weedy / undesirable species Pest pressure
	Performance	Species survival Feed produced Feed timing
	Expectations	Animal peformance targets Profitability Farm goals
Prepare	**Weed control**	Herbicide options Cultivation Break crop, fallow
	Crop or fallow	Reduce weed-seed bank Catch-crop or forage crop Conserve summer soil moisture
	Soil fertility	Soil test Fertiliser and soil amendment options Species to suit soil limitations
Sow	**Varieties**	Soil type constraints Seasonality of varieties Climate constraints
	Timing	Soil moisture Temperatures Seasonal suitability
	Approach	Cultivation or spray-fallow Drilling or broadcast Oversow existing pasture
Establish	**Weeds / Pests**	Pre-emergent options Timely post-emergent action Grazing stock with-holding periods
	Monitor	Weeds / pests Growth and development Timely first grazing
	Grazing	Pasture well enough anchored Quick, early grazing - allow space for all species Consider letting pasture seed in first spring
Maintain	**Grazing**	Stocking density to properly utilise feed Adopt rotational grazing when possible Rest / regrowth phasee
	Weeds / Pests	Anticipate possible threats Monitor Take timely action
	Fertiliser	Soil test at intervals Maintenance fertiliser Replace nutrients from fodder removals

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