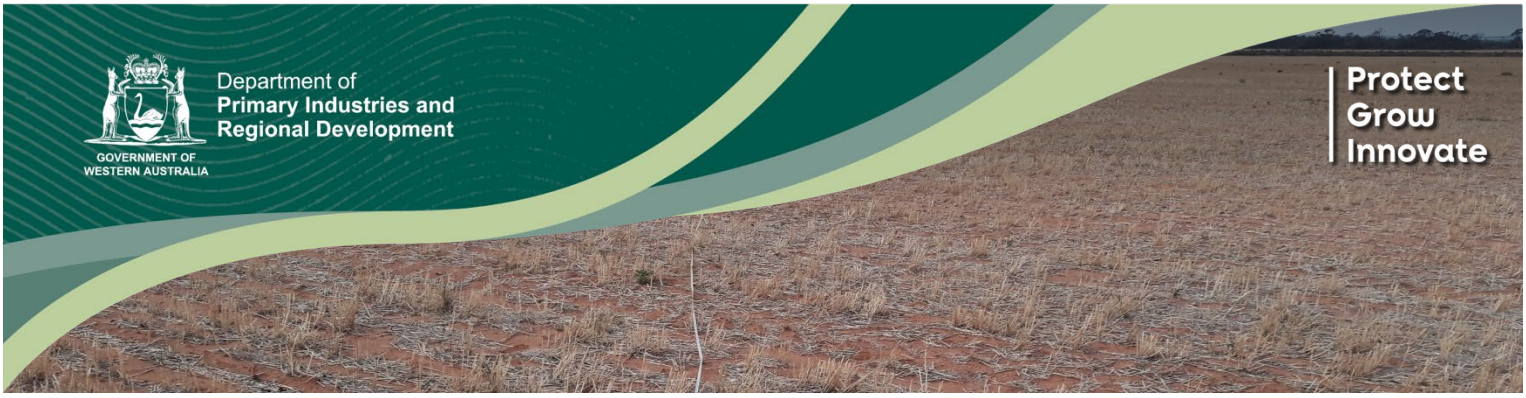
6-2024

Agricultural groundcover update May 2024

Justin Laycock



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Justin Laycock, Agriculture Resource Management and Assessment

Important points

- Over 9% (1,410,000 ha) of the arable farmland in the south-west of Western Australia had less than 50% vegetative groundcover, which is inadequate to prevent wind erosion.
  - Northern grainbelt had the highest risk of wind erosion and over 26% of this farmland had inadequate groundcover, predominantly found on landscapes known for sandy soils.
- About 1.3% (208,900 ha) of arable land had a high to very high risk of wind erosion because groundcover was less than 30%.
  - Half of this land was in the West Midlands Ag Soil Zone.

May groundcover analysis

Regional overview

Over 9% (1,409,800 ha) of arable farmland in the south-west had inadequate (less than 50%) groundcover to prevent wind erosion, which is less than April and is typical for May from 2016 to 2024 (Figure 1, Table 1). Groundcover is likely to decline as it is incorporated into the soil during seeding; consequently, the risk of wind erosion may increase to high or very high. As crops and pastures become established, the risk will rapidly decrease.

The 3 northernmost ag soil zones – Mid West, Mullewa to Morawa and West Midlands – had the largest area (average 26.4%) with inadequate groundcover to prevent erosion (Figure 2, Table 2) and they are discussed below. Less than 10% of the other ag soil zones had inadequate groundcover. See Background and methods for information about ag soil zones.

About 91% of arable farmland in the south-west had adequate (more than 50%) vegetative groundcover to prevent wind erosion. This amount of farmland is typical for May. About 14% of this area had 51–60% groundcover, which is the range DPIRD uses as an indicator of future seasonal decline in condition. Groundcover is expected to decline as it is incorporated into the soil during seeding and rain accelerates decomposition.

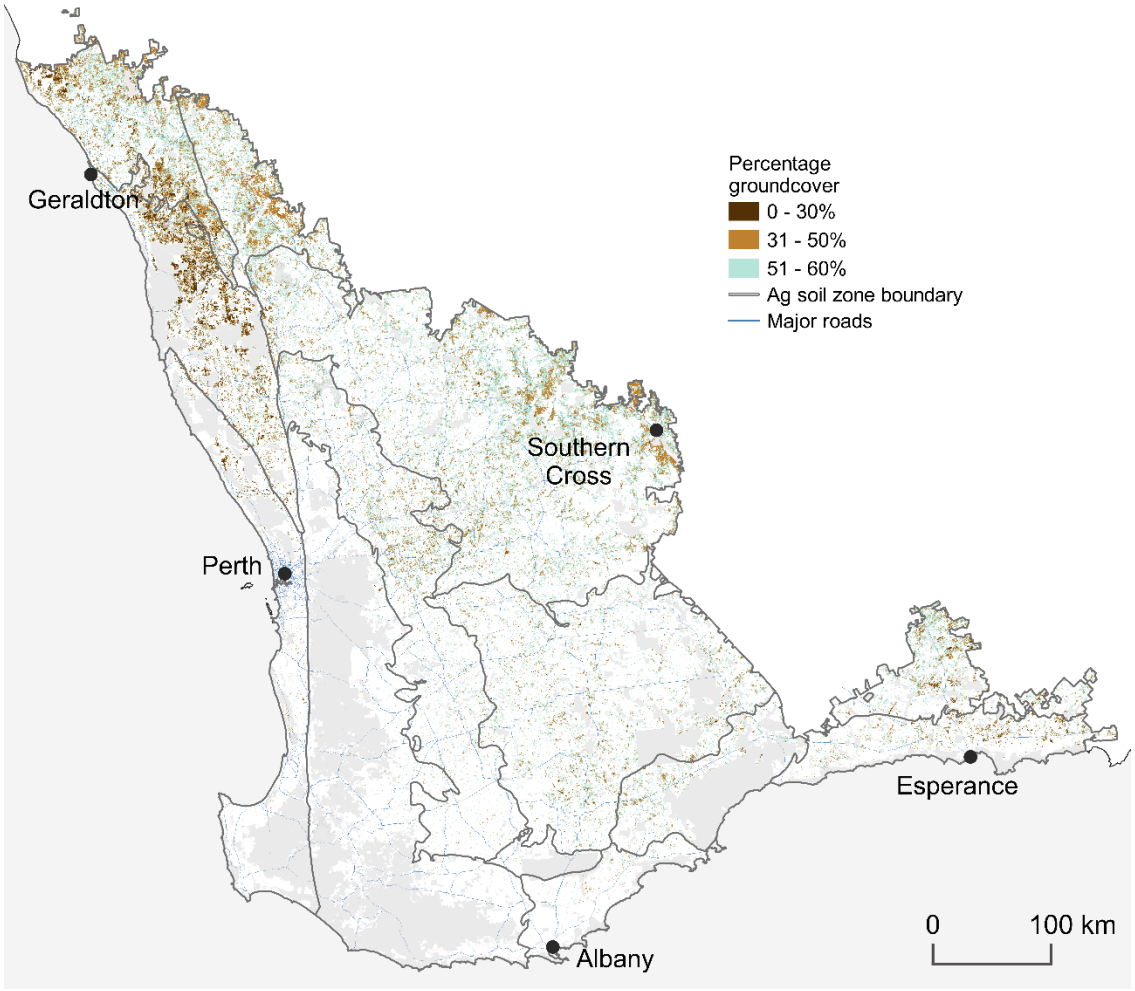

Figure 1: Percentage of groundcover across the south-west of Western Australia, May 2024

Table 1: Area and rank of the amount of farmland in the south-west with inadequate groundcover to prevent wind erosion in May

Year	Area (ha)	Area (%)	Rank
2024	1,409,800	9.1	4
2023	935,700	6.0	2
2022	830,000	5.3	1 (best)
2021	1,269,000	8.1	3
2020	2,929,300	18.8	9 (worst)
2019	1,747,500	11.2	6
2018	2,782,300	17.8	8
2017	1,952,700	12.6	7
2016	1,524,900	9.8	5 (median)

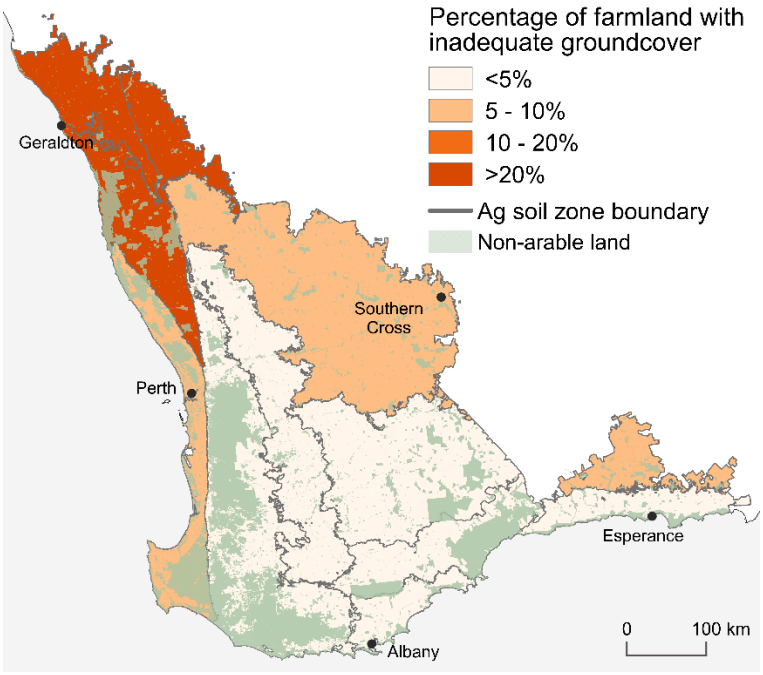

Figure 2: Percentage of arable land with inadequate cover to prevent wind erosion in each ag soil zone, May 2024

Table 2: Percentage of farmland in each ag soil zone with inadequate groundcover

Ag soil zone	Area of farmland with less than 50% groundcover		Area of farmland with less than 30% groundcover	
	%	ha	%	ha
West Midlands	29.9	273,100	11.6	106,400
Mid west	25.8	259,900	4.3	42,800
Mullewa to Morawa	22.6	152,300	0.4	2,400
Salmon Gums mallee	9.4	62,400	1.5	10,000
Central – Northern Wheatbelt	8.3	360,100	0.3	12,400
Swan Coastal Plain to Scott Coastal Plain	5.5	24,800	2.0	9,000
South Coast – Albany to Esperance	5.0	48,700	1.1	10,500
Zone of Rejuvenated drainage	4.4	93,000	0.3	5,200
Southern Wheatbelt	4.0	97,900	0.3	7,400
Stirlings to Ravensthorpe	3.7	29,200	0.3	2,000
Darling Range to south coast	0.7	8,400	0.1	900

Ag zones at high to very high risk of wind erosion

About 261,900 ha of arable farmland in the grainbelt had less than 30% groundcover and consequently has a high to very high risk of wind erosion. This is 30,000 ha less than April 2024.

About 11.6% (106,400 ha) of the West Midlands Ag Soil Zone and 4.3% (42,800 ha) of the Mid West Ag Soil Zone had less than 30% groundcover and consequently have a high to very high risk of wind erosion. Despite the previous dry season in the Mullewa to Morawa and Central Northern Wheatbelt ag soil zones, both had less than 1% of their arable area in these high-risk classes.

West Midlands Ag Soil Zone

The West Midlands Ag Soil Zone is dominated by sandy soils that are highly susceptible to erosion. Of all the ag soil zones, it consistently has a high median percentage (24%) of arable farmland with inadequate groundcover to prevent wind erosion for May. However, in May 2024, there was 28.9% (273,100 ha), which is 25,000 ha more than in April, yet was expected given the dry seasonal conditions (Figure 3). The increase places it above the average for the range of monthly percentages from 2016 to 2023 but less than the 2020–21 dry season (Figure 4).

In May 2024, 11.9% (106,400 ha) of farmland had less than 30% groundcover and consequently has a high to very high erosion risk (Figure 3), up from 81,300 ha in April 2024. This result is similar to the 2020–21 dry season.

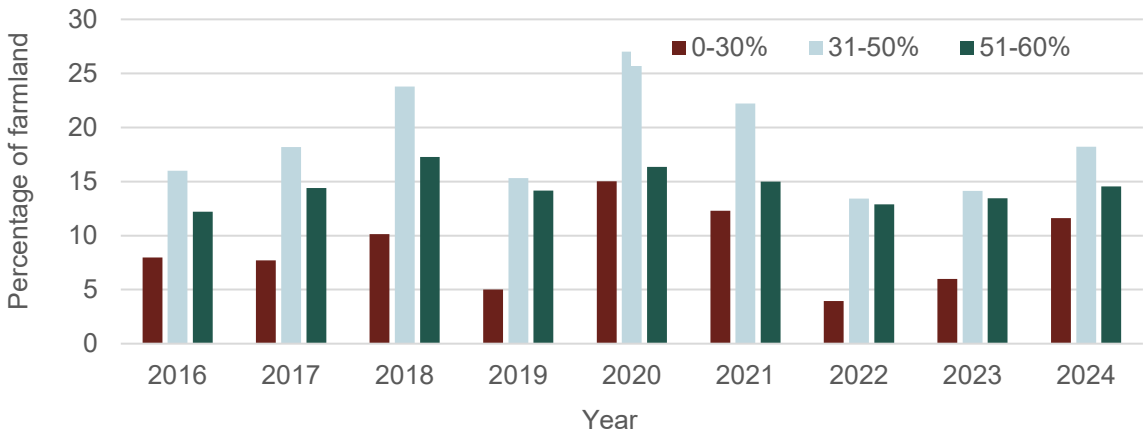

Figure 3: Percentage of farmland in the West Midlands Ag Soil Zone with less than 30% groundcover, 31–50% groundcover or 51–60% groundcover in May, 2016–2024

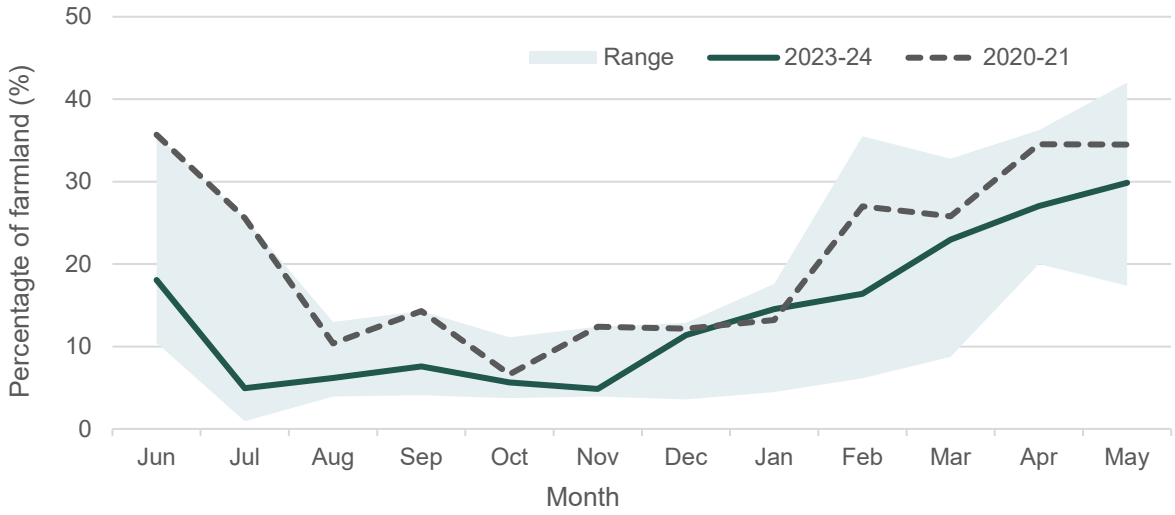

Figure 4: Percentage of farmland with inadequate groundcover in the West Midlands Ag Soil Zone in 2023–24, compared to the range of monthly percentages from 2016 to 2023 and the 2020–21 dry season

Mid West Ag Soil Zone

The Mid West Ag Soil Zone has a high proportion of sandy soils that are susceptible to erosion. About 26% (259,900 ha) of the arable farmland had inadequate (less than 50%) groundcover, a result of a dry season in 2023 and reduced plant growth.

The proportion of land with less than 30% groundcover has almost doubled since February to 4.3% (42,200 ha) and is primarily located on the sandplain soils in the north-west of the zone (Figure 1, Figure 5). The risk of erosion on this landscape is very high because of the lack of groundcover, soil type and strong winds associated with cold fronts in autumn.

The percentage of arable farmland with inadequate cover over the 2023–24 season is similar to the 2020–21 dry season, so it may exceed 30% during autumn (Figure 6).

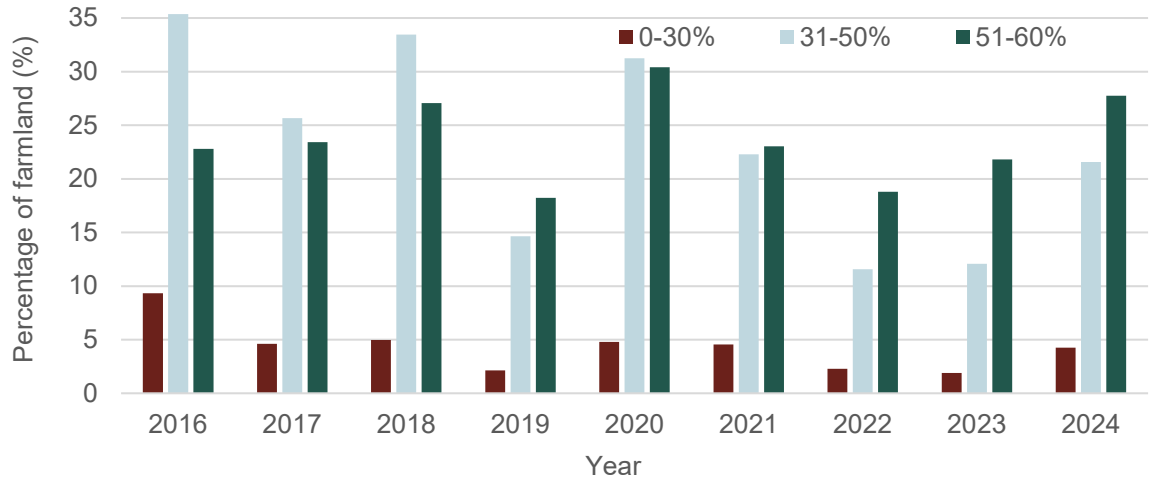

Figure 5: Percentage of farmland in the Mid West Ag Soil Zone with less than 30% groundcover, 31–50% groundcover or 51–60% groundcover in May, 2016–2024

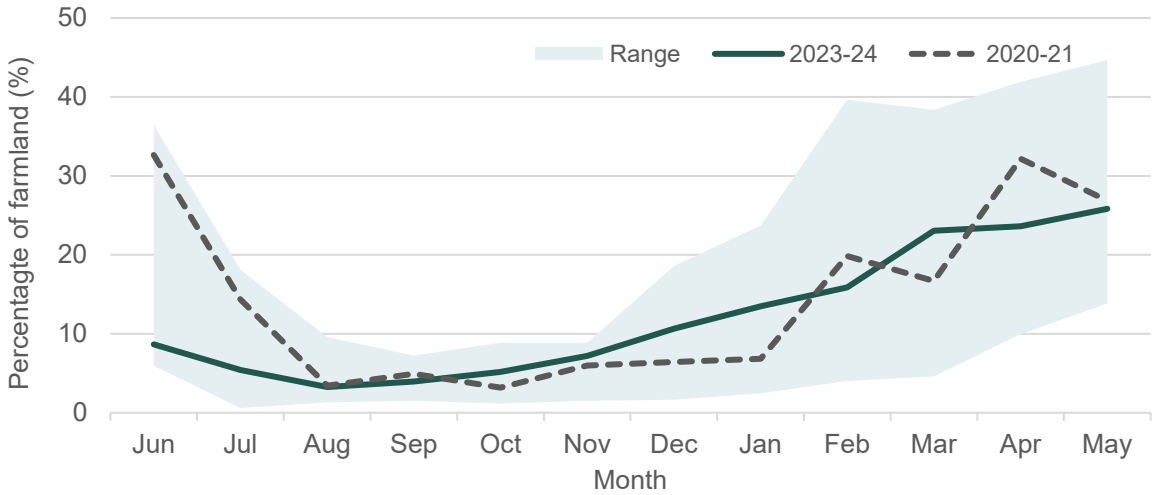

Figure 6: Percentage of farmland with inadequate groundcover in the Mid West Ag Soil Zone in 2023–24, compared to the range of monthly percentages from 2016 to 2022 and the 2020–21 dry season

Mullewa to Morawa Ag Soil Zone

The very dry seasonal conditions in the Mullewa to Morawa Ag Soil Zone resulted in many thin and patchy crops. About 23% (152,300 ha) of the arable farmland had inadequate (less than 50%) groundcover, yet only 0.4% of this farmland had less than 30% groundcover (Figure 7). Groundcover is likely to decline as it is incorporated into the soil during seeding and the likelihood of erosion will increase.

The percentage of arable farmland with inadequate cover over the 2023–24 season is similar to the 2020–21 dry season (Figure 8). The decline shown in the graph may be due to new plant growth or stubbles being flattened during seeding, which appear as increased groundcover in satellite imagery.

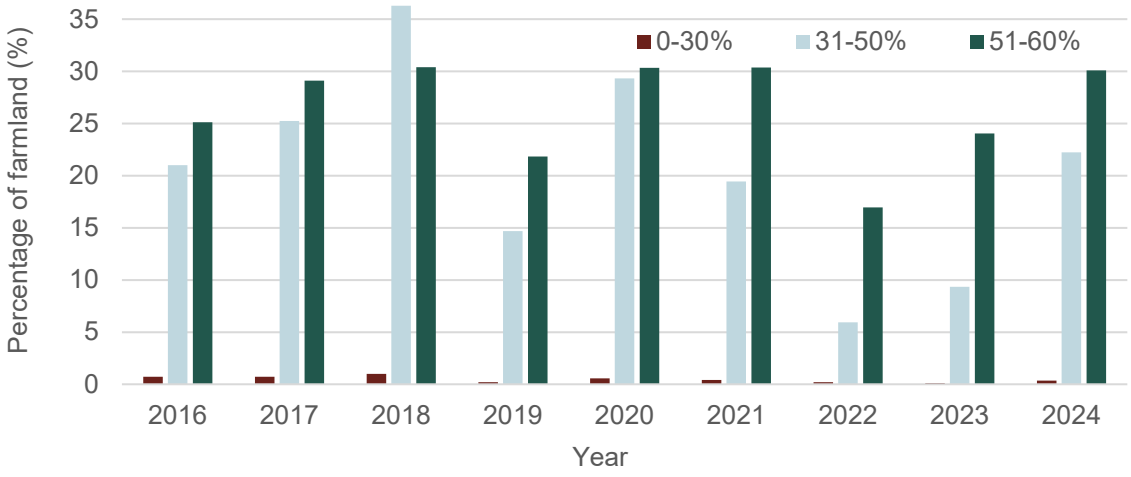

Figure 7: Percentage of farmland in the Mullewa to Morawa Ag Soil Zone with less than 30% groundcover, 31–50% groundcover or 51–60% groundcover in May, 2016–2024

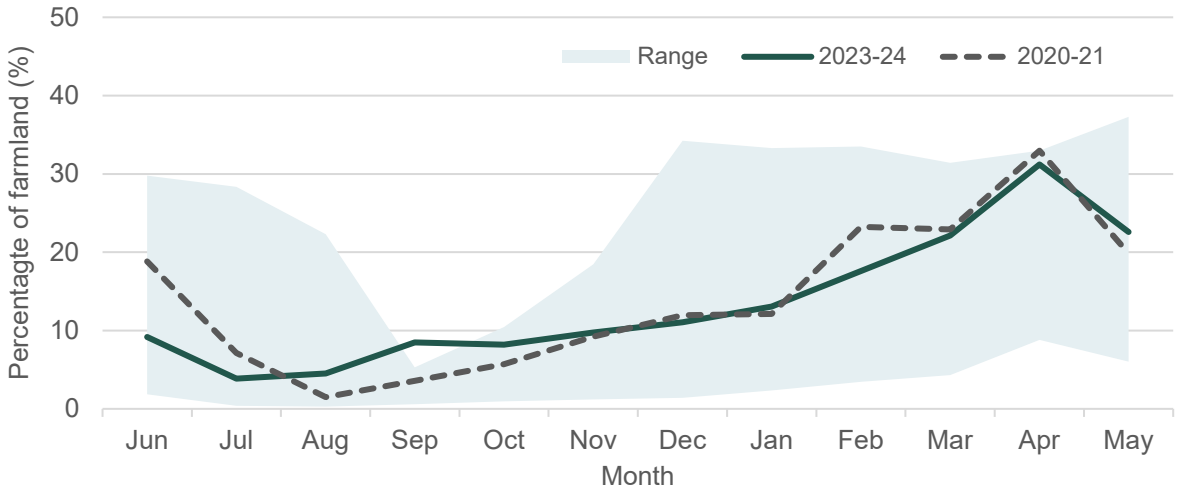

Figure 8: Percentage of farmland with inadequate groundcover in the Mullewa to Morawa Ag Soil Zone in 2023–24, compared to the range of monthly percentages from 2016 to 2022 and the 2020–21 dry season

Background and methods

Total vegetative groundcover imagery derived from the Landsat and Sentinel satellites is used as an indicator of wind erosion risk in the WA grainbelt. Less than 50% vegetative groundcover is classified as inadequate to prevent wind erosion. Farmland with less than 30% groundcover has a high to very high wind erosion risk. Farmland with 31–50% groundcover has a moderate wind erosion risk.[1]

Satellite groundcover can be viewed through a variety of web portals. GEOGLAM RAPP Map and Veg Machine portals allow users to view current and historical vegetative groundcover. Details on the acquisition and processing of satellite groundcover imagery by DPIRD are available in 'Using Landsat satellite imagery to estimate groundcover in the grainbelt of Western Australia'.[2]

Analysis and summary statistics can be processed for any areal extent. The grainbelt represents one spatial unit comprising all arable land used for broad acre cropping and livestock. Ag soil zones provide a broad geographic assessment of groundcover because they align with regional soil characteristics and seasonal climatic conditions (Figure 9).

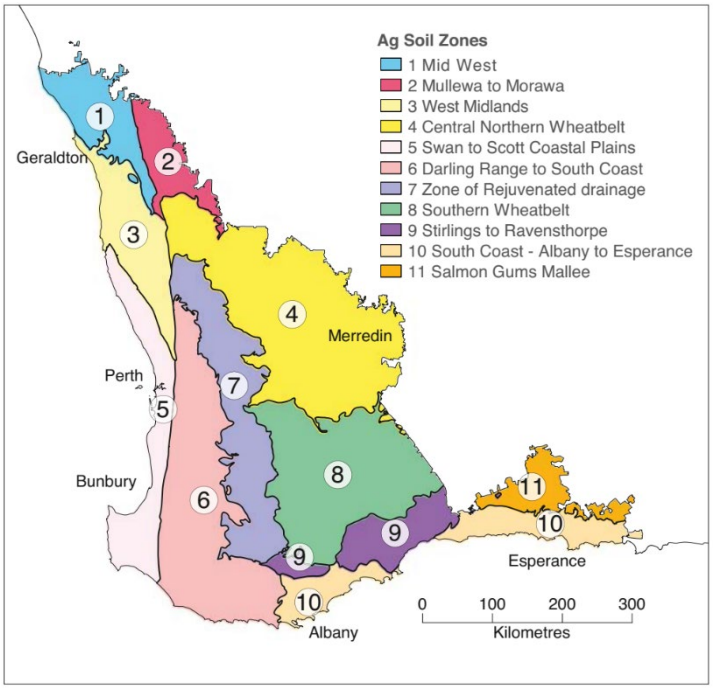

Figure 9: Ag soil zones of the south-west of Western Australia

[1] JF Leys, JE Howorth, JP Guerschman, B Bala and JB Stewart (2020) *Setting targets for National Landcare Program monitoring and reporting vegetation cover for Australia*, NSW Department of Planning, Industry and Environment.

[2] J Laycock, N Middleton and K Holmes (2022) 'Using Landsat satellite imagery to estimate groundcover in the grainbelt of Western Australia', *Resource management technical report 428*, Department of Primary Industries and Regional Development, Western Australian Government.