

Crop/pasture farming systems to conserve soil resources

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Problem.

Most farming systems currently used in the southern wheat belt of N.S.W. are mining the soil resource. Too much emphasis is placed on maximising returns in the short term and to immediate control of problems within the farming systems rather than developing long term stable productivity.

The soil resource is finite and can be easily destroyed for agricultural production by misuse in a very short period of time. Research at Wagga Wagga shows significant crop yield depressions related to cumulative soil erosion losses (1). The soil is not replaceable and cropping systems which exploit the soil will, ultimately, be detrimental to crop growth (2).

Farmers have in recent decades been more intensively farming arable lands predisposing the soil resource to degradation from soil erosion, breakdown of structure, pollution and loss of fertility. Current practices use frequent cultivation, burning of crop residues, chemical control of weeds, diseases and pests, application of artificial fertiliser, minimal crop rotation and insufficient pasture ley phases.

Solution.

There exists sufficient resource information within government and agri-business extension organisations to publish material that farmers can use to develop management plans on their own properties. Soil Conservation Service farm plans which show land capability classification and protection needed from soil erosion are suitable base plans for farmers to divide their land into similar productivity units which can be managed by conservation land management practices. (At 30/6/84, farm plans completed in the southern wheat belt exceeded 1500 and covered more than 970,000ha).

The property management plan for arable land would be developed around a suitable crop/pasture rotation, using reduced tillage, conservation farming practices and crop types that are planned to break the weed, disease and pest cycles associated with mono-cropping.

Southern wheat belt example.

Divide 600 ha of arable land of similar capability and suitability into eight equal management units - adopt following management plan.

		PADDOCKS							
		1	2	3	4	5	6	7	8
Y	1	C+	C	C	CP	P	P	P	Pc
E	2	Pc	C+	C	C	CP	P	P	P
A	3	P	Pc	C+	C	C	CP	P	P
R	4	P	P	Pc	C+	C	C	CP	P
S	5	P	P	P	Pc	C+	C	C	CP
	6	CP	P	P	P	Pc	C+	C	C
	7	C	CP	P	P	P	Pc	C+	C
	8	C	C	CP	P	P	P	Pc	C+

LEGEND	
C+	- Non cereal crop
CP	- Cereal undersown with pasture
Pc	- Spray top and deep rip pasture
C	- Crop with full residue retention
P	- Leguminous pasture
Annual productivity based on:-	
	75 ha of non cereal crop
	225 ha of cereal crop
	300 ha of leguminous pasture

By developing flexible conservation farming systems that are guided by good long term management planning the overall health and longevity of those systems and the soil resource can be protected.

1. Aveyard, J.M. 1982. Proc 2nd Aust. Agron. Conf., Wagga Wagga, P . 248

2. Coventry , D. 1984. (Stubble Retention: Developing a workable system"). N.S.W. Grain Farmer 30 May.