

Influence of tobacco cropping frequency on (1) tobacco crop yield and cured leaf quality

P.E. Tonello, T.S. Rasmussen, J. von Nordheim

Department of Primary Industries, Mareeba. Q. 4880.

The development of the tobacco industry in North Queensland has followed a system of mono-culture broken by native grass leys. Most farmers have only 32 ha of soil suitable for tobacco, and a land use pattern of 2 in 4 or 2 in 6 years tobacco. The recommended land use pattern is to grow tobacco one year in three and during the non-tobacco period to cover the ground by an established grass ley.

Economic pressures are forcing growers to increase their production to remain viable. This necessitates increasing the frequency of tobacco cropping and/or crop diversification to improve the earning capacity of the property and reduce overhead costs. •

Methods

The study which commenced in 1972-73 season was conducted over an eight year period at Southedge Tobacco Research Station, on a granitic red earth (Northcote classification Gn 2.14).

The trial consisted of twelve cropping sequences in which continuous tobacco was compared to a 1 in 2 and 1 in 4 year cropping frequency. The main plots were split every second year to observe the effects of with-holding fumigation (ethylene dibromide) treatment. All tobacco crops received 55 kg N, 68 kg P and 168 kg K per ha.

Results and discussion

Continuous tobacco cropping reduced tobacco yield and cured leaf quality (Table 1). With-holding the soil fumigant treatment under continuous tobacco cropping lowered yield and cured leaf quality. Following land for 1 or 3 years had a beneficial effect on subsequent tobacco crop performance. It appears that under a 1 in 2 or 1 in 4 year cropping system soil fumigation may not be necessary. Fumigation inhibits nitrification (1) by destroying and the nitrifying bacteria, this may account for some of the reduced yield and poor crop development which was evident.

TABLE 1 Effect of cropping frequency and fumigation of tobacco crop yield and cured leaf quality.

Cropping Frequency	Total yield (kg/ha)		Saleable yield kg/ha		Quality (\$/kg)	
	* +	-	+	-	+	-
1:1	2281	2097	2100	1794	3.00	2.95
1:2	2776	3136	2289	2640	3.18	3.22
1:4	2514	2788	2133	2539	3.20	3.26
LSD P=0.05	374	496	N.S.	388	0.12	0.20

* +
- Fumigation

In conclusion, increasing the tobacco cropping frequency to a 1 in 2 year is possible in the short term but should economic pressures push farmers into adopting a continuous tobacco cropping programme then tobacco yield and quality will be depressed. This will increase their dependence on the

use of disease resistant varieties, pesticides and higher fertilizer inputs.

1. Elliot, J.M. and Mountain, W.B. 1963. Can. J. soil Sci. 43: 18-26.