Exercise 21: Fitting Poisson models

The data in the table has all been taken from[10]. The yeast cells relate to the number of blood cells counted by a so-called hemacytometer in small squares of blood. The moss shoots are similarly the number of a certain type of organisms in quadrats laid out by ecologists in some environment of interest. The azuki bean wevils are the number of wevils entered the beans, fed and purpated inside them, finally emerging as holes. The number of holes has been counted on the various beans of the experiment.

Frequency	Yeast cells	Moss shoots	Azuki bean wevils
0	75	100	61
1	103	9	50
2	121	6	1
3	54	8	
4	30	1	
5	13	0	
≥ 6	4	2	
Total	400	126	112

In each of the three cases, fit Poisson models, compute 'exepected' tables and the coefficient of dispersion (CD). Judge whether the data seems to be Poisson distributed and speculate on reasons for deviations.

[10]Sokal, R. F. and Rholf, F. J. (1981) Biometry. Freeman, San Fransisco.