

Model details

Graeme Baird

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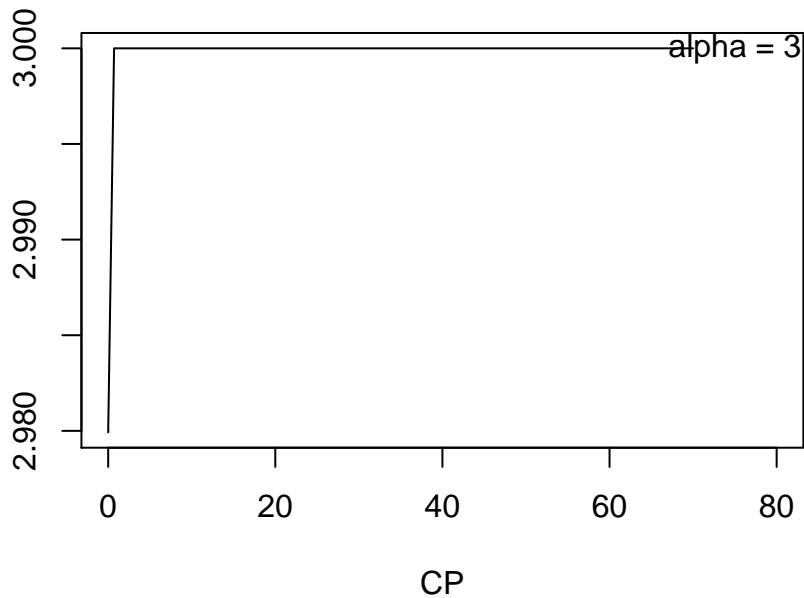
Underlying model details

In this paper we present an extension of a cumulative link ordinal regression model to include nonlinear effects, and it's application to determining chill sufficiency in cherry production. Below are figures illustrating the effect of variations in parameters.

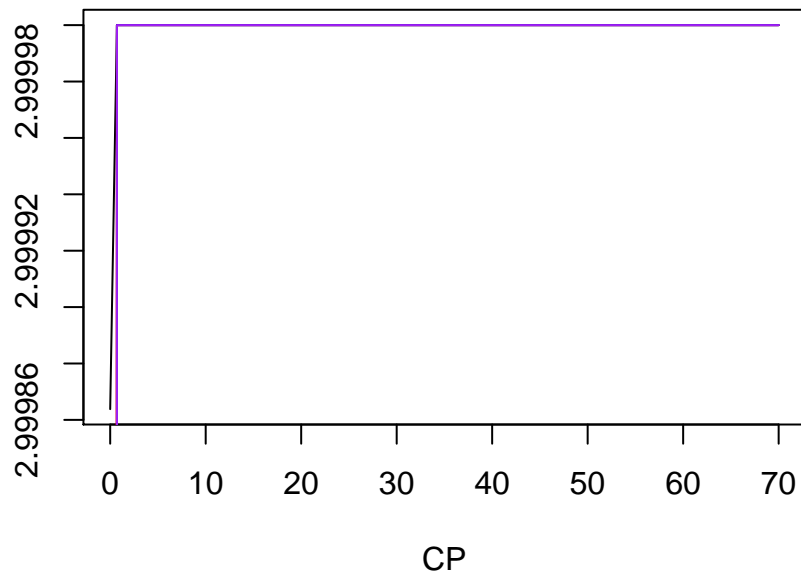
Plotting response of nonlinear CP equation to changes in parameters (X:CP, Y:Coefficient output)

Parameter variance within the non-linear component is best visualized by manipulation of individual parameters, as follows. Parameter ranges demonstrated below are appropriate for un-scaled variables and don't necessarily match actual model parameter estimates, which are fit on scaled observations.

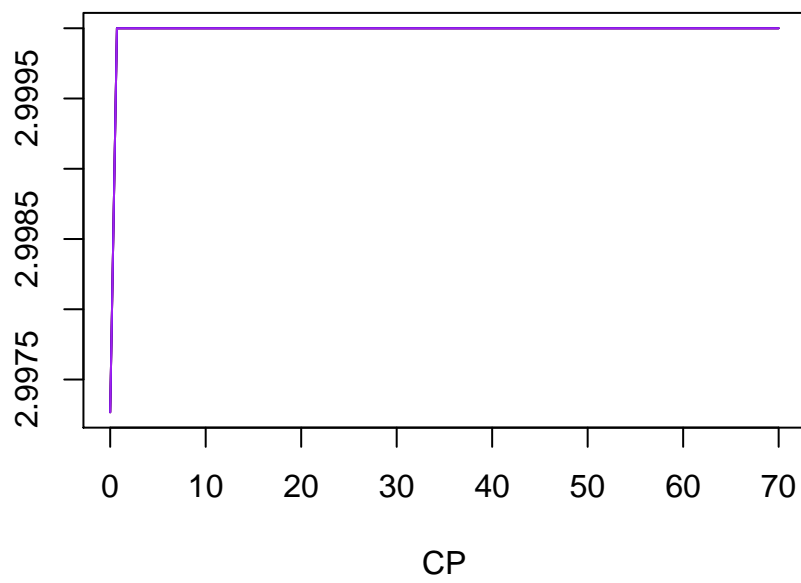
Changes in alpha determine asymptotic maximum possible growth rate



Changes in beta determine acceleration between inflection points

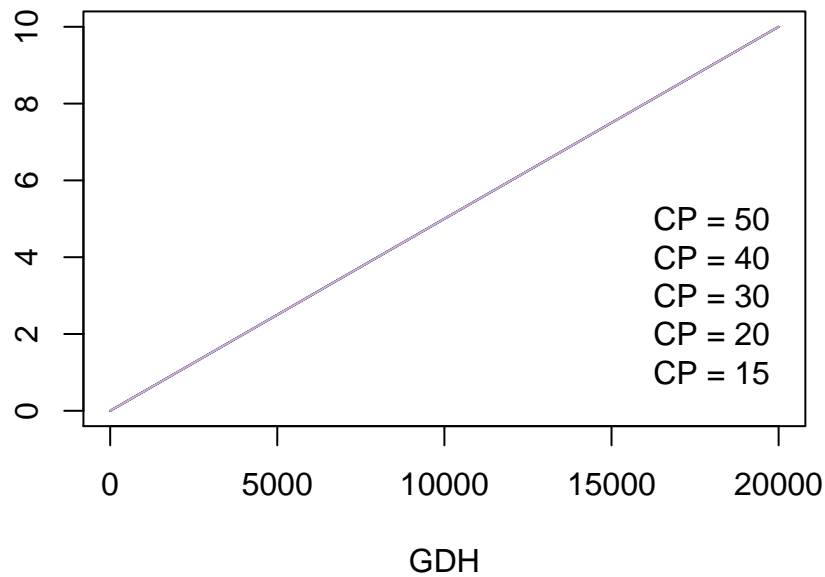


Changes in eta determine overall location of curve



Gamma responsivity to GDH given fixed parameters and varying CP rates

alpha: 5e-04 beta: 10 eta: 25



Simulated budbreak responsivity (proportion in $[0,1]$) to GDH given fixed parameters, varying CP rates, and arbitrary cutpoints (2,5)

alpha: 5e-04 beta: 10 eta: 25

