A Longitudinal Analysis of the Pattern of Change Over Time for Soybean Yield (1990– 2013) By Country

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Figure 1. Soybean Yield (n=797) by Country from 1990-2013.

METHODS

¾ A sample of 797 records across 34 countries with 24 repeated measurements (1990-2013) of soybean yield (hg/ha) from the Food and Agriculture Organization and World Data Bank were used for this longitudinal analysis.

- The dependent variable, soybean yield (hg/ha), is treated as a continuous variable.
- Countries with multiple (>1) average annual temperatures or countries with <20 occasions were excluded.

Assessing Pattern of Change Over Time (1990-2013)

¾ A spaghetti plot fa68 1390.2156lvt.3139irsu-1n (fR)s0n.81(8)5-85f(t)1-2(.94d(s)-1.5(b)m)42(M)-2(-)oes 1390.2156 Tm y i sing Pattern of Change Over Time (1990

- A Shapiro-Wilk's test indicates normality is not met (p <0.0001). This may be due to deviations in the residual tail ends seen in the QQ plot causing the non-normality. Based o the body of evidence, it appears that normality is reasonably met.

The variances and covariances from the marginal V matrix from th Random Linear model appear to decrease as years pass. There is inherent autocorrelation in that years closer together are more correlated than years farther apart.

¾ Soybean yield increased on average by 133 hg/ha per year (Table from 1990 to 2013. A variancends.