Philip M. Fearnside
July 25, 1977

SUMMARY OF SWEET MANIOC YIELD REGRESSION:

1.) ORIGINAL DATA SET: 13 cases

2.) CULLING THE DATA SET:

a.) INVALID DATA:

- field areas less than 1.0 hectare (NB: larger minimum area required for sweet manioc than for bitter manioc due to bias in small fields from the practice of harvesting sweet manioc little by little for eating boiled or feeding to pigs.
- incomplete data for yield, growth period, area or pH

b.) EXCLUDED CATEGORIES OF VALID DATA:

- growth periods less than 1 year
- growth periods over 2 years (no actual cases)

3.) ADJUSTMENTS AND TRANSFORMATIONS OF THE DATA:

- pH "adjusted to 5.0" in accord with the linear response-plateau model for yield prediction.
- yield expressed as kg farinha / 12 months growth

4.) SWEET MANIOC YIELD REGRESSION EQUATION:

$$\begin{pmatrix}\text{Sweet manioc yield} \\ \text{(kg farinha/ha/} \\ \text{12 months growth)}\end{pmatrix} = 587.53 * \begin{pmatrix}\text{pH} \\ \text{(adjusted} \\ \text{to 5.0)}\end{pmatrix} - 1559.2$$

$p = 0.2557$

$r = 0.9204$

$r^2 = 0.8417$

$SE = 81.502$

$N = 3$

5.) REASONS FOR USING REGRESSION DESPITE SMALL SAMPLE SIZE:

There are several reasons for using the above regression despite the lack of statistical significance and the small sample size. The regression parallels the results for bitter manioc, except that sweet manioc yields are lower than predicted bitter manioc yields for a corresponding pH by a factor of 0.52. The regression also confirms field impressions

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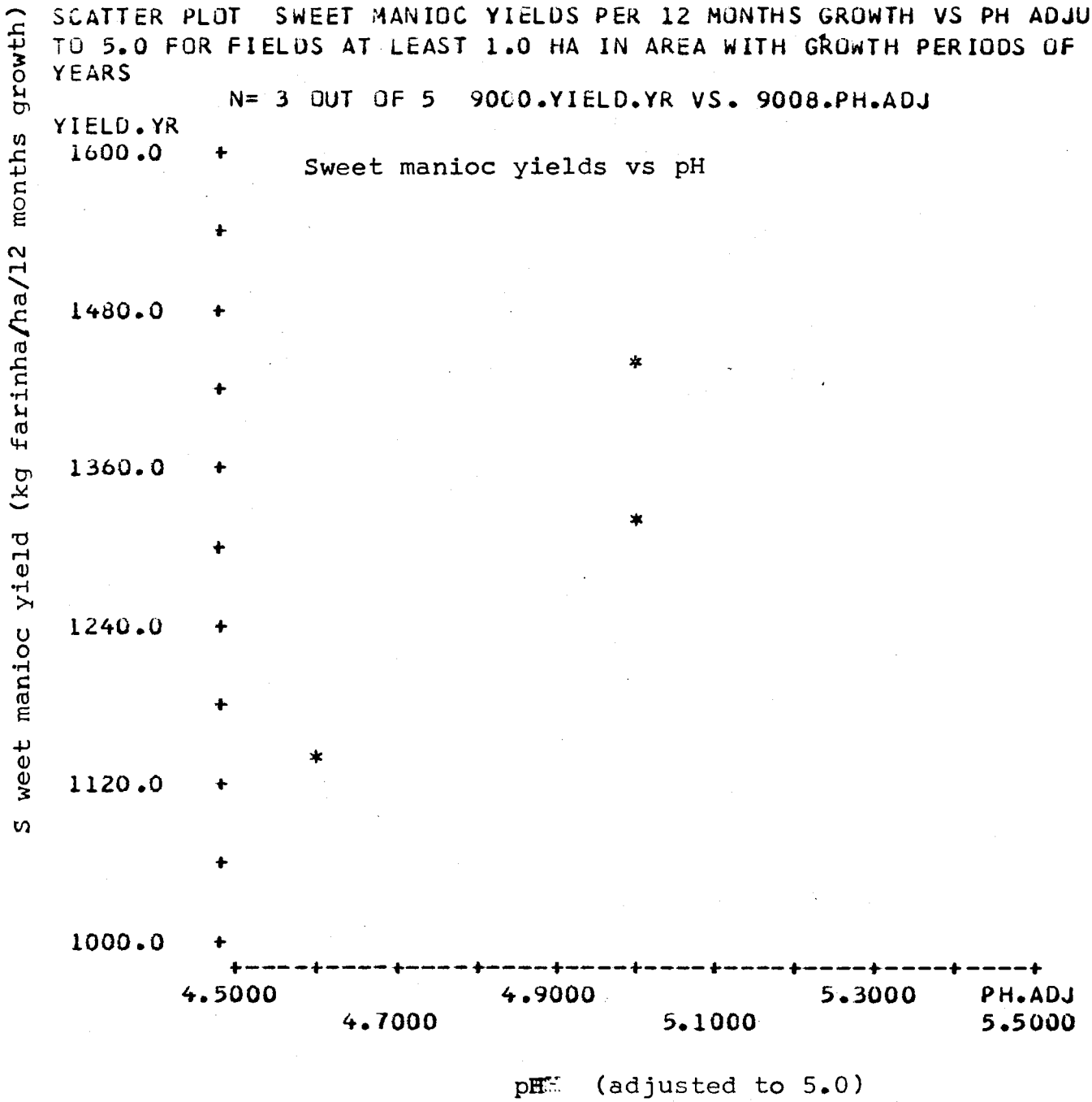
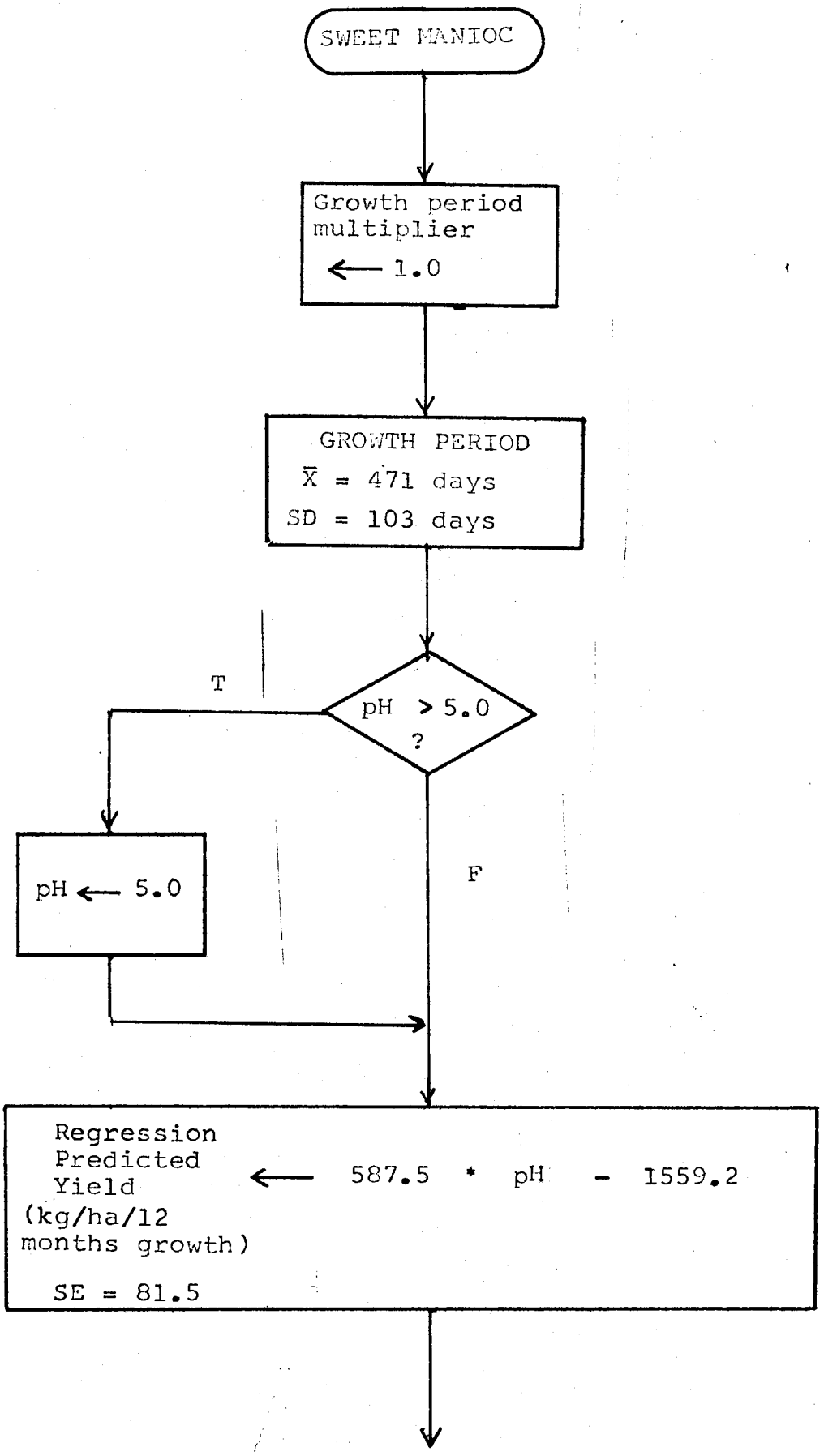
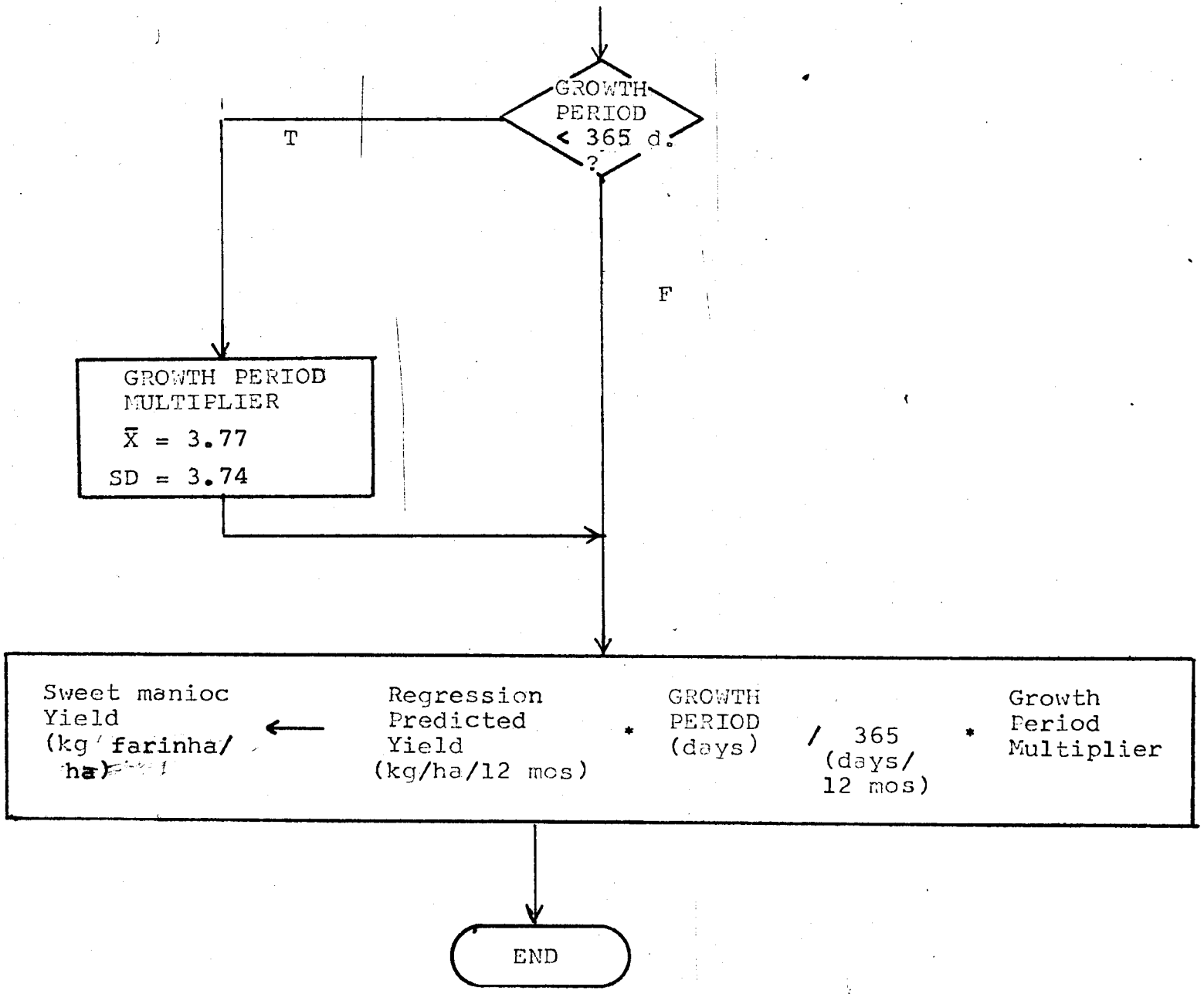
SCATTER PLOT SWEET MANIOC YIELDS PER 12 MONTHS GROWTH VS PH ADJUSTED TO 5.0 FOR FIELDS AT LEAST 1.0 HA IN AREA WITH GROWTH PERIODS OF 1-2 YEARS

N= 3 OUT OF 5 9000.YIELD.YR VS. 9008.PH.ADJ




SWEET MANIOC
Growth period multiplier
← 1.0
GROWTH PERIOD
$\bar{X}$ = 471 days
SD = 103 days
T
pH > 5.0 ?
F
pH ← 5.0
Regression Predicted Yield (kg/ha/12 months growth)
← 587.5 * pH - 1559.2
SE = 81.5


GROWTH PERIOD < 365 d. ?
T
F
GROWTH PERIOD MULTIPLIER
$\bar{X}$ = 3.77
SD = 3.74
Sweet manioc Yield (kg farinha/ ha)
←
Regression Predicted Yield (kg/ha/12 mos)
*
GROWTH PERIOD (days)
/ 365 (days/ 12 mos)
*
Growth Period Multiplier
END