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SOYBEAN TRIAL IN AMERICAN SAMOA

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Soybean (Glycine max) makes an excellent livestock feed. It contains more protein than beef, more calcium than milk and more lecithin (a fat) than eggs. It is also rich in vitamins and minerals, but is deficient in two essential amino acids--methionine and cystine.

Soybean is a temperate climate crop, but many varieties grow well under tropical conditions. It grows well on clay soils, but not where high temperatures and low rainfall prevail. It requires fresh inoculum with rhizobium bacteria to ensure nitrogen-fixing ability; high amounts of phosphorous, calcium, magnesium and sulfur; and weed control for high yields.

The purpose of this study is to determine if soybean will grow in American Samoa

MATERIALS AND METHOD

Maple arrow soybean from the Vermont Bean Seed Company was planted on a newly plowed stony clay loam at the Land Grant Experiment Station on 28 & 29OCT87. The single plot consisted of 10 rows 24 in (61 cm)* apart with 20 plants per row at 5 in (13 cm) spacing. The contents of a 1/4 lb (113 g) bag were sufficient to allow 3 seeds to be planted in each 1 in (3 cm) deep hole. The seeds were not inoculated nor was fertilizer applied to the soil

*Metric conversions are approximations.

Because germination was much greater than the 75% guaranteed minimum, some seedlings from each row were transplanted 2 weeks later to an adjacent plot.

The area was ignored during the holiday period and was consequently overtaken by weeds.

RESULTS

By 11JAN88, 75 days after planting (D.A.P.), many pods were turning from green to brown. On 20JAN, 84 D.A.P., 20 plants were harvested at random from the initially planted plot. Plants were 12 in (30 cm) tall and averaged 14 pods each containing 2 seeds. Rhizobium-induced nodulation was absent from the plant roots. Seeds were removed from pods and separated into 3 groups: 1) large, firm, smooth, ovoid, immature green and yellow seeds, 2) normal, hard, smooth, round, mature yellow seeds, and 3) soft, wrinkled, flattened yellow and brown seeds. The weight percent and count percent distributions of these 3 groups are:

<u>SEED GROUP</u>	<u>WEIGHT PERCENT</u>	<u>COUNT PERCENT</u>
Immature	37	21
Mature	45	48
Wrinkled	18	31

The yield was calculated as 560 lbs/A (630 kg/ha). This is less than 1/3 the normal yield of 1870 lbs/A (2100 kg/ha) in soybean producing areas.

CONCLUSION

Soybean may be a viable livestock feed crop in American Samoa. Given the absence of three vital requirements for good

growth--fresh inoculum, superphosphate fertilizer and weed control--this variety of soybean still gave a respectable yield. Furthermore, there was no apparent loss due to insects, though the loss as soft, wrinkled seeds may be due to a fungus. If local soybean production is ever seriously considered as a means to supplement livestock diets, we recommend planting early maturing varieties (75 days) in late March or early April so harvesting will occur in the drier month of June. Fresh inoculum should be used and the field fertilized with ordinary superphosphate properly placed, at a rate of 500 kg/ha. Weed control, either mechanical or using a selective herbicide (eg. Reward, Vernam, Storm) should be implemented early.

REFERENCES

- Guide for field crops in the tropics and the subtropics. Nov 1974. Samuel C. Litzenger, ed., Technical Assistance Bureau, Agency for International Development, Washington, D.C. 20523. pp 179-186.
- The World Book Encyclopedia. 1974. Field Enterprises Educational Corporation, Chicago. Vol 18, pp 557-558.