A. Variety Improvement and Pest Management (2)

1. Preliminary yield test of Phil 2013 Series

N. Guiyab, V. Serrano, A. Casupanan, B. Manlapaz, R. Sarol, J. Agsaoay, J. Mora

Thirty test clones from Phil 2013 row test series from LAGAREC were entered in the preliminary yield test at LAREC using RCBD to compare their agronomic and yield potential with two check varieties, Phil 8013 and Phil 7544, under natural field condition at LAREC.

Based on tonnage and sugar yield, ten clones were found to be either significantly higher, comparable or significantly lower with the check variety Phil 8013 and Phil 7544. The clones also passed the selection criteria for disease resistance to smut and downy mildew.

The clones which are recommended to undergo National Cooperative Testing are Phil 2013-1667, Phil 2013-1627, Phil 201-1495, Phil 2013-0287, Phi 2013-0771, Phil 2013-1599, Phil 2013-0279, Phil 2013-1585, Phil 2013-1619 and Phil 2013-1319.

2. Screening of Phil 2012 series for resistance to smut

A. Casupanan, N. Guiyab, V. Serrano, B. Manlapaz, R. Sarol, J. Agsaoay, J. Mora

Thirty clones of the 2012 and 2 checks varieties from LGAREC were plant and ratooned and tested for their reaction to sugarcane smut.

Among the thirty clones of 2012 series, Phil 12-0957 was rated very highly resistant; Phil 12-0129, Phil 12-0607 and Phil 12-0089 were highly resistant; Phil 12-0475 was resistant. Sixteen clones were rated Intermediate resistant, these are Phil 12-0955, Phil 12-0307, Phil 12-0747, Phil 12-0609, Phil12-0549, Phil 12-05-27, Phil 12-0055, Phil 12-0011, Phil 12-0623, Phil 12-0045, Phil 12-1019, Phil 12-1263, Phil 12-1373, Phil 12-1153, Phil 12-1203 and Phil 12-1273.Three clones were rated intermediate average , namely, Phil 12-0645, Phil 12-0537 and Phil 12-0465. The two check varieties, Phil 75 44 was rated very highly resistant while Phil 8013 was rated intermediate average.

All clones of 2012 series tested in plant and ratoon cane were rated very highly resistant to very highly susceptible.

B. Production Technology and Crop Management (9)

1. Yield Responses of Phil 2007-0221 and Phil 2007-0243 at Different Seasons of Planting

B. Manlapaz, V. Serrano , N. Guiyab R. A. Casupanan, R Sarol, J. Agsaoay, J. Mora

The experiment was laid out in factorial in RCBD to determine yield responses of Phil 07-0221 and Phil 07-0243 at different seasons of planting.

Significant mean difference was observed in sucrose content (L-Kg/TC), with Phil 07-243 producing higher sucrose content. The test varieties were statistically comparable in number, length and diameter of millable stalks, cane tonnage and sugar yield.

Mean diameter was significantly higher in the early season, millable stalks in mid and sucrose content and sugar yield (L-Kg/Ha) in late season. Number of millable stalks and cane yield per hectare (TC/Ha) were comparable in all seasons of planting.

Season of planting did not influence cane and sugar yield parameters of Phil 07-221 and Phil 07-243.

Phil 07-221 and Phil 07-243 can be planted in any season in Angeles sandy loam at SRA-LAREC. However, to attain higher cane tonnage planting should be done in early season. While for higher sucrose content and sugar yield planting should be done in late.

2. Yield responses of Phil 2007-0221 and Phil 2007-0243 at different ages of harvest

B. Manlapaz, V. Serrano , N. Guiyab A. Casupanan, R. Sarol, J. Agsaoay, J. Mora

The experiment was laid out in factorial in RCBD to determine yield responses of Phil 07-0221 and Phil 07-0243 at different ages of harvest.

Varieties significantly varied in sucrose content and sugar yield. Phil 07-243 produced significantly higher sucrose content and sugar yield.

Millable stalks, sucrose content and sugar yield were significantly higher at 12 and 13 months after planting. Number of millable stalks and cane yield per hectare were comparable.

Different ages at harvest did not significantly influence cane and sugar yield parameters of the varieties.

Results showed that Phil 07-243 produced significantly higher sucrose content and sugar yield, and comparatively higher cane tonnage, if harvested at 12 and 13 months after planting.

3. Growth and yield performance of Phil 2007-0243 and Phil 2007-0221 under different densities of planting

N. Guiyab, V. Serrano, A. Casupanan, B. Manlapaz, R. Sarol, J. Agsaoay, J. Mora

Phil 2007-0221 and Phil 2007-0243 were laid out in strip plot design to test their growth and yield performance using 3.5, 4.0, 4.5 and 5.0 lacsas per hectare.

Percent germination of Phil 2007-0221 and Phil 2007-0243 did not vary under different densities of planting. Significantly highest germination was obtained using 3.5 and 4.0 lacsa.

Average tiller and millable stalk of Phil 2007-0221 and Phil 2007-0243 did not vary under different densities of planting. Significantly highest average tiller and millable stalk were obtained at 3.5, 4.0 and 4.5 lacsas. Other parameters such as height, length and diameter showed comparable performance.

Cane tonnage (TC/Ha), sucrose content (LKg/TC) and sugar yield (LKg/Ha) of Phil 2007-0221 and Phil 2007-0243 did not vary significantly under different densities of planting.

Economic analysis showed that Phil 2007-0221 and Phil 2007-0243 gave the highest ROI at planting density of 4.5 lacsas per hectare.

4. Root Density, Distribution and Yield Relationships of High Yielding Sugarcane Varieties under Sandy Soil Condition *R.J. Sarol, M.V.A. Serrano, J.Z. Agsaoay Jr., N.C. Guiyab, A.M. Casupanan, B.G. Manlapaz, L.C. Olalia, J.M. Mora Roots are the less explored yet essential part of the sugarcane plant for sufficient nutrient and water supply to ensure higher yield. Understanding the nature of the root system will help the plant breeder in selecting superior varieties adapted to different soil conditions. An experiment using 10 sugarcane HYVs was conducted to determine the root characteristics, physiological responses and yield performance in sandy soil of Pampanga, Philippines. The experiment was laid-out in RCBD with

four replications. ANOVA revealed significant differences in all 18 parameters except in apparent purity and root density (RD) at 80-90cm soil depth. Phil 8013, Phil 7544, Phil 97-3933, Phil 99-1793, Phil 04-0081, Phil 00-2569 and Phil 03-1727 produced significantly highest sugar yield (LKg/ha) which ranged from 223.05-257.93. RD (g) and distribution at different soil depths from 0-100cm with interval of 10cm were 318.3 (46.47%), 132.36 (21.59%), 81.02 (14.05%), 26.24 (4.57%), 14.77 (2.61%), 14.58 (2.53%), 13.23 (2.32%), 11.53 (2.05%), 10.80 (1.93%) and 10.68 (1.87%). Stalk characteristics such as diameter, length and number of millable stalks and RD at 0-10cm, 11-20cm, 21-30cm, 51-60cm, 61-70cm, 71-80cm and 90-100cm were positively and significantly correlated with cane yield while percent brix and purity were positively and significantly correlated with sucrose content.

5. Yield responses of Phil 2008-0909 at different seasons of planting

B. Manlapaz, V. Serrano , N. Guiyab R. A. Casupanan, R Sarol, J. Agsaoay, J. Mora

Field experiment on the yield response of Phil 08-0909 in season of planting was laid-out in Angeles sandy loam at SRA-LAREC.

The study determined the cane and sugar yield response of Phil 08-0909 planted in early season (Nov), middle (Jan) and late (Mar)

Yield parameters like number of millable stalks, TC/Ha and L-Kg/TC of Phil 08-0909 were significantly influenced by seasons of planting. More millable stalks and higher tonnage were obtained in early season planted canes while late season gave the highest sucrose content of the juice. However, higher sugar yield was obtained in mid season.

Phil 08-0909 can be planted in any season in Angeles sandy loam soil at SRA-LAREC. To attain higher cane tonnage, planting should be done either in early or mid season. For higher sucrose content, it should be harvested in late, while for higher sugar yield, planting in mid season was ideal.

6. Yield responses of Phil 2008-0909 at different ages of harvest

B. Manlapaz, V. Serrano , N. Guiyab R. A. Casupanan, R Sarol, J. Agsaoay, J. Mora

Field experiment on the Yield response of Phil 08-0909 at different ages at harvest were laid-out in Angeles sandy loam at SRA-LAREC in November 2016.

The study determined the cane and sugar yield response of Phil 08-0909 harvested at 11,12 and 13 months after planting.

The number millable stalks, cane tonnage, sucrose content and sugar yield per hectare of Phil 08-0909 significantly differ at different ages of harvest. Canes harvested at 11 months after planting gave more millable stalks and higher cane yield. Furthermore, canes harvested at 12 and 13 months after planting had the highest sugar rendement and sugar yield.

Phil 08-0909 planted in November in angeles loamy sand produced signicantly higher tonnage, if harvested at 11 months after planting. On the other hand, significantly higher sucrose content and sugar yield were obtained, if harvested at 12 and 13 MAP.

7. Ratoon performance of recommended Phil 2008 series

A.M. Casupanan, N.C. Guiyab, V.A. Serrano, B. Manlapaz, R. Sarol, J. Agsaoay, J. Mora

The study was conducted at SRA-LAREC, Floridablanca, Pampanga from November 2014 to June 2018, to determine the ratooning capacity of Phil 2008-1253, Phil 08-0909 and Phil 2008-0553 in three ratoon crops. The data was taken from the ratoon of ecological test of Phil 2008. The ratoon performance of Phil 7544, a commercial variety with good ratooning capacity was also observed.

In cane yield (TC/Ha) and sugar yield (Lkg/Ha.) Phil 08-1253, Phil 08-0909, Phil 08-0553 and Phil 7544 decreased in yield from first ratoon up to the third ratoon.

In sucrose content (Lkg/TC) Phil 08-0909 increase in the first and third ratoon while Phil 08-1253 decreased in first ratoon but increased in the second and third ratoon. Phil 08-0553 decreased in the first ratoon and produce the same yield as with the plant cane in the second ratoon but increased in the third ratoon.

Among the test varieties Phil 08-1253 gave an average percent increase of 1.3, followed by Phil 08-0553, Phil 08-0909 with 0.49. Phil 7544 gave an average decrease of 3.49. Economic analysis showed that Phil 08-1253, Phil 08-0909 and Phil08-0553 are still profitable to maintain up to third ratoon. Phil 08-12534 gave the highest ROI of 1.35

8. Investigation of effects of plant residue removal on sugarcane production and soil fertility

– collaborative project with JIRCAS, no terminal report provided

9. Investigation of effects of fermentation residue application on sugarcane production and soil fertility

– collaborative project with JIRCAS, no terminal report provided