

## **A. Variety Improvement and Pest Management (6)**

### **1. Preliminary yield test of Phil 2012 Series**

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

Thirty test clones from 2011 row test series were entered in the preliminary yield test at LAREC using RCBD to compare their agronomic performance with two check varieties, Phil 8013 and Phil 7544.

Based on tonnage and sugar yield, six 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 2012-465, Phil 2012-1019, Phil 2012-11, Phil 2012 475, Phil 2012-1263 and Phil 2012-609.

### **2. Screening of Phil 2011 series for resistance to smut**

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

Thirty clones of the 2011 from LGAREC were plant and ratooned and tested for their reaction to sugarcane smut.

Rating of the thirty clones of 2011 series were as follows: five very highly resistant, namely, Phil 11-0131, Phil 11-0899, Phil 11-1371, Phil 11-1013 and Phil 11-1077; five highly resistant, Phil 11-0227, Phil 11-1367, Phil 11-1693, Phil 11-0965 and Phil 11-1121; eleven intermediate resistant, Phil 11-0237, Phil 11-0745, Phil 11-0733, Phil 11-1725, Phil 11-1719, Phil 11-1585, Phil 11-0449, Phil 11-0813, Phil 11-0827, Phil 11-1097, Phil 11-1711; six intermediate average, Phil 11-0133, Phil 11-0365, Phil 11-1683, Phil 11-1075, Phil 11-1631, Phil 11-1051, one susceptible, Phil 11-0169, one highly susceptible, Phil 11-1057 and one rated very highly susceptible which is Phil 11-1657.

All clones of 2011 series tested in plant and ratoon cane were rated very highly resistant to very highly susceptible.

### **3. Screening of Phil 2011 series for resistance to downy mildew.**

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

Ten clones of Phil 2011 series from LGAREC were screened and evaluated for resistance to sugarcane downy mildew in the plant cane.

Based on the results all ten clones of Phil 2011 series were rated very highly resistant. These clones are Phil 11-0365, Phil 11-1367, Phil 11-1725, Phil 11-1683, Phil 11-449, Phil 11-827, Phil 11-1097, Phil 11-1075, Phil 11-1051 and Phil 11-1077.

### **4. Screening of Phil 2010 series for resistance to downy mildew.**

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

Twelve clones of Phil 2010 series from LGAREC were screened and evaluated for resistance to sugarcane downy mildew in the plant and ratoon canes.

Among the twelve clones of 2010 series, eleven were rated very highly resistant, namely, Phil 10-0427, Phil 10-0131, Phil 10-0645, Phil 10-0077, Phil 10-1051, Phil 10-0545, Phil 10-0317, Phil 0141, Phil 10-0085, Phil 10-0149 and Phil 10-0183. One clone, Phil 10-0107 was rated highly resistant.

## **5. Performance of selected Phil 2009 series in four mill districts in Luzon**

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

Ten promising Phil 2009 series sugarcane varieties were planted to evaluate their yield performance in the mill districts of Pampanga, Balayan, Pensumil and Carsumco in Luzon.

Among the test varieties, Phil 2009-1867 showed the best yield performance against the check varieties. In tonnage (TC/Ha). It was comparable to both check varieties in Pampanga and Carsumco and one of the check varieties in Balayan and Pensumil. It gave significantly higher sucrose content (LKg/TC) than Phil 75-44 in Pampanga and sugar yield (LKg/Ha) than Phil 66-07 in Pensumil. It was comparable in LKg/TC to both check varieties in Balayan and Pensumil and comparable in sugar yield to both check varieties in three mill districts. In three yield parameters, it has the fewest losses over the check varieties than the other test varieties.

Phil 2009-1867 has a potential yield of 178.52 TC/Ha and 2.01 LKg/TC. It is very highly resistant to both smut and downy mildew and did not flower in the four mill districts.

## **6. Performance of selected Phil 2010 series in four mill districts in Luzon**

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

Ten promising Phil 2010 series sugarcane varieties were planted to evaluate their yield performance in the mill districts of Pampanga, Balayan, Pensumil and Carsumco in Luzon.

Among the test varieties, Phil 2010-0107 showed the best yield performance against the check varieties. In tonnage (TC/Ha), it was comparable to both check varieties in the four mill districts. It produced significantly higher sucrose content (LKg/TC) and sugar yield (LKg/Ha) than VMC 84-524 in Carsumco. It produced the highest mean tonnage, sucrose content and sugar yield across locations.

Phil 2010-0107 has a potential yield of 143.67 TC/Ha and 2.21 LKg/TC. It is intermediate resistant to smut, highly resistant to downy mildew and very sparse flowerer.

## **B. Production Technology and Crop Management (12)**

### **1. Ratoon Performance of Recommended Phil 2007 series varieties**

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

Two selected varieties from 2007 series, Phil 07-0221 and Phil 07-0243 and standard check variety Phil 7544 were observed in the ratoon crop to determine their ratooning capacity.

In TC/ha, of the Phil 07-0221, there was an increase in first and second ratoon. Phil 07-0243 and Phil 7544 increased in first ratoon but decreased in second ratoon. On the third ratoon all varieties decreased.

In LKG/TC, all varieties have same trend in sucrose content during plant cane, second and third ratoon but in first ratoon all the varieties decreased.

In Lkg/Ha, Phil 07-0221 and Phil 7544 increased in the first and second ratoon while Phil 07-0243 decreased in the first ratoon but increased in the second ratoon. All varieties decreased in the third ratoon.

In the first, second and third ratoon, Phil 07-0221 had an average return on investment (ROI) of 1.33, Phil 07-0423 with 1.38 and Phil 7544 with 1.36. Phil 07-0221 and Phil 07-0423 can still be maintained up to the third ratoon.

## **2. Performance of newly released HYVs in semi commercial production**

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

Phil 2000-1419 and Phil 2000-2155 were planted in 26 rows x 30 meters plots to test their yield performance in semi-commercial-scale production in the plant and ratoon cane. Phil 99-1973, a commercial variety, was also observed.

Cane yield (TC/Ha) and sugar yield (LKG/Ha) decreased from plant to ratoon cane. Phil 2000-1419 has a high decrease of 31.15 TC/Ha and 23.20 Lkg/Ha, respectively, while Phil 2000-2155 gave a decrease of 4.65 TC/Ha and 6.21 Lkg/Ha. Sugar content of Phil 2000-2155 increased from plant to ratoon while Phil 2000-1419 and Phil 99-1793 both decreased.

Phil 2000-1419 has a return of investment (ROI) of 0.64 and 0.53 in the plant and ratoon cane, respectively, Phil 2000-2155 has 0.61 and 0.64, while Phil 99-1793 had 0.60 for both plant and ratoon. On the average, Phil 2000-2155 gave the highest ROI.

## **3. Evaluation of selected HYVs for early milling at Pensumil Mill District**

P. R. Macamos Jr, A.M. Casupanan, N.C. Guiyab, V.A. Serrano and L. C. Olalia

Nine selected High Yielding Varieties (HYV's) and a local variety, Phil 6607, were entered in the evaluation using Randomized Complete Block Design (RCBD) to identify which of these sugarcane varieties give satisfactory cane and sugar yield during early milling season and under natural climatic condition in PENSUMIL Mill District.

Phil 00-2569 maintained having the highest cane tonnage and sugar yield in the crop cycle. Although Phil 04-0081 was comparable with Phil 00-2569 in TC/ha and LKG/ha in the plant cane, its yield parameters decreased abruptly in the first ratoon.

Phil 93-1601 gave the lowest reduction from plant cane to first ratoon in cane yield (TC/ha), sugar rendement (LKG/ha) and sugar yield (LKG/ha). It obtained the second highest LKG/TC in the plant cane and ranked first in the first ratoon. Its sugar yield in the first ratoon was still comparable with Phil 00-2569.

Phil 00-2569 and Phil 93-1601 are recommended for early milling and variety diversification in PENSUMIL Mill District.

## **4. Growth and Yield Performance of Ten High Yielding Varieties of Sugarcane for Early Milling at Carsumco Mill District**

A. M. Casupanan, N.C. Guiyab, P. R. Macamos, Jr, V. A. Serrano, B. G. Manlapaz, R. J. Sarol and J.Z. Agsaoay Jr.

The study determined the growth and yield performance of ten HYVs for early milling at Carsumco Mill District.

Planting in November for early milling influenced some growth parameters which affected the TC/Ha and LKg/ha yield parameters. In both plant and ratoon canes, the Lkg/TC of the varieties were comparable.

Phil 00-2569, Phil 04-0081 and Phil 99-1793 produced higher TC/Ha which also gave higher LKg/Ha in the plant cane. The LKg/Ha of the varieties were comparable in the ratoon cane.

## **5. Yield performance of selected sugarcane varieties under waterlogged conditions**

B.G.Manlapaz, V.A.Serrano, N.Guiyab, A.M.Casupanan,L.B.Yarte,R. J. Sarol, J.Z. Agsaoay

Fifteen selected sugarcane varieties were planted to determine the effects of natural waterlogged condition on their growth and yield response at SRA-LAREC.

The varieties were significantly different in number of millable stalks, cane tonnage (TC/Ha) and sugar yield (LKg/Ha). Among the test varieties, Phil 04-1011 had the greatest number of millable stalks per plot followed by Phil 80-13, Phil 00-2569, Phil 04-0081, Phil 74-64 and Phil 01-0295. The mean length and diameter of millable stalks of the test varieties were not significantly different under natural waterlogged condition.

In sucrose content the mean of the test varieties were not significantly different. Phil 7464 gave the highest TC/Ha comparable with nine other varieties. Phil 01-0295, Phil 74-64 and Phil 04-1011 produced significantly higher sugar yield.

Based on the results of the study none of the test varieties can be considered tolerant or resistant to waterlogged conditions.

## **6. Cane and sugar yields of Phil varieties under chicken manure compost fertilization**

B. G. Manlapaz, M.M. Guevara, V. A. Serrano, N. Guiyab, A. M. Casupanan, L. B. Yarte, R. J. Sarol, J. Z. Agsaoay

The cane and sugar yields of 10 each of selected Phil series 2002, 2005 and 2006 varieties (Set 1) and selected Phil series 2008 varieties (Set 2) including Phil 7544 and Phil 8013 for each set were tested under chicken manure compost fertilization in the plant and ratoon crops.

In the Set 1 test, Phil 8013 generally performed better in both TC/Ha and LKg/Ha in the plant and ratoon crops while Phil 7544 showed better performance in the ratoon crop. The other varieties which showed potential to produce high LKg/Ha in the ratoon crop are Phil 02-421 and Phil 05-2525. Compost fertilization did not influence the LKg/TC of the varieties.

In the Set 2 test, Phil 8013 and Phil 7544 consistently gave better cane and sugar yields in the plant and ratoon crops. Other varieties with potential to produce high LKg/Ha in the plant and ratoon crops are Phil 08-0909, Phil 08-1123 and Phil 08-1253.

For the two sets of tests, Phil 8013 consistently gave better TC/Ha, LKg/TC and LKg/Ha.

## **7. Effect of Method of Cutting and delay in Planting on Germination of Three HYVs**

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

The study determined the influence of slanting and perpendicular methods of cutting canepoints, and length of delay (0,3,7,10 days) in the planting of Phil 00-2569, Phil 00-2155, and Phil 99-1793.

Cutting methods did not affect percent canepoint germination (%). High mean percent germination (95.84%) was observed with no delay (0 day) in planting canepoints after cutting and was even higher (98.49%) up to 3 days of delay. The highest percent canepoint germination was observed from Phil 99-1793 among the three varieties tested (92.21%).

Cane yield (TC/Ha) was also not affected by the cutting methods and the highest mean cane yield was observed from a 3-day delay of planting after cutting (115.64 TC/Ha). Among the three varieties, Phil 00-2569 gave the highest mean cane yield of 203.89 TC/Ha.

Sucrose content (Lkg/TC) and sugar yield (Lkg/Ha) were both not affected by the cutting method. Highest mean sucrose content (2.17 Lkg/TC) and sugar yield (250.46 Lkg/Ha) was observed from a 3-day delay of planting after cutting, and the Phil 99-1793 variety gave the highest mean sucrose content with 2.07 Lkg/TC while Phil 00-2569 has the highest mean sugar yield of 239.67 Lkg/Ha, among the three varieties tested.

The effect of cutting methods statistically has no significant effect on all parameters observed. Delaying the number of days of delay of planting after cutting from 0-day to a 3-day delay can give higher % germination, TC/Ha, Lkg/TC, and TC/Ha while the effect of variety on the parameters tested are variety-specific.

## **8. Performance of Selected HYVs in Wet Season Planting at Pampanga Mill District**

Serrano, M.V, N. Guiyab, J. Agsaoay, R. Sarol, P. Macamos, A. Casupanan, and B. Manlapaz

Ten high yielding varieties were planted at the Luzon Agricultural Research and Extension Center using randomized complete block design to determine their adaptability to wet season planting.

Results showed that among the varieties, Phil 75-44, Phil 93-1601, Phil 97-3933, Phil 99-1793, Phil 2000-1419, Phil 2000-2155, Phil 2000-2569, Phil 2003-0021 and Phil 2004-0081 with the exception of Phil 03-1727 can be planted during the wet season under LAREC conditions. The varieties generally exhibited high mean tonnage and average sucrose content.

## **9. Effects of different patterns and densities of planting on canepoint production of Phil 99-1793**

P. R. Macamos Jr , N.C. Guiyab, A.M. Casupanan, V.A. Serrano and L. C. Olalia

The experiment was conducted at the Luzon Agricultural Research and Extension Center (LAREC) to find out the best combination of planting patterns and densities for canepoint propagation of Phil 99-1793.

Planting pattern and density significantly affected the germination, tiller count and number of millable stalks of Phil 99-1793 in the plant cane. The height of the variety was not significantly affected.

The interaction did not significantly affect the stool count in the ratoon crop but significantly affected the number of millable stalks.

In the plant cane and ratoon crop, planting pattern and density did not significantly affect the canepoint production of Phil 99-1793.

On the average, Return on Investment (ROI) was highest with single row planting in 1-meter furrow distance at planting density of 4.5 lacs per hectare.

## **10. Sugarcane Production with Chicken Manure Compost Fertilization**

A. Casupanan, M.M. Guevarra

The study determined the effects of levels of chicken manure compost fertilization on the growth and cane and sugar yields of Phil 99-1793. The compost test levels were equivalent to 0 (without compost) and 70%, 85%, 100% and 115% of the recommended nitrogen fertilization based on soil analysis of the experimental area.

In the plant cane, the application of chicken manure compost did not influence the growth parameters to include percent germination of canepoints, number of tillers/plots, plant height at 7 MAP, number of millable stalks/plot, stalk length and stalk diameter.

The insignificant influence on all the growth parameters of the application of manure composts were also observed on cane yield per ha (TC/Ha), sugar recovery per ton cane (LKg/TC) and sugar yield per ha (LKg/Ha).

The test was done in the plant crop where the long-term effects of manure compost application in improving the physical and chemical properties of the sandy loam soil of the experimental area to produce significant influence may not have been fully realized.

#### **11. Efficacy of GRO Plant Booster on the Growth and Yield of Sugarcane (FPA-Bio efficacy Test)**

B. Manlapaz and V. Serrano

The efficacy trial was laid-out in the experimental farm of the Sugar Regulatory Administration – Luzon Agricultural Research and Extension Center (SRA-LAREC) in Paguiruan, Floridablanca, and Pampanga based on the approved Experimental Unit Permit (EUP) from the Fertilizer and Pesticide Authority (FPA).

The study determined the effects of GRO Plant Booster on the growth and yield of sugarcane for purposes of product registration for label expansion for sugarcane.

The Recommended Rate of GRO Plant Booster (RR-GRO) or 1.5RR-GRO each applied alone or in combination with the Recommended Rate of Chemical Fertilizer (RR-CF) did not influence the growth and yield parameters.

Application of either RR-GRO or 1.5 RR-GRO in combination with  $\frac{1}{2}$ RR-CF had the same effects as RR-CF on plant height at 7 months after planting (MAP). Combining  $\frac{1}{2}$  RR-CF with 1.5 RR-GRO gave comparable effects on length of millable stalks and cane yield (TC/Ha) with RR-CF.

The nine treatments were comparable on tiller count, plant height at 5 MAP, millable stalk diameter, number of millable stalks and LKg/TC.

On sugar yield (LKg/Ha), GRO Plant Booster did not show effect at RR or 1.5RR or in combinations with RR-CF or  $\frac{1}{2}$  RR-CF.

GRO Plant Booster did not show effectiveness as supplemental fertilizer for either RR-CF or  $\frac{1}{2}$  RR-CF in sugar production.

#### **12. Efficacy of Hyfer Plus (Growth Enhancer) foliar fertilizer on growth and yield of sugarcane (FPA-Bioefficacy Test)**

B. Manlapaz and V. Serrano

The efficacy trial was planted in the experimental farm of the Sugar Regulatory Administration – Luzon Agricultural Research and Extension Center (SRA-LAREC) in Paguiruan, Floridablanca, Pampanga based on the approved Experimental Unit Permit (EUP) from the Fertilizer and Pesticide Authority (FPA).

The study determined the effects of Hyper Plus (Growth enhancer) on the growth and yield of sugarcane for purposes of product registration for label expansion for sugarcane.

Application of one half of the recommended rate of chemical fertilizer (1/2 RR-CF) in combination with Hyper Plus in full dose (RR-HP) or one half of recommended rate (1/2 RR-HP) had the same effects with the recommended rate of chemical fertilizer (RR-CF) in increasing the millable stalk length and caneyield per hectare TC/Ha.

Hyper plus foliar fertilizer is significantly effective in improving sucrose content (LKg/TC) than the recommended rate of chemical fertilizer (RR-CF). On sugar yield (LKg/Ha), application of one half recommended rate of chemical fertilizer (1/2 RR-CF) together with the Hyper plus in full (RR-HP) or 1/2 of the recommended rate of Hyper plus (1/2 RR-HP) also appeared as good as the influence of recommended rate of chemical fertilizer (RR-CF).

With the above mentioned results on the comparative performance of the application of Hyper Plus at full (RR-HP) or one half of recommended rates (1/2 RR-HP) in combination with one half of recommended rate of chemical fertilizer (1/2 RR- CF), and the comparable effects of said treatments with recommended rate of chemical fertilizer (RR-CF) on some growth and yield parameters, Hyper Plus has the potential for use as supplemental fertilizer in sugarcane production.