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TRIP REPORT

Research Contract AID/ca-G-1295

"Weed Control Systems for Representative Farms in Developing Countries"

Philippine Project

National Crop Protection Center/Oregon State University/USAID

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Covering one trip:

June 20-24, 1978 to Xavier University (XU) and to the Region X office of the Bureau of Plant Industry (BPI) both in Cagayan de Oro City, Misamis Oriental; to the Malaybalay Bangcud Matin-ao Regional Crop Protection Center (IBMRCPC), Bukidnon; and to Central Mindanao University (CMU), Musuan, Bukidnon; all in Mindanao.

A. Itinerary

Tues. June 20 lv Manila 12:20 PM, Ar. Cagayan 2:00 PM
 Wed. June 21 lv Cagayan 8:30 AM, Ar Musuan 10:30 AM
 Thurs. June 22 in CMU/IBMRCPC area
 Fri. June 23 lv Musuan 6:30 AM, Ar Cagayan 7:45 AM
 Sat. June 24 lv Cagayan 9:30 AM, Ar Manila 11:00 AM

B. Persons Met

1. Dr. Frank Aclan, XU, Chairman, Dept. of Agronomy and president Weed Sci. Soc. of Mindanao (WSSM), Cagayan de Oro
2. Mr. Floro Dalapag, XU, Weed Sci. Sect. Dept. of Agronomy and one of the coordinators of the Second Mindanao Weed Science Workshop held. May 31-June 02, Cagayan de Oro
3. Mr. Domingo De Guzman, Director of Region X BPI, Cagayan de Oro
4. Mr. Gerardo Uy, Region X BPI
5. Dr. Raymundo Fonollera, Dean College of Agric. CMU, Musuan
6. Dr. Herminio Pava, Chairman Crop Science Dept. CMU

7. Mr. Romeo Bagares, research aide for weed control experiments, CMU
8. Mr. Felipe Lopez, weed science colleague at MBMRCPC, Matin-ao and Bagontaas
9. Mr. Pabs Fernandez, weed science colleague at MBMRCPC, Matin-ao and Bagontaas
10. Mr. Ben Jarloyan, BPI Region X (Malaybalay office) agronomist, at Bagontaas site of MBMRCPC

C. Major Accomplishments/Findings

- I was not able to review progress on weed research and training with CMU colleague Mr. Lorenzo Margate since his wife was giving birth to their third child. I did observe the corn labor/capital (L/C) substitution and systems experiments in the field. These two trials were established in a new corn area containing large amounts of the grass weed Rottboellia exaltata (R. e.) ("aguingay") and also several broadleaves; Ipomoea triloba, Borreria ocymoides, Cassia _____, Commelina _____, Calapogonum _____, and a kudzu. Weeds were much more rank at this new experimental site than during the previous dry season. Weedy check plots in most cases were completely full of weeds and with a few corn plants left. Downy mildew was not as serious as expected, however, corn stands were somewhat irregular because of poor germination of the DMR (downy mildew resistant) composite-2 corn. Dr. Fonollera mentioned that not only CMU corn, but the DMR-C-2 off the university germinated poorly this wet season, partly because of a short drought. Fortunately the CMU area was spared from a devastating army worm infestation found in many nearby areas of Bukidnon. - At 27 days after seeding (DAS) it appeared that there was few differences in corn growth among the treatments and over the three fertilizer levels (except for checks) in the L/C subst. expt. The corn did not appear to be suffering more in those treatments having fewer inputs (lower levels of fertilizer and weed control) than corn with higher input levels. - In the systems expt. more differences were noted at 36 DAS. Weed competition, in general, was more severe by this time than in the L/C expt. The farmer's practice of one off-barring and one hilling up left many weeds in the row and some corn root pruning probably took place. Banded atrazine plus pendimethalin followed by a shallow hilling up looked better than the farmer's practice. The best appearing treatment (cleaner than the hand-weeded check) was pendimethalin pre-emergence followed by 2,4-D post-emergence. This may prove also to be the least expensive treatment. Here control of R. e. and broadleaves was still very good in all replications at 36 DAS. Corn intercropped with mungbean (crop competition against weeds) followed by one handweeding looked superior to this same intercrop where 0.75 kg pendimethalin/ha pre-emergence had been applied. This herbicide greatly suppressed the R. e., but allowed several broadleaves to

flourish whereas these extra weeds were removed from the former plots by handweeding. According to Dr. Manny Floresca of Cyanamid 1.0 kg a.i. pendimethalin would have given better overall weed control than just 0.75 kg. Because of somewhat poor germination weed shading by corn was not as good as could be expected at the 75 cm x 50 cm (2 plants/hill) spacing. I personally feel that higher corn populations are needed. - In general, I was pleased with the conduct of the two CMU trials. Researcher Margate, aide Bagares and laborers form a more organized effort than during the previous dry season. Weed control treatments are more timely now. - Dr. Fonollera, from his experience with the CMU corn agribusiness project, is convinced ^{unless} that the small farmer can sell to the National Grains Authority (NGA) at a guaranteed price (P0.90/kg average during dry season) instead of to a grain miller middleman and produce at least four tons per hectare (80 cavans/ha) then the added inputs such as fertilizer, herbicide and pesticide are not economically justified. According to Fonollera most small corn farmers in Bukidnon are marginal even with the minimal inputs they employ.

- Dr. Fonollera presented the lecture, "The Impacts of Government Intervention on Weed Control Technology, Income and Employment: A Case Study of Basic Grain Farms in El Salvador, Central America" on June 21 from 5-7:30 PM to about 100 CMU staff and students, mostly from Crop Science. - My personal evaluation is that his presentation was generally good, interesting, but too technical for most of the audience (including staff) to grasp. This was because he spent over 30 minutes deriving various economic formulae used in his study. Also slides were overexposed, redundant and not too well arranged; against my opinion.
- Four NCPC/OSU cooperative experiments were established at the Bagontas site of the MBMRCPC. These were stale seedbed, herbicide selectivity, L/C substitution and weed control systems all in corn. The large field for these had not been planted during the previous (dry) season and R. e. was predominant; in fact, few broadleaves were present. In stale seedbed paraquat at 0.2 kg ai/ha was sufficient to kill over 90% of R. e. seedlings in the 8-day old "flush". The animal-drawn harrow or "karan" was not as effective in destroying the weed "flush". The best treatment appeared to be 0.2 kg ai paraquat/ha tanks mixed with 1.5 kg a.i. pendimethalin/ha followed by post-emergence: 2,4-D 0.5 kg a.i./ha over the top when corn was about 25 cm tall. As at CMU the farmer's practice left many weeds in the rows and paraquat tank mixed with pendimethalin and atrazine was not as clean as paraquat plus pendimethalin followed by 2,4-D. Plots treated with paraquat plus atrazine only were almost as weedy as the weedy check plots. (This last treatment is the basis of Mr. Soy Alkuno's custom corn

weed control tractor spraying service begun at Valencia, Bukidnon this wet season. Time was not available to speak with Alkuino on this trip). - Again, as at CMU, pendimethalin at 1.5 kg a.i./ha pre followed by 2,4-D post gave the cleanest plots for the longest period. - There was not sufficient time to completely observe the L/C subst. expt. since time was spent in taking slides of stale seedbed and systems expts. and in discussions. - Stray chickens had removed some young corn plants from some herbicide selectivity plots. Missing hills were replanted with transplants (often difficult to achieve in corn). In this selectivity trial atrazine 1.0 + Dual 2.0 kg a.i./ha tank mix pre-emergence provided practically no control of R. e. (In the previous dry season Dual alone at even 3.0 kg a.i./ha pre gave zero control of R. e.). - Two full time and three part-time weed laborer were contracted to serve the expts. at the Bagontas site. A small house/office is already constructed for the two permanent laborers, who also guard the expts. which are along the main road between CMU and MBMRCPC. The experiments are fenced. With the exception of a few plots in the L/C subst. trial all handweeding appeared to have been done on time. - An MIT-2 corn variety, also somewhat resistant to downy mildew, was planted in all four trials. Downy mildewed plants had been removed twice already and numbers recorded for rows and plots. As at CMU, armyworms have not yet been a problem. - At MBMRCPC itself, last dry season's 2.4 kg a.i. atrazine/ha apparently will cause no toxic carryover effects to upland rice.

- The MBMRCPC has requested assistance from the NCPC and OSU in helping to establish a main concrete block building there (office and library) is mostly complete. Their library. I promised my help on this.
- While at XU, BPI, CMU and MBMRCPC plans were continued for the Third Mindanao Weed Science Workshop (TMWSW) to be held at CMU in August 1978. BPI Region X director De Guzman offered full support to this next shortcourse and was pleased that the second workshop held at Cagayan de Oro (under Dr. Aclan) helped train 20 participants other than the 26 at the first workshop in April at CMU. Since the bulk of trainees of these workshops are from BPI and the Bureau of Agricultural Extension (BAEx), resource persons for the Third workshop will be from MBMRCPC, BPI Region X, NCPC and industry. The participants will be those who attended the first workshop. A 3-day field course is being developed.
- I had wanted to speak with Messrs. Joel Lumagbas of CIBA-GEIGY and Manny Banaag of ICI-Warner Barnes, both of Cagayan de Oro, however since they were travelling Gerardo Uy of BPI agreed to contact them and others at MBMRCPC and CMU for TMWSW arrangements.

According to Ben Jarloyan, Lumagbas will soon initiate a corn trial to that the new downy mildew product Ridomil near our Bagontas expts. I arrived home in Manila with a profound sense of satisfaction that we are making good progress in our cooperative efforts to get weed research and training going in this important corn/sorghum region of the Philippines.