



The XLVI  
Report of The  
**BEAN IMPROVEMENT COOPERATIVE**

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## THE 46th ANNUAL REPORT OF THE BEAN IMPROVEMENT COOPERATIVE

The **Bean Improvement Cooperative (BIC)** invites all members and other interested parties to join us at the Seventeenth Biennial Meeting in Sacramento, California from October 24-30, 2003. In addition, there are associated meetings with our colleagues in the North American Pulse Improvement Association (NAPIA), Crop Germplasm Committees and the Regional W-150 Committee before and after the BIC/National Dry Bean Council (NDBC) sessions. Our local organizers are Paul Gepts, Fred Bliss, Bob Gilbertson, Chet Kurowski and Steve Temple. Please refer to the information provided by the local organizing committee in this report of the BIC, and look for other information on the BIC web site and the call for abstracts that will be mailed directly by the local organizing committee to all BIC members later this year. Please share this information with interested colleagues who would like to attend these meetings and/or join the BIC.

On behalf of the BIC, I would like to recognize Steve Antonius and George Kotch for their years of dedicated service on the BIC Coordinating Committee. I wish to welcome Ken Kmiecik and Chet Kurowski as new industry representatives who joined the coordinating committee in 2003. Our organization has always had a strong commitment from its members who have devoted their time and energy to creating a positive atmosphere of cooperation and enthusiasm for those just beginning their exciting careers and to those who have come to the end of their productive and rewarding careers with beans. Please review the call for nominations for the Frazier-Zaumeyer Distinguished Lectureship, the BIC Meritorious Service Award and the BIC Achievement Award, and forward your nominations to the Awards Committee Chairperson, Howard Schwartz by July 1, 2003. A current list of BIC Committee Membership, and those who have received BIC Awards throughout the history of the Bean Improvement Cooperative is provided in the 2003 issue of the BIC to assist you in nominating colleagues for these awards.

In 2001, Dr. Dermot Coyne was the first recipient of the **Frazier-Zaumeyer Distinguished Lectureship**. The purpose of the Lectureship is to honor a distinguished colleague and invite the award recipient to deliver the keynote opening address at the biennial BIC meeting. The selected individual should have made a significant contribution to bean research over the previous 5-10 year (or longer) period. In addition the recipient would provide a short review (maximum 6 pages) for publication in the BIC report and be featured on the BIC web site. The Lectureship would be distinct from the other BIC Achievement and Meritorious Service Awards and holders of these awards are not excluded from being awarded the Frazier-Zaumeyer Distinguished Lectureship. The Lectureship recognizes the original BIC founder members, Dr. 'Tex' Frazier, distinguished bean breeder and Dr. Bill Zaumeyer an equally distinguished bean pathologist. The Awards Committee in agreement with the BIC President and the Local Meeting Committee Chair will choose the successful recipient of the Lectureship in 2003. The Lectureship will be awarded at the meeting in Sacramento and nominations are requested from the membership. Since the first session of the BIC meeting in Sacramento will focus on the topic of germplasm in recognition of the achievements of Dr. George Freytag and the publication of the monograph: *Taxonomy, Distribution, and Ecology of the Genus Phaseolus (Leguminosae-Papilionoideae)* in North America, Mexico and Central America, the awards committee would prefer to receive nominations of individuals for the Frazier-Zaumeyer Distinguished Lectureship with expertise in the general areas of germplasm collection, utilization and enhancement.

Please bookmark and access the BIC web page [www.css.msu.edu/bic](http://www.css.msu.edu/bic) for current BIC information. In this issue, the BIC continues to publish annually, short review articles on a topic of current interest to members. The mini-reviews will be limited to six (6) pages and are designed to be more expansive, and address a topic of current interest in bean improvement. Members are asked to submit review topics for consideration. In the 2003 edition Dr. M.A. Pastor Corrales summarizes information on 41 disease resistant dry bean germplasm releases from USDA-ARS and State Experimental Stations in Michigan, Nebraska and North Dakota. **Dr. James D. Kelly, BIC President**

## 2003 BIC/NAPIA MEETINGS

### SACRAMENTO, CALIFORNIA

The BIC/NAPIA biennial meeting and associated meetings will be held Oct. 24-30, 2003 at the Embassy Suites Hotel in downtown Sacramento. This hotel is a brand new hotel opened in 2002 and is well located near the major attractions of downtown Sacramento, including Old Sacramento with its eateries and bars, the State Railroad Museum, the Wells Fargo Museum, the Downtown Plaza Mall, etc. It is within walking distance from the State Capitol and Sutter's Fort. For more information about Sacramento, go to <http://www.sacramentocvb.org/>.

The Embassy Suites Hotel (<http://www.embassysuites.com/en/es/hotels/index.jhtml;jsessionid=4FRRS30FK5TDDJ31AOR2K3Q?ctvhocn=SACESES>) has many amenities including complimentary airport transportation, daily newspaper, indoor pool, whirlpool, sauna and fitness center. The Hotel is holding a block of rooms for this conference. The rate of \$ 124.00 includes a free breakfast cooked to order and a nightly two-hour beverage reception (not included are a 12% room tax and an assessment fee of \$ 1.50 per night). **Please make reservations directly with the hotel at 1-800-EMBASSY. Be sure to mention that you are attending the "UC Davis BIC-NAPIA" meeting to get the special rate and credit the meeting so that we can get lower meeting room rates.** Reservations have to be made before October 1, 2003. After this date, the rooms will return to the hotel and rates will be substantially higher.

Registration information, fees, and final meeting agenda will be made available to members and other interested individuals in later mailings. If individuals or groups are interested in helping sponsor coffee breaks, publication costs associated with printing the Abstracts and Proceedings, and/or awards for outstanding student presentations, please contact the BIC president or Dr. R. Gilbertson of the local organizing committee (phone: +1-530-752-3163; email: [rgilbertson@ucdavis.edu](mailto:rgilbertson@ucdavis.edu)). Other members of the local organizing committee are: Paul Gepts (phone: +1-530-752-7743; fax: +1-530-752-4361; email: [pgepts@ucdavis.edu](mailto:pgepts@ucdavis.edu)); Fred Bliss (phone: +1-530-666-0931; email: [Fred.Bliss@seminis.com](mailto:Fred.Bliss@seminis.com)); Chet Kurowski (email: [C.Kurowski@harrismoran.com](mailto:C.Kurowski@harrismoran.com)); and Steve Temple (phone: +1-530-752-8216; email: [srtemple@ucdavis.edu](mailto:srtemple@ucdavis.edu)).

### First Call for Papers for the BIC

This is the first call to alert authors who desire to present oral or poster papers at the 2003 Biennial Meeting of the BIC and associated meetings. The deadline for receiving abstracts is **Friday August 15, 2003**. Abstract received after the August 15 deadline may be placed in the poster sessions if the oral sessions have filled up. (Authors will be notified if this placement is necessary). Details about the format of **Abstracts**, **Oral presentations** (1 only per registrant) and **Poster presentations** will be provided in forthcoming mailings, as will information on audiovisual equipment available during the meetings.

## VIRULENCE PATTERN OF COLLETOTRICHUM LINDEMUTHIANUM IN COMMON BEAN IN ECUADOR

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**Introduction:** Anthracnose, caused by *Colletotrichum lindemuthianum* (Sacc. & Magn.) Scrib. is one of the most important pathogens of common bean in Ecuador. The disease is confined to cool or moderate temperatures and high humidity. Methods of control as sanitation and chemical control are available but are not implemented by most bean growers and in addition are expensive especially for the small farmers in Ecuador. Breeding for resistance offer a good approach in order to reduce the environmental pollution and avoid the boom and bust cycle of introduced with non-durable resistance. Incorporating sources of resistance to the existing bean cultivars requires adequate knowledge of the virulence pattern of the pathogen populations. The objective of this study is to determine the virulence pattern of *Colletotrichum lindemuthianum* by using standard world differential set together with local bean cultivars from Ecuador as supplemental set.

**Materials and Methods:** In 2002, a total of 31 infected leaf samples with *C. lindemuthianum* were collected from the major bean growing area in Ecuador. Race determination work was carried out in greenhouse at the Santa Catalina Experimental Research Station. Quito, Ecuador. A set consisting of 12 international differentials (Balardin et al., 1997) supplemented with nine local cultivars from Ecuador was used in this study. Seedlings were grown in the greenhouse at average temperature of 16°C. Inoculation of primary leaves was made 14 days after planting by using a spore suspension containing  $1.2 \times 10^6$  conidias/ml of *C. lindemuthianum*. Incubation was carried out by replacing the plants in a growth chamber at 16°C and 100% of relative humidity for 48 hours. Seven days after incubation, the reaction type to anthracnose was recorded by using 1-9 scale as described by Pastor-Corrales, 1994. When the reaction type was between 4-9, an isolate was usually considered to be virulent on the differential. (Balardin, et al. 1997). Race identification on the differential set was made through the use of the binary notation proposed by Pastor-Corrales, 1994.

**Results and Discussion:** From 31 samples examined, a total of 12 group of isolates (A-L) showing different virulence pattern were identified on both international and the supplemental local cultivars (Table 1). On the international differentials, the races 0, 3, 4, 256, 260 and 1346 were detected, indicating that using the international supplemental is not adequate to differentiate between the existing virulence in Ecuador. In addition, the lack of stability of the host pathogen interaction, smallness of the race specific effects should also not be ignored. The results obtained demonstrate that the known/unkown resistance genes/factors in the differentials Cornell 49242, Widusa, Kaboon, PI 207262, Tu and G2333 are still effective in the country. The cultivar Paragachi proved to be susceptible to all isolates evaluated and probably does not carry any resistance factor (Table 1). The local cultivars were very useful in examining the virulence of *C. lindemuthianum* in Ecuador. Most of the local cultivars are land races and extensively cultivated in the country (Table 1). Therefore, a host/pathogen co-evolution appears to have been taking place among the pathogen populations in Ecuador. Therefore is highly recommended to include

the local cultivars from Ecuador to the international differential set in order to differentiate adequately between the virulence factors that exist among the populations of *C. lindemuthianum* in Ecuador. It is also worth noting that some isolates of *C. lindemuthianum* in Ecuador carry virulence to the Mesoamerican source of resistance *Co-3*, *Co-4*, *Co-6* and *co-8*, which is not expected in the Andean region (Pastor-Corrales, M. 1994). Presence of virulence to these genes might be explained by pathogen adaptation to these sources of resistance during evaluation of Mesoamerican germplasm in trials in Ecuador.

## References

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- Pastor-Corrales, M. 1994. Importancia de la diversidad y evolución de *Colletotrichum lindemuthianum* para el logro de cultivares de frijol común con resistencia duradera a la antracnosis. Pages 46-51 in: *Resistencia Duradera en Cultivos Alto Andinos*. L. Broers, ed. PREDUZA, Quito, Ecuador.

**Table 1.** Compatible (+)/incompatible (-) reaction of 12 group of isolates of *Colletotrichum lindemuthianum* on 12 standard differentials and nine local cultivars in Ecuador.

Differential s	Co genes	Binar y Value	Group of isolates												
			A	B	C	D	E	F	G	H	I	J	K	L	
Michelite	--	1	-	-	-	-	-	-	-	+	-	-	-	-	
M.D.R.K.	<i>Co-1</i>	2	-	-	-	-	-	-	-	+	-	-	-	+	
P. Marrow	<i>Co-1</i> <sup>3</sup>	4	-	-	-	-	-	-	-	-	+	-	-	+	
Cornell 49242	<i>Co-2</i>	8	-	-	-	-	-	-	-	-	-	-	-	-	
Widusa	--	16	-	-	-	-	-	-	-	-	-	-	-	-	
Kaboon	<i>Co-1</i> <sup>2</sup>	32	-	-	-	-	-	-	-	-	-	-	-	-	
Mexico 222	<i>Co-3</i>	64	-	-	-	-	-	-	-	-	-	-	-	+	
PI 207262	--	128	-	-	-	-	-	-	-	-	-	-	-	-	
To	<i>Co-4</i>	256	-	-	-	-	-	-	-	-	+	+	+	+	
Tu	<i>Co-5</i>	512	-	-	-	-	-	-	-	-	-	-	-	-	
AB136	<i>Co-6, co-8</i>	1024	-	-	-	-	-	-	-	-	-	-	-	+	
G2333	<i>Co-4</i> <sup>2</sup> , <i>Co-5</i> , <i>Co-7</i>	2048	-	-	-	-	-	-	-	-	-	-	-	-	
		<b>Race<sup>1</sup></b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>256</b>	<b>256</b>	<b>260</b>	<b>1346</b>
<b>Local cultivars</b>															
Parag			+	+	+	+	+	+	+	+	+	+	+	+	+
achi <sup>3</sup>															
C. Imbabura <sup>2</sup>			+	+	+	+	-	+	+	-	+	+	+	+	+
Cocacho <sup>2</sup>			-	-	+	+	+	+	+	+	+	+	+	+	+
Magola <sup>2</sup>			-	-	-	+	-	+	+	-	+	+	+	-	-
Je.Ma <sup>3</sup>			-	-	-	-	+	+	-	+	-	+	+	-	-
Mil Uno <sup>4</sup>			-	+	-	-	-	-	-	-	-	+	+	+	+
San Antonio <sup>2</sup>			-	-	-	+	+	-	-	-	+	-	-	-	-
G916 <sup>4</sup>			-	-	-	-	-	+	-	-	-	+	+	-	-
CAP9 <sup>4</sup>			-	+	-	-	-	-	-	-	-	+	-	-	-

**Isolates within each group** A: SCCI20, SCCI33; B: SCCI18, SCCI22, SCCI23, SCCI28; C: SCCI11; D: SCCI46; E: SCCI47, SCCI48; F: SCCI6, SCCI9, SCCI17; G: SCCI1, SCCI2, SCCI3, SCCI4, SCCI5, SCCI7, SCCI8, SCCI10, SCCI15, SCCI50, SCCI54; H: SCCI13, SCCI21; I: SCCI31, SCCI37; J: SCCI16, SCCI19; K: SCCI38

<sup>1</sup> Binary nomenclature identification (Pastor Corrales, M. 1994). <sup>2</sup> Local cultivars. <sup>3</sup> Bred cultivars. <sup>4</sup> Bred advanced lines.