EVALUATION AND TEST PRODUCTION RESULTS OF POTATO VARIETY ATLANTIC DURING 2006-2008 AT LAM DONG PROVINCE AND THE RED RIVER DELTA

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BACKGROUND

In Viet Nam, potato has been a minor winter crop with a total production area of about 35 thousand hectares per annum, 80 % being concentrated in the Red River Delta (RRD). Per capita consumption has been low and mainly as a traditional fresh vegetable. There is a great tendency, however, of diversification of food habit to cope with the modern life style emerging from the industrialization of the economy and increasing income of the people, especially among the young generation. Processed products and snacks have become more popular and convenient food items for a great majority of the working population. Potato chip (crisp) as an enjoyable snack is one among them. The emerging industry during the recent years requires increasing supply of quality potatoes for processing. Suitable varieties that satisfy quality requirements need to urgently be identified. Atlantic is a well known internationally as a standard variety for potato chip processing industry. In collaboration with PepsiCo International (Viet Nam Company), the Potato, Vegetable & Flower Research Center (PVFC) introduced several processing potato varieties and conducted a number of adaptation and production trials in Lam Dong province and the Red River Delta during 2006 -2008 period in attempt to select a suitable variety for the processing industry. Atlantic was identified as the most promising.

MATERIALS AND METHODS

Standard evaluation experiments were conducted as replicated variety trials at three or four locations each at Lam Dong province (during rainy summer 2006 and dry spring season 2007) and the RRD (spring 2007 and winter 2008). In each trial, several newly introduced varieties and local checks (PO3 for Lam Dong province and Diamant for RRD) were also included. Crop management followed the standards for each location and season.

Ten demonstration plots, with sizes from 1000 m2 to 2 ha, were conducted during spring of 2007 in Lam Dong at three districts

namely Dalat, Don Duong and Duc Trong. After temporary approval by the Ministry of Agriculture & Rural Development, test production was carried out on over 60 ha in Lam Dong during 2007 and winter season in the RRD.

RESULTS AND DISCUSSION

Results obtained indicated that Atlantic is well adapted to the growing conditions in both Lam Dong province and the Red River Delta, the main potato production regions of the country having high yield potential and excellent processing qualities. During Summer 2006, tuber yields from trials ranged

from 24-35 tons/ha in Duc Trong and Don Dzuong (800 - 900 m above seas level - asl), respectively. During the Spring season 2007, yields range from 20 – 40 tons/ha at different locations (Dalat -1500 m asl, Duc Trong and Don Dzuong). An average yield over all locations (10 ha in total) of 28.55 tons/ha, 44% high than the regional average, was obtained for the Spring crop indicating the high yield potential of the variety.

For all harvests, tuber dry matter content was high ranging from 21-23 % that well suits the quality requirement of the processing industry. Quality tests indicated that Atlantic holds excellent processing quality when grown under the local conditions. Large scale test production during 2008 encountered unusual cold and wet weather conditions which favoured high late blight infestation creating severe disease epidemic in all three districts. Under such conditions, a large proportion of Atlantic fields were devastated and the average yield obtained was only 15 tons/ha. Exceptional high yield of over 30 tons/ha were obtained, however, where ever the disease was escaped and the crop was well managed.

The variety trials conducted in the RRD during the late growing season of Spring 2007 did not provide convincing results. However, evaluation experiments and test production plots during the winter season 2008 all gave high yields of 23-25 tons/ha with tuber dry matter content exceeding 21%. The results indicated that Atlantic is promising as a new processing variety for production in the area.

With the results obtained from variety trials and test production plots, growers appreciate Atlantic for its high yield potential, fast tuber bulking, early maturity and good tuber appearance. They all hold the expectation to join potato production for supply to the emerging processing industry.

CONCLUSIONS

The variety Atlantic is well adapted to the growing conditions of the RRD and different elevations of Lam Dong province. The variety has the appreciable agronomic characteristics of high tuber yield potential, early maturity and excellent processing qualities such as uniform round tubers with shallow eyes, high dry matter content and low reducing sugars that give perfect chips with the classic appearance and taste. Under the conditions of Lam Dong province, the main weakness of the variety is high susceptibility to late blight which may cause severe epidemic under conducive cold and wet weather. Therefore, effort should be made for controlling the disease under such conditions.

AREA OF APPLICATION

The Ministry of Agriculture and Rural Development has officially recognized and approved Atlantic a new potato variety for production country wide in last September 2008.

Figre 1. Atlantic with tuber yield of 35 tons/ha at Xuan Tho commune, Da Lat, during Spring

Table 1. Tuber yield and dry matter content of four potato varieties evaluated at three locations in the Red River Delta during the winter season 2007.

	Variety	Tuber yield (ton/ha)			% dry matter		
		Gia Loc (HD)	Quang Phuc (HP)	Trong quan (TB)	Gia Loc (HD)	Quang Phuc (HP)	Trong quan (TB)
1	Fl 1867	20.75b	22.94b	23.25b	21.5a	21.6a	21.4a
2	Atlantic	23.56a	24.50a	25.75a	21.6a	21.8a	21.3a
3	PO3	18.87b	18.94c	20.37c	19.1c	18.3c	18.1c
4	Diamant	19.25b	19.44c	19.75c	20.8b	20.6b	19.6b
CV (%)		*6,7*	*4.3*	*3.8*	*9.3*	*5.5*	*5.1*

Note: HD = Hai Duong, HP = Hai Phong, TB = Thai Binh

Table 2. Tuber yield and yield components of three varieties evaluated during the spring season 2007 at wards 8 and 12, Dalat.

Variety	Tubers per plant	Tuber weight / plant (g)	Tuber yield (tons/ha)	% marketable tubers	% dry matter
Ward 8					
Atlantic 1	7.4	830ab	30.16ab	85.1	22.0
Atlantic 5	7.8	910a	36.60a	85.0	22.0
PO3	13.5	710b	28.50b	80.3	21.5
FL1867	11.4	670c	26.7c	80.1	23.4
CV%	-	13.02	11.13	-	-
Ward 12					
Atlantic 1	8.2	560b	24.6c	80.5	22.5
Atlantic 5	9.1	626b	27.5b	78.7	22.0
PO3	14.3	842a	33.1a	79.5	21.3
Fl 1867	10.5	573b	25.2bc	74.9	23.4
CV%	-	11.27	11.26	-	-

Note: Atlantic 1 = using generation (G1) small round seed locally propagated; Atlantic 5= using imported generation 5 (G5) seed tubers of larger sizes.