Full Length Research Paper

Market trend in the agribusiness sector of hybrid maize seed in Paraná State, Brazil

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Nowadays maize hybrid seed companies use marketing tools to achieve their goals on the target markets in order to stand up to competition, meet consumers’ demands, and ensure the market share. The objective of this study was to identify and rank the variables consumers consider most in the product purchase decision and to survey technical and behavioral aspects to create actions and strategies for the companies of the sector. For this purpose, surveys were conducted with producers of the region of Mauá da Serra (Paraná State) based on the four Ps of the marketing mix (product, promotion, price, and place). In the product mix the factors grain yield, performance in the previous year and recommendations of research institutions influence consumers most in the buying decision. Financing is the preferred form of payment for seeds, and special offers have more influence on the buying decision than the price itself. The months of May, June and July are preferred for seed purchase. The consumers use different media channels to obtain information about the product but what influences producers most are lectures and field days. Companies that apply marketing strategies ensure competitiveness and consumer fidelity.

Key words: Aimed market, marketing-mix, seed companies, strategies, Zea mays.

INTRODUCTION

Today, Brazil is the third-greatest maize producer, after the Unites States and China. In the 2013/2014 growing season, maize was planted on 15.01 million hectares with a total production of 75.465 million tons of grains (32.636 in the 1st and 42.829 in the 2nd growing season, respectively). Paraná produced 15.775 million tons of grains (5.624 in the 1st and 10.151 in the second 2nd growing season), which corresponds to 20.9% of the Brazilian production, confirming the leading position of the state as largest producer of maize in Brazil (CONAB, 2014). The interest for high technology seeds, namely in the market of hybrid seed, is on the rise. In the growing season 2013/2014, there was a predominance of simple hybrids (56.15%). The triple hybrid (18.61%), double hybrids (13.56%) and variety (11.68%) complement the options market (EMBRAPA, 2014). Since the growing...
season 2005, there has been an increasing in the availability of simple hybrids on the market. In recent years, this type of cultivar is more than 50% of the available seeds (Cruz et al., 2014). This expresses a trend in the Brazilian agriculture and a growing demand for enhanced production systems.

Seed companies in Brazil have attained an excellent level of technological development in the field of seed production. The increased use of improved seeds resulted in the growth and diversification of seed production, provided mainly by the evolution of plant breeding, the use of biotechnology and the incorporation of new technologies to the seed production process (Foedermayr and Diamantopoulos, 2008). However, only this factor is no longer a competitive differential that would ensure a company’s competitiveness and survival on the market (Spielman et al., 2014). Companies must therefore be capable of identifying their advantages and disadvantages. For this purpose, specific activities that give a competitive edge need to be identified (Mawehe, 2008). Competitors must be different enough to have at least one unique advantage. This virtue can be expressed in a different price of sale, functions, localization, or even in the idea the client has of the product and the distributor (Porter, 1996; Henderson, 1998).

In the particular situation of this study: \( n = \sigma^2 \cdot p \cdot q \cdot N / E^2 + \sigma^2 \cdot p \cdot q \)

Where: \( n = \) sample size; \( \sigma^2 = \) determined confidence level, in number of deviations (sigmas); \( p = \) proportion of the surveyed feature in the whole-sample, in percentage; \( q = 100 - p \) (proportion of the whole-sample that does not have the surveyed feature, in percentage); \( N = \) population size; \( E^2 = \) allowable error of estimation.

The data were organized and analyzed using descriptive statistical methods, as proposed by Girardi (2002). The analysis had the objective of organizing the data in a way that would help find answers to the problem proposed in the investigation.

**RESULTS AND DISCUSSION**

**The producers’ profile**

The maize producers in the study group were young;
tangible and intangible attributes that can, when offered
creation of a new product. The technical and scientific expertise and financial
grow worldwide, since most companies do not have all
obtaining a differentiated product. This modality tends to
aim is always pursue specific solutions, aimed at
breeders, mainly holders' biotechnology, private seed
were released of which 422 (90.37%) cultivars are
In the growing season 2013/2014, 467 maize cultivars
interviewed had completed a college degree. To the
50% 31 to 40 years old) and the other 20% were between
80% were 20 to 40 years old (30% were 21 to 30 and
and disease resistance.

Product
In the growing season 2013/2014, 467 maize cultivars
may be reflection of technological partnerships between
breeders, mainly holders' biotechnology, private seed
to obtaining a differentiated product. This modality tends to
grow worldwide, since most companies do not have all
the technical and scientific expertise and financial
capacity required for the development all stages of the
creation of a new product.

The seed product can be defined as a complex of
tangible and intangible attributes that can, when offered
on the market, satisfy the desire or need of the farmer
clients (Acosta et al., 2002a). When producing
commodities or related products, a larger number of
clients can be attracted by a differentiation of the final
product and aggregation of values and association of
services that make the product more attractive and
competitive than the competitor's (Wilkinson, 1995). One
of the strategies adopted by companies whose
competitors offer the same benefits, product quality and
price, is to provide a product of differentiated packaging,
of appealing appearance and convenient handling. In
relation to the seed product, 100% of the producers
prefer cardboard wrapping (Table 1). The farmers' preference for cardboard packaging must be associated
to the ease of use and convenience this wrapping
provides; besides, it offers greater safety in the
manipulation of these frequently fungicide-treated seeds
on the field besides being readily disposable and
environment-friendly.

With regard to the seed quality - in contrast to the study
of Peske et al. (1991), who concluded that seeds were
chosen and bought mainly for a high germination rate - in
this study the farmers cited vigor most often (26%)
(Figure 2) as responsible for quality. Germination and
seed size ranked second with 17%, followed by the
developing company, variety mixture and origin with 10%
each. Half of the interviewees stated that there are
problems with germination and low vigor of the seed
available on the market.

To purchase seed for planting, 50% of the interviewed
farmers did not relate the choice of the seed to the brand.
The majority (70%) considered the performance of the
variety in the previous year as an influence on the seed
choice, as well as yield (95%), seed size (60%) and cycle
(90%). They preferred early and semi-early varieties and fungicide- treated seeds (70%) and 100% of the
interviewees considered resistance to pests and diseases
fundamental for choosing a cultivar. The increase of the
area where maize is planted in the 2nd growing season
has increased the demand for traits such as earliness
disease resistance.

Of the services provided, recommendations of the
technical assistance staff also have an expressive mean
influence (65%) (Figure 3) on the choice of the cultivar,
compared with the recommendation of research
institutions (80%). Half of the farmers interviewed were
unsatisfied with the technical assistance provided by the
companies. They describe a lack of adequate technical
information about seeds, besides disaffection with the
reception of customer complaints. The use of these
strategies of orientation and service to farmers is still far
from ideal and must be improved if the companies of this
sector are to obtain customer satisfaction and fidelization.

Price
Seeds can be considered one of the most important
investments in the production systems that involve
commercial crops (Jaffee and Srivastava, 1992). More
than just a mere raw material, seed is a carrier of the
technology of the cultivar, a highly effective technologic
vector, so this technology used in the seed development
is included in the price (Acosta et al., 2002b).

With respect to the seed price charged by the
companies, 80% of the farmers claim that prices are high.
Maize prices hit average of the last three harvests the
amount of $9.0 per kilo of seed simple hybrid (ABRATES,
2014). These farmers mainly take the price of commercial
sacks/ha and the ratio sacks of grain to sacks of seed as
basis for the price comparison of maize seed. One of the
price strategies adopted by companies is the practice of a
competitive price, that is, the product is sold at a lower
Table 1. Degree of agreement according to the marketing composite in percentage.

<table>
<thead>
<tr>
<th>Product</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The trademark is a relevant factor when buying seed.</td>
<td>40</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>There are constantly problems with maize seed germination.</td>
<td>38</td>
<td>56</td>
<td>6</td>
</tr>
<tr>
<td>Yield is not an important factor when choosing the maize cultivar.</td>
<td>0</td>
<td>5</td>
<td>95</td>
</tr>
<tr>
<td>There are no problems with low vigor in maize seed.</td>
<td>0</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>The cycle is an important factor in the choice of the maize cultivar.</td>
<td>90</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>There is not enough adequate technical information on maize seed.</td>
<td>20</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>The performance in the previous year is not relevant when choosing the maize cultivar to be planted.</td>
<td>10</td>
<td>20</td>
<td>70</td>
</tr>
<tr>
<td>Technical assistance staff assigned to maize plantations does not seem well prepared.</td>
<td>30</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Seed size has no influence on which maize cultivar is chosen.</td>
<td>10</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>There are no problems of variety mixture in maize seed.</td>
<td>40</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>Maize seed must be fungicide-treated.</td>
<td>90</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>The response to customer complaints is effective.</td>
<td>20</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>Research-based recommendations (Embrapa, IAPAR, others) have an influence on the choice of the maize cultivar to be planted.</td>
<td>80</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Resistance to pests and diseases influences the choice of the maize cultivar.</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Recommendations of the technical assistance staff do not influence the choice of the maize cultivar to be planted.</td>
<td>20</td>
<td>15</td>
<td>65</td>
</tr>
</tbody>
</table>

Price

| The price is an important factor at buying maize seed.                  | 50  | 40  | 10  |
| The price of maize seed is not high.                                   | 0   | 20  | 80  |
| Discounts are important factors at the moment of purchase of maize seed. | 80  | 20  | 0   |

Point of distribution

| The service of technical assistance is not very important when deciding on the point of sale of maize seed. | 0   | 30  | 70  |
| Maize seed is delivered within the specified period.                    | 40  | 60  | 0   |
| The maize cultivars ordered are not the ones that are actually delivered. | 0   | 45  | 55  |
| Maize seed must be delivered to the doorstep.                           | 50  | 30  | 20  |

Promotion

| Maize seed vendors are generally ill-prepared professionals.           | 30  | 40  | 30  |
| The material sales campaigns do not seem to be a good opportunity for buying maize seed. | 40  | 50  | 10  |
| The performance of other producers has no influence on the choice of the maize cultivar. | 0   | 50  | 50  |
| Advertising in radio, television, newspaper, leaflets or other material of publicity do not seem to affect the choice of the maize seed cultivar for planting. | 70  | 30  | 0   |
| Lectures have an influence on which maize cultivar is chosen.          | 80  | 20  | 0   |
| Observations on field days have no influence on the choice of the maize cultivar. | 0   | 20  | 80  |

(1) Agree, (2) agree partially and (3) disagree.
per cent

Figure 2. Technical characteristics in maize seed producers consider important.

price than the competitor’s. This strategy is normally successful when products are basically the same and achieve a high sales volume at low costs. An adoption of this strategy by seed companies is not always recommendable since only 50% of the farmers consider the price in the seed choice whereas 80% of the interviewed assume a sales discount as relevant. This can be used by the companies as a great attraction to make seed purchase appealing for clients.

With regard to the form of payment, 78% of the sample group prefers to pay the seeds on an installment plan versus only 22% who prefer a single payment. In Brazil, rural credit is provided by credit cooperatives and by the commercial banks. In general, the interest rate charged on the loans ranges from 1% to 14% per annum and the payment term varies according to the funding source, the purpose and the production plan submitted. In spite of boosting sales, this is an expensive strategy for the retailer who has a large quantity of outstanding payments, while the opportunity of reinvestment in any other investment type is lost. For the producer on the other hand, the forms of payment, as well the lack of term of repayment and high interest rates can complicate and even cause the abandonment of the purchase process (Teixeira et al., 2004). Maize seed clients are concerned about the price, although it is not the central factor, since the form of payment and the discounts play an important role as well.

Point of distribution

Distribution is the movement of the product from the point of production to the final consumer and is related with distribution channels, number of sales outlets, range of products, location, stock and transport. Cooperatives sell 60% of all seed, compared with other stores. Seed purchase is most concentrated in the months of May, June and July (20%, 40% and 13%, respectively). This information is useful for companies since seed sales campaigns can be intensified in this period. Seventy percent of the interviewed farmers mention that the technical assistance staff has a great influence on the choice of the place of purchase. Sixty percent of farmers interviewed consider that the maize seed is delivered within the specified period. Moreover, almost 50% of the farmers state that the companies are not prepared to attend purchase orders properly; in 45% of the cases they buy a certain variety but receive another, demonstrating disaffection of the producer with this service.

Promotion

The promotion of a product is an important component for setting up and developing the promotional compound and can be defined as the process of company-client communication (Acosta et al., 2002a). Promotion strategies are determined according to a company’s objectives and the most adequate tools to achieve these objectives are chosen. As much as on the product itself, the focus must be on the communication process, namely advertisement, sales promotion, publicity and personal sales (Boas et al., 2004).

In relation to the promotion of the product, 32% of the interviewees have unrestricted access to newspapers, 28% to TV, 22% to magazines and 13% to internet. According to Dias (1993), advertisement is one of the strongest weapons to stimulate the product-market link, since it is one of the main factors for formation of the product sales volume at the point of sales. One must however take some aspects into account: the outreach of an advertisement, that is, the percentage of the target market that is influenced by advertising; the frequency,
that is, the number of times a person is reached by the message; and the appeal of the message - it must spark interest in the product, creating the desire and finally the action of buying. This kind of promotion is therefore an area seed companies can also invest in to increase sales.

Among the producers interviewed 36% take information of technical assistants into consideration while only 18% consider the opinion of researchers for the seed choice. Only 14% of the farmers consider the opinion of seed sellers and another 14% the opinion of other producers. For the seed choice the interviewed obtained information on the cultivars in equal shares from technical bulletins, technical magazines and informative leaflets (33%). The participation of maize producers in technical events is quite high (72%) and can be further exploited according to the potential of preference, mainly lectures (40%) and field days (32%) (Figure 4). Eighty percent of the interviewees agreed that field days and lectures have an influence on the seed choice. According to Peske et al. (1991), these types of events were the main means used to promote cultivars and the company’s image.

**Conclusion**

The surveyed farmer is demanding with respect to customer liaison and support. Based on this observation, technical assistance is a strong strategy to achieve and consolidate a market share and form a public opinion about the company trademark. Besides representing a diagnostic instrument for the inclusion of new products and services, the technical assistance staff is assigned to explain the producers that the all-in price includes the technology required for the different production systems, in each growing season. Brazil has two seasons for maize production. First-crop maize is planted in September and is harvested in March. Production largely serves the domestic feed market. Second-crop corn is planted in January after the early-season soybean harvest. Production from the second corn crop is destined for the export market. Considering that among the interviewees, the main way of seed purchase is through the cooperative and since farmers prioritize an individual customer service, technical assistance may be the most powerful tool of sales boosting and product publicity. This is however only possible, if the cooperative invests in the qualification and training of the technical staff and provides the client with all technical support of the differentiated high quality service he considers important and differential for seed purchase.

A company can find out what clients really appreciate and try to find means to understand and provide these "values". Normally, technical characteristics are differentials if the product is exclusive in a point esteemed by the client. Services rendered, together with the product, usually give rise to the so-called amplified product. We can find a number of forms of establishing an esteemed differential through these services, in other words, a real differential.

**Conflict of Interest**

The author(s) have not declared any conflict of interest.

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Jaffee S, Srivastava J (1992). Seed system development: the


