RUSSIAN MARKET OF LATE BLIGHT FUNGICIDES: ADVICES TO POTATO GROWERS

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In 2010 the Russian market of late blight fungicides included 15 preparations.

The total efficiency of a fungicide, used to protect potato, is determined by: (1) leaf, (2) new growth, (3) stem, (4) tuber protection efficiency, and (5) resistance to rain. To compare fungicides, we used the assessment of these parameters made by the European Community of Independent Experts EU.Net.ICP (PRO Special Report, No. 12, 2008), and the results of our own studies.

Concerning each of the parameters, the efficiency of a fungicide was expressed in pluses: +++,3; ++(+),2.5; ++,2; +(+), 1.5; +, 1; and (+), 0.5. The absence of any effect or unclear effect were considered as 0. The general efficiency of a fungicide represented the sum of efficiencies, determined separately for each parameter and divided into the number of parameters. The calculated value of a general efficiency of each fungicide was compared with its cost (the cost of protection of 1 hectare of a potato field).

Fig. 1 shows that the fungicides, offered on the Russian market, significantly vary in both their cost and efficiency of protection; it also demonstrates that the cost of a fungicide often does not correspond to its efficiency.

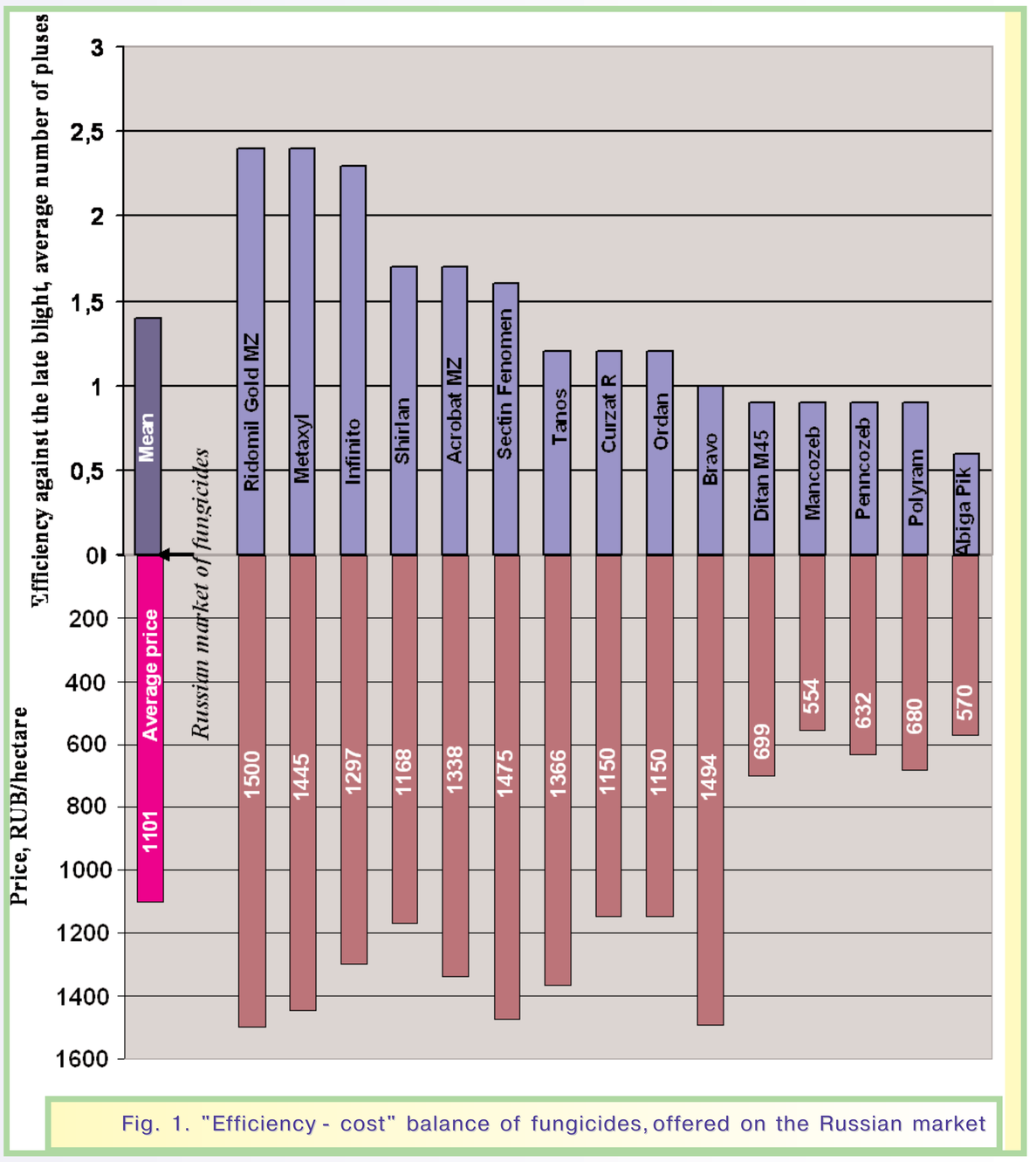

Fig. 1. "Efficiency - cost" balance of fungicides, offered on the Russian market

The consumer qualities of a fungicide are determined mainly by its "cost-efficiency" balance. The ratings of fungicides concerning their consumer qualities were assessed using a 5-score scale. To do this, we compared 15 preparations and registered the best and the worst value of each parameter, setting them as 5 and 1 score, respectively. All other compared preparations obtained intermediate scores, corresponding to their position between the leader and the outsider. To calculate the rating of a fungicide concerning each efficiency parameter, the formula (1) was used; concerning the cost of treatment of 1 hectare, the formula (2) was used

$$FR_x = 4\frac{y_x - \min(y)}{\max(y) - \min(y)} + 1 \quad (1)$$

$$FR_x = 4\frac{\max(y) - y_x}{\max(y) - \min(y)} + 1 \quad (2)$$

in both formulas FRx is the rating of the fungicide x concerning the studied parameter (in scores), y_x is a quantitative value of the studied parameter (the number of pluses for the formula (1) and the cost of treatment, rub/hectare, for the formula (2), respectively).

The calculations of fungicide ratings, performed for three stages of potato plant development are show below.

Stage I (from the shoot emergence to the time of row closing)

Table 1

Comparison of consumer qualities of fungicides applied at the stage I

Fungicide	Leaf protection		Resistance to rain		Cost of fungicide		Total score
	1*	2**	1*	2**	Cost, rub./hectare	Intermediate score	
Acrobat MZ	2.5	4	2.5	5.0	1338	1.6	3.53
Shirlan	3.0	5	2.5	5.0	1168	2.4	4.13
Bravo	2.0	3	2.5	5.0	1491	1.0	3.00
Tanos	2.0	3	2.5	5.0	1366	1.5	3.16
Sectin Fenomen	2.5	4	2.0	3.6	1475	1.1	2.90
Curzat R	2.5	4	2.0	3.6	1150	2.4	3.33
Ordan	2.5	4	2.0	3.6	1120	2.6	3.40
Dithane M45	2.0	3	2.0	2.3	699	4.4	3.23
Mancozeb	2.0	3	1.5	2.3	553	5.0	3.43
Penncozeb	2.0	3	1.5	2.3	632	4.7	3.33
Polyram	2.0	3	1.5	2.3	680	4.4	3.23
Abiga Pik	1.0	1	1.0	1.0	570	4.9	2.30

1* Efficiency, number of pluses.
2 ** Intermediate score.

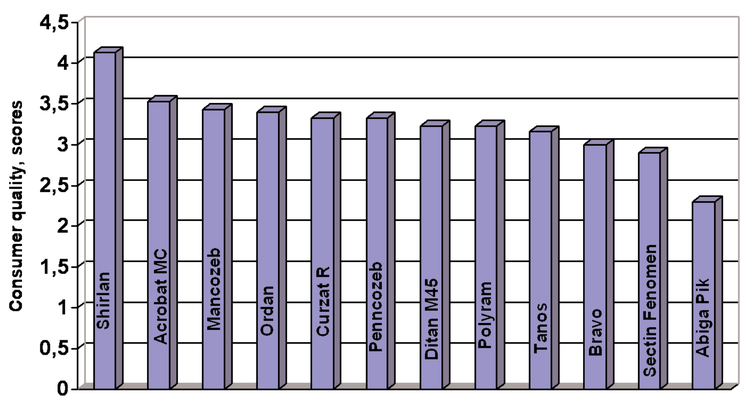

Fig. 2. Rating of fungicides according to their basic consumer qualities at the stage I

Stage II (from the time of row closing to the flowering phase)

Table 2

Comparison of consumer quality of the fungicides applied at the stage II

Fungicide	Protection of new growth		Resistance to rain		Cost of fungicide		Total score
	1*	2**	1*	2**	Cost, rub./hectare	Intermediate score	
Ridomil Gold MZ	2.0	5	3.0	5	1500	1	3.66
Methaxyl	2.0	5	3.0	5	1445	2.08	4.02
Infinito	2.0	5	2.5	1	1297	5	3.66

1* Efficiency, number of pluses.
2 ** Intermediate score.

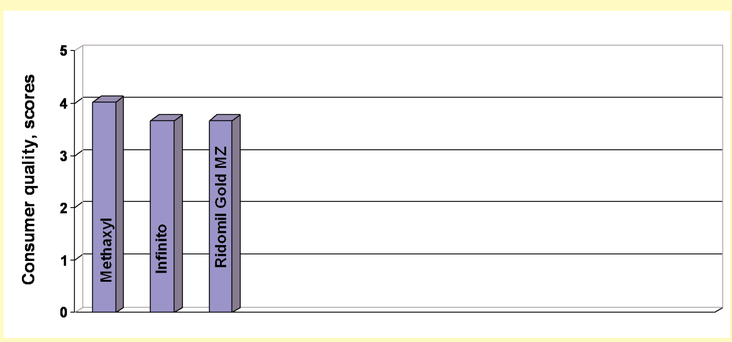

Fig.3. Rating of fungicides according to their basic consumer qualities at the stage II

Stage III (from the flowering phase to the natural haulm destruction)

Table 3

Comparison of consumer quality of the fungicides applied at the stage III

Fungicide	Tuber protection		Resistance to rain		Cost of fungicide		Total score
	1*	2**	1*	2**	Cost, rub./hectare	Intermediate score	
Infinito	3.0	5	2.5	5	1297	1.78	3.92
Acrobat MZ	2.0	3	2.5	5	1338	1.60	3.20
Shirlan	2.5	4	2.5	5	1168	2.35	3.78
Sectin Fenomen	2.0	3	2.0	2.7	1475	1	2.23
Abiga Pik	1.0	1	1.0	1	570	5	2.33

1* Efficiency, number of pluses.
2 ** Intermediate score.

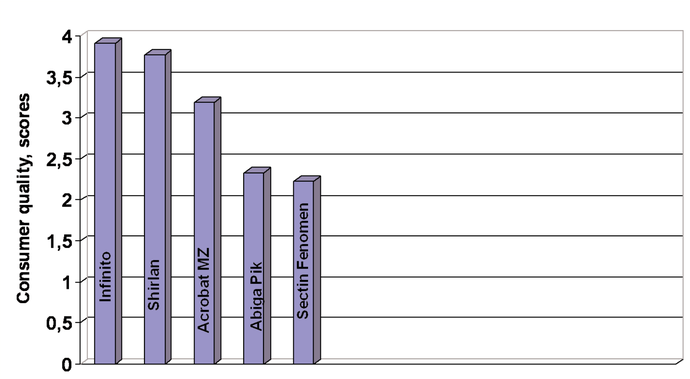

Fig. 4. Rating of fungicides according to their basic consumer qualities at the stage III

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