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ANALYSIS OF THE TOWED AGRICULTURAL MACHINERY MANUFACTURERS IN EUROPE

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Abstract

The purpose of our analysis was to gather data on suspension manufacturers and users and to determine their market shares, using the databases of major agricultural machinery exhibitions. To carry out this work, we developed a methodology to examine and analyse the databases of the four largest European agricultural machinery exhibitions. We particularly endeavoured to distinguish manufacturers and distributors of the machinery, and to eliminate duplicates. The market for agricultural trailers and machinery built on trailer superstructures is highly diverse and complex, posing serious difficulties for evaluation and statistical analysis of the data and for determination of actual sales figures.

Keywords

suspension, trailer, agricultural machinery, machinery manufacture, statistics

Introduction

Trailed machinery and transporters with various types of suspension account for a large proportion of the manufacture and sale of agricultural machinery in Europe. These trailed vehicles cover a wide functional range: agricultural trailers, tanker trailers, trailed fertilisers and manure spreaders, sprayers and fodder mixing wagons. They also have many different types of suspension: tandem, tridem, sprung, rigid, steered, etc.

About 40 companies worldwide make round balers, which come in of various constructions and sizes. Total annual sales have been typically between 30,000 and 35,000 units in recent years. Round balers have the common feature of being towed and driven by tractor. All have either a single-axle or – the versions combined with a bale wrapper – twin or tandem axle suspensions. The latter, owing to their weight and towing speed, which is maximised at up to 40–50 km/h, generally require braked axles.

There are considerably fewer companies – 13 or 14 worldwide – that make the more complicated large square balers. Europe has the greatest concentration of production, with nine manufacturers. There are about 3500–3700 large square balers sold annually worldwide.

More than 80 companies worldwide make sprayers. They are made in a wide range of constructions (suspended, liftmounted, trailed and self-propelled) and sizes. In Europe, some 55 manufactures make sprayers (field flat and axial fan, directed

nozzle, tunnel, etc.). Most of them make trailed sprayers with single and double axle suspension, with tanks ranging in size from 1000 to 12,000 litres.

Fertiliser spreaders are also made in various constructions. Most widespread in Europe are tractor-mounted spinning disc types with tank capacities of between 400 and 3000 litres. Trailed spreaders, with tank capacities of between 3500 and 10,000 litres, are used mainly on large farms and are made in much smaller quantities. [1, 2]

To our knowledge, there are no continental statistical surveys regarding the distribution of this machinery, its market and the manufacturers involved, and neither are national statistics available in every case. In an attempt to fill this gap, we put questions to the agricultural machinery manufacturers and traders of each country to find answers to our questions, but our enquiries were only partially successful. This prompted us to take a new approach, using data available on exhibitors at the four largest European agricultural exhibitions to survey the number of European makers and users of suspensions, their capacities and where possible, their market shares.

Here we present the results of systematically gathering data from each exhibitor's internet catalogue and carrying out analysis and data processing over a period of several months.

2. Material and Method**Components of the research work**

1. Target area: the countries of Europe (without CIS)
2. Product types:
 - a. Agricultural vehicles (standard trailers, tippers, trailed tankers, manure spreaders, forage transport wagons etc.)
 - b. Components by type (tridem, boogie, steerable and rigid)
3. Period:
 - a. 2014, 2015 and 2016

Countries and Exhibitions covered by the project

We included the following countries in our market research:

1. Austria
2. Belgium
3. Czech Republic
4. Denmark
5. Estonia
6. Finland

7. France
8. Netherlands
9. Poland
10. Latvia
11. Lithuania
12. Luxembourg
13. Hungary
14. Great Britain
15. Germany
16. Italy
17. Portugal
18. Spain
19. Slovenia
20. Ukraine
21. Sweden

The first stage in the analysis was to find the relevant companies that manufacture or use agricultural suspensions in each country. Subsequently, we examined the databases on agricultural exhibitions for the last three years. These exhibitions were:

- Agritechnica 2015
- Bologna/EIMA 2014

- Brno 2016
- Paris/SIMA 2015

From our experience, we know that these exhibitions cover almost all the products of agricultural machinery manufacturers. We also involved further companies in the study, mainly those in Finland, from agricultural journals.

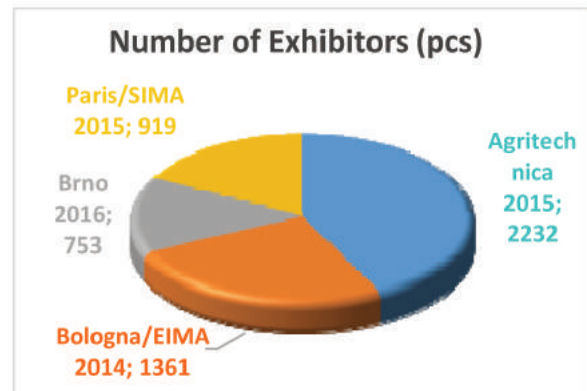


Figure 1. Numbers of companies/exhibitors at the exhibitions

Table 1. The number of companies enumerated per country and per exhibition

exhibition / country	Austria	Belgium	Czech Republic	Denmark	Estonia	Finland	France	Netherlands	Poland	Latvia
Agritechnica 2015	71	23	24	48	2	37	98	125	65	1
Bologna/EIMA 2014	18	12	3	4	0	3	51	14	10	0
Brno 2016	18	19	626	1	0	0	1	7	19	0
Paris/SIMA 2015	14	19	7	9	1	6	530	33	25	0

Table 1. Continued

Lithuania	Luxembourg	Hungary	Great Britain	Germany	Italy	Portugal	Spain	Slovenia	Ukraine	Total
6	5	9	43	1208	390	5	45	17	10	2232
0	0	1	13	57	1100	4	63	8	0	1361
0	0	20	3	24	12	0	1	0	2	753
3	6	2	18	67	129	7	33	4	6	919

Total: 5265

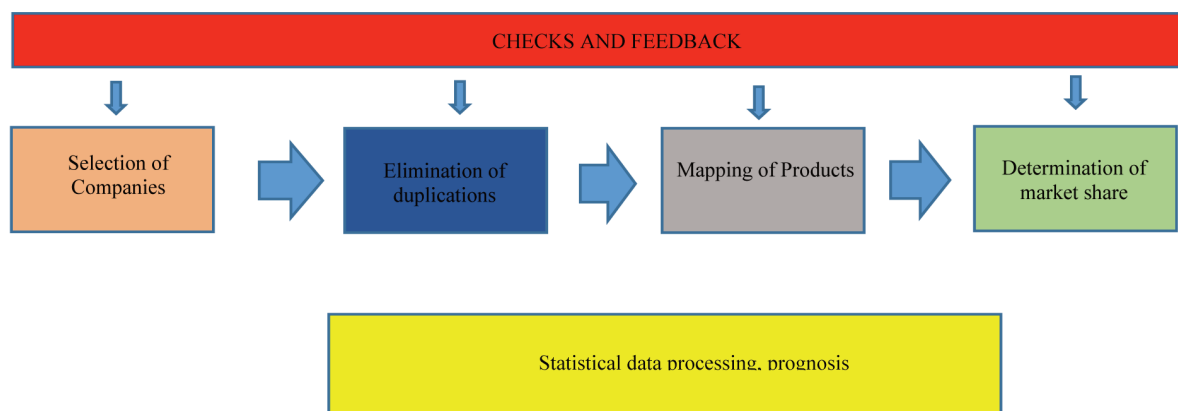


Figure 2. Method of determining relevant companies and their market shares

Table 1 shows that Agritechnica hosted the largest number of companies (2232), followed by the Bologna/EIMA exhibition (Italy). In third place was SIMA in Paris, and in fourth, Brno in the Czech Republic. These figures are distorted, however, by the large numbers of small exhibitors from the host countries. There were 1100 Italian exhibitors at EIMA, for example, and 626 Czech companies at Brno, many of the latter being sales operations with no manufacturing capacity.

Figure 1 shows the number of exhibitors on a pie chart.

Taking account of the international nature of the exhibitions and the numbers of exhibitors there, the ranking is as follows:

From international agricultural journals, we examined a further 25–30 companies, bringing the total to about 5300 companies. There were of course many repetitions among the companies enumerated corresponding to presence at more than one exhibition.

Research methods

Figure 2 shows the methodology we developed to enumerate the relevant companies and determine their market shares.

3. Results and Discussion

We grouped the enumerated companies by the countries listed in the introduction and eliminated the duplicates. A total of 513 relevant companies remained. This is the number of companies in these countries of Europe which manufacture, use and sell agricultural suspensions. The distribution of relevant companies by country is given in Table 2.

Table 2. Countries and relevant companies

Countries	Number of relevant companies (pcs)
Austria	17
Belgium	4
Czech Republic	43
Denmark	18
Estonia	1
Finland	26
France	48
Netherlands	31
Poland	19
Latvia	0
Lithuania	5
Luxembourg	0
Hungary	17
Great Britain	19
Germany	106
Italy	139
Portugal	3
Spain	10
Sweden	3
Slovenia	3
Ukraine	2

4. Results

Determination of the market shares of major manufacturers by product category

Most round baler machinery manufacturers are based in Europe, and the largest number of units are made in Germany and Italy.

The two largest manufacturers are Claas and Krone of Germany. They produce the largest range of types and models and alternate in the position of European market leader. Other large manufacturers are the Lely-Welger (German-Dutch), the CNH Agriculture (Italian), the Kuhn (French) and the John Deere (USA). Welger filed the first patent for a fixed-chamber baler and is a dynamic manufacturer and developer within the Lely Group. CNH Agriculture engages in cooperation in the manufacture of balers. Deutz-Fahr of Germany, part of the SDF Group, also makes balers. Kverneland, owned by Kubota, sells balers from its Italian Galignani baler manufacturing base under the names Kverneland, Vicon and Kubota. Most of the remaining manufacturers (Bergam, Ferraboli, Mascar, Maschio, Wollagri etc.) are Italian. See Figure 3.

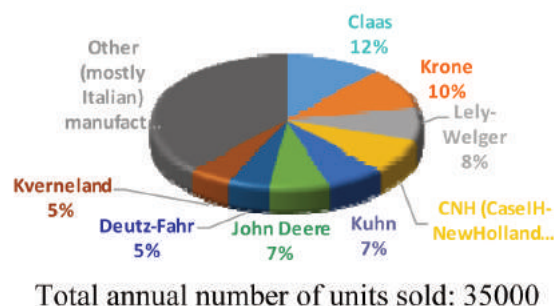


Figure 3. Market shares of round baler manufacturers

The design of large square balers is based on a machine produced by Hesston (now part of AGCO) of the USA. The two large manufacturers, Claas and Krone, dominate the market in this product group. Claas is the outright market leader, but Krone does not lag it in the range of types and models. Another major manufacturer is CNH Agriculture, which markets several models under both of its brand names, New Holland and Case IH. John Deere recently added large square balers to its product range and is rapidly developing new models. Previously, it sold large square balers made by Krone.

Massey Ferguson has been marketing these products for some time and has recently been joined by Fendt, another AGCO brand. Kuhn also holds a 5% market share. Among the other manufacturers are Deutz-Fahr and several Italian companies, including Supertino and Cicoria. See Figure 4.

Square balers are also tractor-trailed. Depending on size, balers may have single-axle suspension or twin or tandem axle braked suspension, with balloon tyres.

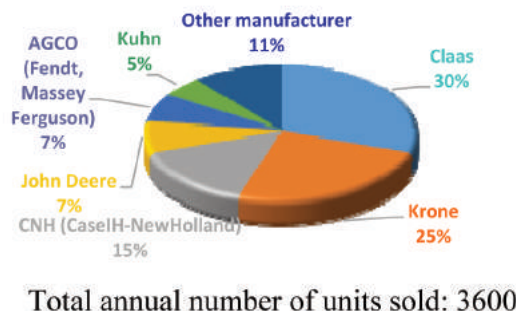


Figure 4. Market shares of square baler manufacturers

Trailed and self-propelled sprayers are dominant in agriculture outside Europe (North and South America, Australia, etc.). About 22,000 trailed field and plantation sprayers are sold each year. The most widespread among European small farms are tractor-mounted sprayers of small capacities (between 400 and 1500 litres). The features of trailed sprayers are of benefit primarily to large and commercial farms and agricultural contractors. The largest worldwide manufacturer of trailed sprayers is the French Exel Group, which owns two previously independent brands, one of which – Hardi – is the clear market leader. Other large manufacturers are Amazone, the Kubota/Kverneland Group, John Deere, the Bergam Group, Caffini, Agrio, the plantation sprayer companies SAE and Unigreen, and more recently Horsch and Lemken. Damman is strong in self-propelled sprayers, but also has a presence with trailed sprayers. See Figure 5.



Figure 5. Market shares of trailed sprayer manufacturers

In large farms outside Europe, particularly in Australia, trailed fertiliser spreaders are in the majority. About 11,000 of them are sold worldwide each year. Most typically, they have a tank of between 5000 and 8000 litres capacity and single-axle braked suspension.

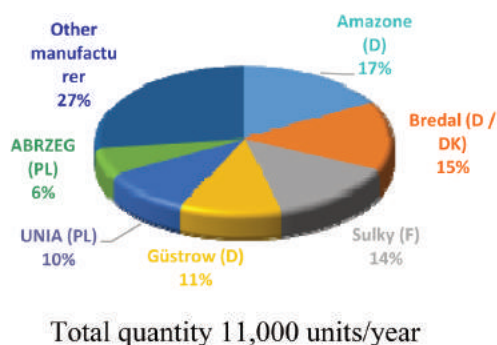


Figure 6. Market shares of trailed fertiliser spreader manufacturers

Those with larger fertiliser tanks have braked twin or tandem axles. In Europe, Amazone of Germany is the largest manufacturer, producing trailed single-axle fertiliser spreaders of capacities between 5500 and 8200 litres. Other large manufacturers are Bredal, Güstrow and the French company Sulky, although the two Polish manufacturers UNIA and ABRZEG also have good positions on European markets. See Figure 6.

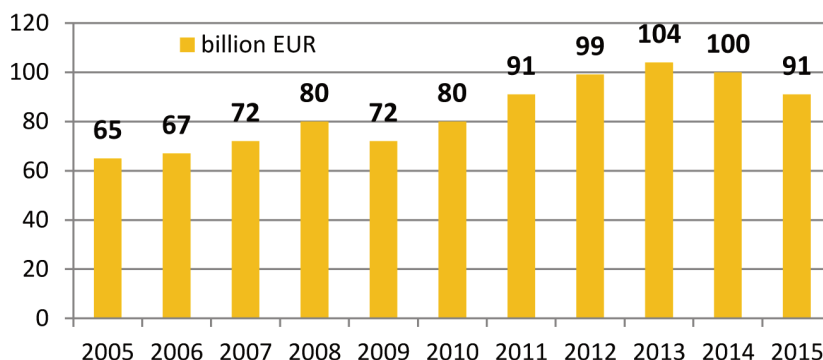


Figure 7. World agricultural machinery turnover between 2005 and 2015. [3, 4, 5]

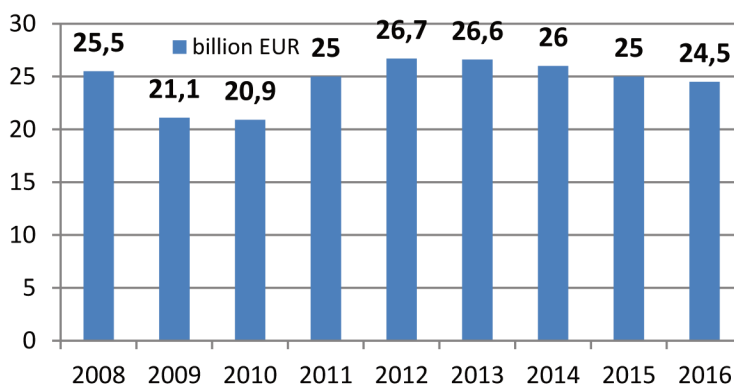


Figure 8. Agricultural machinery turnover in EU countries between 2008 and 2016. [3, 6]

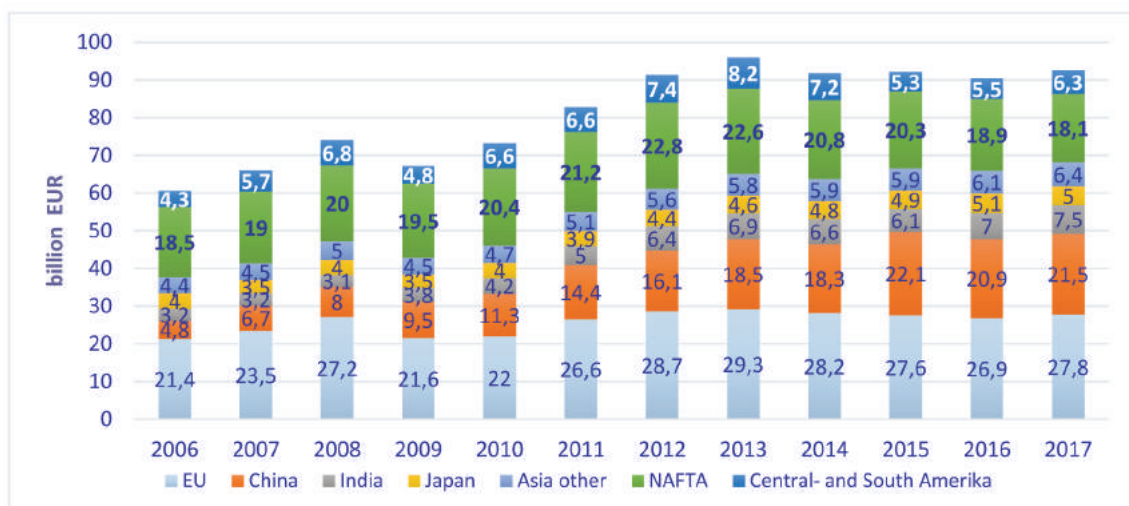


Figure 9. Agricultural machinery manufacturing volume worldwide in billion euros [7, 8]

Global and regional agriculture machinery market trends

There are cyclical variations in agricultural machinery manufacture. This means that the numbers of units of trailed agricultural vehicles increases in some periods and decreases in others [9]. Agriculture is subsidised in every country of Europe. The cycles are to some extent due to the unequal effects of subsidies, but also to the periodic overproduction, cutbacks and increased demand that arise from the laws of the market [10, 11].

Overall, the market in agricultural machinery contracted by 9% worldwide in 2015, as shown on Figure 7. The 91 billion-euro turnover exactly matches that of 2011. The recession is clearly perceptible.

There has been a steady contraction in the EU agricultural machinery market over the last two or three years. This is clear from Figure 8. In 2015, there was a decrease of 8%: the total value of agricultural machinery sales was 23.8 billion euros that year, compared with 26 billion in 2014. The peak was in the post-recession years of 2012 and 2013, when the EU agricultural machinery market swelled to 26.6 and 26.7 billion euros respectively. The figure for 2015 was the lowest for the EU in the period following the economic crisis of 2009–2010. [10, 11]

A good illustration of global trends in the agricultural machinery market is world agricultural machinery production, shown in Figure 9. Following the crisis of 2009, output grew steeply every year until 2013; it then faltered and entered a decreasing trend. There was stagnation until 2016, but preliminary figures show a slightly growing in 2017.

This global trend appears with some phase lag in countries such as Japan and the Asian countries (not including India and China). There, machinery manufacturing continuously grows. Low world price levels are currently being forecast for agricultural commodities, and it can only be hoped that the machinery manufacturing output and the agricultural machinery market will now stabilise.

5. Conclusions and Proposals

The purpose of our analysis was to gather data on suspension manufacturers and users and to determine their market shares, using the databases of major agricultural machinery exhibitions.

To carry out this work, we developed a methodology to examine and analyse the databases of the four largest European agricultural machinery exhibitions. We particularly endeavoured to distinguish manufacturers and distributors of the machinery, and to eliminate duplicates.

The figures showed that German and Italian companies dominate this sector of agricultural machinery manufacturing. More than a hundred manufacturers in these countries incorporate various suspensions into their products. France, the Czech Republic, the Netherlands, Denmark, Finland, the UK, Poland and Austria also have substantial numbers of machinery manufacturers, but most of them serve their domestic markets and have very small shares of the European market in finished products.

Of the product groups under examination, those with the highest levels of sales in terms of number of units were round balers, trailed sprayers and fertiliser spreaders. There is also a substantial market in large square balers, but rather than the number of units, it is the value of machines sold that is significant.

The market for agricultural trailers and machinery built on trailer superstructures is highly diverse and complex, posing serious difficulties for evaluation and statistical analysis of the data and for determination of actual sales figures [12, 13]. Consequently, although we achieved the aim of presenting European manufacturing for this product groups, were unable to fulfil all the objectives of our research.

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