

Residual Value Study of 4WD Tractors





This study was conducted by LECTURA and is based on data obtained through the used-machines market. LECTURA has verified the results and conclusions obtained from its study, however, the data contained in this report are for general information purposes only. The information herein does not constitute advice of any kind and is not intended to be used for investment purposes. The data contained in the report represent only predictions and do not guarantee the future development of the industry/sector. Neither LECTURA nor any of its subsidiaries or officers, shareholders, directors, employees or agents accept any responsibility or liability with respect to the use of or reliance on the information or results contained in this report.

Since 1984,

LECTURA has been redefining the concepts of digital visibility and performance in the heavy equipment industry

not only in Europe, but also in the rest of the world, by providing companies with comprehensive machinery data to support their purchase decisions.

Every month,

1,300,000
visitors

search, find, and use valuable intelligent information from our wide database of over

170,000

machinery and equipment specifications and technical details.

LECTURA Specs, our extensive database of equipment information, attracts hundreds of thousands of professional visitors every month, when researching machinery before their purchase decision. This buyers guide represents the perfect platform to reach buyers and decision makers.

Our web portal LECTURA Press provides the latest news from the heavy machinery industry, exclusive interviews with industry experts and market leaders and publishes quarterly online magazine DigiMessenger in order to always bring the most relevant information to our readers.



Content

1. INTRODUCTION	5
2. METHODOLOGY	7
3. RESULTS	10
3.1 ANALYSIS OF RESIDUAL VALUES	10
3.2 LECTURA AGRI BRANDSURVEY 2023	21
4. CONCLUSION	25

1. Introduction

Tractors are agricultural machines designed to deliver high tractive force at low speeds. Thanks to this ability, tractors are suitable for a wide range of agricultural applications such as tillage, ploughing or harrowing, but also forestry, landscaping or even construction works. Tractors also perform a lot of transportation work in combination with trailers (loading and unloading of grain and silage, loading wagon, slurry tankers) and power take-off applications with hydraulics such as baling or seeding. The biggest tractors are equipped with powerful engines rated at hundreds of horsepower in order to provide enough power for pulling heavy agricultural equipment and attachments.



Four-wheel drive (4WD) tractors offer improved traction, which reduces the risk of slipping and imbalance under heavy loads. 4WD tractors increase productivity in the fields, making them a superior long-term choice.

LECTURA Specs currently lists

13,500 models

produced by

**59
manufacturers**

in the 4WD tractor category
(as of July 2023).

This section is visited
by approximately

**300,000
industry
professionals**

every month who search for
technical specifications and data
prior decision making.

We decided to support their
research and conduct a study
with a goal to analyse the
relationship between the age
of machines and the residual
values. Our study compares
models of tractors with

**engine power
higher than
90HP**

, excluding specialty
tractors. We took into account
models and model series of the
most popular tractor
manufacturers and evaluated the
residual values development in
order to find out which brands or
models retain their value even after
several years and therefore appear
to be a good investment.

2. Methodology

2 Methodology

The research was made using offer prices analysed through the used-machines market. The sample size is within the range of hundreds of thousands data points. After the cleaning and standardising processes more than

45,000 data points

were used for the study (The exact number of datapoints for each model series is listed in the table).

This report is compiled by using data from 2015 to 2022.

Model series	Number of datapoints
Case IH	2023
Magnum	502
Maxxum and Maxxum CVX	151
Optum CVX	388
Puma and Puma CVX LWB	625
Puma and Puma CVX SWB	357
Claas	5175
Arion 400	569
Arion 500	626
Arion 600	1644
Axion 800	1652
Axion 900	684
Fendt	6241
300 Vario	555
500 Vario	139
700 Vario	1801
800 Vario	631
900 Vario	3115
John Deere	27692
6M Large Frame	402
6M Mid Frame	541
6M Short & Small Frame	290
6R Large Frame	7494
6R Mid Frame	5052
6R Small Frame	6261
6R Xtra-Large Frame (6R 230/ 6R 250)	1667
7R Series	3558
8R Series	2427
Massey Ferguson	1846
5600 and 5S series	102
6700 and 6S series	12
7700 and 7S series	1456
8700 series	229
8S series	47
New Holland	3294
T5 AutoCommand (AC) and Dynamic Command (DC)	690
T6	707
T7 HD	106
T7 LWB	989
T7 SWB	802
Sum	46271

OF 4WD TRACTORS

We aimed to analyse the relationship between the age of machines (up to 10 years) and the residual values of the machines. A residual value represents the difference between a current value and a predicted value of a machine based on a regression model. In this case, we used the residual values to assess the trend of the decline in the value of the machines as they age.

We believe the residual value analysis is a suitable approach to assess and compare machinery models from various manufacturers. The results might bring important information about trends and the development of machinery prices over time to both machine buyers and sellers.

One of the major contributions of this analysis is to compare the data on multiple levels – for example, on a level of manufacturer, model or model series.

For the analyses, multiple linear regression, GLM with regularisation specifically, was used. Multiple linear regression is a model for predicting the value of one dependent variable based on two or more independent variables. In this case, we defined the offer prices as the dependent variable. Machine age and operating hours represent independent variables. The assumption is that a tractor with a higher number of operating hours will have a different influence than a tractor with a lower number of operating hours. Also, the variable “manufacturer” was taken into account. Brands of the focus in this report were selected, as they represent key market players, considering also search volume, traffic and brand popularity on LECTURA Specs. The same criteria served for the selection of 4WD tractors as the machinery of this report’s interest.

Based on this analysis, John Deere tractors have the most stable residual values over time. Even after 10 years, the asset would be sold for the highest price (in the open market when conditions are met), compared to competitors selected for this research purposes. Therefore, to provide a broader context of market position of this brand, the report includes a sample of LECTURA

BrandSurvey – research focused on agricultural equipment manufacturers, respectively concepts such as brand satisfaction, media visibility, associations related to the brand and brand positioning.

The data for the survey were collected **from 6.3.2023 to 19.4.2023** on LECTURA Specs website. In total, **3,642 respondents** reviewed John Deere by answering a voluntary online questionnaire.

In this report, the results of the following questions are presented:

- How would you rate this brand in general?
- How would you rate this brand’s dealership network in your country?
- From your point of view, how visible is this brand in the media?
- In which type of media is the brand more visible?
- What machine type do you consider to be the best product of this brand?

Each of the mentioned questions was closed-ended – the respondents were asked to select from predefined options, except for the last question, where they could also type their own reply.

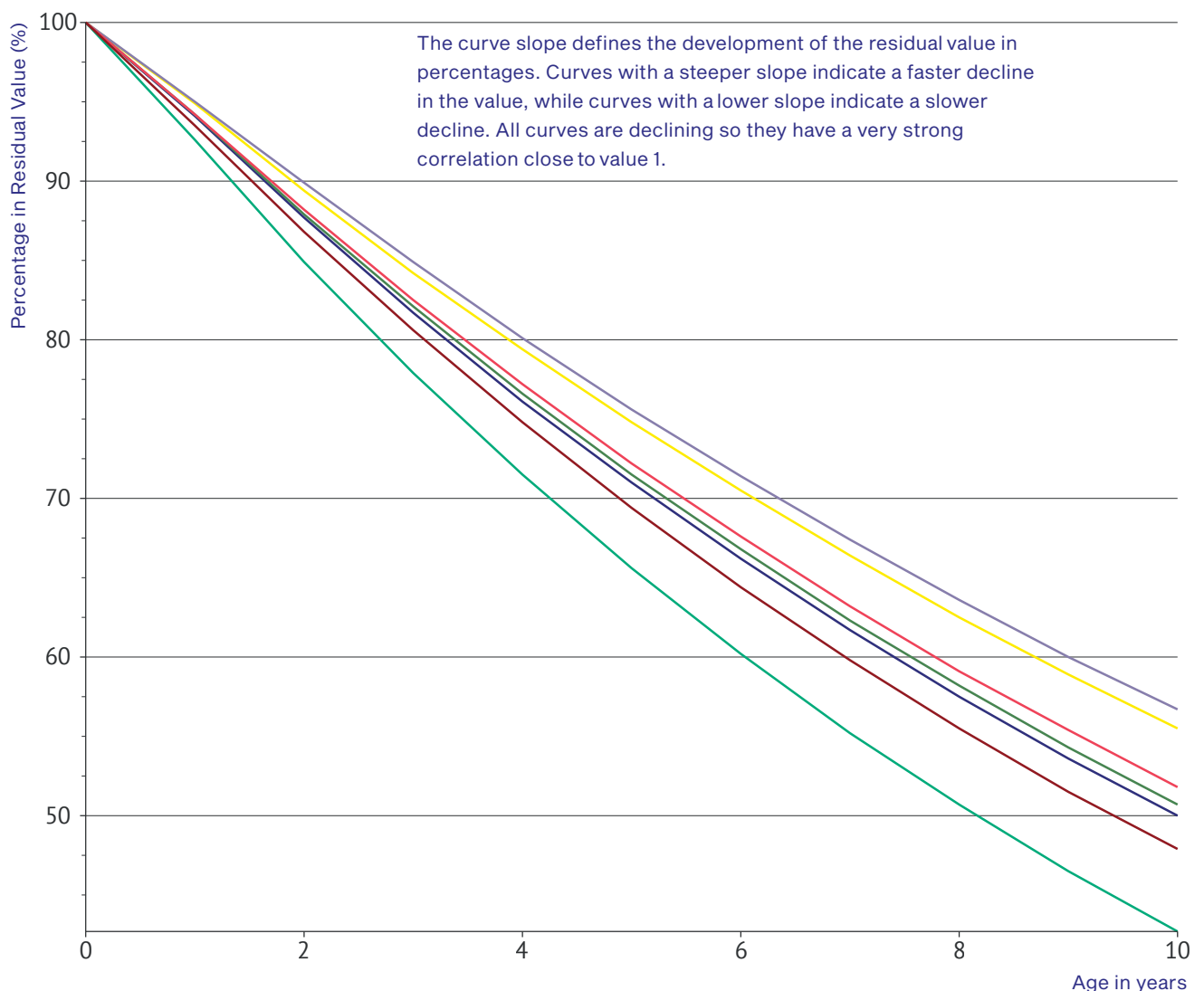


3. Results

3.1 Analysis of residual values

This chapter introduces 8 analyses of residual values development over the time. Depending on the analysis, either specific model series or all the tractors, in sum, of given manufacturers are examined.

All the results of particular analyses are visualised as regression curves. In each graph, the x-axis defines the age of the machine, the y-axis defines the Average Residual Value for Fair Market Value (FMV – determining the value of assets or transactions based on their true value in an open market where regular transactions between buyers and sellers take place, while all participants have complete information at the same time).

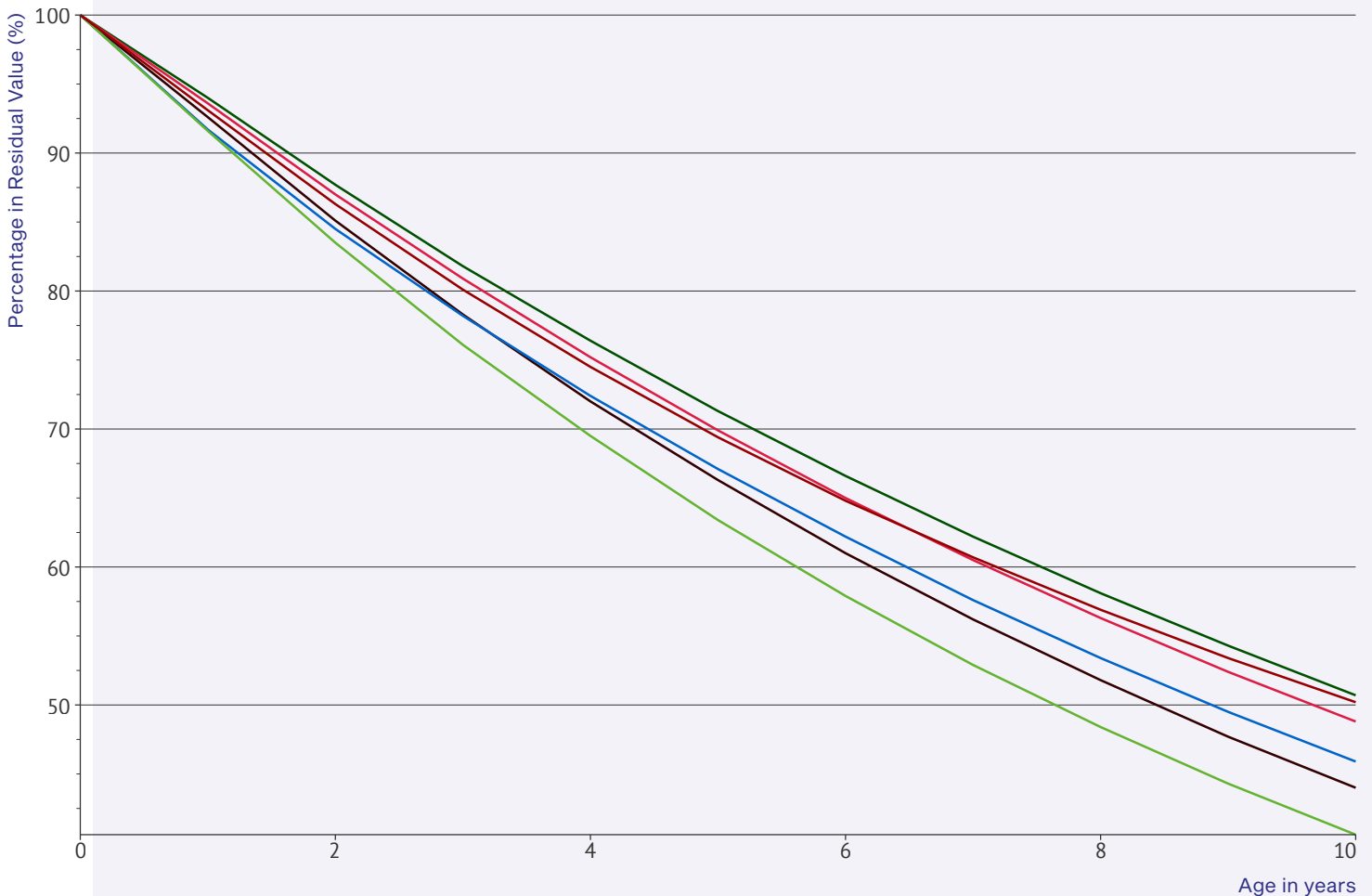


The comparison of residual values development of selected 4WD tractor manufacturers

All curves are non-growing, gradually declining based on the age of the machine. The relationship is stable and linear. The correlations are strong as their values range from 0.99 to 1.

The chart shows that John Deere has the slowest decline of residual values (low slope of residual value curves), followed by Case IH, Massey Ferguson. New Holland, Fendt and Claas, respectively. Such results

might indicate that the flatter the curves are, the better the choice might be since they maintain the highest residual value.



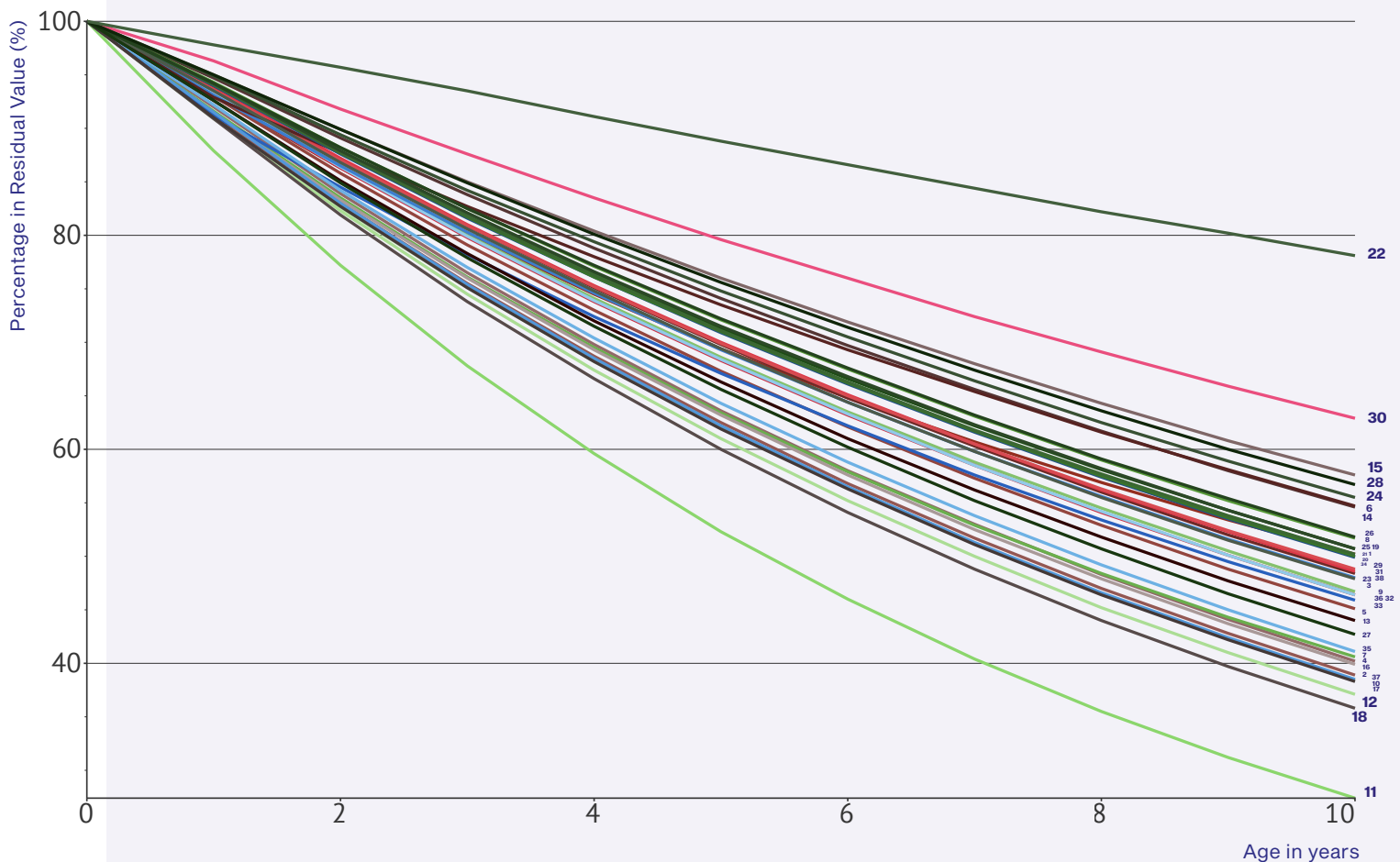
The comparison of residual values of 4WD tractor series from various manufacturers

Curves on the graph represent value lines (residual values) of selected model series from the following manufacturers: Case IH, Claas, Fendt, John Deere, Massey Ferguson, and New Holland.

Again, all the curves are non-growing and gradually decline, as does the age of the machine. The correlations are strong. The higher the age of the machines, the higher the variance of the value lines.



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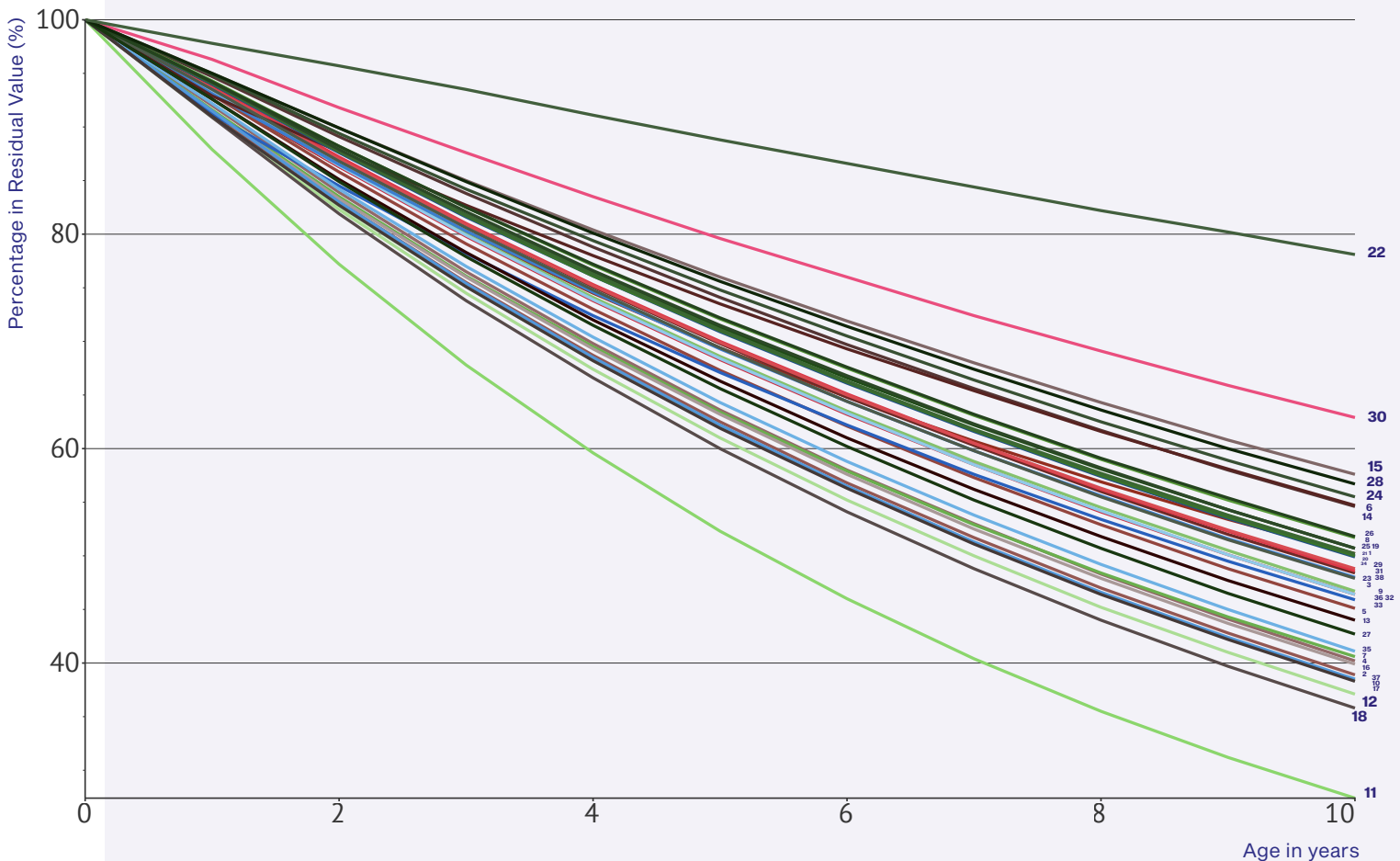


3.1 Result : Analysis of residual values

The smallest absolute values, together with the fastest (steepest slope of the curve) decline of residual values were reported for the Claas tractors. On the other

hand, the curves for John Deere and Massey Ferguson have the lowest slope. Thus, the decline of these tractors' residual values takes the most time.

- | | | | |
|---------------------------------|--------------------|--------------------------------------|---|
| 1 Case IH all | 7 Claas all | 19 John Deere all | 29 Massey Ferguson all |
| 2 Case IH Magnum | 8 Claas Axion 400 | 20 John Deere 6M Large Frame | 30 Massey Ferguson 5600 and 5S series |
| 3 Case IH Maxxum and Maxxum CVX | 9 Claas Arion 500 | 21 John Deere 6M Mid Frame | 31 Massey Ferguson 7700 and 7S series |
| 4 Case IH Puma and Puma CVX LWB | 10 Claas Arion 600 | 22 John Deere 6M Short & Small Frame | 32 Massey Ferguson 8700 series |
| 5 Case IH Puma and Puma CVX SWB | 11 Claas Axion 800 | 23 John Deere 6R Large Frame | |
| 6 Case Optum CVX | 12 Claas Axion 900 | 24 John Deere 6R Mid Frame | 33 New Holland all |
| | | 25 John Deere 6R Small Frame | 34 New Holland T5 AutoCommand (AC) and Dynamic Command (DC) |
| | 13 Fendt All | 26 John Deere 6R Xtra-Large Frame | 35 New Holland T6 |
| | 14 Fendt 300 Vario | 27 John Deere 7R Series | 36 New Holland T7 HD |
| | 15 Fendt 500 Vario | 28 John Deere 8R Series | 37 New Holland T7 LWB |
| | 16 Fendt 700 Vario | | 38 New Holland T7 SWB |
| | 17 Fendt 800 Vario | | |
| | 18 Fendt 900 Vario | | |



The comparison of residual values development of selected John Deere's model series

As the previous charts show, the value of John Deere machines has been declining the slowest over time of all the manufacturers analysed, so we decided to examine the manufacturer's products and model series in more detail.

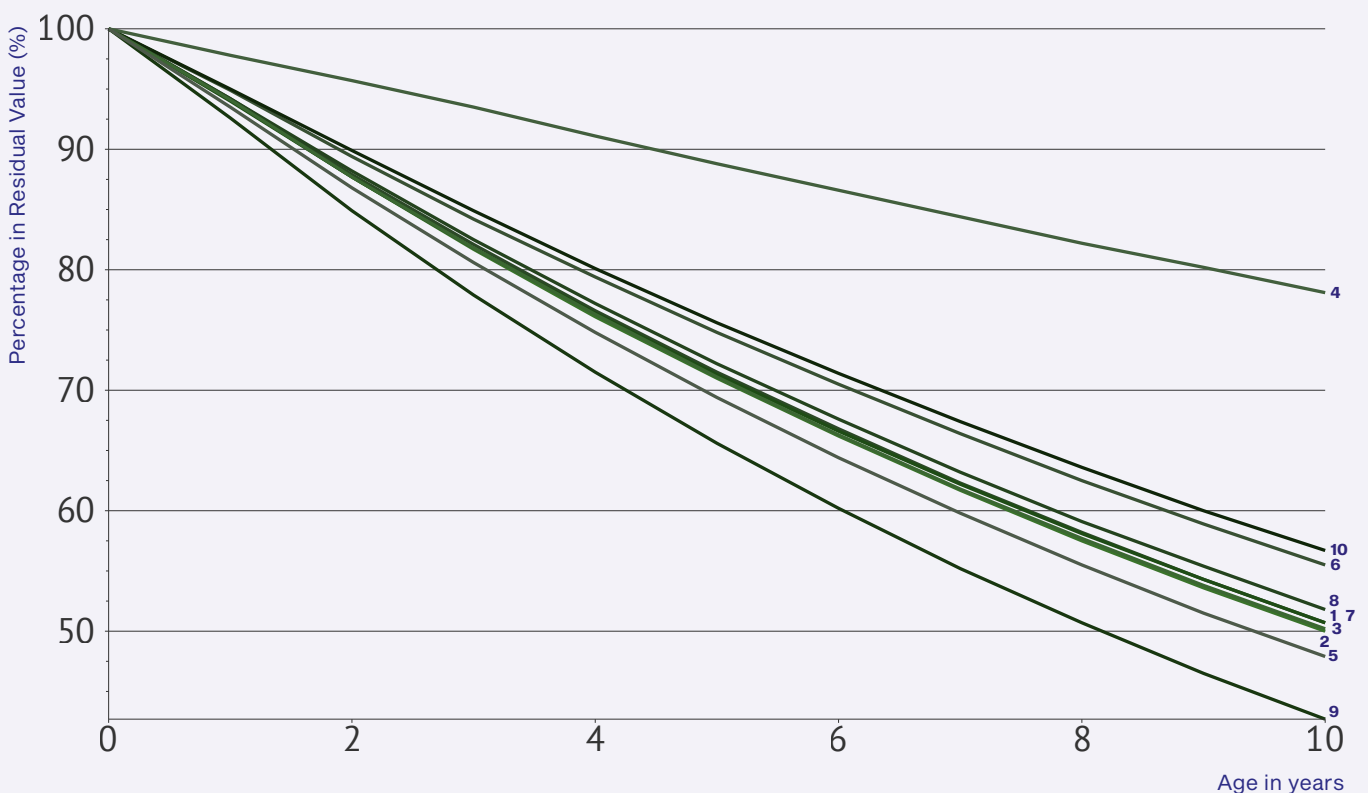
Concerning only the John Deere tractor series, the slowest decline of residual values was observed for 6M Short & Small Frame, as appears from the lowest slope of the curve.

There is even a considerable difference compared to other tractor series, meaning 6M Short & Small Frame is the series with the most stable residual values over time.

On the other hand, the 7R Series loses the value faster than 6M Short & Small Frame, as indicated by the steepest slope of the curve. The remaining series inspected in this research keep a relatively tight range.

In general, all the curves representing various John Deere series decline with the age of the machines. The relationship is stable and linear, again, there are strong correlations observed. As the machine ages, so grows the variance of the residual value curves.

- 1 ■ John Deere all
- 5 ■ John Deere 6R Large Frame
- 8 ■ John Deere 6R Xtra-Large Frame
- 2 ■ John Deere 6M Large Frame
- 6 ■ John Deere 6R Mid Frame
- 9 ■ John Deere 7R Series
- 3 ■ John Deere 6M Mid Frame
- 7 ■ John Deere 6R Small Frame
- 10 ■ John Deere 8R Series
- 4 ■ John Deere 6M Short & Small Frame

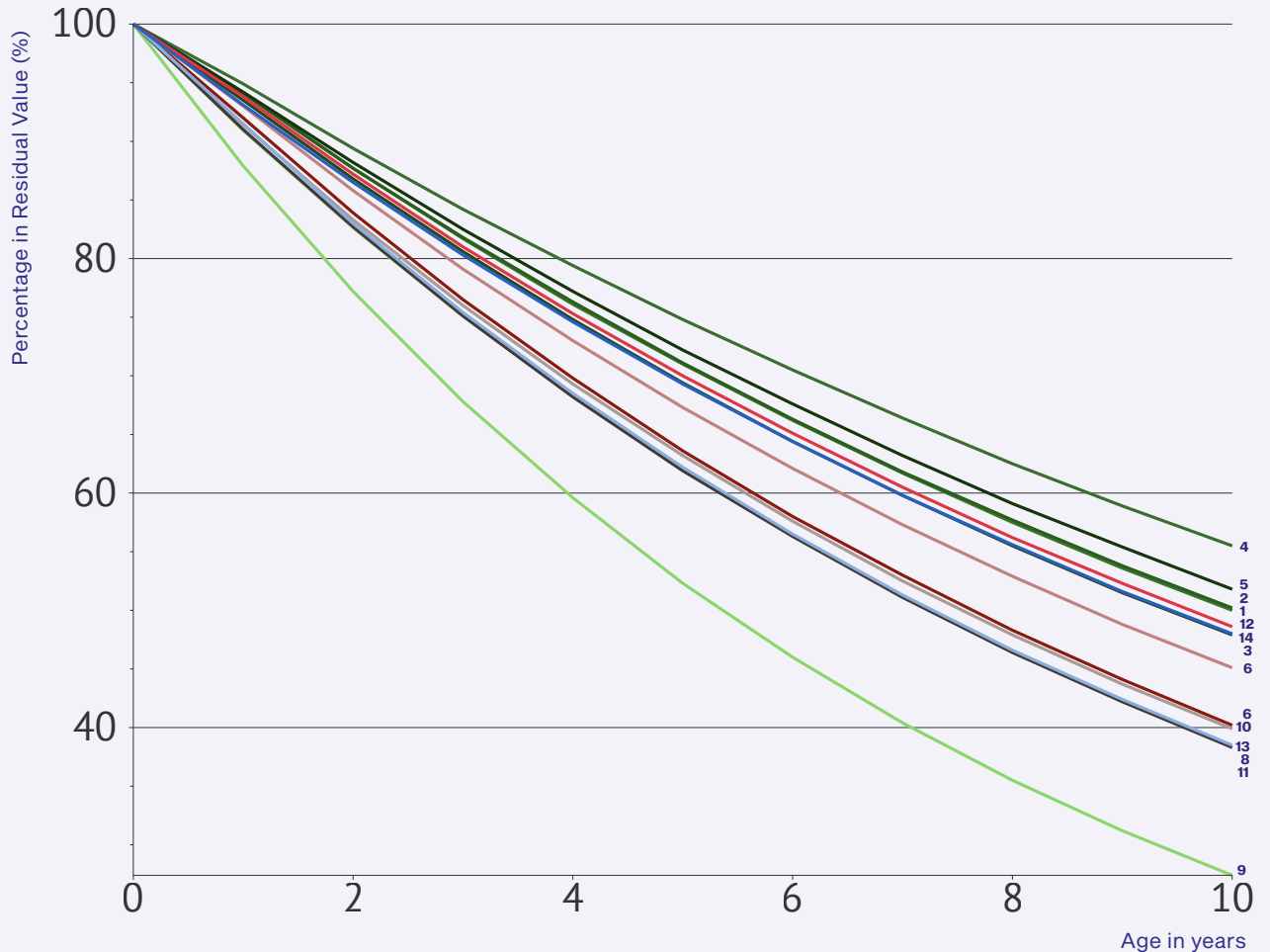


The comparison of residual values development of John Deere’s 6M and 6R model series and their equivalents made by selected manufacturers

In the analysis comparing John Deere’s 6M and 6R model series to the equivalents made by different brands, John Deere machines have the best results – respectively,

their residual value declines the slowest over time, compared to all other manufacturers mentioned in this research.

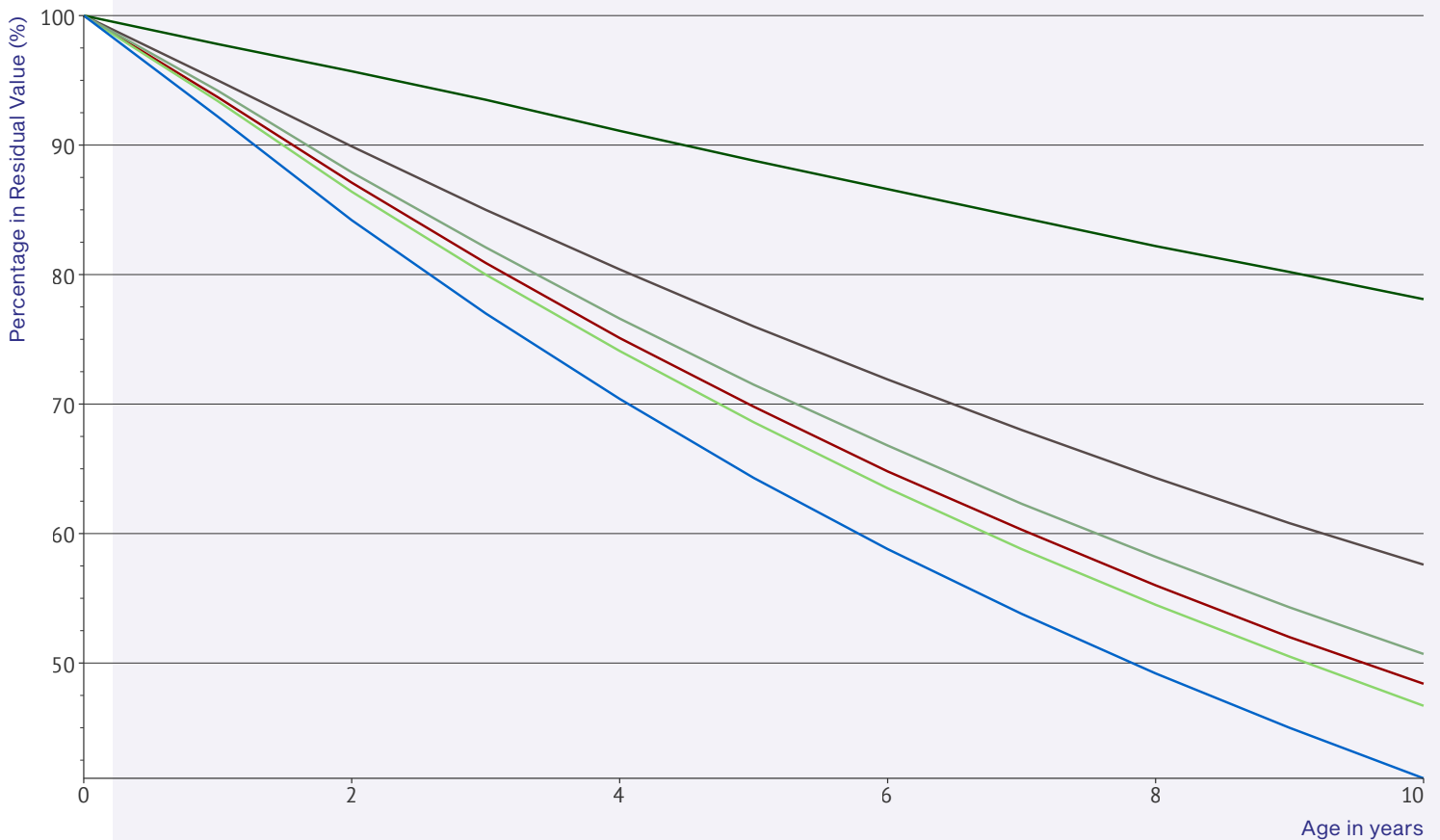
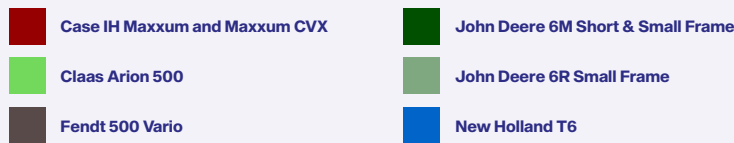
- | | | | | | |
|---|--------------------------------|---|-------------------------------|----|------------------------------------|
| 1 | John Deere 6M Large Frame | 6 | Case IH Puma and Puma CVX LWB | 10 | Fendt 700 Vario |
| 2 | John Deere 6M Mid Frame | 7 | Case IH Puma and Puma CVX SWB | 11 | Fendt 800 Vario |
| 3 | John Deere 6R Large Frame | 8 | Claas Arion 600 | 12 | Massey Ferguson 7700 and 7S series |
| 4 | John Deere 6R Mid Frame | 9 | Claas Axion 800 | 13 | New Holland T7 LWB |
| 5 | John Deere 6R Xtra-Large Frame | | | 14 | New Holland T7 SWB |



The comparison of residual values development of John Deere's 6M Short & Small Frame and 6R Small Frame model series and their equivalents made by selected manufacturers

The analysis focuses on John Deere 6M Short & Small Frame and 6R Small Frame and the most similar models from other manufacturers. The lowest slope of the residual value curve is apparent for the 6M Short & Small Frame series. Even after 10 years, the price is still 78% of the original price.

On the other hand, as the slope of the residual curve indicates, New Holland T6 loses the value the fastest. After 10 years, the price is only 41% of the original purchase price.

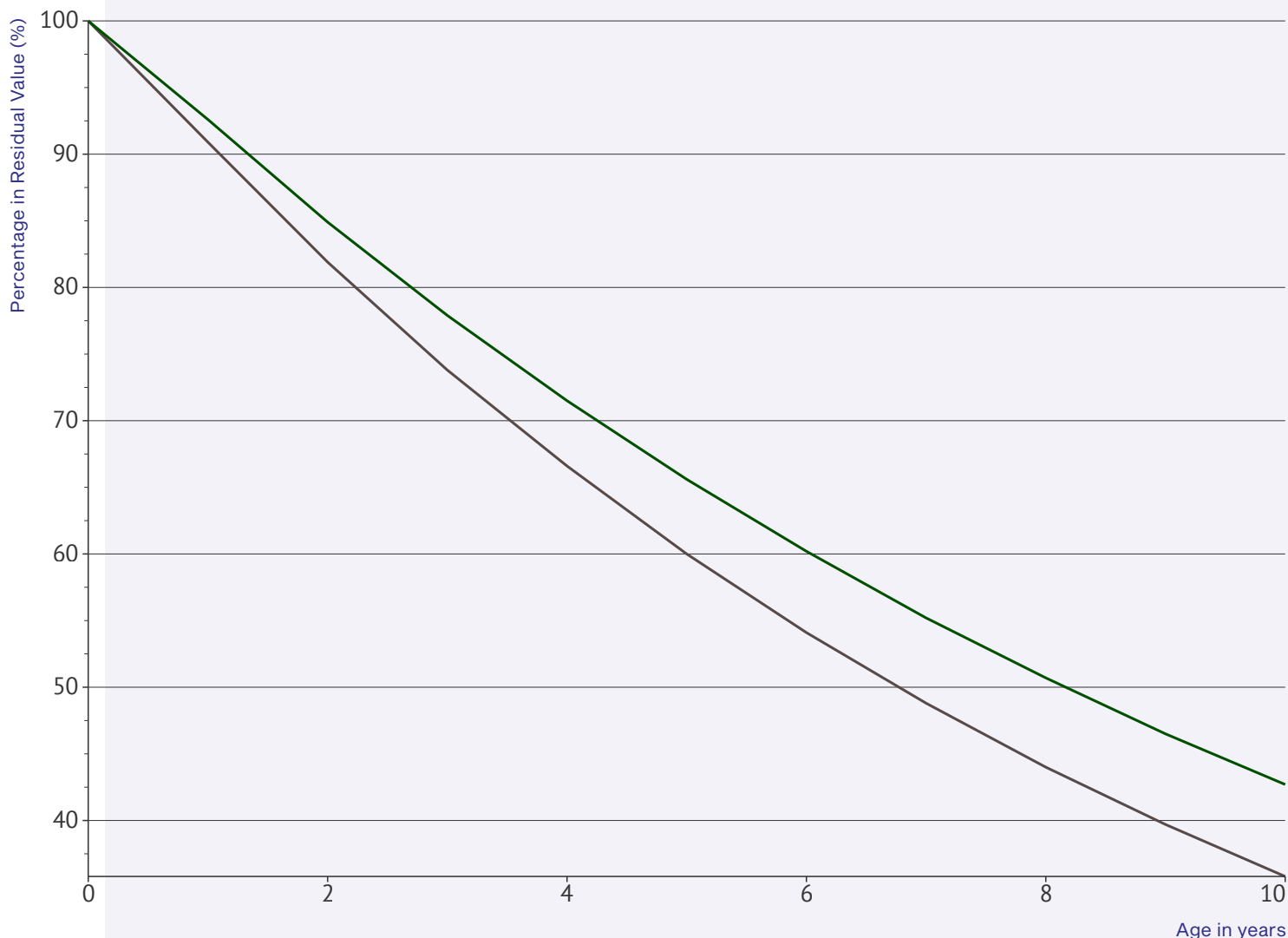


The comparison of residual values development of John Deere 7R and Fendt 900 Vario

In the same way, model series John Deere 7R and Fendt 900 Vario were compared. The residual value curves of both model series are non-growing and strongly correlated. As apparent from the

slope of the curves, John Deere 7R keeps the residual value more stable over time – Fendt 900 Vario follows with a considerable difference.

■ Fendt 900 Vario ■ John Deere 7R Series



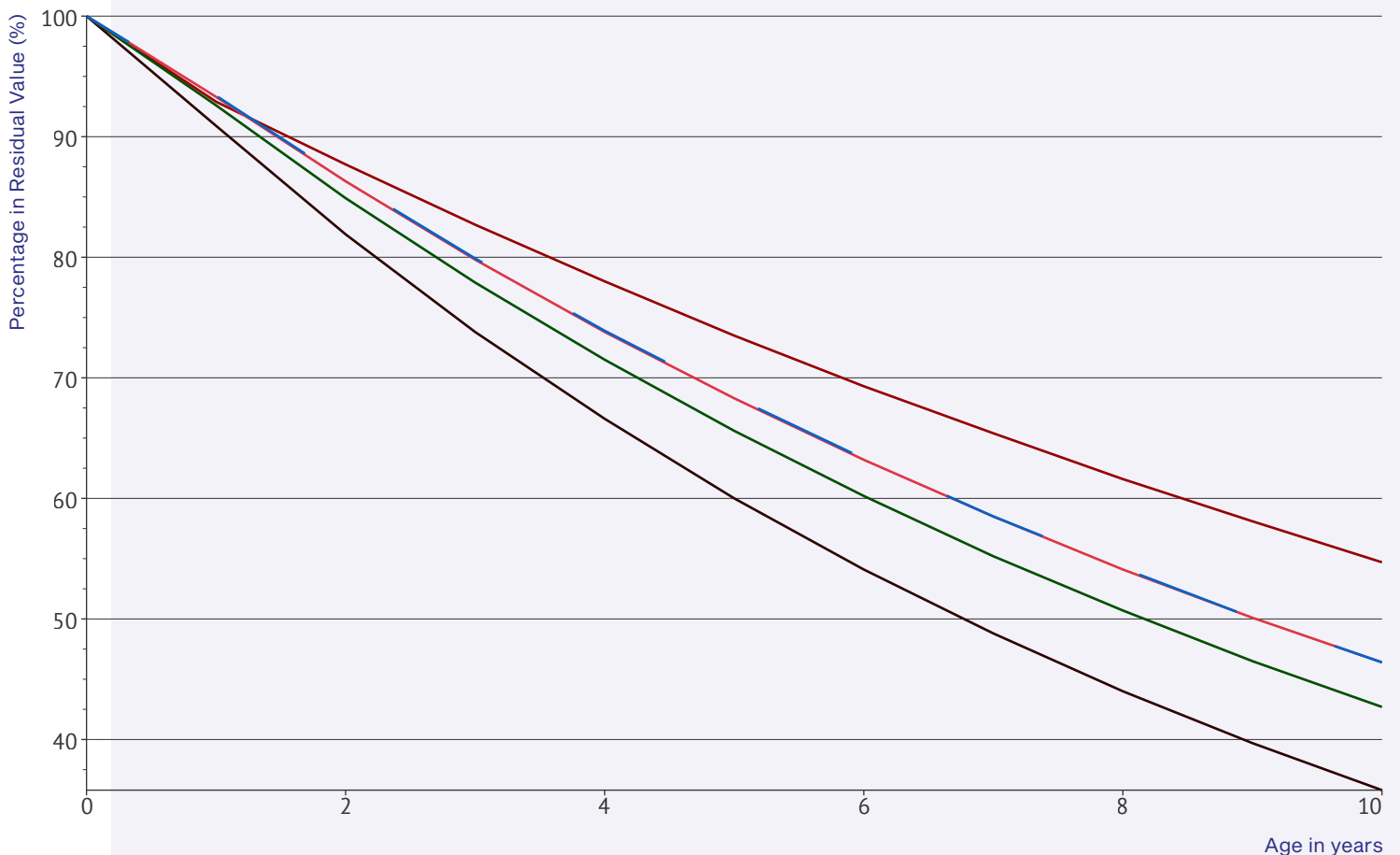
The comparison of residual values development of John Deere 7R series and its equivalents made by selected manufacturers

Although in all the previous analyses, John Deere and its machines kept the most stable residual values over time, in the comparison of its 7R series and equivalents made by other manufacturers, the results show that the residual values of the CASE IH model series Optum CVX decline

way slower, as indicates the slope of the curve.

The development of residual values of John Deere 7R Series is the most similar to these for the Massey Ferguson 8700 Series and New Holland T7 HD.

At the end of the imaginary rank is Fendt 900 Vario, whose residual values decline the fastest.

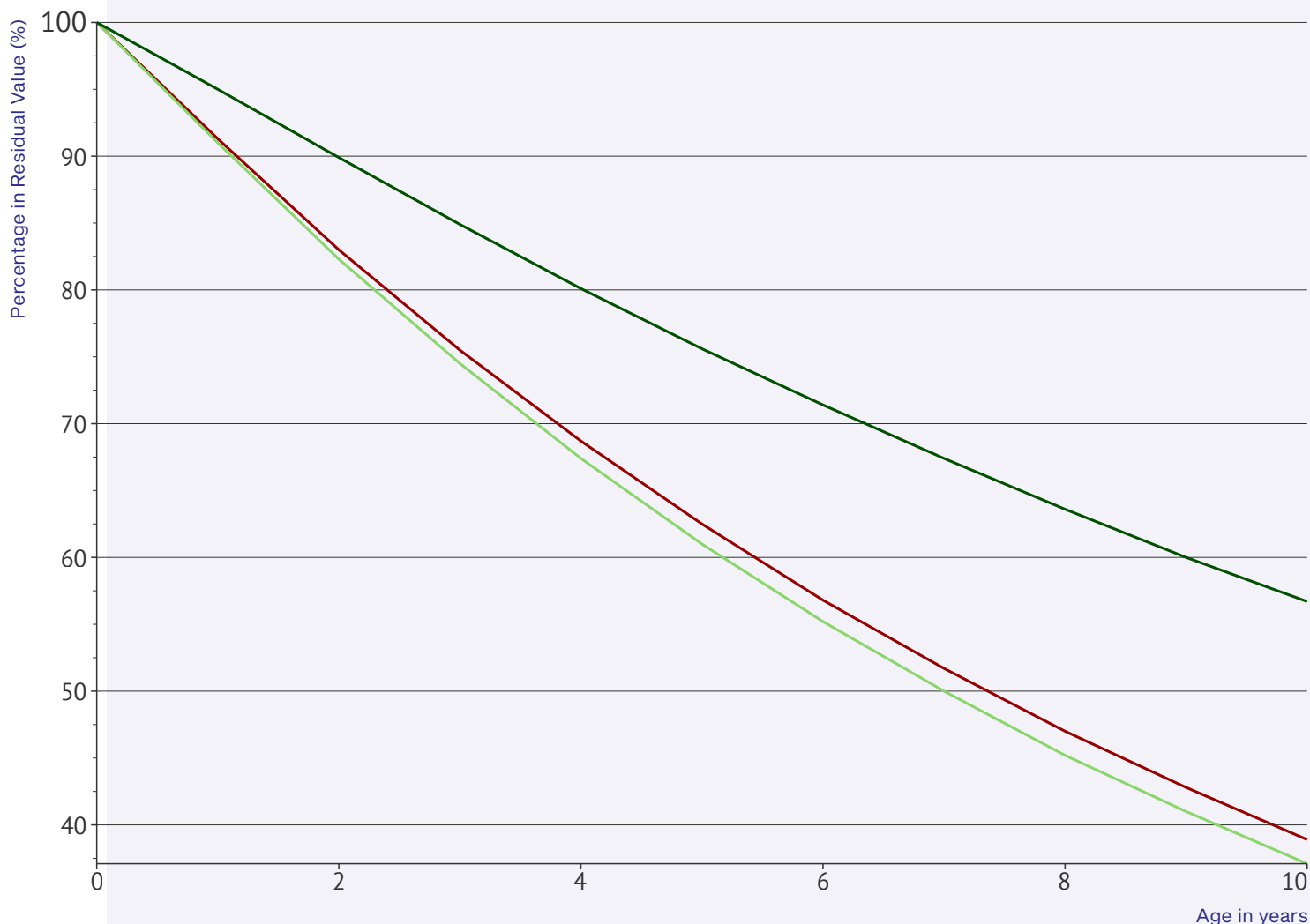


The comparison of residual values development of John Deere 8R, Claas Axion 900, and Case IH Magnum

John Deere gets back the status of the brand with, in sum, the most stable residual values when it comes to the comparison of the 8R series with its equivalents. The lowest slope of John Deere's residual value curve indicates the value declines the slowest, compared to series similar to 8R.

The curves for Claas Axion 900 and Case IH Magnum have much steeper slopes, putting them lower under John Deere's curve in the graph. Their residual value curve development is very similar to each other.

■ Case IH Magnum
 ■ Claas Axion 900
 ■ John Deere 8R Series



3. Results

3.2 LECTURA Agri BrandSurvey 2023

Since our study shows that John Deere tractors are generally declining in value at the slowest rate (compared to their competitors and related models), we decided to strengthen our research further and compare these findings to the results of our latest survey - Agri BrandSurvey 2023.

We asked the respondents about their opinion on the most popular agricultural brands (16 in total) in a number of aspects such as overall satisfaction with the brand, perception of the dealership network, visibility in the media, or the top product.

In the online survey than ran from 6th March to 19th April, LECTURA received 3,642 reviews on John Deere from 105 countries of the world.

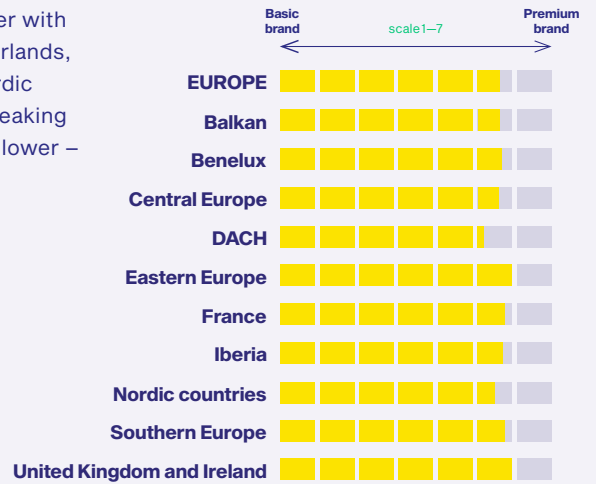
3.2.1 How would you rate this brand in general?

The people were asked to evaluate the brand in general on a **scale from 1 to 7**, where 1 stands for “Basic brand”, and 7 stands for “Premium brand”

The overall rating of John Deere in European countries is above average – 5.59.

The brand performance is perceived differently in different regions and countries.

Although in the British islands John Deere got the best reception of all European regions, together with Benelux, especially Netherlands, the respondents from Nordic countries and German-speaking countries rated the brand lower – especially in Germany.

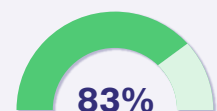
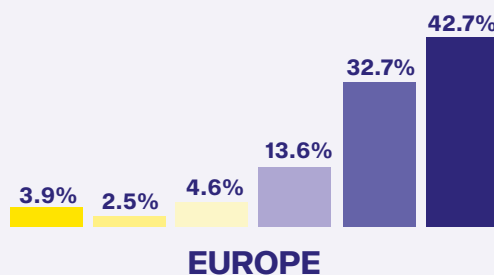


3.2.2 How would you rate this brand’s dealership network in your country?

The respondents evaluated the dealership network by choosing the most corresponding option from very unsatisfactory to very satisfactory. When transformed to scale from 1 to 6, the mean values were converted into % and visualised on an imaginary tachometer.

John Deere’s customers are, in general, satisfied with its dealership network. Of the whole European sample, 42.7% of people claimed to be even very satisfied – across regions and countries, the number varies from 37.1% (Balkan Peninsula) to 68.2% (Eastern Europe).

Put on an imaginary tachometer, the result for the whole of Europe is 83% – ranges within 76% (Balkan peninsula) and 88% (Eastern Europe).

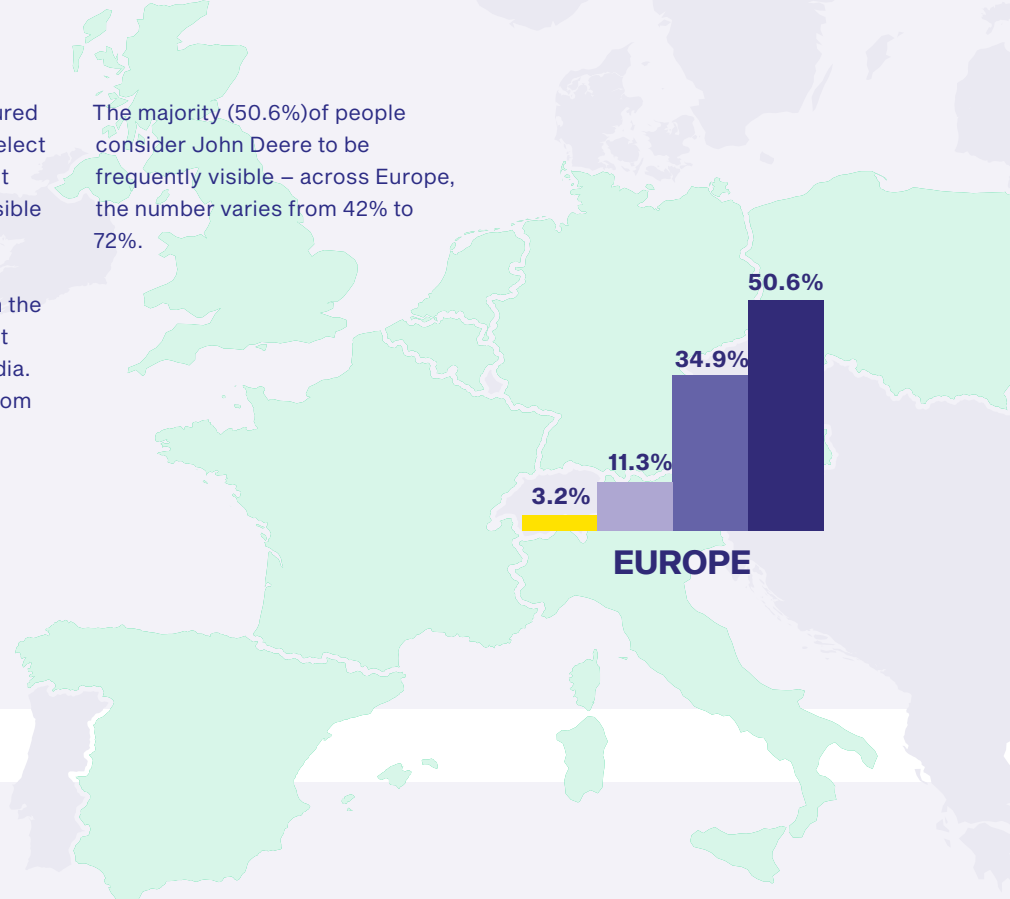


3.2.3 From your point of view, how visible is this brand in the media?

The brand visibility was measured by asking the respondent to select one of the 4 options – different levels of visibility from “not visible at all” to “frequently visible”.

There is only 3.2% of people in the European sample that have not noticed John Deere in the media. On a regional scale, it varies from 0% (Nordics) to 6.4% (Balkan peninsula).

The majority (50.6%) of people consider John Deere to be frequently visible – across Europe, the number varies from 42% to 72%.

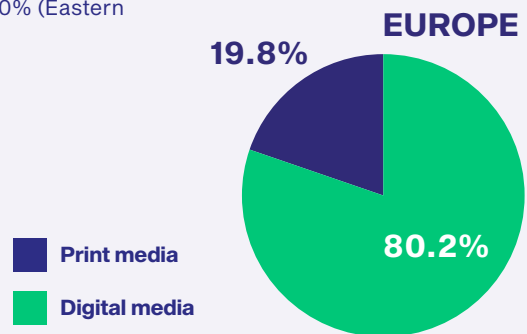


3.2.4 In which type of media is the brand more visible?

The people were asked to indicate whether they saw the brand more often in digital, or print media.

The trend is clearly to go digital. More than 80% of surveyees from Europe remembered the presence of John Deere rather in the digital media.

Across regions and countries, the number varies from 72.5% (Belgium) to even 100% (Eastern Europe).

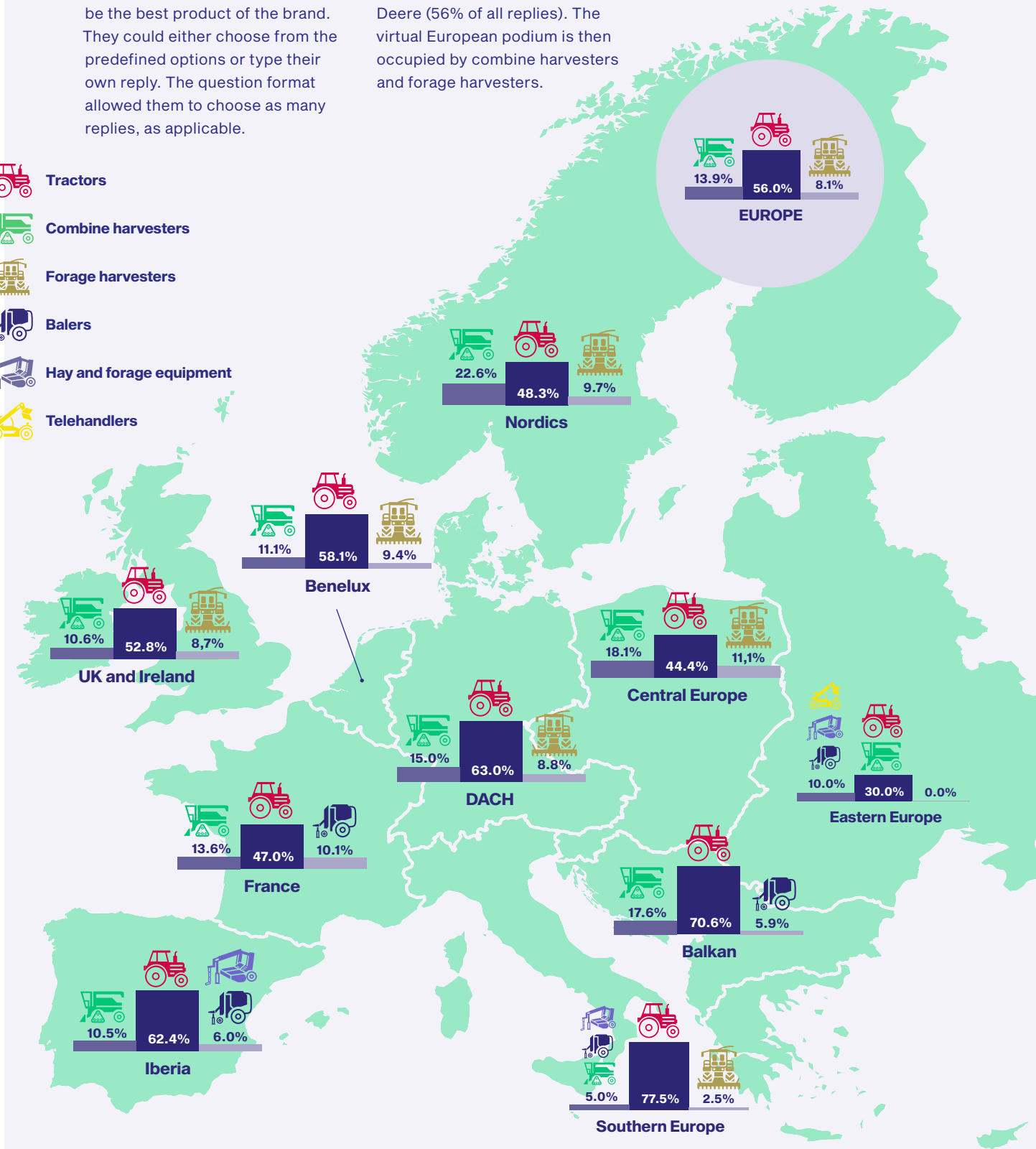


3.2.5 What machine type do you consider to be the best product of this brand?

The people were asked to indicate which equipment they consider to be the best product of the brand. They could either choose from the predefined options or type their own reply. The question format allowed them to choose as many replies, as applicable.

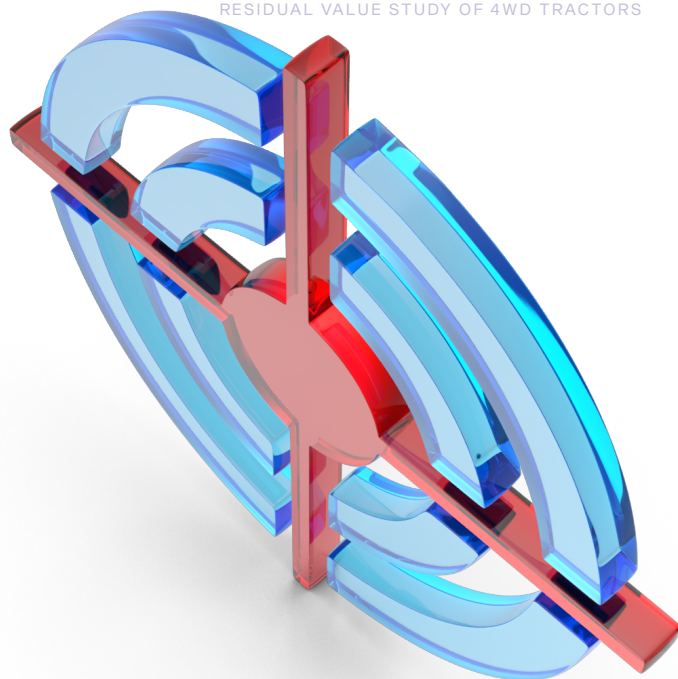
Tractors are without doubt the most popular products of John Deere (56% of all replies). The virtual European podium is then occupied by combine harvesters and forage harvesters.

-  **Tractors**
-  **Combine harvesters**
-  **Forage harvesters**
-  **Balers**
-  **Hay and forage equipment**
-  **Telehandlers**



4. Conclusion

Both approaches, the residual value analyses and the survey revealed the position of John Deere on the market is strong, especially when it comes to tractors.



Concerning the residual value analysis, in general, for all manufacturers and machine series, it applies that as the age grows declines the residual values – as the value of the machines, in general. But, the curves of different manufacturers and even their machine series show different patterns.

Without a doubt, John Deere tractors keep over time the most stable residual values of all the compared tractors.

In many cases, the slope of the residual value curve of John Deere was far less steep compared to other brands meaning the equipment keeps its value much better than other brands. Notably, a great difference

between John Deere's and other brands' equivalents was observed in the case of the 6M Short & Small Frame series.

The additional analysis of data provided in the survey revealed that people from the industry perceive John Deere as a reliable brand

providing products and services of high quality.

Not only would the majority of people consider John Deere as a premium, even sort of a prestigious brand, but they would also positively value the dealership network in terms of density and quality of the services.

The other factor that, we believe, contributes to the results of residual value analysis is the brand is mostly associated with tractors. In the questions asking people to state the best product of John Deere, 56% of replies fell for tractors – the rates for other equipment were lower.

We believe the positive perception supports the potential of John Deere's asset to be sold for the highest price even after years (compared to selected competitors and in case we speak in the context of an open market when the conditions are met). The only exception is observed in the comparison of the 7R series and its equivalents made by other manufacturers.

Apparently, the brand perceives it requires some effort to keep its reputation. As the survey results indicate, the brand seems to invest in visibility, especially in digital media. The strategy of not only providing reliable services but also maintaining ongoing contact with (potential) customers seems to considerably contribute to the positive brand perception.

LECTURA is ready to dig much deeper to get you even more value.

Interested in pricing developments of other machine types or running a survey?

Contact us at:
getintouch@lectura.de

www.lectura.de



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