



Berner  
Fachhochschule

# Literature search essentials

deutschsprachige Fassung

März 2021

# Weshalb wissenschaftliche Literatur?

- ▶ Wissenschaftliche Erkenntnisse werden in erster Linie textförmig festgehalten und weitergegeben.
- ▶ Die wissenschaftliche Literatur zeigt – in ihrer Gesamtheit – die fortschreitende Entwicklung des menschlichen Wissens.
- ▶ Mit der bereits existierenden wissenschaftlichen Literatur zu Ihrem Thema stützen Sie sich auf den aktuellen Forschungsstand ab.
- ▶ Mit Ihrer eigenen wissenschaftlichen Arbeit tragen Sie im Idealfall zur Weiterentwicklung des Wissens bei.
- ▶ Wissenschaftliches Arbeiten ist zu einem wesentlichen Teil Arbeiten mit wissenschaftlicher Literatur.
- ▶ Texte, die nicht auf wissenschaftliche Literatur Bezug nehmen, sind keine wissenschaftlichen Texte.

# Weshalb Literaturrecherche?

- ▶ Um den aktuellen Forschungsstand zu erarbeiten, benötigen Sie die relevante (= thematisch am ähnlichsten bzw. meistzitierte) wissenschaftliche Literatur zu Ihrem Thema.
- ▶ Um die relevante wissenschaftliche Literatur zu finden, empfiehlt sich eine systematische Literaturrecherche:
  - ▶ Nutzen Sie spezialisierte Suchwerkzeuge, die die relevante wissenschaftliche Literatur unabhängig von Sprache und Verlag finden.
  - ▶ Reflektieren und dokumentieren Sie Ihr Vorgehen.
  - ▶ Beurteilen Sie das Gefundene kritisch.
- ▶ Ist die wissenschaftliche Literatur, auf die Sie sich stützen, lückenhaft, entgehen Ihnen möglicherweise wichtige Erkenntnisse und Informationen.

# Suchen versus

# Browsen

Google Scholar

Beliebige Sprache  Seiten auf Deutsch

**Auf den Schultern von Riesen**

Hilfe Neue Suche

 Erweiterte Suche

# Suchen versus

# Volltext beschaffen

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## Web of Science

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### Dynamic forecasting of individual cow milk yield in automatic milking systems

By: Jensen, DB (Jensen, Dan B)<sup>[1]</sup>; van der Voort, M (van der Voort, Mariska)<sup>[1]</sup>; Hogeveen, H (Hogeveen, Henk)<sup>[1]</sup>

JOURNAL OF DAIRY SCIENCE  
Volume: 101 Issue: 11 Pages: 10428-10439  
DOI: 10.3168/jds.2017-14134  
Published: NOV 2018  
Document Type: Article  
View Journal Impact

#### Abstract

Accurate forecasting of dairy cow milk yield is useful to dairy farmers, both in relation to financial planning and for detection of deviating yield patterns, which can be an indicator of mastitis and other diseases. In this study we developed a dynamic linear model (DLM) designed to forecast milk yields of individual cows per milking, as they are milked in milking robots. The DLM implements a Wood's function to account for the expected total daily milk yield. It further implements a second-degree polynomial function to account for the effect of the time intervals between milkings on the proportion of the expected total daily milk yield. By combining these 2 functions in a dynamic framework, the DLM was able to continuously forecast the amount of milk to be produced in a given milking. Data from 169,774 milkings on 5 different farms in 2 different countries were used in this study. A separate farm-specific implementation of the DLM was made for each of the 5 farms. To determine which factors would influence the forecast accuracy, the standardized forecast errors of the DLM were described with a linear mixed effects model (lme). This lme included lactation stage (early, middle, or late), somatic cell count (SCC) level (nonelevated or elevated), and whether or not the proper farm-specific version of the DLM was used. The standardized forecast errors of the DLM were only affected by SCC level and interactions between SCC level and lactation stage. Therefore, we concluded that the implementation of Wood's function combined with a second-degree polynomial is useful for dynamic modeling of milk yield in milking robots, and that this model has potential to be used as part of a mastitis detection system.

Received November 13, 2017.  
Accepted June 11, 2018.  
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**bibliographische Beschreibung**

DYNAMIC FORECASTING OF MILK YIELD 10439

J. Dairy Sci. 101:10428–10439  
<https://doi.org/10.3168/jds.2017-14134>  
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## Dynamic forecasting of individual cow milk yield in automatic milking systems

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**ABSTRACT**

Accurate forecasting of dairy cow milk yield is useful to dairy farmers, both in relation to financial planning and for detection of deviating yield patterns, which can be an indicator of mastitis and other diseases. In this study we developed a dynamic linear model (DLM) designed to forecast milk yields of individual cows per milking, as they are milked in milking robots. The DLM implements a Wood's function to account for the expected total daily milk yield. It further implements a second-degree polynomial function to account for the effect of the time intervals between milkings on the proportion of the expected total daily milk yield. By combining these 2 functions in a dynamic framework, the DLM was able to continuously forecast the amount of milk to be produced in a given milking. Data from 169,774 milkings on 5 different farms in 2 different countries were used in this study. A separate farm-specific implementation of the DLM was made for each of the 5 farms. To determine which factors would influence the forecast accuracy, the standardized forecast errors of the DLM were described with a linear mixed effects model (lme). This lme included lactation stage (early, middle, or late), somatic cell count (SCC) level (nonelevated or elevated), and whether or not the proper farm-specific version of the DLM was used. The standardized forecast errors of the DLM were only affected by SCC level and interactions between SCC level and lactation stage. Therefore, we concluded that the implementation of Wood's function combined with a second-degree polynomial is useful for dynamic modeling of milk yield in milking robots, and that this model has potential to be used as part of a mastitis detection system.

**Key words:** dairy cow, dynamic linear model, milk yield, somatic cell count

**INTRODUCTION**

In the past, many automatic mastitis detection systems and models have been developed and tested to improve the detection of (sub)clinical mastitis in dairy cows (Hogeveen et al., 2010; Dominkak and Kristensen, 2017). Most studies have focused on assessing the sensors' ability to detect clinical mastitis, and were mostly based on the electrical conductivity measures of milk. Electrical conductivity measures can be combined with other sensor data, for example with milk yield measures, potentially resulting in better detection performance (Kamphuis et al., 2008a,b; Mollenhorst et al., 2010). Also, nonsensor data, such as lactation stage and mastitis history, can improve the detection performance of sensor-based systems (Steenveld et al., 2008). Even though changes in animal health can be detected with milk yield measures (Hybretsch et al., 2014; Jensen et al., 2017), not a lot is known about how milk yield, affected by the interval between milkings and milk production curves, can improve mastitis detection at the individual cow level.

When milking robots are used, milking intervals are not fixed. Milking cows at an optimal milking interval has the potential to increase milk yield and improve udder health (Hogeveen et al., 2001; Hale et al., 2003; Dahl et al., 2004; Hevonen and Pyörälä, 2011). André et al. (2010) created a static linear model to describe the herd-level milk yield per milking given the time interval since the last milking. The study showed a significant quadratic effect of the interval, which is in accordance with the findings of Hogeveen et al. (2001). This means that the milk yield for a given milking is expected to peak at a certain interval of time since the last milking, after which the yield will decrease, resulting in the total daily milk yield being below the individual cow's potential. The effect of the interval on milk yield varies between herds as well as between individual cows (André et al., 2010).

Knowing the deviation between expected and observed milk yields of individual cows is important in dairy cow management (Grzesiak et al., 2006; Grzesiak et al., 2016). To know the deviation between expected

**Volltext**

# Buch versus

# Zeitschriftenartikel

didaktische Aufbereitung



Spezialisierungsgrad



Aktualität

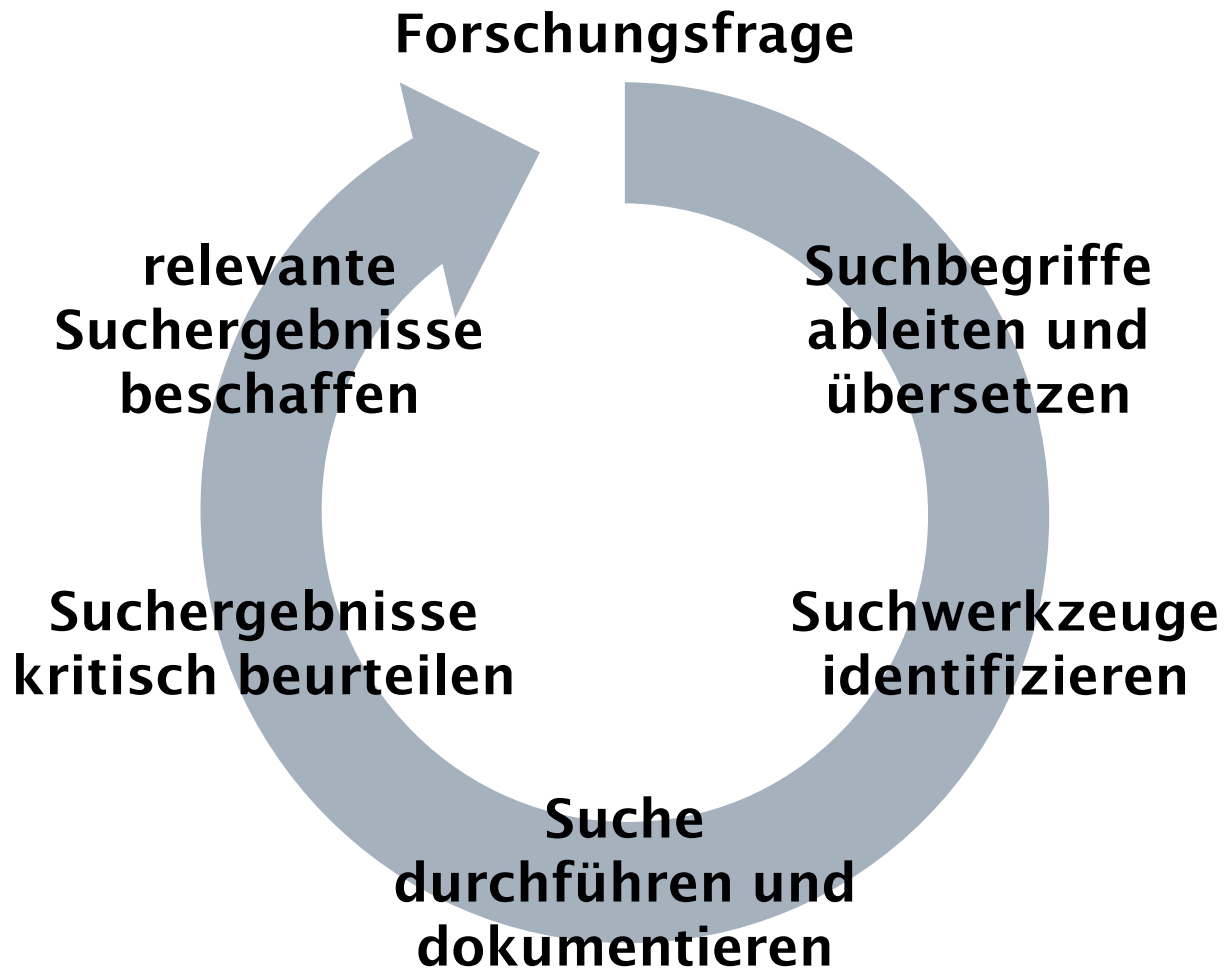


Discovery tool:  
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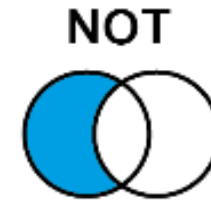
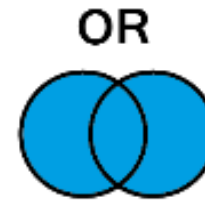
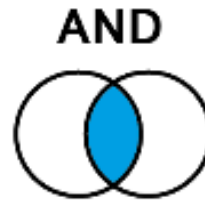
bibliographische  
Datenbanken: OvidSP, WoS...

# Literaturrecherche als Kreislauf



# Wie suchen?

## Boolesche Operatoren



## Trunkieren (\*)

	Results
horse.af.	64263
horses.af.	97011
horse*.af.	123996

## Phrasensuche (" ")

<b>606</b>	TOPIC: ("forest soil" degradation) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI</i>
<b>595</b>	TOPIC: (forest "soil degradation") <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI</i>
<b>4,442</b>	TOPIC: (forest soil degradation) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI</i>



# Weshalb reicht Google Scholar nicht?

- ▶ Trefferzahl lässt sich kaum kontrollieren: meist Zehn-, Hunderttausende, Millionen von Suchergebnissen, von denen nur die ersten paar zur Kenntnis genommen werden  
→ fragwürdiges Vertrauen auf *Relevance Ranking* der Suchmaschine
- ▶ in der Regel nur Suchergebnisse in der Sprache der eingegebenen Suchbegriffe  
→ relevante wissenschaftliche Literatur in anderen Sprachen fehlt möglicherweise
- ▶ Graue Literatur wird kaum gefunden
- ▶ limitierte Such-, Filter- und Sortiermöglichkeiten
- ▶ geeignet für Einstieg oder als Ergänzung zu systematischer Literaturrecherche
- ▶ immer noch besser als [Google.ch](http://Google.ch)/[Google.com](http://Google.com)

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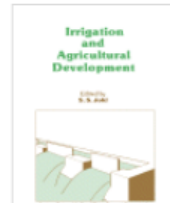
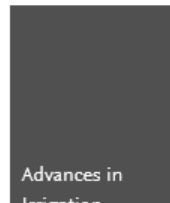
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eines einzigen – wenn auch  
grossen – Wissenschaftsverlags

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2017 (12,961)

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Model Development

Cultural Water Management, Volume 210, 30 November 2018, Pages 49-58

F. A. Lima, A. Martínez-Romero, J. M. Tarjuelo, J. I. Córcoles

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