EXPERIMENTAL APPROACH FOR QUANTIFYING CROP WATER USE AND POLLUTANT LOADING FROM AGRICULTURAL PLOT

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Specially dedicated to my beloved parents and friends for their blessings, encouragement and infinite support towards finishing my research

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ABSTRACT

Storm water runoff is the main contributor to non-point source (NPS) pollution in agricultural land. This issue is extremely important in tropical region due to its high intensity and frequent storms. The objectives of this study were to determine the crop coefficient of two vegetable crops – bittergourd (*Mormordica Charantia*) and chilli (*Capsicum Annuum*), investigate the mechanism of NPS pollutant transport and the influence of hydrologic regime on the pollutant loading. This study was conducted at the Modern Agriculture Centre in Kluang, Johor, from August 2013 to May 2014. A total of 86 rainfall events were recorded but only 52 storms had generated measurable runoff. Samples of runoff, soil water and groundwater were collected after every rainfall event and analysed for nutrient and sediment contents. Twenty-six reference evapotranspiration (ET_o) models which were classified into four different groups were employed and their performance was ranked based on eight different statistical test. Penman model provide the best result in estimating ET_o while the Schendel model tended to overestimate the observed pan ET. The limited parameters used in the temperature based group causes poor performance in predicting the ET_o values. Crop coefficient (K_c) curves for both crops were developed as the ratio of actual ET measured by minilysimeters to the ET values of the best model. The K_c values for the bittergourd were 0.58, 0.88 and 0.69 while for chili were 0.58, 0.95 and 0.73 for the initial, mid and end growth stages, respectively. More runoff event was observed for the bittergourd as its growing period coincided with the North-East Monsoon. The average runoff-rainfall ratio is less than one percent due to the high hydraulic conductivity of the site. The concentrations of nutrients and sediments were very high with maximum Nitrite (NO_2), Nitrate (NO_3), Ammoniacal-Nitrogen (NH_3-N), Phosphate (PO_4), Total Nitrogen (TN), Total Phosphorus (TP), Chemical Oxygen Demand (COD) and Total Suspended Solids (TSS) concentrations in the runoff were 0.385, 10, 4.2, 13.7, 27, 18, 190 and 15000 mg/l respectively. However, the calculated pollutant loading were low due to the remarkably small surface runoff volume. Soil water analysis at 15 and 60 cm soil depth shows a high Phosphorus (P) element leaching to the deeper depth even though P is less mobile. Nitrate concentration showed an increasing trend compared to other nutrients with a maximum of 1.7 mg/l at the end of the study period. The calibration and validation of the Root Zone Water Quality Model (RZWQM2) were carried out to model the leaching of NO_3 to the groundwater. The results of this study can be applied to formulate more reliable water management schemes based on the water requirement of the vegetable crops and providing new information for controlling NPS pollution loading from agricultural activities.

ABSTRAK

Air larian ribut adalah penyumbang utama kepada pencemaran punca bukan titik (NPS) di kawasan pertanian. Isu ini amat penting di rantau tropika kerana keamatan hujan yang tinggi dan berlaku dengan kerap. Objektif kajian ini adalah untuk menentukan pekali tanaman dua jenis sayuran iaitu – peria (*Momordica Charantia*) dan cili (*Capsicum Annuum*), mengkaji mekanisme pengangkutan bahan pencemar NPS dan pengaruh rejim hidrologi ke atas beban pencemar. Kajian ini telah dijalankan di Pusat Pertanian Moden, Kluang, Johor dari Ogos 2013 hingga Mei 2014. Sebanyak 86 kejadian ribut hujan telah direkodkan tetapi hanya 52 daripadanya menghasilkan air larian permukaan yang boleh disukat. Sampel air larian permukaan, air tanah dan air bawah tanah telah diambil selepas setiap kejadian ribut hujan dan dianalisis untuk kandungan nutrien dan sedimen. Dua puluh enam model sejatpeluhan rujukan (ET_o) yang telah diklasifikasikan kepada empat kumpulan telah diaplikasikan dan ditarafkan menggunakan lapan jenis ujian statistik. Model Penman menunjukkan prestasi terbaik dalam menganggarkan ET_o manakala model Schendel cenderung untuk terlebih anggar nilai ET_o. Bilangan parameter yang terhad dalam kumpulan model berdasarkan suhu menyebabkan prestasi yang lemah dalam meramalkan nilai ET_o. Lengkung pekali tanaman (K_c) untuk setiap sayuran telah dibina berdasarkan nisbah antara sejatpeluhan tanaman sebenar yang diukur menggunakan lisimeter mini dengan nilai ET_o dari model yang terbaik. Nilai K_c untuk peria adalah 0.58, 0.88 dan 0.69 manakala bagi cili adalah masing-masing 0.58, 0.95 dan 0.73 untuk peringkat awal, pertengahan dan akhir pertumbuhan tanaman. Lebih banyak kejadian air larian telah direkodkan semasa musim penanaman peria kerana ia berlaku semasa Monsun Timur Laut. Purata nisbah air larian-hujan adalah kurang daripada satu peratus disebabkan nilai kekonduksian hidraulik tanah yang tinggi. Kepekatan nutrien dan sedimen di tapak kajian sangat tinggi dengan nilai maksimum bagi Nitrit (NO_2), Nitrat (NO_3), Ammonia-Nitrogen (NH_3-N), Fosfat (PO_4), Jumlah Nitrogen (TN), Jumlah Fosforus (TP), Kadar Permintaan Oksigen Kimia (COD) dan Jumlah Pepejal Terampai (TSS) dalam air larian masing-masing mencapai 0.385, 10, 4.2, 13.7, 27, 18, 190 dan 15000 mg/l. Air tanah pada kedalaman 15 dan 60 cm menunjukkan kepekatan unsur Fosforus (P) yang tinggi dan cenderung untuk meningkat dengan kedalaman walaupun pada hakikatnya P bersifat kurang bergerak. Kepekatan nitrat didapati meningkat sepanjang tempoh kajian berbanding nutrien lain dengan nilai maksimum 1.7 mg/l di akhir tempoh kajian. Kalibrasi dan validasi model kualiti air zon akar (RZWQM2) telah dijalankan untuk memodel larut lesap NO_3 ke air bawah tanah. Keputusan kajian ini boleh digunakan untuk membangunkan pengurusan air yang lebih sesuai berdasarkan keperluan air tanaman sayur-sayuran dan memberi maklumat baru untuk mengawal beban pencemaran NPS daripada aktiviti pertanian.

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LIST OF ABBREVIATIONS

ADD	-	Antecedent Dry Day
ARE	-	Absolute Relative Error
ASWC	-	Antecedent Soil Water Content
BMP	-	Best Management Practice
C	-	Carbon
C/N	-	Carbon/Nitrogen
COD	-	Chemical Oxygen Demand
CT	-	Conventional Tillage
DO	-	Dissolved Oxygen
DP	-	Dissolved Phosphorus
E	-	Evaporation
ER	-	Enrichment Ratio
ERoc	-	Enrichment Ratio of organic carbon
ET	-	Evapotranspiration
ET_c	-	Crop Evapotranspiration
Et_o	-	Reference Evapotranspiration
FAO	-	Food and Agricultural Organization
FC	-	Field Capacity
I	-	Intensity
K_c	-	Crop Coefficient
K_p	-	Pan Coefficient
K_{sat}	-	Saturated Hydraulic Conductivity
LAI	-	Leaf Area Index
MSE	-	Mean Square Error
N	-	Nitrogen
NH_3	-	Ammonia
NH_3-N	-	Ammoniacal-Nitrogen

NH_4	-	Ammonium
NOF	-	Normalized Objective Function
NO_2	-	Nitrite
NO_3	-	Nitrate
NPS	-	Non Point Source
NSC	-	Nash Sutcliffe Coefficient
OC	-	Organic Carbon
P	-	Phosphorus
ρ_b	-	Soil bulk density
PO_4	-	Phosphate
PP	-	Particulate Phosphorus
PS	-	Point Source
PSD	-	Particle Size Distribution
PWP	-	Permanent Wilting Point
R	-	Runoff
R^2	-	Coefficient of Determination
RE	-	Relative Error
RH	-	Relative Humidity
RMSE	-	Root mean square error
RR	-	Runoff Rainfall
R_s	-	Solar Radiation
RZWQM2	-	Root Zone Water Quality Model 2
ΔS	-	Soil water storage
SOC	-	Soil Organic Carbon
SOM	-	Soil Organic Matter
SWRC	-	Soil Water Retention Curve
T	-	Temperature
TN	-	Total Nitrogen
TP	-	Total Phosphorus
TS	-	Terrace Structure
TSS	-	Total Suspended Solid
U	-	Wind Speed

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CHAPTER 1

INTRODUCTION

1.1 Background Information

Human have benefited a lot from nature for a long time. Sadly, the relationship between us humans and nature are not symbiotic where most of human activities were done without thinking about their damage on nature due to pollution. Pollution can be divided into two; point source (PS) and non-point source (NPS) pollution. A point source refers to pollution from a known source at an identifiable point (e.g.; pollutants and wastewater from industrial, commercial and domestic areas) while non-point source pollution originates from multiple discharge or diffuse points where it mostly occur during rain storm (Choi et al., 2011). Besides rainstorm, water that is used in human activities like irrigation also contributes in transporting non-point source pollutants throughout a large area. In comparison, monitoring and controlling of nonpoint source pollution is more difficult as its pollutants source are difficult to trace and depends on the unpredictable meteorological events and geographic condition. Studies in the United States, Japan and other countries had shown that Agricultural non-point source (ANPS) pollution has become a major concern nowadays (Carpenter et al., 1998; Zhang et al., 2009b).

Generally, non-point source pollution has the following characteristics (Novotny and Olem, 1994).

i) The sources of pollution are wide spread; pollutants such as suspended solids, nutrients, and toxic compounds are discharged into the receiving waters in diffuse manner and are strongly influenced by the storm characteristics.

ii) The pollutants generation processes usually occur over the entire land surface area. Before pollutants enter a water body, there are transport processes that occur over a wide region, accompanied by dissolution, dispersion and infiltration.

iii) Non-point source pollutants are usually discharged at unknown instants of time into the water system with uncertain values of concentration. These factors are influenced by unexpected natural conditions, or the accidental discharge of pollutants.

iv) The extent of non-point source pollution is determined by many factors which are related to climatic events, geographic and geologic features, and may show large temporal and spatial variations.

Examples of ANPS pollutants include fertilizer, pesticides, sediment, bacteria from feedlot, oil spill and nutrients. These pollutants can affect the environmental quality and public health badly, due to eutrophication of lakes and streams, soil contamination by heavy metals and the accumulation of pesticide residues in food (Shen et al., 2012). In an agricultural catchment, runoff that is produced during rainstorm will carry away pollutants which is natural or man-made and deposit it into water bodies like lake, river, wetlands and later contaminating them causing the water unsafe for drinking purpose (Yamada, 2007). NPS pollutants do not only limited to surface water bodies but also can leach into the ground and contaminate the ground water (Braskerud, 2002b, 2002a).

Each storm event is unique and depends on various factors such as storm duration and intensity, antecedent meteorological conditions (air patterns, humidity) and catchment characteristics (Parn et al., 2012). Land development practices may also influence the amount and the characteristics of runoff-flow. In addition, rainfall pattern diversity causes different transport mechanism of pollutants over a catchment surface and the rate of pollutant transport also varies with the flow rate and different concentration in time can be expected. This becomes a challenge to accurately characterize the quality of the runoff and determine the level of pollution in agricultural land.

Compared to the point source pollution, more efforts and investments may be required to deal with NPS pollution due to the unique characteristics of storm and runoff flow. The discharges of storm water are periodic, causing different types of effects than the better regulated continuous point source discharges (Emili and Greene, 2013). Besides, yearly rainfall amounts and distribution may change from time to time. Storm water also causes episodic disturbances in aquatic ecosystems (Minshall, 1988) whose patterns of occurrence are chaotic in nature (Pool, 1989) and the characteristics are unique to each event. Thus, quantification of stormwater pollutant loadings is difficult because of the wide variability of stormwater quality.

Crop water use is a function of evaporation (E) and transpiration (T) that fluctuates daily. Allen et al. (1998) provides definition of evapotranspiration (ET) and reference evapotranspiration (ET_o). ET is defined as the sum of evaporation from water/soil surfaces and the amount of water transpired by plants. ET_o is defined as evapotranspiration from an extensive surface of green grass of uniform height (0.08-0.15 m), an albedo of 0.23, fixed canopy resistance (70 sm^{-1}), actively growing, completely shading the ground, and not short of water (Allen et al., 1998). There are many components that affect ET_o, which include weather variables like solar radiation, air temperature, relative humidity (RH), and wind speed; crop factors such as type of vegetation, crop density and the growth stage; and other conditions such as soil type, salinity, fertility, cultivation level, crop disease, and pests (Allen et al., 1998). ET is one of the most difficult components to be determined in the water balance compared to other components like precipitation or irrigation (Fisher et al., 2005; Xu and Singh, 2005).

1.2 Problem Statement

Sustainable land and reliable food production is important for humanity. Agricultural practices determine the food production level and the state of the global environment. About half of global usable land is already in pastoral or intensive agriculture. Global cereal production has increased for the past decades mainly due to greater inputs of fertilizer, water and pesticides and other technologies from the 'Green Revolution' (Tilman et al., 2002). In the 1950s, agricultural sectors in Malaysia mainly focused on self-sufficiency food. However, since the 1980s, this strategy has changed toward export-oriented agricultural products.

Besides causing the loss of natural ecosystems, agriculture activities also contribute to considerable amounts of nitrogen and phosphorus that are detrimental to the terrestrial ecosystems. Parris (2011) stated that agricultural nonpoint source pollution has become a major concern nowadays as it is able to degrade water quality and has therefore received increasing attention around the globe including in developing countries. According to Yang et al. (2009), 30 to 50 % of surface water is influenced by non-point source pollution.

To increase production of vegetables and fruits, farmers nowadays tend to increase the input of fertilizer more than the required quantity. Over time, agricultural land is getting less fertile and many farmers resort to applying more chemical fertilizers to compensate the declining fertility. If crops are not growing well as expected, they often blame the quality of the chemical fertilizers and use more fertilizers. This fertilizer contains primary nutrients like nitrogen and phosphorus that causes eutrophication and affecting the aquatic habitat (Chambers et al., 2011). Lakes affected by eutrophication are not suitable to be used as drinking water due to its deteriorating water quality besides increasing the cost of water treatment process. In Malaysia, large amount of nutrients are required due to low soil fertility and to achieve high crop yield (Ann, 2012; Goh et al., 2012), therefore runoff with high nutrients contents cannot be avoided.

Sembrong Dam was originally constructed for flood control in the Kluang district but later the water is used for water supply by Syarikat Air Johor (SAJ). Water from Sembrong Dam is distributed to residents in Kluang and Batu Pahat area for domestic use. Water supplied to consumers must be of high quality, as measured by the Water Quality Index (WQI). A large part of the catchment area is under agricultural activities such as oil palm plantation, vegetable farm and orchard (Nelson, 2015). These activities also contribute to lake pollution by the fertilizers and pesticides carried to the river through surface runoff (Baharim 2015). Baharim (2015) also reported that the P level at the dam were more than 90% compared to the normal 70-80% in the Carlson Trophic Index. Livestock manure from fertilizing activities leads to high nutrient content in the lake.

In addition, the physical condition of the lake may be affected due to reduction in dissolved oxygen (DO) by algae and aquatic plants. Nutrient input to the lake causes increase of algae bloom. Later on, this can lead to eutrophication problem which changes the water to green (Baharim, 2015). While this algae can be killed during water treatment process, it will cost more than usual. Due to this, it is crucial to control loading of pollutants that is transferred by overland flow before reaching the nearest waterbody.

Figure 1.1 Greenish lake water due to eutrophication

Agriculture activities also contribute to land degradation through soil erosion from an agricultural land to streams which reduced the fertility of the soil as most nutrients and organic matter are contained at the topsoil (Sharma et al., 2004). Study of soil loss due to surface runoff is very important to determine erosion hotspot areas which are very widespread in humid tropical regions such as Malaysia (Toum et al., 2005). In an attempt to restore the soil to its original composition, more fertilizers and organic matter must be added. Soil erosion refers to the process where soil particles are removed from earth surface by natural process which will later be transported by wind or water to different place to be deposited. Erosion is the largest portion of NPS pollution in the tropical region as it causes sedimentation in lakes and reservoir, increase flood frequency and reduces storage capacity of lake. Sediment refers to eroded soil or suspended solids due to erosion process or surface runoff on an agricultural land, stream banks and highly disturbed area.

In addition to runoff process, pollutants can also be leached far below the ground level till the groundwater. Another motivation of this study is to know how fast different types of pollutants travel below ground surface. Agricultural land with a shallow groundwater level can cause this pollutants to enter the nearest waterbody by baseflow.

Water use in agriculture is also an area of interest in determining the water consumption of plants; therefore a water budget analysis is required to account for the movement and transformation of water in study site. Despite the importance of ET in hydrologic studies, spatial field-scale and short timescale variability remain poorly quantified, and thus this topic deserving further investigation.

Quantification of ET is crucial for sustainable water resources management in the hydrological, agricultural, and environmental studies. There are numerous models exist to estimate the ET_o, but these models give inconsistent values due to their differences in modeling assumptions and input data requirements, or because the models have been developed for specific areas (Lu et al., 2005; Xu and Singh, 2005). Among these models, the FAO56 Penman-Monteith model is considered to be the best approach for estimating ET_o and for the determination of crop coefficient because of its good approximation to lysimeter observations (Droogers and Allen, 2002; Xu and Singh, 2002; Popova et al., 2006). However, the FAO56 Penman-Monteith model requires many weather variables which can potentially introduce measurement and/or computational errors and cause cumulative errors in the calculated ET_o (Rahimikhoob et al., 2012). Due to this, other models that require less parameter should be considered for evaluation. Even though certain models such as Blaney-Criddle, Hargreaves, Makkink, Priestley Taylor and Turc, are developed under different weather variables, the models have been proven useful when applied at different climate regions (Kashyap and Panda, 2001; Xu and Singh, 2001; Trajkovic, 2007). Therefore, multiple ET_o evaluation study for tropical regions is urgently required as there is not much of researches involving ET_o models in the tropic region besides the Penman Monteith.

Crop water use or water requirements are determined by multiplying ET_o with crop coefficient, K_c. It is useful to determine the water requirement of crops according to their growth stage and environmental factors. The K_c value is sensitive and depends on several aspects such as type of crop, weather variables, canopy cover density, growth stage, soil moisture and agricultural operations (Allen et al., 1998). Previous studies have found that K_c for the same crop may vary from region to region depending on environmental factors such as climate and soil evaporation. Even though Allen et al. (1998) have compiled a list of K_c of various crops under different climates, K_c for a crop still has to be determined regionally as it may vary with factors like types of crop, growing stage, soil moisture, climate and agronomic techniques (Doorenbos and Pruitt, 1977; Ko et al., 2009; Piccinni et al., 2009). In addition, some authors have reported differences between published and locally developed K_c (Tyagi et al., 2000; Kashyap and Panda, 2001). Due to this, more studies on determining different types of crop K_c at different climates should be conducted as it may help modelers and water resource engineers to provide more reliable water management schemes. Bittergourd (*Momordica Charantia*) and chili (*Capsicum Annuum*) are some of the most popular vegetables due to its nutrient and medicinal properties that grow in tropical areas such as the Amazon, east Africa, Asia, and the Caribbean. The total requirement of chili in Malaysia reached up to 50000 tonnes per year (harvested area = 2986 ha). Due to insufficient domestic production, Malaysia need to import chili from neighbouring countries like Indonesia (A'fifah et al., 2015). Bittergourd has a long history of medicinal use especially in diabetes treatment, diarrhea, skin fungal infections and hypertension (Crisan et al., 2009). These vegetables are selected since there is lack of study on their crop water use in south-east Asia region.

1.3 Objectives of Study

The main goal of this study is to provide the quality and quantity of pollutant and their transport mechanism. The results of this study would allow the authorities to have a better understanding of the pollutant sources from different agricultural land use. More importantly the findings are useful to help the authorities in designing agricultural runoff pollution control measures.

Specifically these study objectives are:

i) To determine crop water use of *Momordica Charantia* and *Capsicum Annuum* at plot level

ii) To investigate concentration and loading of nutrient and sediments from plot planted with vegetables from Objective 1.

iii) To quantify pollutant leaching rate at agricultural farm and parameters of RZWQM2 model for the nitrate leaching study at agricultural plot

1.4 Scope of Study

Like in other studies, this particular study has its own limitations, both in scope and methodology. To achieve the above objectives, the following tasks were carried out:

- Selection of the study site preferably must be located in an agricultural area. The site must be accessible to facilitate data collection.

- The ET modelling use 26 different ET_o models from four different groups classified based on its weather parameter requirement. The performance of the models was evaluated using Class A pan evaporation data from the Kluang weather station. Eight statistical tests were used to assess and rank the accuracy of these 26 models. The ET values from the best ET_o model of each group were then modeled with weather variables using multiple regression technique.

- Usage of minilysimeters to determine the ET_c as actual ET depends on soil moisture. The obtained ET_c with the ET_o is used to determine the crop coefficient of both chili and bittergourd. The chili and bittergourd were not planted simultaneously to accommodate the farm management planting schedule at that time. A control plot is not necessary as the study compare the influence of two different crops rather than looking at different levels of treatment.

- Establishment of an experimental plot (7.1 *x* 12.2 m) at the study site. The study site is selected based on its location which is far from human disturbance. A tipping bucket flow gauge (model TB1L) was installed at the lower end of the plot to measure water flow and collect runoff during a storm event.

- The study focuses on sediment and nutrient (N & P) transport in runoff, soil water and groundwater. All water samples is collected after a storm event and tested at the Environmental laboratory of UTM. All laboratory works for water quality conforms with Standard Methods for the examination of water and wastewater (APHA, 2005) for Nitrate (NO_3), Nitrite (NO_2), Ammoniacal Nitrogen (NH_3-N), Total Nitrogen (TN), Phosphate (PO_4), Total Phosphorus (TP), Chemical Oxygen Demand (COD) and Total Suspended Solid (TSS).

- RZWQM2 modelling is used in this study to calibrate and validate NO_3 movement in soil water to groundwater due to its high mobility in soil water.

1.5 Significance of Study

The findings of this study are useful for proposing crop water use for crop in Malaysian climate and designing storm water control facilities, by identifying the concentrations and loading of storm water runoff and leaching at vegetable planting land uses in agricultural catchment. The results also help the authorities to improve the strategies of the agricultural runoff and leaching management program.

The specific benefits are as follows:

i) Providing more reliable water management schemes for vegetable crops to avoid under / over irrigation.

ii) Provides new information/data for controlling NPS pollution from agricultural activities.

iii) Enhanced understanding of pollutant transport processes in agricultural area by different types of crop.

REFERENCES

Abbasi, F., Simunek, J., van Genuchten, M. T., Feyen, J., Adamsen, F. J., Hunsaker, D. J., Strelkoff, T. S., & Shouse, P. (2003). Overland Water Flow and Solute Transport: Model Development and Field-Data Analysis. *Journal of Irrigation and Drainage Engineering-ASCE, 129*(2), 71-81. doi:10.1061/(Asce)0733-9437(2003)129:2(71)

Abrams, M. M., & Jarrell, W. M. (1995). Soil-Phosphorus as a Potential Nonpoint-Source for Elevated Stream Phosphorus Levels. *Journal of Environmental Quality*, *24*(1), 132-138.

Abtew, W. (1996). Evapotranspiration Measurements and Modeling for Three Wetland Systems in South Florida. *Journal of the American Water Resources Association*, *32*(3), 465-473. doi:10.1111/j.1752-1688.1996.tb04044.x

Adams, S., Quansah, G.W., Issaka, R.N., Asamoah, E.A., Nketia, K.A. and Amfootu, R., 2014. Water requirements of some selected crops in Tono irrigation area. Journal of Biodiversity and Environmental Sciences 4, 246-257

Addiscott, T., & Whitmore, A. (1987). Computer Simulation of Changes in Soil Mineral Nitrogen and Crop Nitrogen During Autumn, Winter and Spring. *The Journal of Agricultural Science, 109*(01), 141-157.

Addiscott, T., & Whitmore, A. (1991). Simulation of Solute Leaching in Soils of Differing Permeabilities. *Soil Use and Management, 7*(2), 94-102.

Addiscott, T. M., Brockie, D., Catt, J. A., Christian, D. G., Harris, G. L., Howse, K. R., Mirza, N. A., & Pepper, T. J. (2000). Phosphate Losses through Field Drains in a Heavy Cultivated Soil. *Journal of Environmental Quality, 29*(2), 522-532.

Addiscott, T. M., Whitmore, A. P., & Powlson, D. S. (1991). *Farming, Fertilizers and the Nitrate Problem*: CAB International (CABI).

Adela, Y., & Behn, C. (2015). Modelling Phosphorus Losses from Tropical Agricultural Soils in Gilgel Gibe Watershed, Ethiopia. *Journal of Pollution Effects & Control, 3*(3).

Adeniran, K., Amodu, M., Amodu, M., & Adeniji, F. (2010). Water Requirements of Some Selected Crops in Kampe Dam Irrigation Project. *Australian Journal of Agricultural Engineering, 1*(4), 119-125.

Adimassu, Z., Mekonnen, K., Yirga, C., & Kessler, A. (2014). Effect of Soil Bunds on Runoff, Soil and Nutrient Losses, and Crop Yield in the Central Highlands of Ethiopia. *Land Degradation & Development, 25*(6), 554-564.

Akhtar, M. S., Richards, B. K., Medrano, P. A., DeGroot, M., & Steenhuis, T. S. (2003). Dissolved Phosphorus from Undisturbed Soil Cores: Related to Adsorption Strength, Flow Rate, or Soil Structure? *Soil Science Society of America Journal, 67*(2), 458-470.

Allaire-Leung, S. E., Wu, L., Mitchell, J. P., & Sanden, B. L. (2001). Nitrate Leaching and Soil Nitrate Content as Affected by Irrigation Uniformity in a Carrot Field. *Agricultural Water Management, 48*(1), 37-50. doi: 10.1016/S0378-3774(00)00112-8

Allen, R. G., Pereira, L. S., Raes, D., & Smith, M. (1998). Crop Evapotranspiration-Guidelines for Computing Crop Water Requirements. *FAO Irrigation and Drainage Paper 56,* Rome, 300, 6541.

Altman, S. J., & Parizek, R. R. (1995). Dilution of Nonpoint-Source Nitrate in Groundwater. *Journal of Environmental Quality, 24*(4), 707-718.

Amezketa, E., Aragüés, R., Carranza, R., & Urgel, B. (2003). Chemical, Spontaneous and Mechanical Dispersion of Clays in Arid-Zone Soils. *Spanish Journal of Agricultural Research, 1*(4), 95-107.

Aminuddin, B., Ghulam, M., Abdullah, W. W., Zulkefli, M., & Salama, R. (2005). Sustainability of Current Agricultural Practices in the Cameron Highlands, Malaysia. *Water, Air, & Soil Pollution: Focus, 5*(1-2), 89-101.

Anastasiadis, S., Boglis, A., Pechlivanidis, B. G., Lekkas, D. F., & Baltas, E. (2013). Application of Gis Based Clark's Unit Hydrograph and Transfer Function Model to Describe Runoff Response in a Small Catchment, Case Study: Lykoremma River, Greece. *Fresenius Environmental Bulletin, 22*(7b), 2152-2158.

Andraski, T. W., Bundy, L. G., & Brye, K. R. (2000). Crop Management and Corn Nitrogen Rate Effects on Nitrate Leaching. *Journal of Environmental Quality, 29*(4), 1095-1103.

Angle, J., Gross, C., Hill, R., & McIntosh, M. (1993). Soil Nitrate Concentrations under Corn as Affected by Tillage, Manure, and Fertilizer Applications. *Journal of Environmental Quality, 22*(1), 141-147.

Ann, Y. C. (2012). Impact of Different Fertilization Methods on the Soil, Yield and Growth Performance of Black Pepper (Piper Nigrum L.). *Malaysian Journal of Soil Science, 16*, 71-87.

APHA. (2005). Standard Methods for the Examination of Water and Wastewater. *American Public Health Association (APHA):* Washington, *DC, USA*.

Arhonditsis, G., Giourga, C., Loumou, A., & Koulouri, M. (2002). Quantitative Assessment of Agricultural Runoff and Soil Erosion Using Mathematical Modeling: Applications in the Mediterranean Region. *Environmental Management, 30*(3), 434-453.

Armand, R., Bockstaller, C., Auzet, A.-V., & Van Dijk, P. (2009). Runoff Generation Related to Intra-Field Soil Surface Characteristics Variability: Application to Conservation Tillage Context. *Soil and Tillage Research, 102*(1), 27-37.

Asadi, M. E., Clemente, R. S., Das Gupta, A., Loof, R., & Hansen, G. K. (2002). Impacts of Fertigation via Sprinkler Irrigation on Nitrate Leaching and Corn Yield in an Acid-Sulphate Soil in Thailand. *Agricultural Water Management, 52*(3), 197-213. doi:10.1016/S0378-3774(01)00136-6

Asadzadeh, F., Gorji, M., Vaezi, A., Sokouti, R., & Shorafa, M. (2012). Scale Effect on Runoff from Field Plots under Natural Rainfall. *American-Eurasian Journal of Agricultural & Environmental Sciences, 12*(9), 114.

Ashman, M., & Puri, G. (2013). *Essential Soil Science: A Clear and Concise Introduction to Soil Science*. Oxford, UK: John Wiley & Sons.

Assouline, S., & Ben-Hur, A. (2006). Effects of Rainfall Intensity and Slope Gradient on the Dynamics of Interrill Erosion During Soil Surface Sealing. *Catena*, *66*(3), 211-220. doi:10.1016/j.catena.2006.02.005

Atucha, A., Merwin, I. A., Brown, M. G., Gardiazabal, F., Mena, F., Adriazola, C., & Lehmann, J. (2013). Soil Erosion, Runoff and Nutrient Losses in an Avocado (Persea Americana Mill) Hillside Orchard under Different Groundcover Management Systems. *Plant and Soil, 368*(1-2), 393-406. doi:10.1007/s11104-012-1520-0

A'fifah, A.R., M.R. Ismail, E.M.W. Putrei, S.N.A. Abdullah, Z. Berahim, R. Bakhtiar and H. Kausar, 2015. Optimum fertigation requirement and crop coefficients of chilli (*Capsicum annuum*) grown in soilless medium in the tropic climate. *Internationa Journal of Agriculture & Biology*, 17(1), 80–88.

Baffaut, C., & Delleur, J. W. (1990). Calibration of SWMM Runoff Quality Model with Expert System. *Journal of Water Resources Planning and Management, 116*(2), 247-261.

Baharim, Nor Bakhiah. *Spatial and Temporal Distributions of Water Physicochemical Properties, Sediment Quality and Sedimentation in Sembrong Reservoir*. PhD Thesis. Uniersiti Teknologi Malaysia; 2015

Bakhsh, A., Kanwar, R. S., & Ahuja, L. R. (1999). Simulating the Effect of Swine Manure Application on NO_3-N Transport to Subsurface Drainage Water. *Transactions of the ASAE-American Society of Agricultural Engineers, 42*(3), 657-664.

Bakhsh, A., Kanwar, R. S., Jaynes, D. B., Colvin, T. S., & Ahuja, L. R. (2001). Simulating Effects of Variable Nitrogen Application Rates on Corn Yields and NO_3-N Losses in Subsurface Drain Water. *Transactions of the ASAE, 44*(2), 269-276.

Bakhsh, A., Kanwar, R. S., & Karlen, D. L. (2005). Effects of Liquid Swine Manure Aapplications on NO_3-N Leaching Losses to Subsurface Drainage Water from Loamy Soils in Iowa. *Agriculture Ecosystems & Environment*, *109*(1-2), 118-128. doi:10.1016/j.agee.2005.01.018

Balderacchi, M., Guardo, A. D., Vischetti, C., & Trevisan, M. (2008). The Effect of Crop Rotation on Pesticide Leaching in a Regional Pesticide Risk Assessment. *Environmental Science & Technology, 42*(21), 8000-8006.

Baptista, I., Ritsema, C., Querido, A., Ferreira, A. D., & Geissen, V. (2015). Improving Rainwater-Use in Cabo Verde Drylands by Reducing Runoff and Erosion. *Geoderma, 237*, 283-297. doi:10.1016/j.geoderma.2014.09.015

Barthes, B., & Roose, E. (2002). Aggregate Stability as an Indicator of Soil Susceptibility to Runoff and Erosion; Validation at Several Levels. *Catena, 47*(2), 133-149.

Barton, A. P., Fullen, M. A., Mitchell, D. J., Hocking, T. J., Liu, L. G., Bo, Z. W., Zheng, Y., & Xia, Z. Y. (2004). Effects of Soil Conservation Measures on Erosion Rates and Crop Productivity on Subtropical Ultisols in Yunnan

Province, China. *Agriculture Ecosystems & Environment, 104*(2), 343-357. doi:10.1016/j.agee.2004.01.034

Basso, B., & Ritchie, J. T. (2005). Impact of Compost, Manure and Inorganic Fertilizer on Nitrate Leaching and Yield for a 6-Year Maize-Alfalfa Rotation in Michigan. *Agriculture Ecosystems & Environment, 108*(4), 329-341. doi: 10.1016/j.agee.2005.01.011

Beauchemin, S., Simard, R. R., & Cluis, D. (1998). Forms and Concentration of Phosphorus in Drainage Water of Twenty-Seven Tile-Drained Soils. *Journal of Environmental Quality, 27*(3), 721-728.

Bechmann, M. (2014). Long-Term Monitoring of Nitrogen in Surface and Subsurface Runoff from Small Agricultural Dominated Catchments in Norway. *Agriculture Ecosystems & Environment, 198,* 13-24. doi:10.1016/j.agee.2014.05.010

Beede, D. K., & Davidson, J. A. (1999). Phosphorus: Nutritional Management for Y2K and Beyond. *Proceedings. Tri-State Dairy Nutrition. Conference.* Fort Wayne, IN.

Beedy, T., Snapp, S., Akinnifesi, F., & Sileshi, G. (2010). Impact of Gliricidia Sepium Intercropping on Soil Organic Matter Fractions in a Maize-Based Cropping System. *Agriculture, Ecosystems & Environment, 138*(3), 139-146.

Nelson Benjamin (2015, March 17). Sembrong Dam 'slowly dying'. *The Star*. Retrieved November 26, 2016, from http://www.thestaronline.com.my

Bergstrom, L., & Ritter, W. (2001). Nitrogen and Water Quality. Chapter 3. *Agricultural Nonpoint Source Pollution. Watershed Management and Hydrology. CRC Press LLC, Boca Raton, Florida*.

Bernardoni, E. (2013). *Field-Scale Assessment of Nutrient and Soil Losses During Surface Runoff Events, in an Oltrepo Pavese (Southern Lombardy-Italian Region) Vineyard Hill.* PhD Thesis, Università degli Studi di Milano.

Bertol, I., Engel, F., Mafra, A., Bertol, O., & Ritter, S. (2007). Phosphorus, Potassium and Organic Carbon Concentrations in Runoff Water and Sediments under Different Soil Tillage Systems During Soybean Growth. *Soil and Tillage Research, 94*(1), 142-150.

Bertoldi, G., Rigon, R., & Over, T. M. (2006). Impact of Watershed Geomorphic Characteristics on the Energy and Water Budgets. *Journal of Hydrometeorology, 7*(3), 389-403.

Bethlenfalvay, G. J. (1992). Mycorrhizae in the Agricultural Plant-Soil System. *Symbiosis, 14*, 413-425.

Beven, K., & Germann, P. (1982). Macropores and Water Flow in Soils. *Water Resources Research, 18*(5), 1311-1325.

Bhattacharyya, R., Prakash, V., Kundu, S., & Gupta, H. (2006). Effect of Tillage and Crop Rotations on Pore Size Distribution and Soil Hydraulic Conductivity in Sandy Clay Loam Soil of the Indian Himalayas. *Soil and Tillage Research, 86*(2), 129-140.

Biddoccu, M., Ferraris, S., Opsi, F., & Cavallo, E. (2016). Long-Term Monitoring of Soil Management Effects on Runoff and Soil Erosion in Sloping Vineyards in Alto Monferrato (North–West Italy). *Soil and Tillage Research, 155*, 176-189.

Bjorneberg, D. L., Kanwar, R. S., & Melvin, S. W. (1996). Seasonal Changes in Flow and Nitrate-N Loss from Subsurface Drains. *Transactions of the ASAE, 39*(3), 961-967.

Blanco-Canqui, H., & Lal, R. (2008). No-Tillage and Soil-Profile Carbon Sequestration: An on-Farm Assessment. *Soil Science Society of America Journal, 72*(3), 693-701. doi:10.2136/sssaj2007.0233

Boardman, J., Poesen, J., & Evans, R. (2003). Socio-Economic Factors in Soil Erosion and Conservation. *Environmental Science & Policy, 6*(1), 1-6.

Bob, M., Rahman, N. A., Taher, S., & Elamin, A. (2015). Multi-Objective Assessment of Groundwater Quality in Madinah City, Saudi Arabia. *Water Quality, Exposure and Health, 7*(1), 53-66.

Bochet, E., Poesen, J., & Rubio, J. L. (2006). Runoff and Soil Loss under Individual Plants of a Semi-Arid Mediterranean Shrubland: Influence of Plant Morphology and Rainfall Intensity. *Earth Surface Processes and Landforms, 31*(5), 536-549. doi:10.1002/Esp.1351

Boix-Fayos, C., Martinez-Mena, M., Calvo-Cases, A., Arnau-Rosalen, E., Albaladejo, J., & Castillo, V. (2007). Causes and Underlying Processes of Measurement Variability in Field Erosion Plots in Mediterranean Conditions. *Earth Surface Processes and Landforms, 32*(1), 85-101. doi:10.1002/esp.1382

Bonuma, N. B., Rossi, C. G., Arnold, J. G., Reichert, J. M., & Paiva, E. M. C. D. (2013). Hydrology Evaluation of the Soil and Water Assessment Tool

Considering Measurement Uncertainty for a Small Watershed in Southern Brazil. *Applied Engineering in Agriculture, 29*(2), 189-200.

Bormann, H. (2011). Sensitivity Analysis of 18 Different Potential Evapotranspiration Models to Observed Climatic Change at German Climate Stations. *Climatic Change, 104*(3-4), 729-753.

Bowman, R. S., & Rice, R. C. (1986). Transport of Conservative Tracers in the Field under Intermittent Flood Irrigation. *Water Resources Research, 22*(11), 1531-1536.

Brady, N. (1974). The Nature and Properties of Soils (8 ed., pp. 639). New York: MacMillan Publication.

Brahy, V., Henao-Toro, M. C., Goor, F., Ledent, J. F., & Delvaux, B. (2002). Assessing Passive Capillary-Wick Samplers for Monitoring Resident Nitrate Concentration in Real Field. *Soil Use and Management, 18*(1), 18-25. doi: 10.1079/Sum200195

Braskerud, B. (2002a). Factors Affecting Nitrogen Retention in Small Constructed Wetlands Treating Agricultural Non-Point Source Pollution. *Ecological Engineering, 18*(3), 351-370.

Braskerud, B. (2002b). Factors Affecting Phosphorus Retention in Small Constructed Wetlands Treating Agricultural Non-Point Source Pollution. *Ecological Engineering, 19*(1), 41-61.

Breve, M., Skaggs, R., Parsons, J., & Gilliam, J. (1997). Drainmod-N, a Nitrogen Model for Artificially Drained Soil. *Transactions of the ASAE, 40*(4), 1067-1075.

Brocca, L., Melone, F., & Moramarco, T. (2008). On the Estimation of Antecedent Wetness Conditions in Rainfall–Runoff Modelling. *Hydrological Processes, 22*(5), 629-642.

Broughton, W. (1976). Effect of Various Covers on Soil Fertility under Hevea Brasiliensis Muell. Arg. And on Growth of the Tree. *Agro-Ecosystems, 3*, 147-170.

Bubalo, M., Romić, D., Zovko, M., & Kuspilić, N. (2014). Agricultural Impact on Groundwater Vulnerability to Nitrate in Northern Croatia. *Agriculturae Conspectus Scientificus, 79*(1), 23-29.

Bulluck, L., Brosius, M., Evanylo, G., & Ristaino, J. (2002). Organic and Synthetic Fertility Amendments Influence Soil Microbial, Physical and Chemical

Properties on Organic and Conventional Farms. *Applied Soil Ecology, 19*(2), 147-160.

Bundt, M., Widmer, F., Pesaro, M., Zeyer, J., & Blaser, P. (2001). Preferential Flow Paths: Biological 'Hot Spots' in Soils. *Soil Biology and Biochemistry, 33*(6), 729-738.

Burgess, S. S. O., Adams, M. A., Turner, N. C., & Ong, C. K. (1998). The Redistribution of Soil Water by Tree Root Systems. *Oecologia, 115*(3), 306-311. doi:10.1007/s004420050521

Burt, C. M., Clemmens, A. J., Strelkoff, T. S., Solomon, K. H., Bliesner, R. D., Hardy, L. A., Howell, T. A., & Eisenhauer, D. E. (1997). Irrigation Performance Measures: Efficiency and Uniformity. *Journal of Irrigation and Drainage Engineering, 123*(6), 423-442.

Caiqiong, Y., & Jun, F. (2016). Application of HYDRUS-1D Model to Provide Antecedent Soil Water Contents for Analysis of Runoff and Soil Erosion from a Slope on the Loess Plateau. *Catena*, *139*, 1-8.

Cameira, M., Fernando, R., & Pereira, L. (2003). Soil Macropore Dynamics Affected by Tillage and Irrigation for a Silty Loam Alluvial Soil in Southern Portugal. *Soil and Tillage Research*, *70*(2), 131-140.

Cammeraat, E. L. (2004). Scale Dependent Thresholds in Hydrological and Erosion Response of a Semi-Arid Catchment in Southeast Spain. *Agriculture, Ecosystems & Environment*, *104*(2), 317-332.

Caravaca, F., Garcia, C., Hernández, M., & Roldán, A. (2002). Aggregate Stability Changes after Organic Amendment and Mycorrhizal Inoculation in the Afforestation of a Semiarid Site with Pinus Halepensis. *Applied Soil Ecology, 19*(3), 199-208.

Carpenter, S. R., Caraco, N. F., Correll, D. L., Howarth, R. W., Sharpley, A. N., & Smith, V. H. (1998). Nonpoint Pollution of Surface Waters with Phosphorus and Nitrogen. *Ecological Applications*, *8*(3), 559-568. doi:10.2307/2641247

Carter, M. R. (2004). Researching Structural Complexity in Agricultural Soils. *Soil & Tillage Research*, *79*(1), 1-6. doi:10.1016/j.still.2004.04.001

Casermeiro, M., Molina, J., De La Cruz Caravaca, M., Costa, J. H., Massanet, M. H., & Moreno, P. (2004). Influence of Scrubs on Runoff and Sediment Loss in Soils of Mediterranean Climate. *Catena, 57*(1), 91-107.

Catt, J., Howse, K., Farina, R., Brockie, D., Todd, A., Chambers, B., Hodgkinson, R., Harris, G., & Quinton, J. N. (1998). Phosphorus Losses from Arable Land in England. *Soil Use and Management, 14*(4), 168-174.

Cerdà, A., & Doerr, S. H. (2008). The Effect of Ash and Needle Cover on Surface Runoff and Erosion in the Immediate Post-Fire Period. *Catena, 74*(3), 256-263.

Cerda, A., Morera, A. G., & Bodi, M. B. (2009). Soil and Water Losses from New Citrus Orchards Growing on Sloped Soils in the Western Mediterranean Basin. *Earth Surface Processes and Landforms, 34*(13), 1822-1830. doi:10.1002/esp.1889

Cerdan, O., Le Bissonnais, Y., Govers, G., Lecomte, V., van Oost, K., Couturier, A., King, C., & Dubreuil, N. (2004). Scale Effect on Runoff from Experimental Plots to Catchments in Agricultural Areas in Normandy. *Journal of Hydrology, 299*(1-2), 4-14. doi:10.1016/j.jhydrol.2004.02.017

Chambers, P. A., Benoy, G. A., Brua, R. B., & Culp, J. M. (2011). Application of Nitrogen and Phosphorus Criteria for Streams in Agricultural Landscapes. *Water Science and Technology, 64*(11), 2185-2191. doi:10.2166/Wst.2011.760

Chaplot, V., & Le Bissonnais, Y. (2000). Field Measurements of Interrill Erosion under Different Slopes and Plot Sizes. *Earth Surface Processes and Landforms, 25*(2), 145-153. doi:10.1002/(Sici)1096-9837(200002)25:2<145::Aid-Esp51>3.0.Co;2-3

Chinkuyu, A., Meixner, T., Gish, T., & Daughtry, C. (2004). The Importance of Seepage Zones in Predicting Soil Moisture Content and Surface Runoff Using Gleams and RZWQM. *Transactions of the ASAE, 47*(2), 427-438.

Choi, G. C., Lee, J. H., Yu, J. C., Ju, D. J., & Park, J. J. (2011). Laboratory Assessment of Biofihn Process and Its Microbial Characteristics for Treating Nonpoint Source Pollution. *Korean Journal of Chemical Engineering, 28*(5), 1207-1213. doi:10.1007/s11814-010-0479-x

Chotpantarat, S., Limpakanwech, C., Siriwong, W., Siripattanakul, S., & Sutthirat, C. (2012). Effects of Soil Water Characteristic Curves on Simulation of Nitrate Vertical Transport in a Thai Agricultural Soil. *Sustainable Environment Research, 21*(3), 187-193.

Collins, R., & Jenkins, A. (1996). The Impact of Agricultural Land Use on Stream Chemistry in the Middle Hills of the Himalayas, Nepal. *Journal of Hydrology, 185*(1-4), 71-86.

Cook, H. F., Valdes, G. S., & Lee, H. C. (2006). Mulch Effects on Rainfall Interception, Soil Physical Characteristics and Temperature under Zea Mays L. *Soil and Tillage Research, 91*(1), 227-235.

Correll, D. L. (1998). The Role of Phosphorus in the Eutrophication of Receiving Waters: A Review. *Journal of Environmental Quality, 27*(2), 261-266.

Craul, P. (1994). Reducing Soil Compaction and Methods to Combat the Effects of Foot Traffic. *Landscape Architecture, 84*(12), 34-36.

Crisan, S., Campeanu, G., & Halmagean, L. (2009). Study of *Momordica Charantia* L. Species Grown on the Specific Conditions of Romania's Western Part. *Zbornik Radova 44. Hrvatski i 4 Medunarodni Simpozij Agronoma, Opatija, Hrvatska, 16-20 Veljače 2009*.

Cui, Z. L., Chen, X. P., & Zhang, F. S. (2010). Current Nitrogen Management Status and Measures to Improve the Intensive Wheat-Maize System in China. *Ambio, 39*(5-6), 376-384. doi:10.1007/s13280-010-0076-6

Dahan, O., Babad, A., Lazarovitch, N., Russak, E. E., & Kurtzman, D. (2014). Nitrate Leaching from Intensive Organic Farms to Groundwater. *Hydrology and Earth System Sciences*, *18*(1), 333-341. doi:10.5194/hess-18-333-2014

Dahiya, R., Ingwersen, J., & Streck, T. (2007). The Effect of Mulching and Tillage on the Water and Temperature Regimes of a Loess Soil: Experimental Findings and Modeling. *Soil & Tillage Research, 96*(1-2), 52-63. doi: 10.1016/j.still.2007.02.004

Daniel, T. C., Sharpley, A. N., & Lemunyon, J. L. (1998). Agricultural Phosphorus and Eutrophication: A Symposium Overview. *Journal of Environmental Quality*, *27*(2), 251-257.

Daraghmeh, O. A. (2007). *Soil Structure Stability and near-Saturated Hydraulic Characteristics under Reduced and Conventional Tillage.* University of Copenhagen, Faculty of Life Sciences, Department of Agricultural Sciences, Environment, Resources and Technology.

Dash, C. J., Sarangi, A., Adhikary, P. P., & Singh, D. K. (2016). Simulation of Nitrate Leaching under Maize-Wheat Cropping System in a Semiarid Irrigated Area of the Indo-Gangetic Plain, India. *Journal of Irrigation and*

Drainage Engineering, 142(2). doi:Artn 0401505310.1061/(Asce)Ir.1943-4774.0000965

David, M. B., & Gentry, L. E. (2000). Anthropogenic Inputs of Nitrogen and Phosphorus and Riverine Eexport for Illinois, USA. *Journal of Environmental Quality, 29*(2), 494-508.

De Baets, S., Poesen, J., Reubens, B., Wemans, K., De Baerdemaeker, J., & Muys, B. (2008). Root Tensile Strength and Root Distribution of Typical Mediterranean Plant Species and Their Contribution to Soil Shear Strength. *Plant and Soil, 305*(1-2), 207-226.

De Jager, M. J. (2015). *An Analysis of Soil Properties Associated with Badland and Gully Erosion in Rural Catchments of the Ngqushwa District, Eastern Cape Province.* PhD Thesis, Nelson Mandela Metropolitan University.

De Silva, M. S., Nachabe, M. H., Simunek, J., & Carnahan, R. (2008). Simulating Root Water Uptake from a Heterogeneous Vegetative Cover. *Journal of Irrigation and Drainage Engineering-ASCE, 134*(2), 167-174. doi: 10.1061/(Asce)0733-9437(2008)134:2(167)

Deasy, C., Brazier, R., Heathwaite, A., & Hodgkinson, R. (2009). Pathways of Runoff and Sediment Transfer in Small Sgricultural Catchments. *Hydrological Processes, 23*(9), 1349-1358.

Dekker, L., & Bouma, J. (1984). Nitrogen Leaching During Sprinkler Irrigation of a Dutch Clay Soil. *Agricultural Water Management, 9*(1), 37-45.

Delgado, J. A., & Mosier, A. R. (1996). Mitigation Alternatives to Decrease Nitrous Oxides Emissions and Urea-Nitrogen Loss and Their Effect on Methane Flux. *Journal of Environmental Quality, 25*(5), 1105-1111.

Descheemaeker, K., Nyssen, J., Poesen, J., Raes, D., Haile, M., Muys, B., & Deckers, S. (2006). Runoff on Slopes with Restoring Vegetation: A Case Study from the Tigray Highlands, Ethiopia. *Journal of Hydrology, 331*(1-2), 219-241. doi:10.1016/j.jhydrol.2006.05.015

Di Stefano, C., & Ferro, V. (2002). Linking Clay Enrichment and Sediment Delivery Processes. *Biosystems Engineering, 81*(4), 465-479.

Didone, E. J., Minella, J. P. G., Reichert, J. M., Merten, G. H., Dalbianco, L., de Barrros, C. A. P., & Ramon, R. (2014). Impact of No-Tillage Agricultural Systems on Sediment Yield in Two Large Catchments in Southern Brazil.

Journal of Soils and Sediments, 14(7), 1287-1297. doi:10.1007/s11368-013-0844-6

Dikau, R., Rasemann, S., & Schmidt, J. (2004). Hillslope Form. *Encyclopedia of Geomorphology*, 516-521.

Dillaha, T. A. (1990). Role of Best Management Practices in Restoring the Health of the Chesapeake Bay. *Advances in Estuarine Sciences, 41*(90), 57-81.

Doorenbos, J., & Pruitt, W. (1977). Crop Water Requirements. *FAO Irrigation and Drainage Paper 24.* Rome, 144.

Doran, J. (1987). Microbial Biomass and Mineralizable Nitrogen Distributions in No-Tillage and Plowed Soils. *Biology and Fertility of Soils, 5*(1), 68-75.

Dorioz, J., Fleury, P., & Jeannin, B. (1987). Factors Controlling Vegetation Dynamics in Hay Meadows under High Levels of Organic Fertilizer in the French Northern Alps *Animal Manure on Grassland and Fodder Crops. Fertilizer or Waste?* (pp. 341-343). Wageningen: Springer.

Droogers, P., & Allen, R. G. (2002). Estimating Reference Evapotranspiration under Inaccurate Data Conditions. *Irrigation and Drainage Systems, 16*(1), 33-45.

Dugas, W., & Bland, W. (1989). The Accuracy of Evaporation Measurements from Small Lysimeters. *Agricultural and Forest Meteorology, 46*(1), 119-129.

Duiker, S., Flanagan, D., & Lal, R. (2001). Erodibility and Infiltration Characteristics of Five Major Soils of Southwest Spain. *Catena, 45*(2), 103-121.

Dunjo, G., Pardini, G., & Gispert, M. (2004). The Role of Land Use-Land Cover on Runoff Generation and Sediment Yield at a Microplot Scale, in a Small Mediterranean Catchment. *Journal of Arid Environments, 57*(2), 239-256. doi:10.1016/S0140-1963(03)00097-1

Dunne, T., & Black, R. D. (1970). An Experimental Investigation of Runoff Production in Permeable Soils. *Water Resources Research*, *6*(2), 478-490.

Durán Zuazo, V. H., Francia Martínez, J. R., García Tejero, I., Rodríguez Pleguezuelo, C. R., Raya, A. M., & Cuadros Tavira, S. (2012). Runoff and Sediment Yield from a Small Watershed in Southeastern Spain (Lanjarón): Implications for Water Quality. *Hydrological Sciences Journal, 57*(8), 1610-1625.

Durruthy, Y. C., Díaz, C. E. D., Seijas, T. L., Paredes, P., & Pereiras, L. S. (2010). Determining of Crop Coefficients for Horticultural Crops in Cuba through

Field Experiments and Water Balance Simulation. *Revista Ciencias Técnicas Agropecuarias, 19*(1), 50-56.

Duxbury, J., & Peverly, J. (1978). Nitrogen and Phosphorus Losses from Organic Soils. *Journal of Environmental Quality, 7*(4), 566-570.

Eash, N. S., & Sandor, J. A. (1995). Soil Chronosequence and Geomorphology in a Semiarid Valley in the Andes of Southern Peru. *Geoderma, 65*(1-2), 59-79. doi:10.1016/0016-7061(94)00025-6

Eastman, M., Gollamudi, A., Stampfli, N., Madramootoo, C. A., & Sarangi, A. (2010). Comparative Evaluation of Phosphorus Losses from Subsurface and Naturally Drained Agricultural Fields in the Pike River Watershed of Quebec, Canada. *Agricultural Water Management, 97*(5), 596-604. doi: 10.1016/j.agwat.2009.11.010

Eaton, A. D., & Franson, M. (2005). Standard Methods for the Examination of Water and Wastewater. *American Public Health Association, Washington, DC, 21*.

Ebrahimian, H., Liaghat, A., Parsinejad, M., Playan, E., Abbasi, F., & Navabian, M. (2013). Simulation of 1D Surface and 2D Subsurface Water Flow and Nitrate Transport in Alternate and Conventional Furrow Fertigation. *Irrigation Science*, 31 (3), 301-316

Ebrahimian, H. (2014). Soil Infiltration Characteristics in Alternate and Conventional Furrow Irrigation Using Different Estimation Methods. *KSCE Journal of Civil Engineering, 18*(6), 1904-1911. doi:10.1007/s12205-014-1343-z

Edwards, A. C., & Withers, P. J. A. (1998). Soil Phosphorus Management and Water Quality: A UK Perspective. *Soil Use and Management, 14*, 124-130. doi: 10.1111/j.1475-2743.1998.tb00630.x

Edwards, A. C., & Withers, P. J. A. (2008). Transport and Delivery of Suspended Solids, Nitrogen and Phosphorus from Various Sources to Freshwaters in the UK. *Journal of Hydrology, 350*(3-4), 144-153. doi: 10.1016/j.jhydrol.2007.10.053

Edwards, D., & Daniel, T. (1993a). Effects of Poultry Litter Application Rate and Rainfall Intensity on Quality of Runoff from Fescuegrass Plots. *Journal of Environmental Quality, 22*(2), 361-365.

Edwards, D., & Daniel, T. (1993b). Runoff Quality Impacts of Swine Manure Applied to Fescue Plots. *Transactions of the ASAE, 36*(1), 81-86.

Edwards, W. M., Shipitalo, M. J., Owens, L. B., & Dick, W. A. (1993). Factors Affecting Preferential Flow of Water and Atrazine through Earthworm Burrows under Continuous No-Till Corn. *Journal of Environmental Quality, 22*(3), 453-457.

El Kateb, H., Zhang, H. F., Zhang, P. C., & Mosandl, R. (2013). Soil Erosion and Surface Runoff on Different Vegetation Covers and Slope Gradients: A Field Experiment in Southern Shaanxi Province, China. *Catena, 105*, 1-10. doi:10.1016/j.catena.2012.12.012

Elliott, E., & Coleman, D. (1988). Let the Soil Work for Us. *Ecological Bulletins, 39*, 23-32.

Elliott, J. (2013). Evaluating the Potential Contribution of Vegetation as a Nutrient Source in Snowmelt Runoff. *Canadian Journal of Soil Science, 93*(4), 435-443. doi:10.4141/Cjss2012-050

Elrashidi, M. A., Mays, M. D., Harder, J., Schroeder, D., Brakhage, P., Peaslee, S., Seybold, C., & Schaecher, C. (2005). Loss of Phosphorus by Runoff for Agricultural Watersheds. *Soil Science, 170*(7), 543-558. doi: 10.1097/01.ss.0000175340.84421.ec

Emili, L. A., & Greene, R. P. (2013). Modeling Agricultural Nonpoint Source Pollution Using a Geographic Information System Approach. *Environmental Management*, *51*(1), 70-95. doi:10.1007/s00267-012-9940-4

Er-Raki, S., Chehbouni, A., Guemouria, N., Duchemin, B., Ezzahar, J., & Hadria, R. (2007). Combining FAO-56 Model and Ground-Based Remote Sensing to Estimate Water Consumptions of Wheat Crops in a Semi-Arid Region. *Agricultural Water Management, 87*(1), 41-54.

Essig, E. T., Corradini, C., Morbidelli, R., & Govindaraju, R. S. (2009). Infiltration and Deep Flow over Sloping Surfaces: Comparison of Numerical and Experimental Results. *Journal of Hydrology*, *374*(1-2), 30-42. doi: 10.1016/j.jhydrol.2009.05.017

Fan, F., Zhang, F., Song, Y., Sun, J., Bao, X., Guo, T., & Li, L. (2006). Nitrogen Fixation of Faba Bean (Vicia Faba L.) Interacting with a Non-Legume in Two Contrasting Intercropping Systems. *Plant and Soil*, *283*(1-2), 275-286.

Fenton, M., Albers, C., & Ketterings, Q. (2008). Soil Organic Matter. *Agronomy Factsheet, 41*.

Fettweis, U., Mittelstaedt, W., Schimansky, C., & Fiihr, F. (2001). Lysimeter Experiments on the Translocation of the Carbon-14-Labelled Nitrification Inhibitor 3,4-Dimethylpyrazole Phosphate (Dmpp) in a Gleyic Cambisol. *Biology and Fertility of Soils, 34*(2), 126-130. doi:10.1007/s003740100385

Fiener, P., Auerswald, K., & Weigand, S. (2005). Managing Erosion and Water Quality in Agricultural Watersheds by Small Detention Ponds. *Agriculture, Ecosystems & Environment, 110*(3), 132-142.

Fisher, J. B., DeBiase, T. A., Qi, Y., Xu, M., & Goldstein, A. H. (2005). Evapotranspiration Models Compared on a Sierra Nevada Forest Ecosystem. *Environmental Modelling & Software, 20*(6), 783-796.

Flury, M., Flühler, H., Jury, W. A., & Leuenberger, J. (1994). Susceptibility of Soils to Preferential Flow of Water: A Field Study. *Water Resources Research, 30*(7), 1945-1954.

Follett, R., & Delgado, J. (2002). Nitrogen Fate and Transport in Agricultural Systems. *Journal of Soil and Water Conservation, 57*(6), 402-408.

Follett, R., & Schimel, D. (1989). Effect of Tillage Practices on Microbial Biomass Dynamics. *Soil Science Society of America Journal, 53*(4), 1091-1096.

Follett, R. F., & Hatfield, J. L. (2001). Nitrogen in the Environment: Sources, Problems, and Management. *The Scientific World Journal, 1*, 920-926.

Forbes, J. C., & Watson, D. (1992). *Plants in Agriculture*. New York: Cambridge University Press, UK.

Forrer, I., Kasteel, R., Flury, M., & Fluhler, H. (1999). Longitudinal and Lateral Dispersion in an Unsaturated Field Soil. *Water Resources Research, 35*(10), 3049-3060. doi:10.1029/1999wr900185

Frankenberger Jr, W., & Abdelmagid, H. (1985). Kinetic Parameters of Nitrogen Mineralization Rates of Leguminous Crops Incorporated into Soil. *Plant and Soil*, *87*(2), 257-271.

Fraser, A., Harrod, T., & Haygarth, P. (1999). The Effect of Rainfall Intensity on Soil Erosion and Particulate Phosphorus Transfer from Arable Soils. *Water Science and Technology, 39*(12), 41-45.

Freeman, T. J. (2013). *Suggested Procedures for Modeling Phosphorus Runoff in Central Illinois Farm Scale Watersheds*. Southern Illinois University.

Frossard, E., Condron, L. M., Oberson, A., Sinaj, S., & Fardeau, J. C. (2000). Processes Governing Phosphorus Availability in Temperate Soils. *Journal of Environmental Quality, 29*(1), 15-23.

Gallardo, M., Bonachela, S., Orgaz, F., Fereres, E., & Fernandández, M. (1999). Crop Coefficients of a Pepper Crop Grown in Plastic Greenhouses in Almeria, Spain. *III International Symposium on Irrigation of Horticultural Crops 537*.

Gangbazo, G., Pesant, A. R., Cluis, D., Couillard, D., & Barnett, G. M. (1995). Winter and Early Spring Losses of Nitrogen Following Late Fall Application of Hog Manure. *Canadian Agricultural Engineering, 37*(2), 73-79.

Gao, X., Wu, P., Zhao, X., Shi, Y., Wang, J., & Zhang, B. (2011). Soil Moisture Variability Along Transects over a Well-Developed Gully in the Loess Plateau, China. *Catena, 87*(3), 357-367.

Gao, X. P., Li, G. N., Li, G. R., & Zhang, C. (2015). Modeling the Effects of Point and Non-Point Source Pollution on a Diversion Channel from Yellow River to an Artificial Lake in China. *Water Science and Technology, 71*(12), 1806-1814. doi:10.2166/wst.2015.161

García-Orenes, F., Cerdà, A., Mataix-Solera, J., Guerrero, C., Bodí, M., Arcenegui, V., Zornoza, R., & Sempere, J. (2009). Effects of Agricultural Management on Surface Soil Properties and Soil–Water Losses in Eastern Spain. *Soil and Tillage Research, 106*(1), 117-123.

Garcia-Orenes, F., Guerrero, C., Roldan, A., Mataix-Solera, J., Cerda, A., Campoy, M., Zornoza, R., Barcenas, G., & Caravaca, F. (2010). Soil Microbial Biomass and Activity under Different Agricultural Management Systems in a Semiarid Mediterranean Agroecosystem. *Soil & Tillage Research, 109*(2), 110-115. doi:10.1016/j.still.2010.05.005

Gebreslasse, Y. K. (2012). *Particle Transport of Phosphorus in Streams Draining Catchments with Different Land Uses*. Master Thesis, University of Oslo, 148.

Ghadiri, H., & Rose, C. (1991a). Sorbed Chemical Transport in Overland Flow: I. A Nutrient and Pesticide Enrichment Mechanism. *Journal of Environmental Quality, 20*(3), 628-633.

Ghadiri, H., & Rose, C. (1991b). Sorbed Chemical Transport in Overland Flow: II. Enrichment Ratio Variation with Erosion Processes. *Journal of Environmental Quality, 20*(3), 634-641.

Ghahramani, A., Ishikawa, Y., Gomi, T., & Miyata, S. (2011). Downslope Soil Detachment-Transport on Steep Slopes via Rain Splash. *Hydrological Processes, 25*(15), 2471-2480. doi:10.1002/Hyp.8086

Ghidey, F., Alberts, E. E., & Kitchen, N. R. (1999). Evaluation of the Root Zone Water Quality Model Using Field-Measured Data from the Missouri MSEA. *Agronomy Journal, 91*(2), 183-192.

Gholami, L., Sadeghi, S. H., & Homaee, M. (2013). Straw Mulching Effect on Splash Erosion, Runoff, and Sediment Yield from Eroded Plots. *Soil Science Society of America Journal, 77*(1), 268-278.

Gibson, C., Wu, Y., & Pinkerton, D. (1995). Substance Budgets of an Upland Catchment: The Significance of Atmospheric Phosphorus Inputs. *Freshwater Biology, 33*(3), 385-392.

Gish, T., Isensee, A., Nash, R., & Helling, C. (1991a). Impact of Pesticides on Shallow Groundwater Quality. *Transactions of the ASAE, 34*(4), 1745-1753.

Gish, T., Kung, K.-J., Perry, D., Posner, J., Bubenzer, G., Helling, C., Kladivko, E., & Steenhuis, T. (2004). Impact of Preferential Flow at Varying Irrigation Rates by Quantifying Mass Fluxes. *Journal of Environmental Quality, 33*(3), 1033-1040.

Gish, T. J., Helling, C. S., & Mojasevic, M. (1991b). Preferential Movement of Atrazine and Cyanazine under Field Conditions. *Transactions of the ASAE, 34*(4), 1699-1705.

Goh, K. J., Ng, P. H. C., & Gan, H. H. (2012). Soil Nutrient Changes in Ultisols under Oil Palm in Johor, Malaysia. *Journal of Oil Palm & the Environment, 2*, 93-104.

Gómez, J., Giráldez, J., Pastor, M., & Fereres, E. (1999). Effects of Tillage Method on Soil Physical Properties, Infiltration and Yield in an Olive Orchard. *Soil and Tillage Research, 52*(3), 167-175.

Gowda, P., Mulla, D., Desmond, E., Ward, A., & Moriasi, D. (2012). ADAPT: Model Use, Calibration, and Validation. *Transactions of the ASABE, 55*(4), 1345-1352.

Graneli, E., Wallstrom, K., Larsson, U., Graneli, W., & Elmgren, R. (1990). Nutrient Limitation of Primary Production in the Baltic Sea Area. *Ambio, 19*(3), 142-151.

Griffith, E., Ponnamperuma, C., & Gabel, N. W. (1977). Phosphorus, a Key to Life on the Primitive Earth. *Origins of Life, 8*(2), 71-85.

Grove, B., & Oosthuizen, L. K. (2007). Establishing a Benchmark for Comparing Relative Cost-Effectiveness of an Alternative Policy Instrument for Controlling Non-Point Source Pollution. *Water SA, 33*(5), 609-614.

Guerif, J., Richard, G., Durr, C., Machet, J. M., Recous, S., & Roger-Estrade, J. (2001). A Review of Tillage Effects on Crop Residue Management, Seedbed Conditions and Seedling Establishment. *Soil & Tillage Research, 61*(1-2), 13-32. doi:10.1016/S0167-1987(01)00187-8

Gunatilake, H. M., & Vieth, G. R. (2000). Estimation of on-Site Cost of Soil Erosion: A Comparison of Replacement and Productivity Change Methods. *Journal of Soil and Water Conservation, 55*(2), 197-204.

Gupta, V., & Germida, J. (1988). Distribution of Microbial Biomass and Its Activity in Different Soil Aggregate Size Classes as Affected by Cultivation. *Soil Biology and Biochemistry, 20*(6), 777-786.

Gyssels, G., Poesen, J., Bochet, E., & Li, Y. (2005). Impact of Plant Roots on the Resistance of Soils to Erosion by Water: A Review. *Progress in Physical Geography, 29*(2), 189-217. doi:10.1191/0309133305pp443ra

Hahn, C., Prasuhn, V., Stamm, C., & Schulin, R. (2012). Phosphorus Losses in Runoff from Manured Grassland of Different Soil P Status at Two Rainfall Intensities. *Agriculture Ecosystems & Environment, 153*, 65-74. doi: 10.1016/j.agee.2012.03.009

Hallberg, G. R. (1987). Agricultural Chemicals in Ground Water: Extent and Implications. *American Journal of Alternative Agriculture, 2*(01), 3-15.

Hallett, P. D., & Young, I. M. (1999). Changes to Water Repellence of Soil Aggregates Caused by Substrate-Induced Microbial Activity. *European Journal of Soil Science, 50*(1), 35-40. doi:10.1046/j.1365-2389.1999.00214.x

Han, S., Xu, D., & Wang, S. (2012). Runoff Formation from Experimental Plot, Field, to Small Catchment Scales in Agricultural North Huaihe River Plain, China. *Hydrology and Earth System Sciences, 16*(9), 3115-3125.

Han, Y., Lau, S., Kayhanian, M., & Stenstrom, M. K. (2006). Correlation Analysis among Highway Stormwater Pollutants and Characteristics. *Water Science and Technology, 53*(2), 235-243.

Hannapel, R., Fuller, W., Bosma, S., & Bullock, J. (1964a). Phosphorus Movement in a Calcareous Soil: I. Predominance of Organic Forms of Phosphorus in Phosphorus Movement. *Soil Science, 97*(5), 350-357.

Hannapel, R., Fuller, W., & Fox, R. (1964b). Phosphorus Movement in a Calcareous Soil: II. Soil Microbial Activity and Organic Phosphorus Movement. *Soil Science, 97*(6), 421-427.

Hansen, E. M., & Djurhuus, J. (1997). Nitrate Leaching as Influenced by Soil Tillage and Catch Crop. *Soil & Tillage Research, 41*(3), 203-219. doi: 10.1016/S0167-1987(96)01097-5

Hanson, R. D., Ahuja, J. D., Shaffer, L. D., Rojas, M. D., DeCoursey, D. G., Farahani, H., & Johnson, K. (1998). RZWQM : Simulating the Effects of Management on Water Quality and Crop Production, 57 (2), 161-195

Hanson, B. R., Simunek, J., & Hopmans, J. W. (2006). Evaluation of Urea-Ammonium-Nitrate Fertigation with Drip Irrigation Using Numerical Modeling. *Agricultural Water Management, 86*(1), 102-113. doi: 10.1016/j.agwat.2006.06.013

Hashim, G. M., Ciesiolka, C. A. A., Yusoff, W. A., Nafis, A. W., Mispan, M. R., Rose, C. W., & Coughlan, K. J. (1995). Soil Erosion Processes in Sloping Land in the East Coast of Peninsular Malaysia. *Soil Technology*, *8*(3), 215-233. doi:10.1016/0933-3630(95)00021-6

Hassan, S. A., Zainal Abidin, R., & Ramlan, M. F. (1995). Growth and Yield of Chilli (*Capsicum Annuum L.*) in Response to Mulching and Potassium Fertilization. *Pertanika Journal of Tropical Agricultural Science*, *18*(2), 113-117.

Havlin, J. L., Beaton, J. D., Tisdale, S. L., & Nelson, W. L. (2005). *Soil Fertility and Fertilizers: An Introduction to Nutrient Management* (7 ed. Vol. 515). Upper Saddle River, New Jersey: Pearson Prentice Hall

Haws, N. W., Rao, P. S. C., Simunek, J., & Poyer, I. C. (2005). Single-Porosity and Dual-Porosity Modeling of Water Flow and Solute Transport in Subsurface-Drained Fields Using Effective Field-Scale Parameters. *Journal of Hydrology, 313*(3-4), 257-273. doi:10.1016/j.jhydrol.2005.03.035

Haygarth, P., Hepworth, L., & Jarvis, S. (1998). Forms of Phosphorus Transfer in Hydrological Pathways from Soil under Grazed Grassland. *European Journal of Soil Science, 49*(1), 65-72.

Haygarth, P. M., Wood, F. L., Heathwaite, A. L., & Butler, P. J. (2005). Phosphorus Dynamics Observed through Increasing Scales in a Nested Headwater-to-River Channel Study. *Science of the Total Environment, 344*(1), 83-106. doi:10.1016/j.scitotoenv.2005.02.007

Haynes, R. J., & Naidu, R. (1998). Influence of Lime, Fertilizer and Manure Applications on Soil Organic Matter Content and Soil Physical Conditions: A Review. *Nutrient Cycling in Agroecosystems, 51*(2), 123-137.

Healy, R. W. (2008). Simulating Water, Solute, and Heat Transport in the Subsurface with the VS2DI Software Package. *Vadose Zone Journal, 7*(2), 632-639.

Heathwaite, A. L., Griffiths, P., & Parkinson, R. (1998). Nitrogen and Phosphorus in Runoff from Grassland with Buffer Strips Following Application of Fertilizers and Manures. *Soil Use and Management, 14*(3), 142-148.

Heathwaite, A. L., Quinn, P. F., & Hewett, C. J. M. (2005a). Modelling and Managing Critical Source Areas of Diffuse Pollution from Agricultural Land Using Flow Connectivity Simulation. *Journal of Hydrology, 304*(1-4), 446-461. doi:10.1016/j.jhysrol.2004.07.043

Heathwaite, L., Haygarth, P., Matthews, R., Preedy, N., & Butler, P. (2005b). Evaluating Colloidal Phosphorus Delivery to Surface Waters from Diffuse Agricultural Sources. *Journal of Environmental Quality, 34*(1), 287-298.

Heckrath, G., Brookes, P., Poulton, P., & Goulding, K. (1995). Phosphorus Leaching from Soils Containing Different Phosphorus Concentrations in the Broadbalk Experiment. *Journal of Environmental Quality, 24*(5), 904-910.

Hendrickx, J. M., & Flury, M. (2001). *Uniform and Preferential Flow Mechanisms in the Vadose Zone. Conceptual Models of Flow and Transport in the Fractured Vadose Zone*. National Academic Press, Washington, DC, USA, 149-187.

Hewlett, J. D., & Hibbert, A. R. (1967). Factors Affecting the Response of Small Watersheds to Precipitation in Humid Areas. *Forest Hydrology, 1*, 275-290.

Heydari, M. M., Noushabadi, R. N., Vahedi, M., Abbasi, A., & Heydari, M. (2013). Comparison of Evapotranspiration Models for Estimating Reference

Evapotranspiration in Arid Environment. *Middle-East Journal of Scientific Research, 15*(9), 1331-1337.

Hillel, D. (1991). Research in Soil Physics - A Review. *Soil Science, 151*(1), 30-34. doi:10.1097/00010694-199101000-00006

Hillel, D. (1998). *Environmental Soil Physics: Fundamentals, Applications, and Environmental Considerations*. San Diego: Academic Press.

Hobbs, P. R. (2007). Conservation Agriculture: What Is It and Why Is It Important for Future Sustainable Food Production? *Journal of Agricultural Science, 145*, 127-137. doi:10.1017/S0021859607006892

Holford, I. (1997). Soil Phosphorus: Its Measurement, and Its Uptake by Plants. *Soil Research, 35*(2), 227-240.

Holland, J. (2004). The Environmental Consequences of Adopting Conservation Tillage in Europe: Reviewing the Evidence. *Agriculture, Ecosystems & Environment, 103*(1), 1-25.

Hooda, N., & Weston, C. J. (1999). Influence of Site and Fertiliser Addition on Nutrient Cycling in Eucalyptus Globulus Plantations in Gippsland, South-Eastern Australia. I. Foliage and Litter Quality. *Australian Journal of Botany, 47*(2), 189-206. doi:10.1071/Bt98005

Horn, R., Taubner, H., Wuttke, M., & Baumgartl, T. (1994). Soil Physical-Properties Related to Soil-Structure. *Soil & Tillage Research, 30*(2-4), 187-216. doi: 10.1016/0167-1987(94)90005-1

Horton, R. E. (1945). Erosional Development of Streams and Their Drainage Basins; Hydrophysical Approach to Quantitative Morphology. *Geological Society of America Bulletin, 56*(3), 275-370.

Huang, J., Wu, P. T., & Zhao, X. N. (2013a). Effects of Rainfall Intensity, Underlying Surface and Slope Gradient on Soil Infiltration under Simulated Rainfall Experiments. *Catena, 104*, 93-102. doi: 10.1016/j.catena.2012.10.013

Huang, T.-Y., Wu, W., & Li, W.-W. (2013b). Identifying the Major Pollution Sources and Pollution Loading Status of Qiputang River in Taihu Lake Basin of China. *Desalination and Water Treatment, 51*(22-24), 4736-4743.

Huang, Z. G., Ouyang, Z. Y., Li, F. R., Zheng, H., & Wang, X. K. (2010). Response of Runoff and Soil Loss to Reforestation and Rainfall Type in Red Soil

Region of Southern China. *Journal of Environmental Sciences, 22*(11), 1765-1773. doi:10.1016/S1001-0742(09)60317-X

Huber, W. C., Dickinson, R. E, & Branwell, T. O (1988). *Storm Water Management Model, Version 4 : User Manual*. Environmental Research Laboratory, Office of Research and Development, US Environmental Protection Agency

Hudson, B. D. (1994). Soil Organic-Matter and Available Water Capacity. *Journal of Soil and Water Conservation, 49*(2), 189-194.

Huet, J., Druilhe, C., Tremier, A., Benoist, J.-C., & Debenest, G. (2012). The Impact of Compaction, Moisture Content, Particle Size and Type of Bulking Agent on Initial Physical Properties of Sludge-Bulking Agent Mixtures before Composting. *Bioresource Technology, 114*, 428-436.

Huth, N., Bristow, K., & Verburg, K. (2012). SWIM3: Model Use, Calibration, and Validation. *Transactions of the ASABE, 55*(4), 1303-1313.

Igbadun, H.E., 2012. Estimation of crop water use of rain-fed maize and groundnut using mini-lysimeters. Pacific J. Sci. Tech 13, 527-535.

Iqbal, M. Z., & Krothe, N. C. (1995). Infiltration Mechanisms Related to Agricultural Waste Transport through the Soil Mantle to Karst Aquifers of Southern Indiana, USA. *Journal of Hydrology, 164*(1-4), 171-192.

Iqbal, M. Z., & Krothe, N. C. (1996). Transport of Bromide and Other Inorganic Ions by Infiltrating Storm Water beneath a Farmland Plot. *Ground Water, 34*(6), 972-978.

Irigoyen, I., Muro, J., Azpilikueta, M., Aparicio-Tejo, P., & Lamsfus, C. (2003). Ammonium Oxidation Kinetics in the Presence of Nitrification Inhibitors Dcd and Dmpp at Various Temperatures. *Soil Research, 41*(6), 1177-1183.

Ismail, W. R. (2000). The Hydrology and Sediment Yield of the Sungai Air Terjun Catchment, Penang Hill, Malaysia. *Hydrological Sciences Journal*, *45*(6), 897-910.

Jabro, J. D., Jabro, A. D., & Fox, R. H. (2006). Accuracy and Performance of Three Water Quality Models for Simulating Nitrate Nitrogen Losses under Corn. *Journal of Environmental Quality, 35*(4), 1227-1236. doi:10.2134/jeq2005.0413

Jajarmizadeh, M., Harun, S., & Salarpour, M. (2012). A Review on Theoretical Consideration and Types of Models in Hydrology. *Journal of Environmental Science and Technology, 5*(5), 249-261.

James, L., & Burges, S. (1982). Precipitation-Runoff Modeling: Future Directions. *Applied Modeling in Catchment Hydrology, Proceedings of the International Symposium on Rainfall-Runoff Modeling, Water Resources Publications, Littleton*, 291-312.

Jamieson, A. (2001). *Evaluating Phosphorus Losses in Surface and Subsurface Runoff from Two Agricultural Fields in Quebec.* Master Thesis, McGill University.

Janick, J., Schery, R. W., Woods, F. W., & Ruttan, V. W. (1981). *Plant Science: An Introduction to World Crops*. San Francisco: WH Freeman and Company.

Jarvis, N., Zavattaro, L., Rajkai, K., Reynolds, W., Olsen, P.-A., McGechan, M., Mecke, M., Mohanty, B., Leeds-Harrison, P., & Jacques, D. (2002). Indirect Estimation of near-Saturated Hydraulic Conductivity from Readily Available Soil Information. *Geoderma, 108*(1), 1-17.

Jaynes, D., Rice, R., & Bowman, R. (1988). Transport of a Conservative Tracer in the Field under Continuous Flood Irrigation. *Soil Science Society of America Journal, 52*(3), 618-624.

Jaynes, D. B., Ahmed, S. I., Kung, K.-J., & Kanwar, R. S. (2001). Temporal Dynamics of Preferential Flow to a Subsurface Drain. *Soil Science Society of America Journal, 65*(5), 1368-1376.

Jaynes, D. B., & Miller, J. G. (1999). Evaluation of the Root Zone Water Quality Model Using Data from the Iowa MSEA. *Agronomy Journal, 91*(2), 192-200.

Jess, L. (2004). A Bird's Eye View of Precision Agriculture. *Precision Agriculture, 2*, 8-10.

Jia, H., Lei, A., Lei, J., Ye, M., & Zhao, J. (2007). Effects of Hydrological Processes on Nitrogen Loss in Purple Soil. *Agricultural Water Management, 89*(1), 89-97.

Jiang, J., Zhang, Y. Q., Wegehenkel, M., Yu, Q., & Xia, J. (2008). Estimation of Soil Water Content and Evapotranspiration from Irrigated Cropland on the North China Plain. *Journal of Plant Nutrition and Soil Science, 171*(5), 751-761. doi:10.1002/jpln.200625179

Jiao, J.-y., & Wang, W.-z. (2001). The Benefits of Runoff and Sediment Reducing & Effective Cover Rate for Soil and Water Conservation of Artificial Grassland on Loess Plateau. *Acta Agrestia Sinica, 9*, 176-182.

Jiao, J. G., Ellis, E. C., Yesilonis, I., Wu, J. X., Wang, H. Q., Li, H. X., & Yang, L. Z. (2010). Distributions of Soil Phosphorus in China's Densely Populated Village Landscapes. *Journal of Soils and Sediments, 10*(3), 461-472. doi: 10.1007/s11368-009-0135-4

Jiao, P. J., Xu, D., Wang, S. L., & Zhang, T. Q. (2011). Phosphorus Loss by Surface Runoff from Agricultural Field Plots with Different Cropping Systems. *Nutrient Cycling in Agroecosystems, 90*(1), 23-32. doi:10.1007/s10705-010-9409-x

Joel, A., Messing, I., Seguel, O., & Casanova, M. (2002). Measurement of Surface Water Runoff from Plots of Two Different Sizes. *Hydrological Processes, 16*(7), 1467-1478. doi:10.1002/hyp.356

Johnes, P. J., & Hodgkinson, R. A. (1998). Phosphorus Loss from Agricultural Catchments: Pathways and Implications for Management. *Soil Use and Management*, *14*, 175-185. doi:10.1111/j.1475-2743.1998.tb00637.x

Johnson, D. L., Domier, J., & Johnson, D. (2005). Reflections on the Nature of Soil and Its Biomantle. *Annals of the Association of American Geographers, 95*(1), 11-31.

Jordán, A., Zavala, L. M., & Gil, J. (2010). Effects of Mulching on Soil Physical Properties and Runoff under Semi-Arid Conditions in Southern Spain. *Catena*, *81*(1), 77-85.

Kakembo, V. (2001). Trends in Vegetation Degradation in Relation to Land Tenure, Rainfall, and Population Changes in Peddie District, Eastern Cape, South Africa. *Environmental Management*, *28*(1), 39-46. doi: 10.1007/s002672001

Kakembo, V., Palmer, A., & Rowntree, K. (2006). The Use of High Resolution Digital Camera Imagery to Characterize the Distribution of Pteronia Incana Invader Species in Ngqushwa (Formerly Peddie) District, Eastern Cape, South Africa. *International Journal of Remote Sensing*, *27*(13), 2735-2752. doi:10.1080/01431160600554314

Kakembo, V., Xanga, W. W., & Rowntree, K. (2009). Topographic Thresholds in Gully Development on the Hillslopes of Communal Areas in Ngqushwa Local Municipality, Eastern Cape, South Africa. *Geomorphology*, *110*(3-4), 188-194. doi:10.1016/j.geomorph.2009.04.006

Kang, S. Z., Zhang, L., Song, X. Y., Zhang, S. H., Liu, X. Z., Liang, Y. L., & Zheng, S. Q. (2001). Runoff and Sediment Loss Responses to Rainfall and Land Use in Two Agricultural Catchments on the Loess Plateau of China. *Hydrological Processes, 15*(6), 977-988. doi:10.1002/hyp.191

Karam, F., Breidy, J., Stephan, C., & Rouphael, J. (2003). Evapotranspiration, Yield and Water Use Efficiency of Drip Irrigated Corn in the Bekaa Valley of Lebanon. *Agricultural Water Management, 63*(2), 125-137.

Karam, F., Masaad, R., Sfeir, T., Mounzer, O., & Rouphael, Y. (2005). Evapotranspiration and Seed Yield of Field Grown Soybean under Deficit Irrigation Conditions. *Agricultural Water Management, 75*(3), 226-244.

Karami, J., Alimohammadi, A., & Modabberi, S. (2012). Analysis of the Spatio-Temporal Patterns of Water Pollution and Source Contribution Using the Modis Sensor Products and Multivariate Statistical Techniques. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 5*(4), 1243-1255. doi:10.1109/Jstars.2012.2187273

Kashyap, P. S., & Panda, R. (2001). Evaluation of Evapotranspiration Estimation Methods and Development of Crop-Coefficients for Potato Crop in a Sub-Humid Region. *Agricultural Water Management, 50*(1), 9-25.

Katerji, N., & Rana, G. (2014). FAO-56 Methodology for Determining Water Requirement of Irrigated Crops: Critical Examination of the Concepts, Alternative Proposals and Validation in Mediterranean Region. *Theoretical and Applied Climatology, 116*(3-4), 515-536.

Katsvairo, T., Cox, W. J., & van Es, H. (2002). Tillage and Rotation Effects on Soil Physical Characteristics. *Agronomy Journal*, *94*(2), 299-304.

Kay, B. D., & Dexter, A. R. (1990). Influence of Aggregate Diameter, Surface-Area and Antecedent Water-Content on the Dispersibility of Clay. *Canadian Journal of Soil Science, 70*(4), 655-671.

Keating, B. A., Carberry, P. S., Hammer, G. L., Probert, M. E., Robertson, M. J., Holzworth, D., Huth, N. I., Hargreaves, J. N., Meinke, H., & Hochman, Z. (2003). An Overview of APSIM, a Model Designed for Farming Systems Simulation. *European Journal of Agronomy, 18*(3), 267-288.

Keesstra, S., Pereira, P., Novara, A., Brevik, E. C., Azorin-Molina, C., Parras-Alcantara, L., Jordan, A., & Cerda, A. (2016). Effects of Soil Management Techniques on Soil Water Erosion in Apricot Orchards. *Science of the Total Environment, 551*, 357-366. doi:10.1016/j.scitotenv.2016.01.182

Khan, M., Hoque, M., Farooque, A., Habiba, U., & Rahim, M. (2012). Physio-Morphological Features of Chilli Accessions under Moisture Stress Conditions. *Bangladesh Journal of Agricultural Research, 37*(2), 263-269.

Kihara, J., Bationo, A., Mugendi, D. N., Martius, C., & Vlek, P. L. G. (2011). Conservation Tillage, Local Organic Resources and Nitrogen Fertilizer Combinations Affect Maize Productivity, Soil Structure and Nutrient Balances in Semi-Arid Kenya. *Nutrient Cycling in Agroecosystems, 90*(2), 213-225. doi:10.1007/s10705-011-9423-7

Kim, G., Chung, S., & Lee, C. (2007). Water Quality of Runoff from Agricultural-Forestry Watersheds in the Geum River Basin, Korea. *Environmental Monitoring and Assessment, 134*(1), 441-452.

Kim, R., Lee, S., Kim, Y., Lee, J., Kim, S.-K., & Kim, S. (2005). Pollutants in Rainwater Runoff in Korea: Their Impacts on Rainwater Utilization. *Environmental Technology, 26*(4), 411-420.

Kinama, J., Stigter, C., Ong, C., Ng'ang'a, J., & Gichuki, F. (2007). Contour Hedgerows and Grass Strips in Erosion and Runoff Control on Sloping Land in Semi-Arid Kenya. *Arid Land Research and Management, 21*(1), 1-19.

Kirchmann, H., & Bergstrom, L. (2001). Do Organic Farming Practices Reduce Nitrate Leaching? *Communications in Soil Science and Plant Analysis, 32*(7-8), 997-1028. doi:10.1081/Css-100104101

Kirchmann, H., & Ryan, M. H. (2004). Nutrients in Organic Farming–Are There Advantages from the Exclusive Use of Organic Manures and Untreated Minerals. *New Directions for a Diverse Planet. Proceedings of the 4th International Crop Science Congress.*

Kirkby, M., Bracken, L., & Reaney, S. (2002). The Influence of Land Use, Soils and Topography on the Delivery of Hillslope Runoff to Channels in SE Spain. *Earth Surface Processes and Landforms, 27*(13), 1459-1473. doi:10.1002/esp.441

Kisekka, I., Migliaccio, K. W., Dukes, M. D., Crane, J. H., & Schaffer, B. (2010). *Evapotranspiration-Based Irrigation for Agriculture: Crop Coefficients of Some Commercial Crops in Florid*a. Florida Cooperative Extension Service, Inst. Food Agricultural Science, University of Florida.

Kleineidam, K., Košmrlj, K., Kublik, S., Palmer, I., Pfab, H., Ruser, R., Fiedler, S., & Schloter, M. (2011). Influence of the Nitrification Inhibitor 3, 4-

Dimethylpyrazole Phosphate (DMPP) on Ammonia-Oxidizing Bacteria and Archaea in Rhizosphere and Bulk Soil. *Chemosphere, 84*(1), 182-186.

Kleinman, P. J., Sharpley, A. N., Wolf, A. M., Beegle, D. B., & Moore, P. A. (2002). Measuring Water-Extractable Phosphorus in Manure as an Indicator of Phosphorus in Runoff. *Soil Science Society of America Journal, 66*(6), 2009-2015.

Klute, A. (1986). Water Retention: Laboratory Methods Methods of Soil Analysis: Part 1—Physical and Mineralogical Methods. *Agronomy Monograph, 9*, 635-662.

Knudsen, M. T., Kristensen, I. B. S., Berntsen, J., Petersen, B. M., & Kristensen, E. S. (2006). Estimated N Leaching Losses for Organic and Conventional Farming in Denmark. *Journal of Agricultural Science, 144,* 135-149. doi:10.1017/S0021859605005812

Ko, J., Piccinni, G., Marek, T., & Howell, T. (2009). Determination of Growth-Stage-Specific Crop Coefficients (Kc) of Cotton and Wheat. *Agricultural Water Management, 96*(12), 1691-1697.

Kong, Q., Li, G., Wang, Y., & Huo, H. (2012). Bell Pepper Response to Surface and Subsurface Drip Irrigation under Different Fertigation Levels. *Irrigation Science, 30*(3), 233-245.

Kothyari, B., Verma, P., Joshi, B., & Kothyari, U. (2004). Rainfall–Runoff-Soil and Nutrient Loss Relationships for Plot Size Areas of Bhetagad Watershed in Central Himalaya, India. *Journal of Hydrology*, *293*(1), 137-150.

Kronvang, B., Behrendt, H., Andersen, H. E., Arheimer, B., Barr, A., Borgvang, S., Bouraoui, F., Granlund, K., Grizzetti, B., & Groenendijk, P. (2009). Ensemble Modelling of Nutrient Loads and Nutrient Load Partitioning in 17 European Catchments. *Journal of Environmental Monitoring*, *11*(3), 572-583.

Krug, E. C., & Frink, C. R. (1983). Acid Rain on Acid Soil: A New Perspective. *Science*, *217*(4610), 520-525.

Kumar, A., Kanwar, R. S., & Ahuja, L. R. (1998). RZWQM Simulation of Nitrate Concentrations in Subsurface Drainage from Manured Plots. *Transactions of the ASAE*, *41*(3), 587-597.

Kung, K. J. S., Steenhuis, T. S., Kladivko, E. J., Gish, T. J., Bubenzer, G., & Helling, C. S. (2000). Impact of Preferential Flow on the Transport of Adsorbing and

Non-Adsorbing Tracers. *Soil Science Society of America Journal, 64*(4), 1290-1296.

Lal, R. (2003). Soil Erosion and the Global Carbon Budget. *Environment International, 29*(4), 437-450.

Lal, R. (2008). Soils and Sustainable Agriculture. A Review. *Agronomy for Sustainable Development, 28*(1), 57-64. doi:10.1051/agro:2007025

Lal, R. (2009a). Laws of Sustainable Soil Management. *Agronomy for Sustainable Development, 29*(1), 7-10. doi:10.1051/agro:2008060

Lal, R. (2009b). The Plow and Agricultural Sustainability. *Journal of Sustainable Agriculture, 33*(1), 66-84. doi:Pii 907461123 Doi 10.1080/10440040802548555

Lam, W., Macrae, M., English, M., O'Halloran, I., & Wang, Y. (2016). Effects of Tillage Practices on Phosphorus Transport in Tile Drain Effluent under Sandy Loam Agricultural Soils in Ontario, Canada. *Journal of Great Lakes Research, 42*(6), 1260-1270.

Landa, F. M., Fausey, N. R., Nokes, S. E., & Hanson, J. D. (1999). Plant Production Model Evaluation for the Root Zone Water Quality Model (RZWQM 3.2) in Ohio. *Agronomy Journal, 91*(2), 220-227.

Langdale, G., West, L., Bruce, R., Miller, W., & Thomas, A. (1992). Restoration of Eroded Soil with Conservation Tillage. *Soil Technology, 5*(1), 81-90.

Le Bissonnais, Y. (1996). Aggregate Stability and Assessment of Soil Crustability and Erodibility: I. Theory and Methodology. *European Journal of Soil Science, 47*(4), 425-437.

Le Bissonnais, Y., Benkhadra, H., Chaplot, V., Fox, D., King, D., & Daroussin, J. (1998). Crusting, Runoff and Sheet Erosion on Silty Loamy Soils at Various Scales and Upscaling from m^2 to Small Catchments. *Soil & Tillage Research, 46*(1-2), 69-80. doi:10.1016/S0167-1987(97)00079-2

Lee, J. Y., Yang, J.-S., Han, M., & Choi, J. (2010). Comparison of the Microbiological and Chemical Characterization of Harvested Rainwater and Reservoir Water as Alternative Water Resources. *Science of the Total Environment, 408*(4), 896-905.

Lee, K.-H., Isenhart, T. M., & Schultz, R. C. (2003). Sediment and Nutrient Removal in an Established Multi-Species Riparian Buffer. *Journal of Soil and Water Conservation, 58*(1), 1-8.

Lee, K. H., Isenhart, T. M., Schultz, R. C., & Mickelson, S. K. (2000). Multispecies Riparian Buffers Trap Sediment and Nutrients During Rainfall Simulations. *Journal of Environmental Quality, 29*(4), 1200-1205.

Legates, D. R., & McCabe, G. J. (1999). Evaluating the Use of "Goodness-of-Fit" Measures in Hydrologic and Hydroclimatic Model Validation. *Water Resources Research, 35*(1), 233-241.

Leh, M., Bajwa, S., & Chaubey, I. (2013). Impact of Land Use Change on Erosion Risk: An Integrated Remote Sensing, Geographic Information System and Modeling Methodology. *Land Degradation & Development, 24*(5), 409-421.

Leonard, R. A., Knisel, W. G., & Davis, F. M. (1995). Modelling Pesticide Fate with GLEAMS. *European Journal of Agronomy, 4*(4), 485-490.

Leys, A., Govers, G., Gillijns, K., Berckmoes, E., & Takken, I. (2010). Scale Effects on Runoff and Erosion Losses from Arable Land under Conservation and Conventional Tillage: The Role of Residue Cover. *Journal of Hydrology, 390*(3-4), 143-154. doi:10.1016/j.jhydrol.2010.06.034

Li, H. Y., & Sivapalan, M. (2011). Effect of Spatial Heterogeneity of Runoff Generation Mechanisms on the Scaling Behavior of Event Runoff Responses in a Natural River Basin. *Water Resources Research, 47*. doi:Artn W00h08 Doi 10.1029/2010wr009712

Li, X. H., Yang, J., Zhao, C. Y., & Wang, B. (2014). Runoff and Sediment from Orchard Terraces in Southeastern China. *Land Degradation & Development, 25*(2), 184-192. doi:10.1002/ldr.1160

Li, Y., Zhang, Q. W., Reicosky, D. C., Bai, L. Y., Lindstrom, M. J., & Li, L. (2006). Using Cs-137 and Pb-210(Ex) for Quantifying Soil Organic Carbon Redistribution Affected by Intensive Tillage on Steep Slopes. *Soil & Tillage Research, 86*(2), 176-184. doi:10.1016/j.still.2005.02.006

Li, Y. Y., & Shao, M. A. (2006). Change of Soil Physical Properties under Long-Term Natural Vegetation Restoration in the Loess Plateau of China. *Journal of Arid Environments, 64*(1), 77-96. doi:10.1016/j.jaridenv.2005.04.005

Li, Z., Liu, W. Z., Zhang, X. C., & Zheng, F. L. (2009). Impacts of Land Use Change and Climate Variability on Hydrology in an Agricultural Catchment on the Loess Plateau of China. *Journal of Hydrology, 377*(1-2), 35-42. doi: 10.1016/j.jhydrol.2009.08.007

Lin, H., McInnes, K., Wilding, L., & Hallmark, C. (1999). Effects of Soil Morphology on Hydraulic Properties I. Quantification of Soil Morphology. *Soil Science Society of America Journal, 63*(4), 948-954.

Lindsay, W., & Moreno, E. (1960). Phosphate Phase Equilibria in Soils. *Soil Science Society of America Journal, 24*(3), 177-182.

Lindstrom, M., Lobb, D., & Schumacher, T. (2001). Tillage Erosion: An Overview. *Annals of Arid Zone, 40*(3), 337-350.

Lipiec, J., Hajnos, M., & Swieboda, R. (2012). Estimating Effects of Compaction on Pore Size Distribution of Soil Aggregates by Mercury Porosimeter. *Geoderma, 179,* 20-27. doi:10.1016/j.geoderma.2012.02.014

Liu, J., Aronsson, H., Blomback, K., Persson, K., & Bergstrom, L. (2012a). Long-Term Measurements and Model Simulations of Phosphorus Leaching from a Manured Sandy Soil. *Journal of Soil and Water Conservation, 67*(2), 101-110. doi:10.2489/jSWC.67.2.101

Liu, J. L., Zhan, A., Chen, H., Luo, S. S., Bu, L. D., Chen, X. P., & Li, S. Q. (2015). Response of Nitrogen Use Efficiency and Soil Nitrate Dynamics to Soil Mulching in Dryland Maize (Zea Mays L.) Fields. *Nutrient Cycling in Agroecosystems, 101*(2), 271-283. doi:10.1007/s10705-015-9678-5

Liu, R., Wang, J., Shi, J., Chen, Y., Sun, C., Zhang, P., & Shen, Z. (2014). Runoff Characteristics and Nutrient Loss Mechanism from Plain Farmland under Simulated Rainfall Conditions. *Science of the Total Environment, 468,* 1069-1077.

Liu, Y., Fu, B. J., Lu, Y. H., Wang, Z., & Gao, G. Y. (2012b). Hydrological Responses and Soil Erosion Potential of Abandoned Cropland in the Loess Plateau, China. *Geomorphology, 138*(1), 404-414. doi: 10.1016/j.geomorph.2011.10.009

Liu, Y., Tao, Y., Wan, K. Y., Zhang, G. S., Liu, D. B., Xiong, G. Y., & Chen, F. (2012c). Runoff and Nutrient Losses in Citrus Orchards on Sloping Land Subjected to Different Surface Mulching Practices in the Danjiangkou Reservoir Area of China. *Agricultural Water Management, 110,* 34-40. doi:10.1016/j.agwat.2012.03.011

Lobb, D. A., Kachanoski, R. G., & Miller, M. (1995). Tillage Translocation and Tillage Erosion on Shoulder Slope Landscape Positions Measured Using 137cs as a Tracer. *Canadian Journal of Soil Science, 75*(2), 211-218.

Lourenzi, C. R., Ceretta, C. A., Tiecher, T. L., Lorensini, F., Cancian, A., Stefanello, L., Girotto, E., Vieira, R. C. B., Ferreira, P. A. A., & Brunetto, G. (2015). Forms of Phosphorus Transfer in Runoff under No-Tillage in a Soil Treated with Successive Swine Effluents Applications. *Environmental Monitoring and Assessment, 187*(4). doi:ARTN 209 DOI 10.1007/s10661-015-4437-2

Lowrance, R. (1992). Nitrogen Outputs from a Field-Size Agricultural Watershed. *Journal of Environmental Quality, 21*(4), 602-607.

Lu, H. M., Yin, C. Q., Wang, W. D., & Shan, B. Q. (2007). A Comparative Study of Nutrient Transfer via Surface Runoff from Two Small Agricultural Catchments in North China. *Environmental Geology, 52*(8), 1549-1558. doi:10.1007/s00254-006-0599-0

Lu, J., Sun, G., McNulty, S. G., & Amatya, D. M. (2005). A Comparison of Six Potential Evapotranspiration Methods for Regional Use in the Southeatern United States. *Journal of the American Water Resources Association, 41*(3), 621-633. doi:10.1111/j.1752-1688.2005.tb03759.x

Ma, J., Shi, Y., Chen, X., & Wang, H. X. (2013). Nitrogen Load from Rural Non-Point Source Pollution in Suburb Area of Shenyang: A Case Study of Damintun Town. *Progress in Environmental Science and Engineering, Pts 1-4, 610-613*, 3277-3281. doi:10.4028/www.scientific.net/AMR.610-613.3277

Ma, L., Ahuja, L., Ascough, J., Shaffer, M., Rojas, K., Malone, R., & Cameira, M. (2001). Integrating System Modeling with Field Research in Agriculture: Applications of the Root Zone Water Quality Model (RZWQM). *Advances in Agronomy, 71*, 233-292.

Ma, L., Ascough, J., Ahuja, L., Shaffer, M., Hanson, J., & Rojas, K. (2000). Root Zone Water Quality Model Sensitivity Analysis Using Monte Carlo Simulation. *Transactions of the ASAE, 43*(4), 883-896.

Magesan, G., Vogeler, I., Scotter, D., Clothier, B., & Tillman, R. (1995). Solute Movement through Two Unsaturated Soils. *Soil Research, 33*(4), 585-596.

Mah, M., Douglas, L., & Ringrose-Voase, A. (1992). Effects of Crust Development and Surface Slope on Erosion by Rainfall. *Soil Science, 154*(1), 37-43.

Mamedov, A., Huang, C., & Levy, G. (2006). Antecedent Moisture Content and Aging Duration Effects on Seal Formation and Erosion in Smectitic Soils. *Soil Science Society of America Journal, 70*(3), 832-843.

Mandal, D., & Sharda, V. (2013). Appraisal of Soil Erosion Risk in the Eastern Himalayan Region of India for Soil Conservation Planning. *Land Degradation & Development, 24*(5), 430-437.

Mander, Ü., Kuusemets, V., Lõhmus, K., & Mauring, T. (1997). Efficiency and Dimensioning of Riparian Buffer Zones in Agricultural Catchments. *Ecological Engineering, 8*(4), 299-324.

Manrique, L. A. (1993). Technology for Soil-Erosion Assessment in the Tropics - a Review. *Communications in Soil Science and Plant Analysis, 24*(9-10), 1033-1064. doi:10.1080/00103629309368859

Martínez-Mena, M., López, J., Almagro, M., Albaladejo, J., Castillo, V., Ortiz, R., & Boix-Fayos, C. (2012). Organic Carbon Enrichment in Sediments: Effects of Rainfall Characteristics under Different Land Uses in a Mediterranean Area. *Catena, 94*, 36-42.

Martínez, J. R. F., Zuazo, V. H. D., & Raya, A. M. (2006). Environmental Impact from Mountainous Olive Orchards under Different Soil-Management Systems (SE Spain). *Science of the Total Environment, 358*(1), 46-60.

Massey, H., & Jackson, M. (1952). Selective Erosion of Soil Fertility Constituents. *Soil Science Society of America Journal, 16*(4), 353-356.

Matthews, A. M., Armstrong, A. C., Leeds-Harrison, P. B., Harris, G. L., & Catt, J. A. (2000). Development and Testing of a Model for Predicting Tillage Effects on Nitrate Leaching from Cracked Clay Soils. *Soil & Tillage Research, 53*(3-4), 245-254. doi:10.1016/S0167-1987(99)00109-9

Mayor, Á. G., Bautista, S., & Bellot, J. (2011). Scale-Dependent Variation in Runoff and Sediment Yield in a Semiarid Mediterranean Catchment. *Journal of Hydrology, 397*(1), 128-135.

Mills, A. J., & Fey, M. V. (2004). Effects of Vegetation Cover on the Tendency of Soil to Crust in South Africa. *Soil Use and Management, 20*(3), 308-317. doi:10.1079/Sum2004262

Mingguo, Z., Qiangguo, C., & Hao, C. (2007). Effect of Vegetation on Runoff-Sediment Yield Relationship at Different Spatial Scales in Hilly Areas of the Loess Plateau, North China. *Acta Ecologica Sinica, 27*(9), 3572-3581.

Minshall, G. W. (1988). Stream Ecosystem Theory: A Global Perspective. *Journal of the North American Benthological Society*, 263-288.

Miranda, F. R., Gondim, R. S., & Costa, C. A. G. (2006). Evapotranspiration and Crop Coefficients for Tabasco Pepper (*Capsicum Frutescens* L.). *Agricultural Water Management, 82*(1), 237-246. doi: 10.1016/j.agwat.2005.07.024

Mirzaei, M., Sohrabi, T., Jahanbania, H., Faghih, M., & Shu, L. T. (2011). Evaluation of Evapotranspiration Coefficient and Daily Crop Reference Evapotranspiration in a Semi-Arid Region Based on Field Water Balance and Fao Method. *Australian Journal of Basic & Applied Sciences, 5*(12), 1850-1856.

Mitchell, J. P., Carter, L., Munk, D., Klonsky, K., Hutmacher, R., Shrestha, A., DeMoura, R., & Wroble, J. (2012). Conservation Tillage Systems for Cotton Advance in the San Joaquin Valley. *California Agriculture, 66*(3), 108-115. doi:10.3733/ca.v066n03p108

Mittal, S. B., Anlauf, R., Laik, R., Gupta, A. P., Kapoor, A. K., & Dahiya, S. S. (2007). Modeling Nitrate Leaching and Organic-C Build-up under Semi-Arid Cropping Conditions of N India. *Journal of Plant Nutrition and Soil Science, 170*(4), 506-513.

Mohamed Azwan, M. Z., Mohd Kamil, Y., Hazilia, H., & Suhani, N. (2010). Nitrate-Nitrogen Concentration Variation in Groundwater Flow in a Paddy Field. *Journal – The Institution of Engineers, Malaysia, 71*(4), 1-10.

Mohammad, A. G., & Adam, M. A. (2010). The Impact of Vegetative Cover Type on Runoff and Soil Erosion under Different Land Uses. *Catena, 81*(2), 97-103. doi:10.1016/j.catena.2010.01.008

Mohtar, R. H., Zhai, T., & Chen, X. (2000). A World Wide Web-Based Grazing Simulation Model (GRASIM). *Computers and Electronics in Agriculture, 29*(3), 243-250.

Molina, J., & Richards, K. (1984). Simulation Models of the Nitrogen and Carbon Cycle in the Soil-Water-Plant System, NCSWAP: Guide for the Preparation of Input Data Files and Execution of NCSWAP. *Soil Series, 116*.

Moreno-de las Heras, M., Nicolau, J. M., Merino-Martín, L., & Wilcox, B. P. (2010). Plot-Scale Effects on Runoff and Erosion Along a Slope Degradation Gradient. *Water Resources Research, 46*(4).

Morgan, R. P. C. (2009). *Soil Erosion and Conservation*. London: John Wiley & Sons.

Moriasi, D., Wilson, B., Douglas-Mankin, K., Arnold, J., & Gowda, P. (2012). Hydrologic and Water Quality Models: Use, Calibration, and Validation. *Transactions of the ASABE, 55*(4), 1241-1247.

Moriasi, D. N., Arnold, J. G., Van Liew, M. W., Bingner, R. L., Harmel, R. D., & Veith, T. L. (2007). Model Evaluation Guidelines for Systematic Quantification of Accuracy in Watershed Simulations. *Transactions of the ASABE, 50*(3), 885-900.

Moroke, T., Dikinya, O., & Patrick, C. (2009). Comparative Assessment of Water Infiltration of Soils under Different Tillage Systems in Eastern Botswana. *Physics and Chemistry of the Earth, 34*(4), 316-323.

Morris, N. L., Miller, P. C. H., Orson, J. H., & Froud-Williams, R. J. (2010). The Adoption of Non-Inversion Tillage Systems in the United Kingdom and the Agronomic Impact on Soil, Crops and the Environment-a Review. *Soil & Tillage Research, 108*(1-2), 1-15. doi:10.1016/j.still.2010.03.004

Morvan, X., Naisse, C., Issa, O. M., Desprats, J. F., Combaud, A., & Cerdan, O. (2014). Effect of Ground-Cover Type on Surface Runoff and Subsequent Soil Erosion in Champagne Vineyards in France. *Soil Use and Management, 30*(3), 372-381. doi:10.1111/Sum.12129

Moussa, R., Voltz, M., & Andrieux, P. (2002). Effects of the Spatial Organization of Agricultural Management on the Hydrological Behaviour of a Farmed Catchment During Flood Events. *Hydrological Processes, 16*(2), 393-412. doi:10.1002/Hyp.333

Mozaffari, M., & Sims, J. (1994). Phosphorus Availability and Sorption in an Atlantic Coastal Plain Watershed Dominated by Animal-Based Agriculture. *Soil Science, 157*(2), 97-107.

Mubarak, I., Mailhol, J. C., Angulo-Jaramillo, R., Bouarfa, S., & Ruelle, P. (2009). Effect of Temporal Variability in Soil Hydraulic Properties on Simulated Water Transfer under High-Frequency Drip Irrigation. *Agricultural Water Management, 96*(11), 1547-1559. doi:10.1016/j.agwat.2009.06.011

Mulumba, L. N., & Lal, R. (2008). Mulching Effects on Selected Soil Physical Properties. *Soil and Tillage Research, 98*(1), 106-111.

Myrbeck, A., Stenberg, M., Arvidsson, J., & Rydberg, T. (2012). Effects of Autumn Tillage of Clay Soil on Mineral N Content, Spring Cereal Yield and Soil

Structure over Time. *European Journal of Agronomy, 37*(1), 96-104. doi: 10.1016/j.eja.2011.11.007

Nadal-Romero, E., Gonzalez-Hidalgo, J. C., Cortesi, N., Desir, G., Gomez, J. A., Lasanta, T., Lucia, A., Marin, C., Martinez-Murillo, J. F., Pacheco, E., Rodriguez-Blanco, M. L., Diaz, A. R., Ruiz-Sinoga, J. D., Taguas, E. V., Taboada-Castro, M. M., Taboada-Castro, M. T., Ubeda, X., & Zabaleta, A. (2015). Relationship of Runoff, Erosion and Sediment Yield to Weather Types in the Iberian Peninsula. *Geomorphology, 228*, 372-381. doi: 10.1016/j.geomorph.2014.09.011

Nadeu, E., Berhe, A., Vente, J. d., & Boix-Fayos, C. (2012). Erosion, Deposition and Replacement of Soil Organic Carbon in Mediterranean Catchments: A Geomorphological, Isotopic and Land Use Change Approach. *Biogeosciences, 9*(3), 1099-1111.

Nciizah, A. D., & Wakindiki, I. I. (2014). Rainfall Pattern Effects on Crusting, Infiltration and Erodibility in Some South African Soils with Various Texture and Mineralogy. *Water SA, 40*(1), 57-64.

Nearing, M., Deer-Ascough, L., & Laflen, J. (1990). Sensitivity Analysis of the WEPP Hillslope Profile Erosion Model. *Transactions of the ASAE, 33*(3), 839-849.

Nebo, C., Portella, M. C., Carani, F. R., de Almeida, F. L. A., Padovani, C. R., Carvalho, R. F., & Dal-Pai-Silva, M. (2013). Short Periods of Fasting Followed by Refeeding Change the Expression of Muscle Growth-Related Genes in Juvenile Nile Tilapia (Oreochromis Niloticus). *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology, 164*(4), 268-274.

Nelson, P. N., Cotsaris, E., & Oades, J. M. (1996). Nitrogen, Phosphorus, and Organic Carbon in Streams Draining Two Grazed Catchments. *Journal of Environmental Quality, 25*(6), 1221-1229.

Niaghi, A. R., Majnooni-Heris, A., Haghi, D. Z., & Mahtabi, G. (2013). Evaluate Several Potential Evapotranspiration Methods for Regional Use in Tabriz, Iran. *Journal of Applied Environmental and Biological Science, 3*(6), 31-41.

Nielsen, D., & Biggar, J. (1986). Water Flow and Solute Transport Processes in the Unsaturated Zone. *Water Resources Research, 22*(9S).

Nikolaidis, N. P., Heng, H., Semagin, R., & Clausen, J. C. (1998). Non-Linear Response of a Mixed Land Use Watershed to Nitrogen Loading. *Agriculture Ecosystems & Environment, 67*(2-3), 251-265. doi:10.1016/S0167-8809(97)00123-0

Nimah, M., & Hanks, R. (1973). Model for Estimating Soil Water, Plant, and Atmospheric Interrelations: I. Description and Sensitivity. *Soil Science Society of America Journal, 37*(4), 522-527.

Norton, L. D. (2008). Gypsum Soil Amendment as a Management Practice in Conservation Tillage to Improve Water Quality. *Journal of Soil and Water Conservation, 63*(2), 46a-48a. doi:10.2489/63.2.46a

Novara, A., Gristina, L., Saladino, S., Santoro, A., & Cerdà, A. (2011). Soil Erosion Assessment on Tillage and Alternative Soil Managements in a Sicilian Vineyard. *Soil and Tillage Research, 117*, 140-147.

Novotny, V., & Olem, H. (1994). Water Quality : Prevention, Identification and Management of Diffuse Pollution. *Van Nostrand-Reinhold Publishers*.

Oenema, O., van Liere, L., & Schoumans, O. (2005). Effects of Lowering Nitrogen and Phosphorus Surpluses in Agriculture on the Quality of Groundwater and Surface Water in the Netherlands. *Journal of Hydrology, 304*(1-4), 289-301. doi:10.1016/j.jhydrol.2004.07.044

Ojeda, G., Tarrasón, D., Ortiz, O., & Alcaniz, J. (2006). Nitrogen Losses in Runoff Waters from a Loamy Soil Treated with Sewage Sludge. *Agriculture, Ecosystems & Environment, 117*(1), 49-56.

Okada, R., Kiyota, E., Sabanadzovic, S., Moriyama, H., Fukuhara, T., Saha, P., Roossinck, M. J., Severin, A., & Valverde, R. A. (2011). Bell Pepper Endornavirus: Molecular and Biological Properties, and Occurrence in the Genus Capsicum. *Journal of General Virology, 92*(11), 2664-2673.

Oliver, J. E. (2005). *The Encyclopedia of World Climatology*. Dordrecht, Netherlands: Springer Science & Business Media.

Ongley, E. D. (1996). *Control of Water Pollution from Agriculture* (Vol. 55). Rome, Italy: Food & Agriculture Organization.

Ongley, E. D., Zhang, X. L., & Yu, T. (2010). Current Status of Agricultural and Rural Non-Point Source Pollution Assessment in China. *Environmental Pollution, 158*(5), 1159-1168. doi:10.1016/j.envpol.2009.10.047

Onsoy, Y. S., Harter, T., Ginn, T. R., & Horwath, W. R. (2005). Spatial Variability and Transport of Nitrate in a Deep Alluvial Vadose Zone. *Vadose Zone Journal, 4*(1), 41-54.

Onyando, J., Kisoyan, P., & Chemelil, M. (2005). Estimation of Potential Soil Erosion for River Perkerra Catchment in Kenya. *Water Resources Management, 19*(2), 133-143.

Orgaz, F., Fernandez, M. D., Bonachela, S., Gallardo, M., & Fereres, E. (2005). Evapotranspiration of Horticultural Crops in an Unheated Plastic Greenhouse. *Agricultural Water Management, 72*(2), 81-96. doi: 10.1016/j.agwat.2004.09.010

Oudin, L., Hervieu, F., Michel, C., Perrin, C., Andréassian, V., Anctil, F., & Loumagne, C. (2005). Which Potential Evapotranspiration Input for a Lumped Rainfall–Runoff Model?: Part 2—Towards a Simple and Efficient Potential Evapotranspiration Model for Rainfall–Runoff Modelling. *Journal of Hydrology, 303*(1), 290-306.

Owens, L. (1981). Effects of Nitrapyrin on Nitrate Movement in Soil Columns. *Journal of Environmental Quality, 10*(3), 308-310.

Owusu-Sekyere, J., Asante, P., & Osei-Bonsu, P. (2010). Water Requirement, Deficit Irrigation and Crop Coefficient of Hot Pepper (*Capsicum Frutescens*) Using Irrigation Interval of Four (4) Days. *Journal of Agricultural and Biological Science, 5*(5), 72-78.

Oztas, T., Koc, A., & Comakli, B. (2003). Changes in Vegetation and Soil Properties Along a Slope on Overgrazed and Eroded Rangelands. *Journal of Arid Environments, 55*(1), 93-100. doi:10.1016/S0140-1930(02)00267-7

Pagliai, M., Vignozzi, N., & Pellegrini, S. (2004). Soil Structure and the Effect of Management Practices. *Soil and Tillage Research, 79*(2), 131-143.

Palis, R., Ghandiri, H., Rose, C., & Saffigna, P. (1997). Soil Erosion and Nutrient Loss. III. Changes in the Enrichment Ratio of Total Nitrogen and Organic Carbon under Rainfall Detachment and Entrainment. *Australian Journal of Soil Research, 35*(4), 891-905.

Pandey, A., Chowdary, V., & Mal, B. (2007). Identification of Critical Erosion Prone Areas in the Small Agricultural Watershed Using USLE, GIS and Remote Sensing. *Water Resources Management, 21*(4), 729-746.

Papiernik, S. K., Lindstrom, M. J., Schumacher, J. A., Farenhorst, A., Stephens, K. D., Schumacher, T. E., & Lobb, D. A. (2005). Variation in Soil Properties and Crop Yield across an Eroded Prairie Landscape. *Journal of Soil and Water Conservation, 60*(6), 388-395.

Pärn, J., Pinay, G., & Mander, Ü. (2012). Indicators of Nutrients Transport from Agricultural Catchments under Temperate Climate: A Review. *Ecological Indicators, 22*, 4-15.

Parris, K. (2011). Impact of Agriculture on Water Pollution in OECD Countries: Recent Trends and Future Prospects. *International Journal of Water Resources Development, 27*(1), 33-52.

Parsons, A. J., & Stone, P. M. (2006). Effects of Intra-Storm Variations in Rainfall Intensity on Interrill Runoff and Erosion. *Catena, 67*(1), 68-78. doi: 10.1016/j.catena.2006.03.002

Patin, J., Mouche, E., Ribolzi, O., Chaplot, V., Sengtahevanghoung, O., Latsachak, K. O., Soulileuth, B., & Valentin, C. (2012). Analysis of Runoff Production at the Plot Scale During a Long-Term Survey of a Small Agricultural Catchment in Lao PDR. *Journal of Hydrology, 426*, 79-92. doi: 10.1016/j.jhydrol.2012.01.015

Paustian, K., Andren, O., Clarholm, M., Hansson, A.-C., Johansson, G., Lagerlof, J., Lindberg, T., Pettersson, R., & Sohlenius, B. (1990). Carbon and Nitrogen Budgets of Four Agro-Ecosystems with Annual and Perennial Crops, with and without N Fertilization. *Journal of Applied Ecology, 27*, 60-84.

Peng, S., Garcia, F., Laza, R., Sanico, A., Visperas, R., & Cassman, K. (1996). Increased N-Use Efficiency Using a Chlorophyll Meter on High-Yielding Irrigated Rice. *Field Crops Research, 47*(2), 243-252.

Peterson, E. W., Davis, R. K., Brahana, J., & Orndorff, H. A. (2002). Movement of Nitrate through Regolith Covered Karst Terrane, Northwest Arkansas. *Journal of Hydrology, 256*(1), 35-47.

Pfab, H., Palmer, I., Buegger, F., Fiedler, S., Muller, T., & Ruser, R. (2012). Influence of a Nitrification Inhibitor and of Placed N-Fertilization on N_2O Fluxes from a Vegetable Cropped Loamy Soil. *Agriculture Ecosystems & Environment, 150*, 91-101. doi:10.1016/j.agee.2012.01.001

Piccinni, G., Ko, J., Marek, T., & Howell, T. (2009). Determination of Growth-Stage-Specific Crop Coefficients (Kc) of Maize and Sorghum. *Agricultural Water Management, 96*(12), 1698-1704.

Pierzynski, G. M., McDowell, R. W., Sims, J., & Sharpley, A. (2005). Chemistry, Cycling, and Potential Movement of Inorganic Phosphorus in Soils. *Phosphorus: Agriculture and the Environment*, 53-86.

Pimentel, D. (2006). Soil Erosion: A Food and Environmental Threat. *Environment, Development and Sustainability, 8*(1), 119-137.

Pitkanen, J., & Nuutinen, V. (1997). Distribution and Abundance of Burrows Formed by Lumbricus Terrestris L and Aporrectodea Caliginosa Sav in the Soil Profile. *Soil Biology & Biochemistry, 29*(3-4), 463-467. doi: 10.1016/S0038-0717(96)00040-5

Polyakov, V., & Lal, R. (2004). Soil Erosion and Carbon Dynamics under Simulated Rainfall. *Soil Science, 169*(8), 590-599.

Pool, R. (1989). Is It Chaos, or Is It Just Noise? *Science, 243*(4887), 25.

Popa, N., Nistor, D., Hurjui, C., Filiche, E., & Petrovici, G. (2015). Monitoring the Effect of Conservation Practices on the Erosion Rates in Some Small Watersheds in Eastern Romania. *Eurasian Journal of Soil Science, 4*(1), 6-14.

Popova, Z., Kercheva, M., & Pereira, L. S. (2006). Validation of the FAO Methodology for Computing ET_o with Limited Data. Application to South Bulgaria. *Irrigation and Drainage, 55*(2), 201-215.

Pote, D., Daniel, T., Nichols, D., Sharpley, A., Moore, P., Miller, D., & Edwards, D. (1999). Relationship between Phosphorus Levels in Three Ultisols and Phosphorus Concentrations in Runoff. *Journal of Environmental Quality, 28*(1), 170-175.

Powers, R. F. (1980). Mineralizable Soil Nitrogen as an Index of Nitrogen Availability to Forest Trees. *Soil Science Society of America Journal, 44*(6), 1314-1320.

Prairie, Y. T., & Kalff, J. (1986). Effect of Catchment Size on Phosphorus Export. *Water Resources Bulletin WARBAQ, 22*(3).

Priebe, D., & Blackmer, A. (1989). Soil Moisture Content at Time of Application as a Factor Affecting Losses of N from Surface-Applied Urea. *Journal of Fertilizer Issues, 6*(3), 62-67.

Priestley, C., & Taylor, R. (1972). On the Assessment of Surface Heat Flux and Evaporation Using Large-Scale Parameters. *Monthly Weather Review, 100*(2), 81-92.

Prosdocimi, M., Jordan, A., Tarolli, P., Keesstra, S., Novara, A., & Cerda, A. (2016). The Immediate Effectiveness of Barley Straw Mulch in Reducing Soil Erodibility and Surface Runoff Generation in Mediterranean Vineyards. *Science of the Total Environment*, *547*, 323-330. doi:10.1016/j.scitotenv.2015.12.076

Puigdefabregas, J. (2005). The Role of Vegetation Patterns in Structuring Runoff and Sediment Fluxes in Drylands. *Earth Surface Processes and Landforms, 30*(2), 133-147. doi:10.1002/esp.1181

Qian, J., Zhang, L. P., Wang, W. Y., & Liu, Q. (2014). Effects of Vegetation Cover and Slope Length on Nitrogen and Phosphorus Loss from a Sloping Land under Simulated Rainfall. *Polish Journal of Environmental Studies, 23*(3), 835-843.

Qiang, F., Wenwu, Z., Jun, W., Zhang, X., Mingyue, Z., Zhong, L., Yuanxin, L., & Xuening, F. (2016). Effects of Different Land-Use Types on Soil Erosion under Natural Rainfall in the Loess Plateau, China. *Pedosphere, 26*(2), 243-256.

Quijano, L., Gaspar, L., & Navas, A. (2016). Spatial Patterns of SOC, SON, Cs-137 and Soil Properties as Affected by Cd Redistribution Processes in a Mediterranean Cultivated Field (Central Ebro Basin). *Soil & Tillage Research, 155,* 318-328. doi:10.1016/j.still.2015.09.007

Quinton, J. N., Catt, J. A., & Hess, T. M. (2001). The Selective Removal of Phosphorus from Soil: Is Event Size Important? *Journal of Environmental Quality, 30*(2), 538-545.

Rácz, C., Nagy, J., & Dobos, A. C. (2013). Comparison of Several Methods for Calculation of Reference Evapotranspiration. *Acta Silvatica et Lignaria Hungarica, 9*(1), 9-24.

Radcliffe, D. E., Reid, D. K., Blomback, K., Bolster, C. H., Collick, A. S., Easton, Z. M., Francesconi, W., Fuka, D. R., Johnsson, H., King, K., Larsbo, M., Youssef, M. A., Mulkey, A. S., Nelson, N. O., Persson, K., Ramirez-Avila, J. J., Schmieder, F., & Smith, D. R. (2015). Applicability of Models to Predict

Phosphorus Losses in Drained Fields: A Review. *Journal of Environmental Quality, 44*(2), 614-628. doi:10.2134/jeq2014.05.0220

Radke, J., & Berry, E. (1993). Infiltration as a Tool for Detecting Soil Changes Due to Cropping, Tillage, and Grazing Livestock. *American Journal of Alternative Agriculture, 8*(4), 164-174.

Rahardjo, H., Leong, E. C., & Rezaur, R. (2008). Effect of Antecedent Rainfall on Pore-Water Pressure Distribution Characteristics in Residual Soil Slopes under Tropical Rainfall. *Hydrological Processes, 22*(4), 506-523.

Rahimikhoob, A., Behbahani, M. R., & Fakheri, J. (2012). An Evaluation of Four Reference Evapotranspiration Models in a Subtropical Climate. *Water Resources Management, 26*(10), 2867-2881.

Ramakrishna, A., Tam, H. M., Wani, S. P., & Long, T. D. (2006). Effect of Mulch on Soil Temperature, Moisture, Weed Infestation and Yield of Groundnut in Northern Vietnam. *Field Crops Research, 95*(2), 115-125. doi:10.1016/j.fcr.2005.01.030

Ramos-Scharrón, C. E., & MacDonald, L. H. (2007). Measurement and Prediction of Natural and Anthropogenic Sediment Sources, St. John, Us Virgin Islands. *Catena*, *71*(2), 250-266.

Ramos, M., & Martınez-Casasnovas, J. (2004). Nutrient Losses from a Vineyard Soil in Northeastern Spain Caused by an Extraordinary Rainfall Event. *Catena, 55*(1), 79-90.

Ramos, M., & Martínez-Casasnovas, J. (2006). Nutrient Losses by Runoff in Vineyards of the Mediterranean Alt Penedès Region (Ne Spain). *Agriculture, Ecosystems & Environment*, *113*(1), 356-363.

Ramos, M. C., & Martinez-Casasnovas, J. A. (2010). Effects of Precipitation Patterns and Temperature Trends on Soil Water Available for Vineyards in a Mediterranean Climate Area. *Agricultural Water Management*, *97*(10), 1495-1505. doi:10.1016/j.agwat.2010.05.003

Ramos, M. E., Benítez, E., García, P. A., & Robles, A. B. (2010). Cover Crops under Different Managements vs. Frequent Tillage in Almond Orchards in Semiarid Conditions: Effects on Soil Quality. *Applied Soil Ecology, 44*(1), 6-14.

Rasmussen, K. J. (1999). Impact of Ploughless Soil Tillage on Yield and Soil Quality: A Scandinavian Review. *Soil & Tillage Research*, *53*(1), 3-14. doi:10.1016/S0167-1987(99)00072-0

Reichert, J. M., da Rosa, V. T., Vogelmann, E. S., da Rosa, D. P., Horn, R., Reinert, D. J., Sattler, A., & Denardin, J. E. (2016). Conceptual Framework for Capacity and Intensity Physical Soil Properties Affected by Short and Long-Term (14 Years) Continuous No-Tillage and Controlled Traffic. *Soil & Tillage Research, 158*, 123-136. doi:10.1016/j.still.2015.11.010

Ren, D., Xu, X., Hao, Y., & Huang, G. (2015). Modeling and Assessing Field Irrigation Water Use in a Canal System of Hetao, Upper Yellow River Basin: Application to Maize, Sunflower and Watermelon. *Journal of Hydrology*.

Reusing, M., Schneider, T., & Ammer, U. (2000). Modelling Soil Loss Rates in the Ethiopian Highlands by Integration of High Resolution Moms-02/D2-Stereo-Data in a GIS. *International Journal of Remote Sensing, 21*(9), 1885-1896.

Reynolds, C. S., & Davies, P. S. (2001). Sources and Bioavailability of Phosphorus Fractions in Freshwaters: A British Perspective. *Biological Reviews, 76*(1), 27-64. doi:10.1017/S1464793100005625

Ribolzi, O., Cuny, J., Sengsoulichanh, P., Mousques, C., Soulileuth, B., Pierret, A., Huon, S., & Sengtaheuanghoung, O. (2011). Land Use and Water Quality Along a Mekong Tributary in Northern Lao PDR. *Environmental Management, 47*(2), 291-302. doi:10.1007/s00267-010-9593-0

Ridley, A. M., Dineen, K., Burland, J. B., & Vaughan, P. R. (2003). Soil Matrix Suction: Some Examples of Its Measurement and Application in Geotechnical Engineering. *Geotechnique, 53*(2), 241-253. doi: 10.1680/geot.53.2.241.37275

Rieke-Zapp, D. H., & Nearing, M. A. (2005). Slope Shape Effects on Erosion: A Laboratory Study. *Soil Science Society of America Journal, 69*(5), 1463-1471. doi:10.2136/sssaj2005.0015

Ritsema, C. J., Dekker, L. W., Hendrickx, J. M. H., & Hamminga, W. (1993). Preferential Flow Mechanism in a Water Repellent Sandy Soil. *Water Resources Research, 29*(7), 2183-2193. doi:10.1029/93wr00394

Ritter, W. F., & Shirmohammadi, A. (2010). *Agricultural Nonpoint Source Pollution: Watershed Management and Hydrology*. Florida: CRC Press.

Rivett, M. O., Buss, S. R., Morgan, P., Smith, J. W. N., & Bemment, C. D. (2008). Nitrate Attenuation in Groundwater: A Review of Biogeochemical Controlling Processes. *Water Research, 42*(16), 4215-4232. doi: 10.1016/j.watres.2008.07.020

Robbins, S. G., & Voss, R. D. (1991). Phosphorus and Potassium Stratification in Conservation Tillage Systems. *Journal of Soil and Water Conservation, 46*(4), 298-300.

Romic, D., Romic, M., Borosic, J., & Poljak, M. (2003). Mulching Decreases Nitrate Leaching in Bell Pepper (*Capsicum Annuum* L.) Cultivation. *Agricultural Water Management, 60*(2), 87-97. doi:Pii S0378-3774(02)00168-3Doi 10.1016/S0378-3774(02)00168-3

Römkens, M., & Prasad, S. (2006). Rain Infiltration into Swelling/Shrinking/Cracking Soils. *Agricultural Water Management, 86*(1), 196-205.

Römkens, M. J., Helming, K., & Prasad, S. (2002). Soil Erosion under Different Rainfall Intensities, Surface Roughness, and Soil Water Regimes. *Catena, 46*(2), 103-123.

Roth, K., Jury, W. A., Fluhler, H., & Attinger, W. (1991). Transport of Chloride through an Unsaturated Field Soil. *Water Resources Research, 27*(10), 2533-2541. doi:10.1029/91wr01771

Russo, D., Zaidel, J., & Laufer, A. (1994). Stochastic-Analysis of Solute Transport in Partially Saturated Heterogeneous Soil 1. Numerical Experiments. *Water Resources Research, 30*(3), 769-779. doi:10.1029/93wr02883

Sabillón, G., & Merkley, G. (2004). Fertigation Guidelines for Furrow Irrigation. *Spanish Journal of Agricultural Research, 2*(4), 576-587.

Sadeghi, S. H. R., Gholami, L., Homaee, M., & Darvishan, A. K. (2015a). Reducing Sediment Concentration and Soil Loss Using Organic and Inorganic Amendments at Plot Scale. *Solid Earth, 6*(2), 445-455. doi:10.5194/se-6-445-2015

Sadeghi, S. H. R., Gholami, L., Sharifi, E., Darvishan, A. K., & Homaee, M. (2015b). Scale Effect on Runoff and Soil Loss Control Using Rice Straw Mulch under Laboratory Conditions. *Solid Earth, 6*(1), 1-8. doi: 10.5194/se-6-1-2015

Safi, Z., Bahram, G. M., Ahmadzai, K. M., & Alemi, M. A. (2016). Organic Matter and Nutrient (NPKC) Losses via Surface Runoff in Urban Agriculture (UA) of Kabul, Afghanistan. *International Journal of Agricultural Research and Review, 4*(1), 440-447.

Safi, Z., Predotova, M., Schlecht, E., & Buerkert, A. (2011). Horizontal Matter Fluxes and Leaching Losses in Urban and Peri-Urban Agriculture of Kabul, Afghanistan. *Journal of Plant Nutrition and Soil Science, 174*(6), 942-951. doi:10.1002/jpln.201000385

Sahat, S., Yusop, Z., Askari, M., & Ziegler, A. (2016). Estimation of Soil Erosion Rates in Oil Palm Plantation with Different Land Cover. *IOP Conference Series: Materials Science and Engineering*.136 (1). doi: 10.1088/1757-899X/136/1/012086

Salah, A. M., Prasse, R., & Marschner, B. (2016). Intercropping with Native Perennial Plants Protects Soil of Arable Fields in Semi-Arid Lands. *Journal of Arid Environments, 130*, 1-13.

Salo, T., & Turtola, E. (2006). Nitrogen Balance as an Indicator of Nitrogen Leaching in Finland. *Agriculture Ecosystems & Environment, 113*(1-4), 98-107. doi:10.1016/j.agee.2005.09.002

Sam-Amoah, L., Darko, R. O., & Owusu-Sekyere, J. (2006). Water Requirement, Deficit Irrigation and Crop Coefficient of Hot Pepper (*Capsicum Frutescens* Var Legon18) Using Irrigation Interval of Two (2) Days. *Journal of Agricultural and Biological Science, 8*(2), 139-146.

Santhi, C., Arnold, J. G., Williams, J. R., Dugas, W. A., Srinivasan, R., & Hauck, L. M. (2001). Validation of the Swat Model on a Large River Basin with Point and Nonpoint Sources. *Journal of the American Water Resources Association, 37*(5), 1169-1188.

Saxton, K., & Rawls, W. (2006). Soil Water Characteristic Estimates by Texture and Organic Matter for Hydrologic Solutions. *Soil Science Society of America Journal, 70*(5), 1569-1578.

Sazakli, E., Alexopoulos, A., & Leotsinidis, M. (2007). Rainwater Harvesting, Quality Assessment and Utilization in Kefalonia Island, Greece. *Water Research, 41*(9), 2039-2047.

Scanlon, B. R., Reedy, R. C., Gates, J. B., & Gowda, P. H. (2010). Impact of Agroecosystems on Groundwater Resources in the Central High Plains, USA. *Agriculture Ecosystems & Environment, 139*(4), 700-713. doi:10.1016/j.agee.2010.10.017

Schaetzl, R. J., Knapp, B. D., & Isard, S. A. (2005). Modeling Soil Temperatures and the Mesic-Frigid Boundary in the Central Great Lakes Region, 1951-2000.

Soil Science Society of America Journal, 69(6), 2033-2040. doi: 10.2136/sssaj2004.0349

Scheiner, J. D., & Lavado, R. S. (1998). The Role of Fertilization on Phosphorus Stratification in No-Till Soils. *Communications in Soil Science and Plant Analysis, 29*(17-18), 2705-2711. doi:10.1080/00103629809370145

Schiettecatte, W., Cornelis, W., Acosta, M., Leal, Z., Lauwers, N., Almoza, Y., Alonso, G., Díaz, J., Ruíz, M., & Gabriels, D. (2008a). Influence of Landuse on Soil Erosion Risk in the Cuyaguateje Watershed (Cuba). *Catena, 74*(1), 1-12.

Schiettecatte, W., Gabriels, D., Cornelis, W., & Hofman, G. (2008b). Enrichment of Organic Carbon in Sediment Transport by Interrill and Rill Erosion Processes. *Soil Science Society of America Journal, 72*(1), 50-55.

Schönbrodt-Stitt, S., Behrens, T., Schmidt, K., Shi, X., & Scholten, T. (2013). Degradation of Cultivated Bench Terraces in the Three Gorges Area: Field Mapping and Data Mining. *Ecological Indicators, 34*, 478-493.

Schroeder, P., Radcliffe, D., & Cabrera, M. (2004). Rainfall Timing and Poultry Litter Application Rate Effects on Phosphorus Loss in Surface Runoff. *Journal of Environmental Quality, 33*(6), 2201-2209.

Schultz, R., Isenhart, T., Simpkins, W., & Colletti, J. (2004). Riparian Forest Buffers in Agroecosystems–Lessons Learned from the Bear Creek Watershed, Central Iowa, USA. *Agroforestry Systems, 61*(1-3), 35-50.

Schwen, A., Bodner, G., & Loiskandl, W. (2011). Time-Variable Soil Hydraulic Properties in near-Surface Soil Water Simulations for Different Tillage Methods. *Agricultural Water Management, 99*(1), 42-50. doi: 10.1016/j.agwat.2011.07.020

Serna, M. D., & Pomares, F. (1992). Nitrogen Mineralization of Sludge Amended Soil. *Bioresource Technology*, 39(3), 285-290

Seutloali, K. E., & Beckedahl, H. R. (2015). A Review of Road-Related Soil Erosion: An Assessment of Causes, Evaluation Techniques and Available Control Measures. *Earth Sciences Research Journal, 19*(1), 73-80.

Shaffer, M., Halvorson, A., & Pierce, F. (1991). Nitrate Leaching and Economic Analysis Package (NLEAP): Model Description and Application. *Managing Nitrogen for Groundwater Quality and Farm Profitability*, 285-322.

Shan, L., He, Y., Chen, J., Huang, Q., Lian, X., Wang, H., & Liu, Y. (2015). Nitrogen Surface Runoff Losses from a Chinese Cabbage Field under Different Nitrogen Treatments in the Taihu Lake Basin, China. *Agricultural Water Management, 159*, 255-263.

Sharip, Z., Zaki, A. T., Shapai, M., Suratman, S. & Shaaban, A. J. 2014. Lakes of Malaysia: Water quality, eutrophication and management. *Lakes &Reservoirs: Research & Management*, 19**,** 130-141.

Sharma, P., Rai, S., Sharma, R., & Sharma, E. (2004). Effects of Land-Use Change on Soil Microbial C, N and P in a Himalayan Watershed. *Pedobiologia, 48*(1), 83-92.

Sharpley, A. (1980a). The Effect of Storm Interval on the Transport of Soluble Phosphorus in Runoff. *Journal of Environmental Quality, 9*(4), 575-578.

Sharpley, A. (1980b). The Enrichment of Soil Phosphorus in Runoff Sediments. *Journal of Environmental Quality*, *9*(3), 521-526.

Sharpley, A. (1985). Depth of Surface Soil-Runoff Interaction as Affected by Rainfall, Soil Slope, and Management. *Soil Science Society of America Journal, 49*(4), 1010-1015.

Sharpley, A., Foy, B., & Withers, P. (2000). Practical and Innovative Measures for the Control of Agricultural Phosphorus Losses to Water: An Overview. *Journal of Environmental Quality, 29*(1), 1-9.

Sharpley, A., Rekolainen, S., Tunney, H., Carton, O., Brookes, P., & Johnston, A. (1997). Phosphorus in Agriculture and Its Environmental Implications. *Phosphorus Loss from soil to Water. Proceedings of a workshop, Wexford, Irish Republic, 29-31 September 1995.*

Sharpley, A., & Syers, J. (1976a). Phosphorus Transport in Surface Runoff as Influenced by Fertiliser and Grazing Cattle. *New Zealand Journal of Science, 19*, 277-282.

Sharpley, A., & Syers, J. (1976b). Potential Role of Earthworm Casts for the Phosphorus Enrichment of Runoff Waters. *Soil Biology and Biochemistry, 8*(5), 341-346.

Sharpley, A., & Syers, J. (1979a). Loss of Nitrogen and Phosphorus in Tile Drainage as Influenced by Urea Application and Grazing Animals. *New Zealand Journal of Agricultural Research, 22*(1), 127-131.

Sharpley, A., & Syers, J. (1979b). Phosphorus Inputs into a Stream Draining an Agricultural Watershed. *Water, Air, and Soil Pollution, 11*(4), 417-428.

Sharpley, A. N., Chapra, S. C., Wedepohl, R., Sims, J. T., Daniel, T. C., & Reddy, K. R. (1994). Managing Agricultural Phosphorus for Protection of Surface Waters - Issues and Options. *Journal of Environmental Quality, 23*(3), 437-451.

Sharpley, A. N., Daniel, T., & Edwards, D. (1993). Phosphorus Movement in the Landscape. *Journal of Production Agriculture, 6*(4), 492-500.

Sharpley, A. N., McDowell, R. W., & Kleinman, P. J. A. (2001). Phosphorus Loss from Land to Water: Integrating Agricultural and Environmental Management. *Plant and Soil, 237*(2), 287-307. doi: 10.1023/A:1013335814593

Sharpley, A. N., & Withers, P. J. A. (1994). The Environmentally-Sound Management of Agricultural Phosphorus. *Fertilizer Research, 39*(2), 133-146. doi:10.1007/Bf00750912

Shen, Q., Ran, W., & Cao, Z. (2003). Mechanisms of Nitrite Accumulation Occurring in Soil Nitrification. *Chemosphere, 50*(6), 747-753.

Shen, Z., Liao, Q., Hong, Q., & Gong, Y. (2012). An Overview of Research on Agricultural Non-Point Source Pollution Modelling in China. *Separation and Purification Technology, 84*, 104-111.

Shepherd, M., Wheeler, D., Selbie, D., Buckthought, L., & Freeman, M. (2013). Overseer®: Accuracy, Precision, Error and Uncertainty. Currie, LD, and Christensen, CL, Accurate and Efficient Use of Nutrients on Farms. *Occasional Report No. 26*, Fertilizer and Lime Research Centre, Massey University, Palmerston North, 1-8.

Shi, J. G., Liu, J. H., Zhao, B. P., Jia, L. X., Chen, Q., Acharya, S. N., Yan, Y. F., & Rong, X. P. (2012a). Effects of Re-Used Plastic Film Mulching on Soil Temperature and Sunflower's Emergence. *Advances Materials Research, 518*, 5390-5394. doi:10.4028/www.scientific.net/AMR.518-523.5390

Shi, J. G., Liu, J. H., Zhao, B. P., Xue, S. X., Jia, L. X., Acharya, S. N., Chen, Q., Yan, Y. F., & Gao, C. P. (2012b). Ecological Effects of Re-Used Film Mulching During Fallow Period of Cropland. *Advances Materials Research, 518*, 4680-4686. doi:10.4028/www.scientific.net/AMR.518-523.4680

Shin, M. H., Jang, J. R., Jung, Y., Park, Y. S., Lim, K. J., & Choi, J. D. (2015). Effect of Straw Mulch on Runoff and NPS Pollution Reduction from Experimental Plots under a Climate Change Scenario in Korea. *Journal of Irrigation and Drainage Engineering, 141*(8), 04015005.

Shipitalo, M., Edwards, W., Owens, L., & Dick, W. (1990). Initial Storm Effects on Macropore Transport of Surface-Applied Chemicals in No-Till Soil. *Soil Science Society of America Journal*, *54*(6), 1530-1536.

Shipitalo, M. J., Dick, W. A., & Edwards, W. M. (2000). Conservation Tillage and Macropore Factors That Affect Water Movement and the Fate of Chemicals. *Soil & Tillage Research, 53*(3-4), 167-183. doi:10.1016/S0167-1987(99)00104-X

Shortle, J. S., Ribaudo, M., Horan, R. D., & Blandford, D. (2012). Reforming Agricultural Nonpoint Pollution Policy in an Increasingly Budget-Constrained Environment. *Environmental Science & Technology, 46*(3), 1316-1325.

Shrestha, S., Pandey, V. P., Yoneyama, Y., Shrestha, S., & Kazama, F. (2013). An Evaluation of Rainwater Quality in Kathmandu Valley, Nepal. *Sustainable Environment Research, 23*(5), 341-350.

Shukla, S., Jaber, F. H., Goswami, D., & Srivastava, S. (2013). Evapotranspiration Losses for Pepper under Plastic Mulch and Shallow Water Table Conditions. *Irrigation Science*, *31*(3), 523-536. doi:10.1007/s00271-012-0327-3

Shuman, L. M. (2003). Fertilizer Source Effects on Phosphate and Nitrate Leaching through Simulated Golf Greens. *Environmental Pollution, 125*(3), 413-421. doi:10.1016/S0269-7491(03)00081-2

Sieling, K. & Kage, H. (2006). N Balance as an Indicator of N leaching in an Oilseed Rape-Winter wheat-Winter barley Rotation. *Agriculture, Ecosytem & Environment*, 115(1), 261-269.

Simard, G. (2005). *Monitoring and Simulation of Nutrient Transport from Agricultural Fields.* Master Thesis, McGill University, Montreal, Quebec.

Simard, R. R., Beauchemin, S., & Haygarth, P. M. (2000). Potential for Preferential Pathways of Phosphorus Transport. *Journal of Environmental Quality, 29*(1), 97-105.

Simmelsgaard, S. E. (1998). The Effect of Crop, N-Level, Soil Type and Drainage on Nitrate Leaching from Danish Soil. *Soil Use and Management, 14*(1), 30-36. doi:10.1111/j.1475-2743.1998.tb00607.x

Šimon, T., Javůrek, M., Mikanova, O., & Vach, M. (2009). The Influence of Tillage Systems on Soil Organic Matter and Soil Hydrophobicity. *Soil and Tillage Research, 105*(1), 44-48.

Simonne, E., Dukes, M., & Haman, D. (2004). *Principles and Practices of Irrigation Management for Vegetables. Vegetable Production Guide for Florida.* University of Florida, Gainesville, *FL*, 33-39.

Sims, J. T., Simard, R. R., & Joern, B. C. (1998). Phosphorus Loss in Agricultural Drainage: Historical Perspective and Current Research. *Journal of Environmental Quality, 27*(2), 277-293.

Šimůnek, J., van Genuchten, M. T., & Šejna, M. (2012). HYDRUS: Model Use, Calibration, and Validation. *Transactions of ASABE, 55*(4), 1263-1276.

Sinaj, S., Frossard, E., & Fardeau, J. C. (1997). Isotopically Exchangeable Phosphate in Size Fractionated and Unfractionated Soils. *Soil Science Society of America Journal, 61*(5), 1413-1417.

Sivakumar, M., Boroumand-Nasab, S., & Singh, R. N. (1995). Pollutograph Modeling of an Impervious Catchment. *Conference on Water Resources at Risk. American Institute of Hydrology and International Mine Water Association, Denver, Colorado*.

Six, J., Bossuyt, H., Degryze, S., & Denef, K. (2004). A History of Research on the Link between (Micro) Aggregates, Soil Biota, and Soil Organic Matter Dynamics. *Soil and Tillage Research, 79*(1), 7-31.

Skoien, S. E., Borresen, T., & Bechmann, M. (2012). Effect of Tillage Methods on Soil Erosion in Norway. *Acta Agriculturae Scandinavica Section B-Soil and Plant Science, 62*, 191-198. doi:10.1080/09064710.2012.736529

Smets, T., Poesen, J., & Knapen, A. (2008). Spatial Scale Effects on the Effectiveness of Organic Mulches in Reducing Soil Erosion by Water. *Earth-Science Reviews, 89*(1-2), 1-12. doi:10.1016/j.earscirev.2008.04.001

Smettem, K., & Bristow, K. (1999). Obtaining Soil Hydraulic Properties for Water Balance and Leaching Models from Survey Data. 2. Hydraulic Conductivity. *Crop and Pasture Science, 50*(7), 1259-1262.

Smith, R. (1992). OPUS: An Integrated Simulation Model for Transport of Nonpoint-Source Pollutants at the Field Scale, Volume 1, Documentation. *Research Report. No. PB-92-231208/XAB; ARS--98*. Agricultural Research Service, Albany, CA (United States). Western Utilization Research and Development Div.

Sopian, K., & Othman, M. Y. H. (1992). Estimates of Monthly Average Daily Global Solar Radiation in Malaysia. *Renewable Energy, 2*(3), 319-325.

Spalding, R. F., Watts, D. G., Schepers, J. S., Burbach, M. E., Exner, M. E., Poreda, R. J., & Martin, G. E. (2001). Controlling Nitrate Leaching in Irrigated Agriculture. *Journal of Environmental Quality, 30*(4), 1184-1194.

Srinivasan, G., Robock, A., Entin, J. K., Luo, L. F., Vinnikov, K. Y., Viterbo, P., & Grp, A. M. (2000). Soil Moisture Simulations in Revised AMIP Models. *Journal of Geophysical Research-Atmospheres, 105*(D21), 26635-26644. doi:10.1029/2000jd900443

Srinivasarao, C., Venkateswarlu, B., Lal, R., Singh, A., Kundu, S., Vittal, K., Patel, J., & Patel, M. (2014). Long-Term Manuring and Fertilizer Effects on Depletion of Soil Organic Carbon Stocks under Pearl Millet-Cluster Bean-Castor Rotation in Western India. *Land Degradation & Development, 25*(2), 173-183.

Srivastava, J., & Meyer, E. (1998). Is Conservation Tillage a Viable Option in the Cis? *Draft Paper*, World Bank, Washington.

Stamm, C., Fluhler, H., Gachter, R., Leuenberger, J., & Wunderli, H. (1998). Preferential Transport of Phosphorus in Drained Grassland Soils. *Journal of Environmental Quality, 27*(3), 515-522.

Stanchi, S., Falsone, G., & Bonifacio, E. (2015). Soil Aggregation, Erodibility, and Erosion Rates on Mountain Soils (NW Alps, Italy). *Solid Earth*, 6(2), 403.

Steenhuis, T., Kim, Y., Parlange, J., Akhtar, M., Richards, B., Kung, K., Gish, T., Dekker, L., Ritsema, C., & Aburime, S. (2001). An Equation for Describing Solute Transport in Field Soils with Preferential Flow Paths. *Preferential Flow, Water Movement and Chemical Transport in the Environment, Proceedings of the ASAE 2nd International Symposium, Honolulu, Hawaii.*

Steenhuis, T. S., Staubitz, W., Andreini, M. S., Surface, J., Richard, T. L., Paulsen, R., Pickering, N. B., Hagerman, J. R., & Geohring, L. D. (1990). Preferential

Movement of Pesticides and Tracers in Agricultural Soils. *Journal of Irrigation and Drainage Engineering, 116*(1), 50-66.

Steffens, K., Larsbo, M., Moeys, J., Kjellstrom, E., Jarvis, N., & Lewan, E. (2014). Modelling Pesticide Leaching under Climate Change: Parameter vs. Climate Input Uncertainty. *Hydrology and Earth System Sciences, 18*(2), 479-491. doi:10.5194/hess-18-479-2014

Stenberg, M., Aronsson, H., Linden, B., Rydberg, T., & Gustafson, A. (1999). Soil Mineral Nitrogen and Nitrate Leaching Losses in Soil Tillage Systems Combined with a Catch Crop. *Soil & Tillage Research, 50*(2), 115-125. doi:10.1016/S0167-1987(98)00197-4

Stevens, D. P., Cox, J. W., & Chittleborough, D. J. (1999). Pathways of Phosphorus, Nitrogen, and Carbon Movement over and through Texturally Differentiated Soils, South Australia. *Australian Journal of Soil Research, 37*(4), 679-693.

Stöckle, C. O., Donatelli, M., & Nelson, R. (2003). CROPSYST, a Cropping Systems Simulation Model. *European Journal of Agronomy, 18*(3), 289-307.

Stoltenberg, N., & White, J. (1953). Selective Loss of Plant Nutrients by Erosion. *Soil Science Society of America Journal, 17*(4), 406-410.

Stutter, M. I., Langan, S. J., & Lumsdon, D. G. (2009). Vegetated Buffer Strips Can Lead to Increased Release of Phosphorus to Waters: A Biogeochemical Assessment of the Mechanisms. *Environmental science & technology, 43*(6), 1858-1863. doi:10.1021/Es8030193

Suhaila, J., Deni, S. M., Zin, W. Z. W., & Jemain, A. A. (2010). Trends in Peninsular Malaysia Rainfall Data During the Southwest Monsoon and Northeast Monsoon Seasons: 1975-2004. *Sains Malaysiana, 39*(4), 533-542.

Sun, B., Zhang, L. X., Yang, L. Z., Zhang, F. S., Norse, D., & Zhu, Z. L. (2012). Agricultural Non-Point Source Pollution in China: Causes and Mitigation Measures. *Ambio, 41*(4), 370-379. doi:10.1007/s13280-012-0249-6

Tabari, H., Grismer, M. E., & Trajkovic, S. (2013). Comparative Analysis of 31 Reference Evapotranspiration Methods under Humid Conditions. *Irrigation Science, 31*(2), 107-117. doi:10.1007/s00271-011-0295-z

Tang, J. L., Cheng, X. Q., Zhu, B., Gao, M. R., Wang, T., Zhang, X. F., Zhao, P., & You, X. (2015). Rainfall and Tillage Impacts on Soil Erosion of Sloping Cropland with Subtropical Monsoon Climate - A Case Study in Hilly Purple

Soil Area, China. *Journal of Mountain Science, 12*(1), 134-144. doi:10.1007/s11629-014-3241-8

Tarolli, P., & Sofia, G. (2016). Human Topographic Signatures and Derived Geomorphic Processes across Landscapes. *Geomorphology, 255*, 140-161.

Taylor, S. D., He, Y., & Hiscock, K. M. (2016). Modelling the Impacts of Agricultural Management Practices on River Water Quality in Eastern England. *Journal of Environmental Management, 180*, 147-163.

Tchobanoglous, G., Burton, F. L., & Stensel, H. D. (2003). Wastewater Engineering: Treatment and Reuse. *McGraw-Hill*.

Tebrugge, F., & During, R. A. (1999). Reducing Tillage Intensity - a Review of Results from a Long-Term Study in Germany. *Soil & Tillage Research, 53*(1), 15-28. doi:10.1016/S0167-1987(99)00073-2

Tejada, M., & Gonzalez, J. (2008). Influence of Two Organic Amendments on the Soil Physical Properties, Soil Losses, Sediments and Runoff Water Quality. *Geoderma, 145*(3), 325-334.

Tengbeh, G. (1993). The Effect of Grass Roots on Shear Strength Variations with Moisture Content. *Soil Technology, 6*(3), 287-295.

Terranova, O., Antronico, L., Coscarelli, R., & Iaquinta, P. (2009). Soil Erosion Risk Scenarios in the Mediterranean Environment Using RUSLE and GIS: An Application Model for Calabria (Southern Italy). *Geomorphology, 112*(3), 228-245.

Thomas, G. W., Haszler, G. R., & Crutchfield, J. D. (1992). Nitrate-Nitrogen and Phosphate-Phosphorus in Seven Kentucky Streams Draining Small Agricultural Watersheds: Eighteen Years Later. *Journal of Environmental Quality, 21*(1), 147-150.

Thomas, G. W., & Phillips, R. E. (1979). Consequences of Water Movement in Macropores. *Journal of Environmental Quality, 8*(2), 149-152.

Tilman, D., Cassman, K. G., Matson, P. A., Naylor, R., & Polasky, S. (2002). Agricultural Sustainability and Intensive Production Practices. *Nature, 418*(6898), 671-677.

Timmons, D., Verry, E., Burwell, R., & Holt, R. (1977). Nutrient Transport in Surface Runoff and Interflow from an Aspen-Birch Forest. *Journal of Environmental Quality, 6*(2), 188-192.

Tortoso, A. C., & Hutchinson, G. (1990). Contributions of Autotrophic and Heterotrophic Nitrifiers to Soil NO and N_2O Emissions. *Applied and Environmental Microbiology, 56*(6), 1799-1805.

Toum, S. A., Jaafar, O., & SA, S. M. (2005). A Study of Surface Wash and Runoff at Tekala Forest Reserve Malaysia. *e-BANGI: Jurnal Sains Sosial dan Kemanusiaan, 3*(3), 1-11.

Toy, T. J., Foster, G. R., & Renard, K. G. (2002). *Soil Erosion: Processes, Prediction, Measurement, and Control*: John Wiley & Sons.

Trajkovic, S. (2007). Hargreaves Versus Penman-Monteith under Humid Conditions. *Journal of Irrigation and Drainage Engineering, 133*(1), 38-42.

Triplett, G. B., & Dick, W. A. (2008). No-Tillage Crop Production: A Revolution in Agriculture! *Agronomy Journal, 100*(3), 153-165. doi: 10.2134/agronj2007.0005c

Trivedi, Y. V., Patel, N. L., Ahlawat, T. R., Gaikwad, S. S., & Bhalerao, P. P. (2012). Impact of Organic Manures and Inorganic Fertilizers on Growth, Yield, Nutrient Uptake and Soil Nutrient Status in Guava. *Indian Journal of Horticulture, 69*(4), 501-506.

Troeh, F., & Thompson, L. (2005). *Soils and Soil Fertility* (Vol. 6). New York: Oxford University Press.

Troiano, J., Garretson, C., Krauter, C., Brownell, J., & Huston, J. (1993). Influence of Amount and Method of Irrigation Water Application on Leaching of Atrazine. *Journal of Environmental Quality*, *22*(2), 290-298.

Trojan, M., & Linden, D. (1992). Microrelief and Rainfall Effects on Water and Solute Movement in Earthworm Burrows. *Soil Science Society of America Journal, 56*(3), 727-733.

Truman, C., Strickland, T., Potter, T., Franklin, D., Bosch, D., & Bednarz, C. (2007). Variable Rainfall Intensity and Tillage Effects on Runoff, Sediment, and Carbon Losses from a Loamy Sand under Simulated Rainfall. *Journal of Environmental Quality*, *36*(5), 1495-1502.

Truman, C. C., & Bradford, J. M. (1990). Effect of Antecedent Soil-Moisture on Splash Detachment under Simulated Rainfall. *Soil Science, 150*(5), 787-798. doi:10.1097/00010694-199011000-00005

Tukimat, N. N. A., & Harun, S. (2013). The Projection of Future Rainfall Change over Kedah, Malaysia with the Statistical Downscaling Model. *Malaysian Jornal of Civil Engineering, 23*, 67-79.

Turkelboom, F., Poesen, J., Ohler, I., VanKeer, K., Ongprasert, S., & Vlassak, K. (1997). Assessment of Tillage Erosion Rates on Steep Slopes in Northern Thailand. *Catena, 29*(1), 29-44. doi:10.1016/S0341-8162(96)00063-X

Turkeltaub, T., Dahan, O., & Kurtzman, D. (2014). Investigation of Groundwater Recharge under Agricultural Fields Using Transient Deep Vadose Zone Data. *Vadose Zone Journal, 13*(4). doi:10.2136/vzj2013.10.0176

Turner, R. E., & Rabalais, N. N. (2003). Linking Landscape and Water Quality in the Mississippi River Basin for 200 Years. *BioScience, 53*(6), 563-572.

Turtola, E., & Jaakkola, A. (1995). Loss of Phosphorus by Surface Runoff and Leaching from a Heavy Clay Soil under Barley and Grass Ley in Finland. *Acta Agriculturae Scandinavica B-Plant Soil Sciences, 45*(3), 159-165.

Turtola, E., & Paajanen, A. (1995). Influence of Improved Subsurface Drainage on Phosphorus Losses and Nitrogen Leaching from a Heavy Clay Soil. *Agricultural Water Management, 28*(4), 295-310. doi:10.1016/0378-3774(95)01180-3

Tyagi, N. K., Sharma, D. K., & Luthra, S. K. (2000). Evapotranspiration and Crop Coefficients of Wheat and Sorghum. *Journal of Irrigation and Drainage Engineering-ASCE, 126*(4), 215-222. doi:10.1061/(Asce)0733-9437(2000)126:4(215)

Uchida, R. (2000). Essential Nutrients for Plant Growth: Nutrient Functions and Deficiency Symptoms. *Plant Nutrient Management in Hawaii's Soils*, 31-55.

Ulen, B. (2003). Concentrations and Transport of Different Forms of Phosphorus During Snowmelt Runoff from an Illite Clay Soil. *Hydrological Processes, 17*(4), 747-758. doi:10.1002/Hyp.1164

Ulen, B., Aronsson, H., Bechmann, M., Krogstad, T., Oygarden, L., & Stenberg, M. (2010). Soil Tillage Methods to Control Phosphorus Loss and Potential Side-Effects: A Scandinavian Review. *Soil Use and Management, 26*(2), 94-107. doi:10.1111/j.1475-2743.2010.00266.x

Ulen, B., & Johansson, G. (2009). Long-Term Nutrient Leaching from a Swedish Arable Field with Intensified Crop Production against a Background of Climate Change. *Acta Agriculturae Scandinavica Section B-Soil and Plant*

Science, 59(2), 157-169. doi:Pii 908567298 Doi 10.1080/09064710802040541

Ulrich, U., Dietrich, A., & Fohrer, N. (2013). Herbicide Transport via Surface Runoff During Intermittent Artificial Rainfall: A Laboratory Plot Scale Study. *Catena, 101*, 38-49.

Unger, P., Stewart, B., Parr, J., & Singh, R. (1991). Crop Residue Management and Tillage Methods for Conserving Soil and Water in Semi-Arid Regions. *Soil and Tillage Research, 20*(2-4), 219-240.

USEPA. (1983). Results of the Nationwide Urban Runoff Program: Final Report. *US Environmental Protection Agency, Water Planning Division, Washington D.C, 1*.

Uusi-Kämppä, J., Braskerud, B., Jansson, H., Syversen, N., & Uusitalo, R. (2000). Buffer Zones and Constructed Wetlands as Filters for Agricultural Phosphorus. *Journal of Environmental Quality, 29*(1), 151-158.

Uusi-Kämppä, J., & Heinonen-Tanski, H. (2008). Evaluating Slurry Broadcasting and Injection to Ley for Phosphorus Losses and Fecal Microorganisms in Surface Runoff. *Journal of Environmental Quality, 37*(6), 2339-2350.

Vadas, P. A., Meisinger, J. J., Sikora, L. J., McMurtry, J. P., & Sefton, A. E. (2004). Effect of Poultry Diet on Phosphorus in Runoff from Soils Amended with Poultry Manure and Compost. *Journal of Environmental Quality, 33*(5), 1845-1854.

Vahabi, J., & Nikkami, D. (2008). Assessing Dominant Factors Affecting Soil Erosion Using a Portable Rainfall Simulator. *International Journal of Sediment Research, 23*(4), 376-386.

Vaithiyanathan, P., & Correll, D. L. (1992). The Rhode River Watershed - Phosphorus Distribution and Export in Forest and Agricultural Soils. *Journal of Environmental Quality, 21*(2), 280-288.

Valentin, C., Agus, F., Alamban, R., Boosaner, A., Bricquet, J.-P., Chaplot, V., De Guzman, T., De Rouw, A., Janeau, J.-L., & Orange, D. (2008). Runoff and Sediment Losses from 27 Upland Catchments in Southeast Asia: Impact of Rapid Land Use Changes and Conservation Practices. *Agriculture, Ecosystems & Environment, 128*(4), 225-238.

Valentin, C., Poesen, J., & Li, Y. (2005). Gully Erosion: Impacts, Factors and Control. *Catena, 63*(2), 132-153.

Van Bodegom, P. (1995). *Water, Nitrogen and Phosphorus Dynamics in Three Fallow Systems and Maize in Western Kenya*. Master Thesis, Wageningen Agricultural University, Wageningen.

Van de Giesen, N., Stomph, T., & De Ridder, N. (2000). Scale Effects of Hortonian Overland Flow and Rainfall–Runoff Dynamics in a West African Catena Landscape. *Hydrological Processes, 14*(1), 165-175.

Van Oost, K., Govers, G., de Alba, S., & Quine, T. A. (2006). Tillage Erosion: A Review of Controlling Factors and Implications for Soil Quality. *Progress in Physical Geography, 30*(4), 443-466. doi:10.1191/0309133306pp487ra

Vanclooster, M., Ducheyne, S., Dust, M., & Vereecken, H. (2000). Evaluation of Pesticide Dynamics of the WAVE-Model. *Agricultural Water Management, 44*(1-3), 371-388. doi:10.1016/S0378-3774(99)00101-8

Vanderborght, J., Timmerman, A., & Feyen, J. (2000). Solute Transport for Steady-State and Transient Flow in Soils with and without Macropores. *Soil Science Society of America Journal, 64*(4), 1305-1317.

Vanderborght, J., Vanclooster, M., Timmerman, A., Seuntjens, P., Mallants, D., Kim, D. J., Jacques, D., Hubrechts, L., Gonzalez, C., Feyen, J., Diels, J., & Deckers, J. (2001). Overview of Inert Tracer Experiments in Key Belgian Soil Types: Relation between Transport and Soil Morphological and Hydraulic Properties. *Water Resources Research, 37*(12), 2873-2888. doi: 10.1029/2000wr000110

Vásquez-Méndez, R., Ventura-Ramos, E., Oleschko, K., Hernández-Sandoval, L., Parrot, J.-F., & Nearing, M. A. (2010). Soil Erosion and Runoff in Different Vegetation Patches from Semiarid Central Mexico. *Catena, 80*(3), 162-169.

Verhulst, J., Kleijn, D., & Berendse, F. (2007). Direct and Indirect Effects of the Most Widely Implemented Dutch Agri-Environment Schemes on Breeding Waders. *Journal of Applied Ecology, 44*(1), 70-80. doi:10.1111/j.1365-2664.2006.01238.x

Verstraeten, G., Poesen, J., Govers, G., Gillijns, K., Van Rompaey, A., & Van Oost, K. (2003). Integrating Science, Policy and Farmers to Reduce Soil Loss and Sediment Delivery in Flanders, Belgium. *Environmental Science & Policy, 6*(1), 95-103. doi:Pii S1462-9011(02)00116-8Doi 10.1016/S1462-9011(02)00116-8

Vinther, F. P., Elsgaard, L., & Jacobsen, O. S. (2001). Heterogeneity of Bacterial Populations and Pesticide Degradation Potentials in the Unsaturated Zone of Loamy and Sandy Soils. *Biology and Fertility of Soils, 33*(6), 514-520.

Wahl, N. A., Bens, O., Buczko, U., Hangen, E., & Hüttl, R. (2004). Effects of Conventional and Conservation Tillage on Soil Hydraulic Properties of a Silty-Loamy Soil. *Physics and Chemistry of the Earth, Parts A/B/C, 29*(11), 821-829.

Wang, J., Lu, G. A., Guo, X. S., Wang, Y. Q., Ding, S. W., & Wang, D. Z. (2015). Conservation Tillage and Optimized Fertilization Reduce Winter Runoff Losses of Nitrogen and Phosphorus from Farmland in the Chaohu Lake Region, China. *Nutrient Cycling in Agroecosystems, 101*(1), 93-106. doi:10.1007/s10705-014-9664-3

Wang, J., Wang, D., Zhang, G., Wang, Y., Wang, C., Teng, Y., & Christie, P. (2014). Nitrogen and Phosphorus Leaching Losses from Intensively Managed Paddy Fields with Straw Retention. *Agricultural Water Management, 141*, 66-73. doi:10.1016/j.agwat.2014.04.008

Wang, W. L., Liang, T., Wang, L. Q., Liu, Y. F., Wang, Y. Z., & Zhang, C. S. (2013). The Effects of Fertilizer Applications on Runoff Loss of Phosphorus. *Environmental Earth Sciences, 68*(5), 1313-1319. doi:10.1007/s12665-012-1829-2

Wang, X. X., Shang, S. Y., Yang, W. H., Clary, C. R., & Yang, D. W. (2010). Simulation of Land Use-Soil Interactive Effects on Water and Sediment Yields at Watershed Scale. *Ecological Engineering, 36*(3), 328-344. doi: 10.1016/j.ecoleng.2008.11.011

Wang, Y., Zhang, J. H., Zhang, Z. H., & Jia, L. Z. (2016a). Impact of Tillage Erosion on Water Erosion in a Hilly Landscape. *Science of the Total Environment, 551*, 522-532. doi:10.1016/j.scitotenv.2016.02.045

Wang, Y. Y., Li, H. Z., & Xu, Z. X. (2016b). Rainfall-Induced Nutrient Losses from Manure-Fertilized Farmland in an Alluvial Plain. *Environmental Monitoring and Assessment, 188*(1). doi:ARTN 810.1007/s10661-015-5008-2

Watts, D. W., & Hall, J. K. (2000). Effects of Conventional and Mulch Tillage on Dicamba Transport. *Weed Technology, 14*(1), 94-99. doi:10.1614/0890-037x(2000)014[0094:Eocamt]2.0.Co;2

Wei, L., Zhang, B., & Wang, M. (2007). Effects of Antecedent Soil Moisture on Runoff and Soil Erosion in Alley Cropping Systems. *Agricultural Water Management, 94*(1), 54-62.

Weiler, M., & Naef, F. (2003). Simulating Surface and Subsurface Initiation of Macropore Flow. *Journal of Hydrology, 273*(1-4), 139-154. doi:Pii S0022-1694(02)00361-XDoi 10.1016/S0022-1694(02)00361-X

Wen, Z., Jiao, F., Liu, B., Bu, Y., & Jiao, J. (2005). Natural Vegetation Restoration and Soil Nutrient Dynamics of Abandoned Farmlands in Forest-Steppe Zone on Loess Plateau. *Journal of Applied Ecology, 16*(11), 2025-2029.

White, K. L., & Chaubey, I. (2005). Sensitivity Analysis, Calibration, and Validations for a Multisite and Multivariable SWAT Model: Wiley Online Library.

Wilbers, G.-J., Sebesvari, Z., Rechenburg, A., & Renaud, F. G. (2013). Effects of Local and Spatial Conditions on the Quality of Harvested Rainwater in the Mekong Delta, Vietnam. *Environmental Pollution, 182*, 225-232.

Wildemeersch, J. C. J., Vermang, J., Cornelis, W. M., Diaz, J., Gabriels, D., & Ruiz, M. E. (2014). Tillage Erosion and Controlling Factors in Traditional Farming Systems in Pinar Del Rio, Cuba. *Catena, 121*, 344-353. doi:10.1016/j.catena.2014.05.027

Wildenschild, D., Hopmans, J. W., & Simunek, J. (2001). Flow Rate Dependence of Soil Hydraulic Characteristics. *Soil Science Society of America Journal, 65*(1), 35-48.

Williams, A., Scholefield, D., Dowd, J., Holden, N., & Deeks, L. (2000). Investigating Preferential Flow in a Large Intact Soil Block under Pasture. *Soil Use and Management, 16*(4), 264-269.

Williams, J. R., & Izaurralde, R. (2006). The APEX Model. *Watershed Models*, 437-482.

Willmott, C. J. (1981). On the Validation of Models. *Physical Geography, 2*(2), 184-194.

Withers, P., & Jarvie, H. (2008). Delivery and Cycling of Phosphorus in Rivers: A Review. *Science of the Total Environment, 400*(1), 379-395.

Wong, C., Venneker, R., Uhlenbrook, S., Jamil, A., & Zhou, Y. (2009). Variability of Rainfall in Peninsular Malaysia. *Hydrology and Earth System Sciences Discussions, 6*(4), 5471-5503.

Wooldridge, J., & Harris, R. (1991). Effect of Organic Mulches and Plastic Sheet on Soil Temperature. *Deciduous Fruit Grower, 41*(4), 118-121.

Wu, S.-F., Wu, L.-H., Shi, Q.-W., Wang, Z.-Q., Chen, X.-Y., & Li, Y.-S. (2007). Effects of a New Nitrification Inhibitor 3, 4-Dimethylpyrazole Phosphate (DMPP) on Nitrate and Potassium Leaching in Two Soils. *Journal of Environmental Sciences, 19*(7), 841-847.

Wu, Y., & Chen, J. (2013). Investigating the Effects of Point Source and Nonpoint Source Pollution on the Water Quality of the East River (Dongjiang) in South China. *Ecological Indicators, 32*, 294-304.

Xin, Z. B., Xu, J. X., & Zheng, W. (2008). Spatiotemporal Variations of Vegetation Cover on the Chinese Loess Plateau (1981-2006): Impacts of Climate Changes and Human Activities. *Science in China Series D-Earth Sciences, 51*(1), 67-78. doi:10.1007/s11430-007-0137-2

Xing, W. M., Yang, P. L., Ren, S. M., Ao, C., Li, X., & Gao, W. H. (2016). Slope Length Effects on Processes of Total Nitrogen Loss under Simulated Rainfall. *Catena, 139*, 73-81. doi:10.1016/j.catena.2015.12.008

Xu, C.-Y., & Singh, V. (2002). Cross Comparison of Empirical Equations for Calculating Potential Evapotranspiration with Data from Switzerland. *Water Resources Management, 16*(3), 197-219.

Xu, C.-Y., & Singh, V. (2005). Evaluation of Three Complementary Relationship Evapotranspiration Models by Water Balance Approach to Estimate Actual Regional Evapotranspiration in Different Climatic Regions. *Journal of Hydrology, 308*(1), 105-121.

Xu, C. Y., & Singh, V. P. (2001). Evaluation and Generalization of Temperature-Based Methods for Calculating Evaporation. *Hydrological Processes, 15*(2), 305-319. doi:10.1002/Hyp.119

Xue, Q., Chen, Y. J., & Liu, L. (2016). Erosion Characteristics of Ecological Sludge Evapotranspiration Cover Slopes for Landfill Closure. *Environmental Earth Sciences, 75*(5). doi:ARTN 419 10.1007/s12665-015-5166-0

Xystrakis, F., & Matzarakis, A. (2010). Evaluation of 13 Empirical Reference Potential Evapotranspiration Equations on the Island of Crete in Southern Greece. *Journal of Irrigation and Drainage Engineering, 137*(4), 211-222.

Yakubu, M. L., Yusop, Z., & Fulazzaky, M. A. (2016). The Influence of Rain Intensity on Raindrop Diameter and the Kinetics of Tropical Rainfall: Case Study of Skudai, Malaysia. *Hydrological Sciences Journal, 61*(5), 944-951.

Yamada, K. (2007). Diffuse Pollution in Japan: Issues and Perspectives. *Water Science and Technology, 56*(1), 11-20.

Yang, X., & Jin, W. (2010). Gis-Based Spatial Regression and Prediction of Water Quality in River Networks: A Case Study in Iowa. *Journal of Environmental Management, 91*(10), 1943-1951.

Yang, Y., Song, B. K., & Kang, L. (2009). Status and Controlling on Tianjin's Non-Point Source Pollution. *River Basin Research and Planning Approach*, 323-328.

Yaziz, M. I., Gunting, H., Sapari, N., & Ghazali, A. (1989). Variations in Rainwater Quality from Roof Catchments. *Water Research, 23*(6), 761-765.

Youlton, C., Espejo, P., Biggs, J., Norambuena, M., Cisternas, M., Neaman, A., & Salgado, E. (2010). Quantification and Control of Runoff and Soil Erosion on Avocado Orchards on Ridges Along Steep-Hillslopes. *Ciencia E Investigacion Agraria, 37*(3), 113-123.

Young, R., Olness, A., Mutchler, C., & Moldenhauer, W. (1986). Chemical and Physical Enrichments of Sediment from Cropland. *Transactions of the ASAE, 29*(1), 165-0169.

Yu, M. Z., Xu, X. X., Liu, P. L., & Zheng, S. Q. (2012). The Response of Runoff and Sediment on Eco-Environmental Change of Yan'gou Watershed in the Loess Hilly Region. *Journal of Food Agriculture & Environment*, *10*(1), 941-945.

Yu, Q. G., Ma, J. W., Zou, P., Lin, H., Sun, W. C., Yin, J. Z., & Fu, J. R. (2015). Effects of Combined Application of Organic and Inorganic Fertilizers Plus Nitrification Inhibitor DMPP on Nitrogen Runoff Loss in Vegetable Soils. *Environmental Science and Pollution Research, 22*(1), 472-481. doi: 10.1007/s11356-014-3366-x

Yusop, Z., Nik, A. R., Suki, A., & Zakaria, M. F. (1989). Rainfall Chemistry and Nutrient Loading in a Peninsular Malaysia Forest Site. *Journal of Tropical Forest Science*, 201-214.

Zhang, G. H., Liu, G. B., & Wang, G. L. (2012a). Effects of Canopy and Roots of Patchy Distributed Artemisia Capillaris on Runoff, Sediment, and the Spatial

Variability of Soil Erosion at the Plot Scale. *Soil Science, 177*(6), 409-415. doi:10.1097/Ss.0b013e3182539713

Zhang, G. H., Liu, G. B., Wang, G. L., & Wang, Y. X. (2011). Effects of Vegetation Cover and Rainfall Intensity on Sediment-Associated Nitrogen and Phosphorus Losses and Particle Size Composition on the Loess Plateau. *Journal of Soil and Water Conservation, 66*(3), 192-200. doi: 10.2489/jswc.66.3.192

Zhang, G. S., Hu, X. B., Zhang, X. X., & Li, J. C. (2013a). Effect of Plastic Mulch and Winter Catch Crop on Water Availability and Vegetable Yield in a Rain-Fed Vegetable Cropping System at Mid-Yunnan Plateau, China. *Scientia Horticulturae, 164*, 333-339. doi:10.1016/j.scienta.2013.09.053

Zhang, G. S., Zhang, X. X., & Hu, X. B. (2013b). Runoff and Soil Erosion as Affected by Plastic Mulch Patterns in Vegetable Field at Dianchi Lake's Catchment, China. *Agricultural Water Management, 122*, 20-27. doi:10.1016/j.agwat.2013.02.004

Zhang, J., Gong, H. L., Li, X. J., & Ross, M. (2009a). Assessment of Nitrogen Loading in Miyun Reservoir Beijing Using Bayesian Decision Network. *2009 3rd International Conference on Bioinformatics and Biomedical Engineering, Vols 1-11*, 5966-5969.

Zhang, J. H., Lobb, D. A., Li, Y., & Liu, G. C. (2004a). Assessment of Tillage Translocation and Tillage Erosion by Hoeing on the Steep Land in Hilly Areas of Sichuan, China. *Soil & Tillage Research, 75*(2), 99-107. doi:10.1016/j.still.2003.08.003

Zhang, L., Peng, X. R., Kang, S., Zhang, Y., Liu, X. H., & Su, H. C. (2009b). Analysis and Evaluation for Pollution Source of Xiquanyan Reservoir Eutrophication. *2009 International Conference on Environmental Science and Information Application Technology, Vol iii, Proceedings*,, 284-287. doi:10.1109/Esiat.2009.405

Zhang, W. S., Wang, X. Y., Li, X. X., Ren, W. P., & Li, J. H. (2012b). Diffuse Export of Nutrients under Different Land Uses in the Irrigation Area of Lower Beiyunhe River (China). *Procedia Environmental Sciences, 13*, 1363-1372. doi:10.1016/j.proenv.2012.01.129

Zhang, Y., Zhang, X., Shao, M., & Li, S. (2004b). Impact of Straw Cover on Mineral Nitrogen Loss by Runoff on Loess Slope. *Journal of Soil and Water Conservation, 18*(1), 85-88.

Zhang, Z., Zhu, Y., Cheng, J., & Bailey, J. (2002). Phosphorus Export from a Paddy Rice Field During Flood Events. *Soil Use and Management, 18*(4), 316-323.

Zhang, Z. Y., Kong, L. L., Zhu, L., Xia, J. H., & Patricia, X. (2012c). Fate Characteristics of Nitrogen in Runoff from a Small Agricultural Watershed on the South of Huaihe River in China. *Environmental Earth Sciences, 66*(3), 835-848. doi:10.1007/s12665-011-1293-4

Zhao, Y. G., & Xu, M. X. (2013). Runoff and Soil Loss from Revegetated Grasslands in the Hilly Loess Plateau Region, China: Influence of Biocrust Patches and Plant Canopies. *Journal of Hydrologic Engineering, 18*(4), 387-393. doi:10.1061/(Asce)He.1943-5584.0000633

Zheng-Chao, Z., & Shangguan, Z.-P. (2008). Effect of Ryegrasses on Soil Runoff and Sediment Control. *Pedosphere, 18*(1), 131-136.

Zheng, C., Hill, M., Cao, G., & Ma, R. (2012). MT3DMS: Model Use, Calibration, and Validation. *Transactions of the ASABE, 55*(4), 1549-1559.

Zhou, L. M., Jin, S. L., Liu, C. A., Xiong, Y. C., Si, J. T., Li, X. G., Gan, Y. T., & Li, F. M. (2012). Ridge-Furrow and Plastic-Mulching Tillage Enhances Maize-Soil Interactions: Opportunities and Challenges in a Semiarid Agroecosystem. *Field Crops Research, 126*, 181-188. doi:10.1016/j.fcr.2011.10.010

Zhu, B., Wang, T., Kuang, F., Luo, Z., Tang, J., & Xu, T. (2009). Measurements of Nitrate Leaching from a Hillslope Cropland in the Central Sichuan Basin, China. *Soil Science Society of America Journal, 73*(4), 1419-1426.

Zhu, K., Zhang, L., Hart, W., Liu, M., & Chen, H. (2004). Quality Issues in Harvested Rainwater in Arid and Semi-Arid Loess Plateau of Northern China. *Journal of Arid Environments, 57*(4), 487-505.

Zhu, T. X. (2016). Effectiveness of Conservation Measures in Reducing Runoff and Soil Loss under Different Magnitude-Frequency Storms at Plot and Catchment Scales in the Semi-Arid Agricultural Landscape. *Environmental Management, 57*(3), 671-682. doi:10.1007/s00267-015-0644-4

Ziadat, F., & Taimeh, A. (2013). Effect of Rainfall Intensity, Slope, Land Use and Antecedent Soil Moisture on Soil Erosion in an Arid Environment. *Land Degradation & Development, 24*(6), 582-590.

Ziegler, A. D., Giambelluca, T. W., & Sutherland, R. A. (2001). Erosion Prediction on Unpaved Mountain Roads in Northern Thailand: Validation of Dynamic Erodibility Modelling Using KINEROS2. *Hydrological Processes, 15*(3), 337-358. doi:10.1002/Hyp.96

Zougmoré, R., Guillobez, S., Kambou, N., & Son, G. (2000). Runoff and Sorghum Performance as Affected by the Spacing of Stone Lines in the Semiarid Sahelian Zone. *Soil and Tillage Research, 56*(3), 175-183.

Zougmoré, R., Zida, Z., & Kambou, N. (2003). Role of Nutrient Amendments in the Success of Half-Moon Soil and Water Conservation Practice in Semiarid Burkina Faso. *Soil and Tillage Research, 71*(2), 143-149.

Zuazo, V. D., Martínez, J. F., Pleguezuelo, C. R., Raya, A. M., & Rodríguez, B. C. (2006). Soil-Erosion and Runoff Prevention by Plant Covers in a Mountainous Area (SE Spain): Implications for Sustainable Agriculture. *Environmentalist, 26*(4), 309-319.

Zuazo, V. H. D., & Pleguezuelo, C. R. R. (2008). Soil-Erosion and Runoff Prevention by Plant Covers. A Review. *Agronomy for Sustainable Development, 28*(1), 65-86. doi:10.1051/Agro:2007062

Zuazo, V. H. D., Raya, A. M., & Ruiz, J. A. (2004). Nutrient Losses by Runoff and Sediment from the Taluses of Orchard Terraces. *Water, Air, and Soil Pollution, 153*(1-4), 355-373.

Zuo, X. A., Zhao, X. Y., Zhao, H. L., Guo, Y. R., Zhang, T. H., Li, L. Y., & Wang, S. K. (2008). Spatial Pattern and Variability of Vegetation in Degradation Processes of Sandy Grassland in Horqin Sandy Land. *2008 Proceedings of Information Technology and Environmental System Sciences: Itess 2008, Vol 1*, 662-667.